

shape and internal structure. Some of the nodules appear to have been broken *in situ*, and a deposit of manganese to have subsequently taken place around the pieces of the original nodules. The superior surface is smoother than the inferior, as is usually the case. These nodules with a blow break up more easily following the radii than following the concentric layers of which they are composed. Plate IX. figs. 5 and 6 represent transverse sections, and show the peculiarities of internal structure. The nucleus is, as a rule, small and not sharply marked off from the concentric manganese zones; in some cases it is impossible to find any trace of a nucleus. In fig. 5 the face of the section has been polished, and when the black shining surface is closely examined, it is seen to be made up of undulating lines or zones superposed the one upon the other. Hundreds of these fine wavy lines succeed each other without any apparent interposition, and they are much more numerous than shown in the figure. The nodules at this station are therefore much more compact than is generally the case, from the hydrates being less mixed with extraneous substances. The polished surface has a metallic mirror-like lustre. Fig. 6 shows the face of one of these nodules in which the manganese has been removed by strong hydrochloric acid; the clayey skeleton that remains in this case is so scanty that it does not hold together, in which respect it differs considerably from the specimen shown in figs. 7 and 7a on the same plate, representing the clayey skeleton of a nodule from another station. Pl. IX. fig. 2 exhibits another nodule from this station that has been formed around a large triangular tooth of *Carcharodon*, there being in fact three centres of concretion, one at each corner of the triangle. Each of these has augmented by successive depositions, and they have united to form a single nodule. The figure represents the under surface of the nodule, which is rough from the presence of small mammillæ, especially at the borders. Pl. IX. fig. 10 shows a portion of one of the nodules from this station in which the manganese has been removed by hydrochloric acid; several tubes of Rhizopods appear between two successive layers of the nodule. Pl. VI. figs. 8, 11, and 16, represent sharks' teeth from this station, and Pl. VIII. figs. 4, 5, 12, and 13, earbones of Cetaceans. Other teeth and bones were much more thickly covered with layers of manganese and iron hydrates. When the manganese nodules are reduced to powder, and the magnetic particles extracted by means of a magnet, these are found to consist of magnetite and small black cosmic spherules with nuclei of metallic iron. The appearance of these fragments is represented in Pl. XXIII. fig. 12, after they have been pounded in an agate mortar and treated with an acid solution of sulphate of copper. The nodules also contain fragments of siliceous organisms, zeolitic crystals, fragments of felspar and other minerals, similar to those found in the ooze itself.

Station 275, 2610 fathoms.—The sounding tube brought up over half a litre of the darkest chocolate-coloured clay procured during the cruise; the colour was due to small pellets of manganese and minute grains of the same substance, the centres of which