of the passage is large and close behind the internal auditory meatus, the external one is much smaller and opens under the ridge already mentioned about 9 mm. distant from the back margin of the fenestra ovalis. The lower opening is for the transmission of the jugular vein. The passage for this vein starts within the wall of the brain-cavity in a small orifice well down in the medullary region some distance beneath the inner end of the foramen lacerum posterius. It curves upward and backward through the bone and emerges close beneath the common exit of the ninth, tenth, and eleventh nerves, separated from it only by a thin partition of bone so that the two openings are almost confluent externally. Near the external end of the jugular passage there seems to be a branch leading forward within the bone, but it is small and its course has not been ascertained. The opening behind the foramen lacerum posterius, and distant from it about 8 mm., is the anterior condyloid foramen, Figures 26 and 27, *a*, *c*, *f*. The hindmost of the foramina, about 16 mm. farther back, is the exit of the twelfth or hypoglossal nerve (XII). Its inner end is considerably larger than the outer one.

Brain. (*Figure 27.*)

The brain-cavity of *Edmontosaurus* is long and narrow but relatively much broader across the cerebrum than elsewhere. Its length is slightly less than one-fourth that of the skull, and it is both actually and porportionately longer than the brain-cavity of *Claosaurus annectens* as represented by Marsh's figure of the cast.

In the paratype of *Edmontosaurus* there is little distortion in the cranium and an accurate gelatine cast of the entire brain-cavity was obtained and reproduced in plaster, Figure 27, *A*, *B*, *C*. The cast includes the nerve exits for their full extent outward, giving the diameter, direction, and length of the passages, and the thickness of the walls of the brain-case at any particular opening.

The shape of the brain-cavity probably does not give exactly that of the brain itself especially if conditions were at all similar to those found in the Tuatara (*Sphenodon punctatus*) of New Zealand. Dendy[1] has remarked on the great disparity in size in *Sphenodon* between the brain-cavity and the brain, which latter he found to be suspended in the cavity by innumerable strands of connective tissue. It is reasonable to suppose, however, that in dinosaurs the brain conformed in a moderate degree to the shape of the cavity, and this assumption appears to be borne out by the cast in which the various divisions of the brain seem to be fairly represented as regards size and relief. In describing the cast of the brain-cavity of *Edmontosaurus*, therefore, its different parts will be referred to in terms that would be applied to the brain itself.

In Figure 27, the cast is shown in lateral, A, superior, B, and inferior, C, aspects. In it the principal divisions of the brain are denoted, viz., the olfactory lobes, the cerebrum (cerebral hemispheres), the optic lobes, the cerebellum, the medulla oblongata, and the pituitary body. All the cranial nerve exits are represented, as well as the internal carotid artery's entry into the pituitary body from below. Two constrictions are con-

[1]Philos. Trans. Royal Soc. London, Ser. B. vol. 201, 1911, pp. 227-331. "On the structure, development, and morphological interpretation of the pineal organs and adjacent parts of the brain in the Tuatara (*Sphenodon punctatus*," by Arthur Dendy.