

summit to the sides of the shaft they were seen to blend with each other : *c* lost its great opacity, the tubes of the dentine disappeared, and vascular canals occurred only at considerable intervals. About an inch from the summit of the tooth these layers ceased to be recognisable. Subjacent to the dentine layer, in the summit of the shaft, was the layer *e*, which formed the central portion of this part of the tooth. It had essentially the same structure as the layer *b*, but the main stems of the vascular canals ascended almost vertically, so as to be divided longitudinally in the vertical section through the shaft. Many shorter canals, which had, doubtless, connected the vertical canals with each other, were, however, divided obliquely or transversely. Along the surface of apposition of this layer with the dentine *d*, sections through a canal were seen, into which some of the vertical canals were traced. Below, where the dentine terminated, the layers *b* and *e* became blended with each other, and together formed the white opaque band in the centre of the shaft of the tooth, so that they, like it, had the structural character of the modified vaso-dentine. The minute mesial chink in the shaft already referred to was a space in the layer *e*, and represented all that was left of the pulp-cavity.

We may now proceed to inquire by what process the unprotruded tooth of the young *Mesoplodon layardi* assumes the remarkable form and structure exhibited by the tooth in the adult animal. It must be observed that no change takes place in the shape of the denticle or crown proper ; in its size, however, there is a slight diminution in the adult. This is doubtless due to the friction to which the denticle would be subjected soon after it had projected beyond the gum. For when the growth of the tooth had proceeded until it projected beyond the mouth of the animal, the denticle could have suffered but little from the effects of friction, as it is set at such an angle to the shaft as to be directed away from the animal's snout, and towards the water in which it swims. That the surface of the denticle does undergo some slight loss of substance after it is protruded beyond the gum is evident, however, from the disappearance, to a large extent, from its surface of the cap of enamel. We are to look, therefore, for an explanation of the mode of production of the peculiar form of the adult tooth, to changes in the fang, by means of which it is converted into the strap-shaped shaft. These changes are due to an enormous growth of two of the tissues of the fang, viz., the cement and the modified vaso-dentine.

As has already been stated, both these structures are present, though in proportionally small amount, in the fang of the young tooth, whilst they make up almost the entire mass of the strap-shaped shaft of the adult. By their growth the pulp-cavity is obliterated, except the merest rudiment near the upper end of the shaft. Similarly, the dentine which exists as a very definite layer in the fang of the young tooth is reduced in the shaft of the adult tooth to a layer situated only at its summit. By the growth of the cement and modified vaso-dentine, not only does the tooth protrude from its socket and the gum, but from the mouth, so as to curve around the side of the snout in the manner already described, and which would necessarily limit the power of opening the mouth.