

PAPERS READ.

ON A FOSSIL CALVARIA.

BY CHARLES W. DE VIS, B.A.

PLATE 17.

A model of the upper surface of a brain, produced from the interior of a fossil brain-pan, has already been under the inspection of the Society. To obtain a just conception of the animal represented by it, it appears necessary that the mould itself should be brought into view. I therefore allow myself the pleasure of submitting to consideration a cast of the entire fossil, and of offering some remarks upon it for the purpose of eliciting opinion. The portion of skull which time has left to us consists of the parietal and the upper part of the occipital bones. On its superior surface the sagittal suture is almost effaced—it is indicated merely by a slight groove anteriorly. Posteriorly there is a shallow depression between the particles immediately in front of the superoccipital and from the radiated arrangement of the cell-walls standing out in low relief from the surface of the bone I am inclined to think that there is here an interparietal ossified from a single centre. The parietals are flattened anteriorly and gradually become very moderately convex posteriorly. The cristæ are far removed from the sagittal suture, and are scarcely appreciable—mere lineæ temporalis from which the temporal surfaces slope at a slightly increased angle. The occipital surface makes with that of the parietals an open angle of 120° . The lambdoidal suture is entirely effaced, but no superior occipital crest is developed. A strong and prominent longitudinal spine indicates the necessity that existed for a powerful ligamentum nuchæ. On each side of its upper half a large and deep impression roughened by plate-like bony processes attests the volume of the complexi. The longitudinal spine is crossed by a faint inferior ridge, and beneath the crucial spine so formed there is an ample smooth area on either side for the insertion of the deep muscles of the neck. The confluence of the constituent bones of the calvaria renders it a solid mass of great density and thickness. Measuring

but four inches in length, and three in breadth, the average thickness of the parietals is nearly three-quarters of an inch, the least thickness of the occipital one quarter—the bevel of the coronal suture is not less than thirteen lines in depth. The sutural edges are strongly serrated by more or less tortuous plate-like processes continuous from edge to edge.

The brain-cavity gives us the form of the upper third (there or thereabouts) of the brain anteriorly, increasing to its upper half posteriorly. In the cast taken from it the fore edge of the brain is a straight line broken by the indentations between the anterior convolutions. The anterior angles are rounded, behind them the sides of the anterior lobes of the hemispheres bulge out, but, the posterior lobes contracting, the posterior angles are brought square or nearly so with the anterior. The posterior divaricating edges of the hemispheres form with one another an angle of 110° , and those of the cerebellum being parallel with them respectively, the outline of the cerebellum with its investments is apparently rhomboidal. The dura mater is dense over the cerebellum, but over the cerebrum much thinner, allowing the convolutions beneath it to be seen pretty distinctly. The upper surface of the membrane was highly vascular—the inner table of the skull is throughout channelled with minute branching sulci, which on a gutta-percha impression are seen to communicate with the lateral sinuses and other trunks. A rudimentary tentorium is developed on one side only—on the other there is merely a broad shallow groove. The longitudinal sinus and upper limb of the falx are lodged in a deep median sulcus. The convolutions of the brain are symmetrical and consist mainly of three pairs arranged in two lines, diverging from before backward to the Sylvian fissure which is but faintly marked. The vermiform process is of moderate size—its summit attains nearly the level of the cerebrum; the lateral lobes are about equal to it in breadth. The cerebellum in its fore and aft dimension is to the cerebrum, as seen in the cast of the brain cavity, as five to seven, but the posterior angles of the latter come well back upon the cerebellum and permit no lateral fissure nor depression between them to be seen.

I apprehend that the form and structure of the calvaria taken in conjunction with the subquadrate and unsegmented outline of the brain, forbid the supposition that it was of marsupial origin. A cross crestless and posteriorly sloping skull cap like this could scarcely have belonged to a carnivorous placental. The type of brain presented by it does not accord with that of any terrestrial herbivore known to the writer, who is therefore compelled to refer it to some aquatic mammal. On comparing the fossil with the corresponding part of the skull of the Dugong, the external resemblance between the two is sufficiently obvious. The chief, almost the only difference, is the still greater reduction of the parietal crest, and the oblique instead of nearly perpendicular descent of the bone exterior to the crest. In other words the temporal fossa was shallower, the muscles working the jaws feebler in the extinct than in the recent animal. On reverting to the inner side of the fossil the rectangular shape of the hemispheres of the brain favors, so far as it goes, the suggestion that it has Sirenenian affinities. But the objections to that view are not without weight. They consist in the apparent absence of the fairly marked division of the cerebrum into fore and hind lobes seen in both the living and extinct forms of the group—in the number and symmetry of the convolutions in the presence of a rudimentary tentorium, and above all in the greater proportionate extent to which the cerebellum is uncovered. It is true that the *naked* cerebellum of the Manatee figured by Dr. Murie (Trans. Zool. Soc., vol. VIII., pl. 25, appears to be as much exposed as that of the fossil, but in a figure of the cast of the brain-case of the same animal given by Professor Owen (Journ. Geol. Soc.), and in a similar cast of Halicore now before the writer, the proportion of the cerebellum to the cerebrum, is, or seems to be much less than in the extinct form under notice. Remembering however, that the brains of the two surviving genera of Sirenians show that considerable modifications may be consistent with the general type of brain, it may not be too rash to surmise that a brain of inferior development and a smoothness of skull indicative of feebler masticating power, may have been the coadaptation of the softer vegetation,

and less perilous conditions of life enjoyed by a Sirenian tenant of fresh waters. Leaving this question, however, to the discoveries of my fellow-students, I opine that the present relic is the first indication we have had of the existence of the animal. And in expectation of that increased knowledge of its structure which will doubtless be the fruit of further research, I propose to give it recognition under the name of *Chronozoon Australe*. The fossil was procured from the Chinchilla (Darling Downs) drift, in which it was of course associated with crocodiles, turtles, *ceratodus*, &c., together with land animals.

REMARKS ON A SKULL OF AN AUSTRALIAN ABORIGINAL FROM
THE LACHLAN DISTRICT.

BY BARON N. DE MIKLOUHO-MACLAY.

PLATE 18.

The cranium, which, through the kindness of Mr. C. S. Wilkinson, I have had for inspection, is not complete (the right temporal bone, the greater part of the sphenoid and the ethmoid bone are absent), but in a fair state of preservation, which circumstance makes me suppose that the owner of the same died not long ago, and that the skull has not remained long in the ground.

This cranium of a probably male Australian aboriginal, of very likely over forty years of age (the *sutura sagittalis* not very distinct), is remarkable not only on account of a very pronounced dolichocephalism (breadth-index 66.8), but also for the peculiar formation of the occipital bone. The superior curved lines with the external occipital protuberance of the above-named bone form a very prominent occipital curved *crest*, larger than in any of the skulls I have ever seen before. None of the skulls of Australian aborigines in the Australian and Macleay Museums present such a prominence of the superior curved lines. The hindmost point of this skull is the occipital protuberance, and not the convex part of the upper portion of the occipital bone, (the so-called occipital point), as is the case in most human skulls.



De Vis, Charles Walter. 1883. "On a fossil calvaria." *Proceedings of the Linnean Society of New South Wales* 8, 392–395. <https://doi.org/10.5962/bhl.part.28662>.

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