

A SECOND SAUROPTERYGIAN CONVERTED INTO
OPAL, FROM THE UPPER CRETACEOUS OF
WHITE CLIFFS, NEW SOUTH WALES.

WITH INDICATIONS OF ICHTHYOPTERYGIANS
AT THE SAME LOCALITY.

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(Plates xlii.—xlv.)

The discovery of the remains of *Cimoliosaurus leucoscopelus*, Eth. fil.,¹ in the White Cliffs Opal deposit has been followed by that of another Sauropterygian referable to *Cimoliosaurus*, closely allied to *C. sutherlandi*, McCoy². The remains of this reptile have passed into the possession of the Trustees, by purchase, and are now described. The skeleton consists of the following parts:—Thirty-six vertebral centra, a number of rib pieces, a tooth, the distal end of a humerus, two femora, one nearly complete, and other fragments.

The mode of preservation is similar to that of *C. leucoscopelus*, the bones being converted into opal of one variety or another. In most instances the conversion is complete, but in a few cases traces of bone tissue still remain. Most of the centra are converted either into white opaque opal, or colourless translucent opal with blue patches, passing into indifferent "magpie" opal; here and there traces of precious opal make their

¹ Etheridge—Rec. Austr. Mus., iii., 2, 1897, p. 19.

² McCoy—Ann. Mag. Nat. Hist., (3), xix., 1867, p. 356; Trans. R. Soc. Vict., viii., 1, 1868, p. 42

appearance. In fact, this description will hold good for nine-tenths of the bones, the small cervical pleurapophysis (Pl. xliv., fig. 6 and 7) containing more precious opal than any of the other fragments. For richness of colour these bones bear no comparison with those of *C. leucoscopus*.

Vertebral Centra.—The whole of these are faintly amphicelous, but in some cases the double cupping is so faintly marked that the anterior and posterior articular surfaces may be described as amphiplatamous, and many with a marked central boss, but without any trace of peripheral rugosity. In outline the articular surfaces vary from oval to ellipsoidal—the anterior cervical and dorsal oval, the posterior cervical (? pectoral) ellipsoidal—and the lateral surfaces, speaking broadly, are slightly concave longitudinally. The ventral surfaces of the anterior cervical are rather flattened, and those of the pectoral (?) and dorsal convex in varying degree; from all the neural arches and pleurapophyses have been removed. The venous foramina are well marked and large, both dorsally and ventrally, whilst the central boss of the articular surfaces in the pectoral (?) and dorsal centra is not only large, but possesses a central depression of its own. The floor of the neural canal in the cervical centra is shown as a biconate scar, and on the pectoral (?) and dorsal as an hour-glass-shaped scar. The neurapophysial facets are ellipsoidal, deep, and more or less horizontal excavations on the anterior cervical centra, becoming broader as the column is descended, and there confined strictly to the dorsal surfaces of the bones. On the pectoral (?) centra these scars are even wider transversely, oblique, and descend on to the lateral surfaces, but on the dorsal centra, they, to all intents and purposes, again assume the same characters as those of the anterior cervicals; none of the neurapophyses are preserved *in situ*.

The pleurapophysial facets, or costal pits, are in every case single, and on the more anterior cervical centra are faint, elongated (fore and aft) scars, and situated low down on the lateral surfaces. On several of the centra, immediately in front of those I assume to be pectorals, these facets take on a very definite and rounded outline, showing a fractured projecting surface. On the pectoral (?) centra the pleurapophysial facets are compressed longitudinally, and project laterally. I distinguish the dorsal centra by the absence of these scars. There are three much worn centra, shorter (*i.e.* fore and aft), that may be caudals, although I cannot satisfactorily detect facets for the attachment of chevron bones.