

THE TAXONOMIC STATUS OF *Dasyurus affinis* McCoy [1865]
(DASYURIDAE) AND *Hypsiprymnus trisulcatus* McCoy [1865]
(MACROPODIDAE), TWO MARSUPIALS FROM A HOLOCENE
CAVE DEPOSIT NEAR GISBORNE, VICTORIA

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Abstract

Dasyurus affinis McCoy [1865] and *Hypsiprymnus trisulcatus* McCoy [1865] are recorded as junior synonyms of *Dasyurops maculatus* (Kerr 1792) and *Potorous tridactylus* (Kerr 1792), respectively. Some comments are made on the identity of a further 3 species, not specifically identified by McCoy, but included by him in his list of mammals from the Gisborne Bone Cave. Identification of these species is not effected. The year of issue of McCoy's list of mammals from the Bone Cave is stated by D. E. Thomas in a private communication to be 1865. The origin and age of the Bone Cave is discussed by Edmund D. Gill in an Appendix. The age of the Bone Cave is recorded by him as Holocene.

Introduction

Two species, *Dasyurus affinis* McCoy and *Hypsiprymnus trisulcatus* McCoy, were erected by a note on the Geological Survey of Victoria Quarter Sheet 7 NW. when, in a list of mammals from the Bone Cave (Mt Macedon Cave (Etheridge 1878); Gisborne Cave (Chapman 1930)), in Bone Cave Ravine at the head of Toolam Toolern Ck, 5 miles S. by E. from Gisborne, McCoy recorded '*Dasyurus affinis* (McCoy) New Species nearly as large as *D. maculatus* but differing in proportions' and '*Hypsiprymnus trisulcatus* (McCoy) a New Species a little smaller than the living *H. minor* and having only 3 sulci on large premolar in the lower jaw'.

The date of publication of McCoy's list has been in doubt (*vide* Gill 1953a, p. 163); however, in a private communication to the author, dated 18 December 1958, Dr D. E. Thomas, Chief Government Geologist, Department of Mines, Victoria, provided the following information:

'The Quarter Sheet had not been published by March 1861 when it was still in course of preparation, but had been published before the 30th June 1862. This edition did not contain the drawings of the caves and the fossil list which was issued in 1865. By 31st December 1865, 31 copies had been issued gratuitously but no sales had been made. The main distribution, however, was on 16th February 1865.'

A note on the Bone Cave contained in a letter dated 'Geological Survey Office, Melbourne, 14 Feb. 1859' and written by A. R. C. Selwyn (Selwyn 1860), recorded:

'The only other interesting discovery of the Survey here is the Bone-cave at Gisborne, about 25 miles north of Melbourne. Enclosed is a sketch of the locality, also a plan and section on true scale from actual measured survey (see figs. 1, 2 & 3). In it, imbedded in light powdery and perfectly dry soil, we found great quantities of the osseous remains of Birds and Mammals; the most remarkable being perfect skulls of the Dingo, the Devil of Tasmania, and another carnivorous animal, which M'Coy thinks is quite a new genus: the skull is in shape somewhat similar to that of a domestic cat, but not more than half the size; and there are only two molars. The roof and sides of the passages, where narrow,

were quite smoothed and polished, evidently from the frequent passage of the animals that have inhabited the cave. When discovered, all these passages were so completely filled up with earthy matter, that no animal much larger than a rat could have obtained entrance; when cleared out, some of them were four feet high. The above would, I think, prove our basaltic lava-flows, in which the cave occurs, and which rest on the older gold-drifts, to be very old Pliocene. The bones are being figured and described by M'Coy.'



FIG. 1—Locality Map, Victoria.

No further description of *D. affinis* or *H. trisulcatus* has appeared in the literature but two syntypes of the former (Nat. Mus. Vict. No. P7425-6) have been figured by Gill (1953a, Pl. 1, fig. 1-9). Also figured from this site (McCoy 1882, Pl. 61, fig. 1, 1a, 3, 3a, 4, 5, 5a) are the fragmentary left mandibular ramus of *Sarcophilus harrisii* (NMV No. P1857) and 3 cranial fragments of *Canis familiaris* (NMV No. 7443, P7447-8)*. A further 4 fragments from the Bone Cave (NMV No. P7427-30)** referred by Gill (1953b, p. 88) to *Thylacinus cynocephalus* belong, not to *Thylacinus*, but to *Canis familiaris*. McCoy's list has been emended by Mahony (1912) and by Chapman (1930) but these authors did not discuss the status of *D. affinis* or *H. trisulcatus*.

