ART. XIV.—*An Amphibian from the Eocene;* by F. B. LOOMIS.

Among the specimens collected from the Lysite beds of the Lower Eocene on Bridger Creek, Wyoming, by the Amherst College expedition of 1905, is a well-preserved skull of an amphibian. It is about 1¼ inches long and represents an individual about the size of a mudpuppy (*Necturus*). Though Amphibians must have lived in the ponds and moist places then, as both before and since Eocene times, I believe none has heretofore been found. The Lysite represents flood-plain deposits, under a rather arid climate, as do most of our western Eocene epicontinental deposits, but there must have been streams and moist places, and this form presumably lived in or near some such place.

Unlike such amphibian remains as have been found in the Tertiary, this skull can not be referred to any of the living genera, though it seems to be clearly one of the Caudata, and belongs to the family Salamandridæ, and be as near to the genus *Triton* as to any of the living types; but it differs in so many material points that I am not by any means confident that it can be considered in any way ancestral. It is peculiar among all amphibians in having a small splint-like supraoccipital bone, and among caudate types in having a trace of the parietal foramen, though the actual opening is closed and plugged with bone. The anterior part of the skull is fused into a solid roof, and I can not see where the nasal passages opened anteriorly, though the interior openings are large. The cartilage bones of the posterior part of the skull are unusually completely ossified, and the otic region is developed so as to form a strong projecting process on the ventral side. Most of the skull is preserved except the quadrate region, and parts of the squamosum and pterygoid bones.

I have called the form *Ototriton solidus* gen. and sp. nov. The type is in the Amherst College Cabinet, and comes from Bridger Creek, Wyoming, from the Lysite beds, associated with *Eohippus kraspidotus, Phenacodus vortmani, Notharctus venticolus, Paramys bicuspis,* etc.

The frontals and nasals of both sides are fused together and to the maxillæ; so that the whole anterior

part of the skull is solidly roofed over. The premaxillæ, however, were free and must have been small. They are lacking, but along the front of the skull are grooves into which they set (see fig. 1 B, P. mx). In this respect, but in no other, the skull suggest *Necturus*. The parietals extend back from the frontals to the rear of the cranium. (The line cutting off the rear part of the parietals is not a suture but a crack.) These bones are paired, and along the middle line in the rear, separated from each other by the narrow splint-like supraoccipital bone; most unusual in amphibians, but very clear here. Near the front of

FIG. 1.

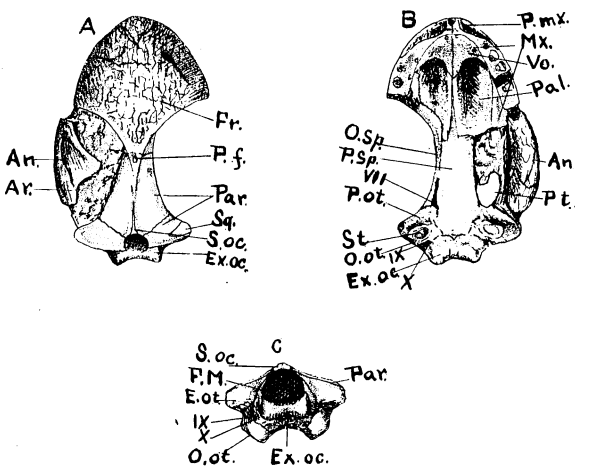

FIG. 1.—Skull of *Ototriton solidus*, natural size; A from above, B from below, C from the rear.

An. angulare; *Ar.* articulare; *E. ot.* epiotic; *Ex. oc.* Exoccipital; *Fr.* Frontal; *F. M.* Foramen Magnum; *Mx.* Maxilla; *O. ot* Opisthotic; *O. sp.* Orbitospenoid; *Pal.* Palatinum; *Par.* Parietal; *P. mx.* Premaxilla facets; *P. ot.* Prootic; *P. sp.* Parasphenoid; *Pt.* Pterygoid; *S. oc.* Supraoccipital; *St.* Stapes; *Vo.* Vomer; VII, IX, X Foramena of cranial nerves.

the parietals is a depressed area, in which there is an oval groove which can represent nothing but a parietal foramen, though it is closed and plugged with bone; but very clearly outlined, especially when magnified. Along their posterior border the parietals flare up a little making a low crest across the rear of the skull. The proximal end of the squamosum bone is present but that is all.

The maxillæ carry a row of simple conical teeth set

along the outer margin (acrodont); and probably extended onto the premaxillæ, which are lacking though indicated. Inside these are several tiny teeth indicating a second inner row, of much smaller size. The palate is strongly arched for an amphibian, its anterior portion being roofed by the vomers, each of which has a tiny tooth on the front margin. On the posterior border of the vomers, open the posterior choanen; and from this point back the palate is even more arched. The palatal bones are strongly arched and unusually wide, extending back in this specimen to beyond the middle of the skull; and possibly the pointed rear ends are missing. The arrangement of the vomers, palatines, and the choanen is most like that of the newts, especially in the extended palatals, in the development of the choanen, and in the arching of the palate. Still it is not close enough to Triton so that I would want to put it in the same genus. The parasphenoid is of moderate size, and it tends to be confluent with the exoccipitals and otic bones, but faint suture lines indicate the boundaries I have shown in fig. 1 B. The back part of one of the pterygoids is present and this is separate from the palatal bones entirely.

The two occipital condyles are confluent and completely ossified, making a saddle-like articulation for the skull. The whole otic region is completely ossified and strongly developed. The inner ear chamber has inflated the otic bones so that they have developed a stout process around it, on the out end of which is the stapes, wholly ossified, and in place on the left side, though lost on the right. The epiotic also is largely inflated and develops into strong lateral knobs from which the squamosum starts.

The back end of the lower jaw is present and of typical caudate pattern, but there is not enough of it to offer any basis for comparisons.

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