139 and 140. CARCHARODON TOOTH.—Station 285. Lat. 32° 36′ S., long. 137° 43′ W., 2375 fathoms (Dittmar).

The tooth weighed 22 grms. The outer shell was readily detached from the inner portion.

139. The outside portion was found to contain 33·66 per cent. of phosphoric acid, equal to 73·48 per cent. of tricalcic phosphate, and 2·28 per cent. of fluorine. Ratio of equivalents of phosphoric acid to fluorine—

1 : 0·1

140. The inside portion was completely analysed, with the following results :—

| | P. | E. | $\frac{P.}{E.}$ |
|---|---|---|---|
| Silica and portion insoluble in hydrochloric acid, | 13·34 | | |
| Moisture, | 8·41 | | |
| Combined water, | 6·03 | | |
| Manganous oxide (MnO),[1] | 35·51 | : 35·5 | = 1 |
| Loose oxygen,[1] | 6·85 | : 8 | = 0·8562 |
| Ferric oxide,[1] | 12·47 | : 80 | = 0·1556 |
| Alumina, | 5·09 | | |
| Lime, | 3·72 | | |
| Magnesia, | 3·74 | | |
| Potash, | 0·56 | | |
| Soda, | 1·31 | | |
| Phosphoric acid, | 0·83 | | |
| Carbonic acid, | 1·19 | | |
| Silica in solution, | 0·30 | | |
| Chlorine and copper, | traces | | |
| | 100·25 | | |

[1] The extra oxygen in the ferric oxide, as the quotients show, is more than sufficient to convert the manganous oxide into binoxide.

141 and 142. OXYRHINA TEETH.—Station 286. Lat. 33° 29′ S., long. 133° 22′ W., 2335 fathoms (Dittmar).

Colour, brownish black.

The teeth consisted of a tough outer shell filled up with a friable black mass.

Three of the teeth were taken, the inside portion separated from the shell, and the percentages of phosphoric acid determined, with the following results :—

| | (141) Inside. | (142) Outside. |
|---|---|---|
| Per cent. of phosphoric acid, | 7·97 | 32·58 |
| Equal to tricalcic phosphate, | 17·39 | 71·12 |

143. EARBONE.—Station 285. Lat. 32° 36′ S., long. 137° 43′ W., 2375 fathoms (Brazier).

| | | |
|---|---|---|
| | Loss on ignition after drying at 230° Fahr., | 4·60 |
| Portion soluble in Hydrochloric Acid = 95·04 = | Alumina, | 0·50 |
| | Ferric oxide, | 9·28 |
| | Calcium phosphate, | 67·72 |
| | Manganese oxide, | 2·85 |
| | Calcium sulphate, | 2·69 |
| | Calcium carbonate, | 10·95 |
| | Magnesium carbonate, | 0·75 |
| | Silica, | 0·30 |
| Portion insoluble in Hydrochloric Acid = 0·36 = | Insoluble residue, | 0·36 |
| | | 100·00 |

NOTE.—Portion of carbone; total weight 244 grains. Beside the details given in the foregoing analysis, it evidently contained nitrogenous organic matter in small quantity. By comparative experiments it was found to contain more than the piece of bone used in Analysis 149, and about the same as the shark's tooth used in Analysis 137. From material left over from this specimen and the tooth of Analysis 137, a nitrogen determination was made and yielded 0·052 per cent. of nitrogen.