[* P7448 is recorded by Gill (1953a, p. 163) as P1488.]

[** These specimens are recorded by Gill (1953b, p. 88) as P7427-1430.]

The two syntypes of *D. affinis* and the figured specimens of *S. harrisii* and *C. familiaris* are the only Bone Cave material, definitely known to have been handled by McCoy, that can now be traced. Specimens from this site are not represented in the collections of the Department of Mines, Victoria, or in those of the Department of Geology and Mineralogy, University of Melbourne. The possibility of finding additional material at the site itself is remote. However, there is a small collection of Bone Cave material in the National Museum of Victoria (NMV), in addition to the specimens mentioned above. This collection was made, in part, by the Geological Survey of Victoria and may contain material examined by McCoy. Observations made on the NMV Bone Cave collection are presented in this paper.

***Dasyurus affinis* McCoy**

Two specimens, P7425-6, are entered in the Palaeontological Register of the National Museum of Victoria as '*Dasyurus maculatus*, Kerr', with the note '[These specimens constitute the type (not fig^d.) of *D. affinis*, McCoy MS.—see ¼ sheet 7 NW., Geol. Surv. Vic., Note]'. This entry, dated 31 December 1904, was made after McCoy's death and during Mr F. Chapman's tenure of office as Palaeontologist

Note.

The Bones in this Cave are all strongly adherent to the tongue, and have quite lost their animal matter. The recognisable fragments are as follow

Placental Mammalia.

Canis Dingo or Wild Dog identical with living one.

New Genus of Carnivorous animal.

Implacental or Marsupial Mammalia.

Diabolus (Sarcophilus) Ursinus Tasmanian Devil, no species of this Genus at present known living on the continent of Australia.

Dasyurus viverrinus identical with living species.

Dasyurus affinis (McCoy) New Species nearly as large as

D. maculatus but differing in proportions.

Phalangista vulpina identical with living species.

Phalangista New Species.

Perameles obesula apparently identical with living species.

Hypsiprymuus trisulcatus (McCoy) a New Species a little smaller than the living H. minor and having only 3 sulci on large premolar in the lower jaw.

Macropus a species nearly allied to the living M. ualabatus but distinct.

Frederick McCoy Palaentologist to Geological Survey.

FIG. 2—Note by McCoy on the Bone Cave Mammalia, included on some early copies of Geological Survey of Victoria Quarter Sheet 7 NW.

at this museum. Similar information has been provided for a type of *D. affinis* by Mahony (1912), who quoted data recorded on a museum label. A search was made for a manuscript by McCoy on the Bone Cave during preparation of the present paper. Manuscript material of McCoy's could not be found within the University of Melbourne, in the Public Library of Victoria, in the Library of the Department of Mines, Victoria, or in that of the Royal Society of Victoria. A collection of McCoy's notes and correspondence is preserved in the National Museum of Victoria, but no reference to the Bone Cave fauna was found in these writings.

The syntypes, 2 left mandibular rami, fall, both in mensuration and morphology, within the range of variation in *Dasyurops maculatus*. Therefore, *Dasyurus affinis* McCoy [1865] is recorded here as a junior synonym of *Dasyurops maculatus* (Kerr 1792). *D. maculatus* is still found in Victoria (Brazenor 1950). Its occurrence in Victorian cave deposits has been noted by Wakefield (1960, 1963a, 1963b).

