cally termed the coursing and banding of the fabric. We can, however, determine, notwithstanding the induced obscur.ty, that the buckler of the Osteolepis was divided transversely in the middle into two main parts or segments, - an occipital part, C, and a frontal part, A; and that the occipital segment seems to include also the parietal and mastoid plates, and the frontal segment to comprise, with its own proper plates, not only the nasal plate, but also the representative of the anterior part of the vomer. All, however, is obscure. But in our uncertainty regarding the homologies of the divisions of this dermal buckler, let us not forget the homology of the buckler itself, as a whole, with the upper surface of the true cranium in the osseous fishes. Though frequently crushed and broken, it exists in all the finer specimens of my collection as a symmetrically arranged collocation of enamelled plates, as firmly united into one piece, though they all indicate their distinct centres of ossification, as the corresponding surface of the cranium in the carp or cod. The lateral curves in the frontal part immediately opposite the lozengeshaped plate in the centre, show the position of the eyes, which were placed in this genus, as in some of the carnivorous turtles, immediately over the mouth, - an arrangement common to almost all the Ganoids of the Lower Old Red The nearly semicircular termination of the Sandstone. buckler formed the creature's snout; and in the Osteolepis, as in the Glyptolepis and the Diplopterus, it was armed on the under side, like the vomer of so many of the osseous fishes, with sharp teeth. Some of my specimens indicate the nasal openings a little in advance of the eyes. The nape of the creature was covered by three detached plates, (9, 9, 9, fig. 13,) which rested upon anterior dorsal scales, and whose homo.og.ies, in the osseous fishes, may possibly be found in