Sections through the leaf and base of young stems have been made, but the apparatus at hand does not permit of a section thin enough to give structural details. The organic connection between the leaf and the base of the young stem is clearly shown, and the young plant evidently starts in connection with the fibro-vascular bundles of the leaf, but my sections do not clearly show the nature of the connection.

The cells of the very base of the young stem and the adjoining leaf cells were crowded with chlorophyll grains, while there were very few in the other leaf cells, showing clearly the much greater constructive activity (anabolism) of these tissues.

PLYMOUTH, N. H.

NOTES ON THE FOSSIL MAMMALIA OF EUROPE.

CHARLES EARLE.

VI.

Remarks on the Fossil Tapiroids of France.

As far as our paleontological knowledge stands in regard to the evolution of the modern tapirs, this phylum arose in Europe and America at about the same time. In America we find in the Bridger the genus Isectolophus, which is considered to represent one of the stages leading to Tapirus.

Prof. Albert Gaudry has lately published an important paper[1] on the evolution of the teeth of fossil Tapiroids and refers remains found in the Middle Eocene of Argenton, France, to the American genus Colodon, which he includes in the tapir phylum. Now, in the first place, Colodon comes from the Oligocene, or White River Beds, whereas the beds at Argenton are equal to the Middle Eocene, or Bridger. The teeth which Professor Gaudry has referred to *Colodon minimus*, in my opinion, should be identified as those of the American genus Isectolophus, or a very closely related genus. This is more in harmony with the origin of the tapir's tooth, as in Colodon the metacone is concave, whereas in Isectolophus this cusp is convex, like that of the recent tapir.

[1] La dentition des Ancêstres des Tapirs, *Bull. Soc. Geog. de France*, p. 315. 1897.

In fact, I am not at all certain that Colodon is found in Europe, even in beds above the Eocene. The *Protapirus douvillei*, which has been referred by some American paleontologists to Colodon, is, as I have shown,[1] really a true tapir and belongs in the genus Protapirus, which is one of the generic links leading to Tapirus.

Again, *Hyrachyus intermedius* of Filhol has been placed by M. Gaudry as a synonym of *Colodon minimus*. I can hardly agree with my learned friend of the Jardin des Plantes in this identification, and I think the jaw and teeth referred by Filhol to the genus Hyrachyus were correctly identified.

In the jaw of the French species of Hyrachyus, described by M. Filhol, the number and structure of the teeth are the same as in the typical American species of this genus, and there is no third lobe on the last lower molar. The measurements of the jaw and teeth of *H. intermedius* correspond nearly exactly with those of *Hyrachyus agrarius* of the Bridger.

The presence of such typical American Middle Eocene genera as Hyrachyus and Isectolophus in the Eocene of Argenton, France, demonstrates how closely this fauna is related to that of the Bridger.

So far as I am aware, the larger species of Lophiodon are not found at Argenton, *L. isselensis* coming from Issel. We might conclude from this that the Argenton beds are really earlier than those of Issel, and this would harmonize better with our ideas of the dental morphology of the tapirs, as it is more probable that the types with a convex metacone, Isectolophus, gave origin to both tapirs and lophiodonts than that the latter were ancestral to the tapirs. The typical forms of Lophiodon, as *L. isselensis*, probably led to no permanent results in regard to evolving higher genera.

In conclusion, the evidence is now pretty conclusive that Hyrachyus is found at Argenton, and a decided advance has been made by Professor Gaudry in the removal of one of the small species of Lophiodon from that genus, but whether the view is correct that it is a species of Isectolophus remains to be seen. The third species of Lophiodon which was referred by Cuvier to this genus is now placed by Professor Gaudry in Propalæotherium. The mist has now considerably cleared away in regard to What is Lophiodon? In France, at least, all of the small species have been accounted for and referred probably to their proper genera.

[1] *Science*, Dec. 25, 1896.

VII.

Note on the Structure of the Skull in Dichodon.

The genus Dichodon has been recorded from the Eocene of Hordwell, England, at Egerkingen by Rütimeyer, and also is found in the Siderolithic du Mauremont. While at Paris in 1895, I had the opportunity of examining part of a skull from the Phosphorites, labeled *Dacrytherium cayluxi.* I at once noticed the modernization of this skull and the characters of the teeth, and immediately referred it to that little-known genus Dichodon of Owen. This genus has not, I believe, been recorded before from the Phosphorites of France.

In Dichodon the fourth upper premolar is completely molariform: it resembles Agriochoerus in this respect somewhat, but in the latter this tooth has not developed the postero-internal cusp. Dichodon stands unique among Artiodactyles in the complex structure of the last premolar.

The facial part of the skull in Dichodon is high and strongly compressed. The anterior narial openings are not as terminal in position as in the Anoplotheroids, with a corresponding reduction in the nasal bones, obliquity and enlargement of the nares. As compared with Dacrytherium, there is no preorbital fossa, and the facial part of the skull in Dichodon is much more modernized than in the former genus.

In comparison with modern selenodont Artiodactyla, the anterior portion of the skull in Dichodon closely resembles that of the Tylopoda and departs widely from the primitive type found in the Anoplotheres.

With the exception of the closed dental series in Dichodon, this genus has apparently little near relationship to the Anoplotheres, but is a much higher type and more nearly related to the true Selenodonts.

NEW ROCHELLE, N. Y.,
January 24, 1898.