A third mandibular ramus of *D. maculatus* (P22841) and 2 edentulous right premaxillae (P17642, P17648) resembling those of this species (P17648 is atypical in that only 3 incisor alveoli are developed) are included in the NMV Bone Cave collection. Mensuration for the 3 Bone Cave mandibular rami and for a mandibular

TABLE 1

Measurements (mm) for 2 syntypes of *Dasyurus affinis* McCoy and for 2 comparative left mandibular rami of *Dasyurops maculatus* (Kerr). NMV No. P7425-6, P22841—specimens from the Bone Cave near Gisborne, Victoria. M7659 ♀ Australian Museum specimen from Major's Ck, Braidwood District, N.S.W.

(Measurements in this Table and in Tables 2 and 3 were taken by vernier calipers graduated to read to 0.05 mm; tooth measurements do not include roots; measurements for alveoli have been taken at the level of the alveolar border.)

	<i>D. affinis</i> P7425 Syntype	<i>D. affinis</i> P7426 Syntype	<i>D. maculatus</i> P22841	<i>D. maculatus</i> M7659♀
Length of mandibular ramus	69 approx.	73 approx.	59 approx.	74
Mandibular depth measured labially below tip of bone between roots of M_1 ..	9.9	10.7	7.5	10.6
Mandibular depth measured labially below tip of bone between roots of M_3 ..	10.9	11.9	8.4	11.9
Mandibular depth measured below alveolar border at posterior extremity of M_4	10.6	11.2	8.3	10.4
Width of mandibular ramus at anterior extremity of M_2	4.4	4.4	3.6	4.4
Width of mandibular ramus at posterior extremity of M_4	5.4	5.4	4.1	5.5
Width of mandibular ramus measured from labial edge of masseteric flange to lingual edge of angular process with coronoid process held vertical ..	16 approx.			17
Minimum length from anterior edge of mandibular foramen to posterior margin of mandibular ramus	8.3	6.9		9.7
Height of coronoid process measured lingually above level of alveolar border	18 approx.	20 approx.		22
Angle of slope of anterior edge of coronoid process measured from line joining labial edges of alveoli of M_3	115°	122°	115°	125°
Angle of slope of inferior border of symphysis measured from alveolar border	31°	34°	35°	40°
Length from anterior extremity of alveolus of I_1 to posterior extremity of M_4 ..	42 approx.	40 approx.	37	42
Length from anterior extremity of alveolus of anterior root of P_1 to posterior extremity of M_4	34	32	30	34
Length of incisor alveoli		3.3 approx.	3.8 approx.	4.0
Length from anterior extremity of alveolus of anterior root of P_1 to posterior extremity of alveolus of posterior root of P_3	9.7	8.8	7.7	9.2
Length from anterior extremity of alveolus of anterior root of P_1 to posterior extremity of alveolus of posterior root of P_1	4.3	4.3	3.6	4.4
Length from anterior extremity of alveolus of anterior root of P_3 to posterior extremity of alveolus of posterior root of P_3	4.5	4.4	4.1	4.8
P_1 Length × width			3.7 × 1.8	3.9 × 2.0
P_3 Length × width			4.0 × 2.0	4.2 × 2.3
M_1 Length × width	5.0 × 3.0	4.8 × 3.2	4.6 × 2.9	4.8 × 3.2
M_2 Length × width	5.9 × 3.8	5.6 × 3.8	5.4 × 3.5	5.8 × 3.7
M_3 Length × width	6.5 × 3.9	6.3 × 4.0	6.1 × 3.6	6.5 × 3.8
M_4 Length × width	6.9 × 3.9	6.3 × 3.8	6.3 × 3.5	6.7 × 3.8
M_{1-4} Length	24.0	approx. 22.7 approx.	22.0	23.0

ramus of *D. maculatus* from Major's Ck, N.S.W., is recorded in Table 1. The 4 mandibular rami are figured in Pl. LXXVII.

Hypsiprymnus trisulcatus McCoy

The specimen (or specimens) on which this species was erected cannot be traced. 4 cranial fragments (P17633-5, P22843) and 7 mandibular fragments (P17636-41, P22842) of *Potorous tridactylus* (Kerr 1792) (= *Hypsiprymnus minor* (Shaw 1800)) are included in the NMV Bone Cave collection. The number of sulci developed on the labial and lingual surfaces of P_4 can be accurately determined for 3 of these fragments (P17639-40, P22842), and on the lingual surface alone for a further 3 (P17636-8). 4 sulci are present on P_4 in these specimens; the

TABLE 2

Measurements (mm) for NMV specimens of *Potorous tridactylus* (Kerr) from the Bone Cave near Gisborne, Victoria. P17633 fragmentary cranium. P17634-5 fragments from left side of crania. P22843 fragment from right side of cranium. 4 individuals represented.

