

Measurements of Left Ectopterygoid of Specimen, Cat. No. 2289.

	Mm.
Estimated length.....	192
Estimated maximum breadth (height) posteriorly.....	100
Thickness of bone where it fills the postero-maxillary notch.....	23
Average thickness of bone elsewhere.....	6

Vomer. (V.). *Figure 3.* This element is known only from a small portion disclosed toward its anterior end in the specimen collected in 1912 (Cat. No. 2288). The vomer has not been found with the disarticulated skull, belonging to the skeleton collected in 1916. It apparently, however, connected in front with the maxillaries on the inner side of the anterior maxillary processes, and behind with the pterygoids on the internosuperior surface on the height of their anterior wings, and had an estimated length of 385 mm.

The portion of the vomer seen in the 1912 specimen is 125 mm. long, attains a maximum breadth of 20 mm., and lies in the midline of the skull in the posterior half-length of the narial opening on a level with and midway between the upper border of the lower premaxillary limbs. It is broadest at midlength, narrows slightly forward and much more so backward, so as to have an anterior breadth of 16 mm. and a posterior one of 6 mm. In front it ends abruptly in a transverse break so that the shape of the bone at the maxillary connexion is not revealed. Behind, it continues into the matrix of which as much has been removed as is at present possible. Toward the front what appears to be a median line of division, traceable for a short distance back, suggests a coalescence of an elemental pair.

The vertical inner surface of the laterally compressed anterior maxillary process in *Edmontosaurus* is rugose along the whole of its length in advance of a narrow, horizontal, shelf-like protrusion, projecting inward from the hinder part of the process, for the support of the vomer from beneath. That the vomer passed forward beyond the anterior maxillary processes is probable judging from the appearance of the inner surface of these processes which are rugosely striated to the tip. In *Prosaurolophus* a shallow groove is present on the inner side of the superior border of the lower premaxillary limb beneath the anterior end of the narial opening and just behind where the lower limbs separate for their backward ascent. This groove in *Prosaurolophus* marks the position of the attenuated anterior end of the vomer, and it is probable that the vomer of *Edmontosaurus* had a like slender termination in advance of the maxillæ. To all appearances, therefore, the vomer remained narrow between the anterior processes of the maxillaries, separating them from each other by only a short transverse distance.

The shape of the posterior termination of the vomer is unknown. On the inner side of the narrowly compressed ridge forming the most elevated part of the pterygoids forward is a roughened, transversely concave surface on which the posterior end of the vomer apparently lay. Whether the vomer bifurcated behind and reached the pterygoids on either side of the median line in this manner, or united with the pair by a horizontal expansion has not been ascertained as yet. Judging, however, from the distance apart of the pterygoids anteriorly the vomer had a posterior breadth of about 50 mm. Its estimated breadth between the forward end of the anterior maxillary processes is about 10 mm. In this genus the vomer appears, therefore, to have been slender throughout and devoid of any considerable expansion.