

furrows, and of a brownish colour. The surfaces of the protruded part again were comparatively smooth, and of a yellow colour. A longitudinal section was then made through the shaft from the alveolar border to the upper end close to the base of the denticle. The shaft was then seen to be solid throughout, except for a minute mesial chink $\frac{1}{10}$ th of an inch long, and admitting only the point of a fine needle, which was situated $\frac{7}{10}$ ths of an inch from the upper end of the shaft.

To the naked eye the shaft consisted in the greater part of its length of an external cortical part investing a central band. The cortical part was of a dull yellow colour; at the alveolar end it formed a thin lamina on each surface of the tooth, but at and near the line of emergence from the gum it was $\frac{2}{10}$ ths of an inch thick, and on the extruded part of the shaft it averaged about $\frac{1}{10}$ th of an inch in thickness. The cortical layer consisted of cement containing well-marked lacunæ and canaliculi. In the centre of many of the lacunæ a minute solid particle was situated, apparently the dried and shrivelled mass of nucleated protoplasm which occupies the lacuna in a living tooth.¹

Sections through Haversian canals were occasionally seen in the cement, more especially in its deeper part. The surface of the section through the cement was marked by numerous lines placed parallel to each other, and to the surface of the tooth, which gave it a laminated appearance.

In the alveolar part of the tooth, and in the larger portion of the protruded part of the shaft, the cortical layer was in apposition with the central band, which had an opaque white appearance, and varied in breadth from $\frac{2}{10}$ ths to $\frac{4}{10}$ ths of an inch. This band was traversed by canals, some of which were continuous with those of the cement, though others were divided transversely and obliquely. The matrix between these canals had a granulated appearance. The opaque central band had, therefore, the structural characters of the modified vaso-dentine described in the young tooth.

The upper end of the shaft, in proximity to the base of the denticle, was complex in structure, and consisted of several layers (fig. 19); *a*, the most superficial, consisted of cement, in which, however, no Haversian canals were seen. Immediately subjacent to *a* was the layer *b*, thicker than the cement, and of an opaque white appearance: it had the same general structure as the central band of the shaft, and the chief vascular canals were directed perpendicularly to the surface of the tooth. The next layer, *c*, was from $\frac{1}{3}$ d to $\frac{1}{4}$ th the thickness of *b*, and was even more opaque; some vascular canals were seen to pass at intervals from it into the layer *b*. Subjacent to *c* was the layer *d*, which was about equal to it in thickness: it was very translucent, and contained undulating and branched dentine tubes, which ran outwards to the layer *c*. In one or two places *c* was less opaque than usual, and could be seen to contain closely aggregated tubes, not unlike dentine tubes, in addition to the vascular canals already referred to; *c* may, therefore, be regarded as vaso-dentine, whilst *d* is pure dentine. As these two layers were traced from the

¹ See fig. 207, p. 756, of my Introduction to Human Anatomy, for an illustration of the contents of the lacunæ of a tooth.