	<i>Potorous tridactylus</i>			
	P17633	P17634	P17635	P22843
Length from anterior extremity of intermaxillary suture to basisphenoid-pre-sphenoid suture	47 approx.			
Length from anterior extremity of premaxilla to posterior extremity of interpremaxillary suture		14	12 approx.	
Length of interfacial suture	27			
Length of interparietal suture	15			
Length from labial edge of alveolar border between M^1 and M^2 to frontomaxillo-lacrymal point	15			
Bizygomatic width	39			
Interorbital width	16			
Width across nasals between nasofrontomaxillary points	11.1			
Width of palate between alveoli of antero-internal roots of M^2	12.8			
Length of diastema between I^3 and C		2.5	3.1	
Length of diastema between C and P^4	6.2	5.0	6.5	6.7
Length from posterior extremity of alveolus of I^3 to anterior extremity of alveolus of P^4		11.5	12.6	
Length from anterior extremity of alveolus of I^1 to posterior extremity of alveolus of M^4			44	
Length from anterior extremity of alveolus of I^1 to posterior extremity of alveolus of I^3		8.7	7.9	
Length from anterior extremity of alveolus of P^4 to posterior extremity of alveolus of M^4	24		24	
I^3 Length \times width		2.8 \times 1.6		
P^4 Length \times width		7.3 \times 3.2		6.9 \times 2.8 approx.
M^1 Length \times width	4.2 \times 3.6	4.4 \times 3.7	4.3 \times 3.8	4.1 \times 3.6
M^2 Length \times width	4.5 \times 4.1	4.6 \times 4.0	4.7 \times 4.1	4.4 \times 3.9
M^3 Length \times width	4.7 \times 3.9	4.5 \times 3.9	4.7 \times 3.8	4.6 \times 3.7
M^{1-3} Length	13.4	13.5	13.5	12.9

posterior sulcus is typically not as well defined as the more anteriorly placed sulci and is susceptible, on the labial surface of the tooth, to early obliteration by wear. A smaller number of sulci are developed, however, on P_4 in some individuals of *P. tridactylus*. A male *P. tridactylus* (NMV No. R7725) from near Wynyard, NW, Tasmania has 3 sulci on P_4 while only 2 sulci are present on P_4 of a female *P. tridactylus* (NMV No. R8370) from Clark Is., Bass Strait. It is clear, then, that the presence of 3 sulci on P_4 of *H. trisulcatus* does not distinguish this species from *P. tridactylus*.

On the evidence available, discrimination between *H. trisulcatus* and *P. tridactylus* is untenable and *Hypsiprymnus trisulcatus* McCoy [1865] is recorded here as a junior synonym of *Potorous tridactylus* (Kerr 1792). *P. tridactylus* is still found in Victoria (Brazenor 1950). It has been recorded from Victorian cave deposits by Wakefield (1960, 1963a, 1963b). Mensuration for the Bone Cave *P. tridactylus* is recorded in Tables 2 and 3. Specimens of it are figured in Pl. LXXVIII.

TABLE 3

Measurements (mm) for NMV specimens of *Potorous tridactylus* (Kerr) from the Bone Cave near Gisborne, Victoria. P17636-8, P17641, P22842 left mandibular rami. P17639-40 right mandibular rami. Seven individuals represented.

