

The cement undoubtedly owes its origin to the alveolo-dental periosteum, which will serve as a centre of formation of new cement so long as the growth of the shaft continues. It is not possible to speak so positively of the origin of the tissue which constitutes the opaque central band of the shaft. If it be, as I have surmised, a modified vaso-dentine, then one would have to look to the pulp for its seat of production, but if it be a modified cement, then it would arise from the alveolo-dental periosteum. In the latter case, therefore, almost the entire shaft would be of periosteal origin. The tooth differs most materially from the tusks of the elephant or the narwhal, in which the pulp-cavity is persistent, and the continuous growth of the tusk is due to the conversion of the pulp occupying that cavity into dentine.

In the original specimen from the Cape, described and figured by Dr Gray and by Professor Owen, the teeth were not so large as in this animal, in which, indeed, the teeth have attained a size greater than in any previously recorded specimen. Dr Gray states that the length of the anterior edge of the exposed part of the tooth of his specimen was $9\frac{1}{2}$ inches, whilst in this one the same border was 10 inches to the base of the denticle, and nearly an inch more to the highest part of the shaft. Nothing is said by either of these authors of the teeth crossing each other on the dorsum of the beak, and in the front view of the teeth in the jaw given by Dr Gray (fig. 72, c) the summits of the shafts are represented as touching, but not crossing.

From Dr Hector's short account of the teeth in his specimen, which was caught at the Chatham Islands, and from his published figures (Pl. III. figs. 1-5), it is obvious that his animal was younger than the specimen *B*. The teeth in the New Zealand jaw are only 6 inches long and 3 inches wide, so that they could have projected only at the side of the beak and not reached its dorsum. From the notes taken by Mr Moseley, on his visit to the Wellington Museum, I extract the following more complete account of these teeth, and a comparison of their characters with those of the Cape specimen:—

“When the anterior margins of the teeth in the two specimens, at the spots where they emerged from the alveoli, are placed accurately side by side at the same level, the posterior margins of the teeth in the New Zealand jaw reach back and correspond in sweep of curve exactly to the vacant alveolar spaces which are conspicuous immediately behind the teeth in the Cape jaw. The teeth in the New Zealand specimen are thus inclined at a less angle than they are in the Cape one, and it appears that the teeth as they increase in age and length, become tilted up towards the vertical, leaving vacant alveolar spaces behind them. Possibly they are dragged up by attempts to open the jaw after they have overlapped. In the New Zealand specimen the dentinal caps (my denticles) are about twice as large as in the Cape one, and proportionately thick and stout. In both, these caps are, when the teeth are *in situ*, almost vertical in direction, having thus, curiously enough, the original direction which they had when within the young alveolus, notwithstanding the curving of the hypertrophied fangs. In the New