	<i>Potorous tridactylus</i>						
	P17641	P17640	P17639	P17638	P17637	P17636	P22842
Mandibular depth measured labially below tip of bone between roots of M_1 ..		7.2	8.0	8.0	8.4	8.2	6.7
Mandibular depth measured labially below tip of bone between roots of M_3 ..				8.1	8.5		
Width of mandibular ramus at anterior extremity of M_1 ..		4.0	3.9	4.8	4.5	3.9	4.0
Width of mandibular ramus at posterior extremity of M_3 ..				6.0	5.7		
Length of diastema ..		4.5	6.0	6.3			
P_3 Length \times width ..	3.8 \times 2.0	3.4 \times 1.8					
dP_4 Length \times width ..		3.4 \times 2.2					
P_4 Length \times width ..			6.1 \times 2.7	6.3 \times 2.6	6.2 \times 2.8	6.1 \times 2.4	5.9 \times 2.4
M_1 Length \times width ..		4.4 \times 3.0	3.8 \times 2.8	4.1 \times 3.2	4.1 \times 3.1	3.6 \times 3.0	4.0 \times —
M_2 Length \times width ..		4.7 \times 3.2	4.3 \times 3.2	4.7 \times 3.5	4.7 \times 3.5	4.3 \times 3.5	4.5 \times 3.4
M_3 Length \times width ..				4.8 \times 3.5	4.7 \times 3.5	4.4 \times 3.6	4.7 \times 3.5
M_4 Length \times width ..					4.4 \times 3.3	4.3 \times 3.2	4.0 \times 3.1
P_4-M_4 Length ..					23.1	22.3	22.4
M_1-4 Length ..					17.5	16.4	16.9

Other Observations

A further two animals, designated new in McCoy's list, are neither named nor described, and their identity cannot now be determined. However, the mammalian remains in the NMV Bone Cave collection belong to a modern fauna (*Sarcophilus harrisii*, now confined to Tasmania, has only recently become extinct in Victoria, a radiocarbon date of 538 ± 200 years (before present) having been obtained for an aboriginal kitchen midden, containing remains of this species, at Koroit Beach in W. Victoria (Gill 1953b)) and, as extinct Quaternary mammals found elsewhere are not included in McCoy's list, McCoy's collection possibly consisted of modern

species only; identification of his two unnamed animals as new might have resulted from incomplete comparison with species already known. The Bone Cave, itself, postdates the Pleistocene in its development (*vide* Appendix) and the Bone Cave fauna is Holocene in age.

A brief description of McCoy's new genus is given by Selwyn (*vide supra*). The only Australian placental mammals, other than *Canis* (and *Vulpes*) with 2 molars in each maxillary row, belong in the *Megachiroptera*, a species of which, *Pteropus poliocephalus*, has been recorded from Victoria (Brazenor 1950), and in the *Hydromyinae*, also with a species, *Hydromys chrysogaster*, known from Victoria (Brazenor 1950). It might be, however, that Selwyn was referring to the presence of but one molar in each maxillary row. This molar count is found in the introduced domestic cat *Felis catus* and in *Putorius* skeletal remains of which were recorded by Wakefield (1963a) from the main lava cave at Mt Hamilton, 110 miles W. of Melbourne. These mammals, with the exception of *Canis*, were not identified in the NMV Bone Cave collection. Although the identity of McCoy's genus cannot be resolved here, it appears likely that his determination was in error as he makes no mention of this animal in his later publications on Victorian mammals.

The identity of McCoy's *Phalangista* is also unknown. Modern phalangerids are represented in the NMV Bone Cave collection; possibly, one of these is McCoy's 'New Species'.

Unnamed, and again of uncertain identity, is the species of *Macropus* 'nearly allied to the living *M. ualabatus* but distinct'. Recognizable remains of *Wallabia bicolor* (Desmarest 1804) (= *Macropus ualabatus* (Lesson and Garnot 1827)) are not included in the NMV Bone Cave collection. However, this species is found in Victoria (Brazenor 1950) and, here again, McCoy might have confused individual with specific variation in discriminating between *W. bicolor* and the Bone Cave macropod.

Conclusions

Available evidence supports the view that McCoy's fauna was modern. The presence of new mammals in McCoy's Bone Cave collection has not been satisfactorily demonstrated; *D. affinis* and *H. trisulcatus*, erected by him on Quarter Sheet 7 NW., are junior synonyms. The most perplexing problem is that of the identity of McCoy's new genus of carnivorous placental. This animal might have been the domestic cat. A false conception of the antiquity of his material might have led McCoy to believe that the cat could not be included in his Bone Cave collection.

Acknowledgements

I am indebted to Mr Edmund D. Gill, Curator of Fossils, National Museum of Victoria, for facilitating my examination of the NMV Bone Cave collection. Messrs R. Wilkins and D. Woodruff assisted Mr Gill and me in an examination of the Bone Cave. For the loan of comparative material, I wish to thank Mr C. W. Brazenor, Director (since retired) of the National Museum of Victoria, and Dr J. W. Evans, Director of the Australian Museum. Valuable information has been provided by Dr D. E. Thomas, Chief Government Geologist, Department of Mines, Victoria. The absence of Bone Cave specimens in the collections of the Department of Geology and Mineralogy, University of Melbourne was confirmed for me by the Curator, Mr A. A. Baker. Negatives of the syntypes of *D. affinis* and prints of McCoy's list of mammals, included on some early copies of Quarter Sheet 7 NW., were provided by Mr Gill and Dr Thomas respectively. The rest of the photography was done by the Department of Illustration, University of Sydney. Correspondence

containing information recorded in this paper has been placed in the archives of the National Museum of Victoria.

References

- BRAZENOR, C. W., 1950. The mammals of Victoria and the dental characteristics of monotremes and Australian marsupials. *Nat. Mus. Vict. Handbook* 1.
- CHAPMAN, F., 1930. Australian cave faunas. *Vict. Nat.* 47 (6): 99-100.
- ETHERIDGE, R., Jr., 1878. *A Catalogue of Australian Fossils*. Cambridge.
- GILL, E. D., 1953a. Catalogue of Quaternary types and figured specimens in the National Museum, Melbourne. *Mem. Nat. Mus. Melbourne* 18: 157-168.
- , 1953b. Distribution of the Tasmanian devil, the Tasmanian wolf, and the dingo in SE. Australia in Quaternary time. *Vict. Nat.* 70 (5): 86-90.
- IREDALE, T., and TROUGHTON, E. Le G., 1934. A check-list of the mammals recorded from Australia. *Mem. Aust. Mus.* 6.
- MAHONY, D. J., 1912. On the bones of the Tasmanian devil and other animals, associated with human remains near Warrnambool: with a note on the dune sand. *Vict. Nat.* 29 (3): 43-46.
- MCCOY, F., 1865. Note. Quarter Sheet 7 NW. (Mt. Aitken). *Geol. Surv. Vict.*
- , 1882. Prodrum of the palaeontology of Victoria, Dec. 7. *Geol. Surv. Vict.*
- SELWYN, A. R. C., 1860. Notes on the geology of Victoria. *Quart. Journ. Geol. Soc. Lond.* 16: 145-150.
- SIMPSON, G. G., 1930. *Fossilium catalogus I: Animalia. Post-Mesozoic Marsupialia*. 47. (Ed. J. F. Pompeckj). W. Junk: Berlin.
- WAKEFIELD, N. A., 1960. Recent mammal bones in the Buchan district—1. *Vict. Nat.* 77 (6): 164-178.
- , 1963a. Sub-fossils from Mount Hamilton, Victoria. *ibid.* 79 (11): 323-330.
- , 1963b. Mammal sub-fossils from near Portland, Victoria. *ibid.* 80 (2): 39-45.

Appendix

AGE AND ORIGIN OF THE GISBORNE CAVE

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The Gisborne Cave was formed during the Holocene Period, and is unusual in origin. It has been excavated in basaltic tuff which lies between bedrock of Upper Ordovician siltstone (Harris and Crawford 1921), and a thick flow or flows of olivine basalt. Quarter Sheet 7 NW. of the Geological Survey shows the site of the cave, its ground plan, and a geological section (which does not include the tuff).

Volcanics

The tuff is clayey through partial decomposition. It contains, especially near the base, pieces of basalt (volcanic bombs). The tuff with coarse ejectamenta suggests the point of eruption was not far away. Dr A. W. Beasley, Curator of Minerals, National Museum of Victoria, examined this material and confirmed its tuffaceous nature. A rounded 'pebble' of basalt about 4 in. in diameter selected from the lower part of the tuff was submitted to Dr A. B. Edwards and Dr G. Baker who determined it as a Newer Basalt, probably of the Gisborne type. The overlying flow or flows are mapped as being of this type (Edwards and Crawford 1940), which is one of the commonest in the district.

Origin of the Cave

The cave is excavated in clayey tuff, but not by water erosion. It appears to have been dug out by fossorial animals. Wetting and drying effects, and wind erosion, have modified the entrance to the cave, and the part of the cliff face formed of tuff. After the somewhat large entrance, the cave consists of a number of anastomosing

tunnels and the direction of these appears to be controlled only by the occurrence of any heavy ejectamenta.

Age

The Gisborne Cave is on the E. side of a steep gully which is one of the headwaters of the Toolern Ck where it is back-cutting into the Gisborne Highlands. The gully, therefore, is one of the very youngest waterways. The thalweg is very steep, the contours on the Military Map (Sunbury Sheet) indicating a declivity of the order of 1 in 5 in the vicinity of the cave. The stream has only recently exposed the tuff at the cave site, so the cave cannot be of any great antiquity. The Keilor Terrace was built from about 20,000 years ago to about 6,000 years ago, as shown by radio-carbon dates. Consideration of the relationship of these sediments and those of the succeeding Maribyrnong Terrace to young valleys, leads to the conclusion that the time when the tuff band was fully exposed at the cave site (so making cave formation possible) was later than Pleistocene, and until more detailed dating is done in the area, the age of the cave has to be given simply as Holocene.

References

- CRAWFORD, W., 1940. The physiography of the Gisborne Highlands. *Proc. Roy. Soc. Vict.* 52: 262-280.
 EDWARDS, A. B., and CRAWFORD, W., 1940. The Cainozoic volcanic rocks of the Gisborne district. *ibid.* 52: 281-311.
 HARRIS, W. J., and CRAWFORD, W., 1921. The relationships of the sedimentary rocks of the Gisborne district, Victoria. *ibid.* 33: 39-78.

Explanation of Plates

PLATE LXXVII

- Fig. 1-4—*Dasyurus affinis* McCoy. (1) P7425 (Syntype), lingual view; (2) labial view; (3) P7426 (Syntype), lingual view, (4) labial view.
 Fig. 5-8—*Dasyurus maculatus* (Kerr). (5) P22841, lingual view, (6) labial view; (7) M7659 ♀, lingual view, (8) labial view.
 Fig. 9, 10—*Dasyurus affinis* McCoy. (9) P7425 (Syntype), occlusal view; (10) P7426 (Syntype), occlusal view.
 Fig. 11, 12—*Dasyuops maculatus* (Kerr). (11) P22841, occlusal view; (12) M7659 ♀, occlusal view.

P7425-6, P22841 NMV specimens from the Bone Cave near Gisborne, Victoria. M7659 ♀ Australian Museum specimen from Major's Ck, Braidwood District, N.S.W. Magnification $\times 1.0$ approx.

PLATE LXXVIII

- Fig. 1-14—*Potorous tridactylus* (Kerr). (1) P17633, dorsal view, (2) palatal view, (3) lateral view; (4) P17634, palatal view, (5) lateral view; (6) P17641, occlusal view; (7) P17640, occlusal view; (8) P17639, occlusal view; (9) P17636, occlusal view; (10) P17638, labial view, (11) occlusal view, (12) lingual view; (13) P22842, occlusal view; (14) P17641, lingual view.

NMV specimens from the Bone Cave near Gisborne, Victoria. Note fused dP_4M_1 and alveolus of single rooted tooth between I_1 and P_3 in P17641. Fig. 1-5, 10-14 $\times 1.0$ approx.; Fig. 6-9 $\times 2.0$ approx.



Mahoney, J A and Gill, Edmund Dwen. 1964. "The taxonomic status of *Dasyurus affinus* McCoy [1865] (Dasyuridae) and *Hypsiprymnus trisulcatus* McCoy [1865] (Macropodidae), two marsupials from a Holocene cave deposit near Gisborne, Victoria." *Proceedings of the Royal Society of Victoria. New series* 77(2), 525–533.

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