

treated is represented in fig. 3*b*.¹ This examination shows likewise that the yellowish white matter extends into and across the dark bands. It is also to be noted, as seen in fig. 3*a*, that these alternate bands are not continued quite to the edge of the section, but are surrounded by a black layer in which no alternation of light and dark bands is at once visible, although when a surface of the section is demanganised, alternating bands may be distinguished, the lines being very fine. This external black layer is much more compact than the internal portions of the nodule, and follows perfectly the contours of the triangular wedge, covering the whole of the periphery. The internal parts are much more friable and porous than the external layer, and the separation between them is very well marked and rather sharp. Sometimes there is an interruption of continuity between the internal concentric alternating layers, which causes this variety to break into coatings and peel like an onion more easily than the spherical variety. There is no central nucleus in this pyramidal variety, unless the whole interior be regarded as a nucleus surrounded by the layers forming the black border. There were some twenty or thirty nodules of this variety, but large numbers, although presenting certain analogies with these typical forms, are much more irregular.

Of the nodules which we would designate as grape-shaped, it is impossible to give a morphological description. This arises from the fact that the mammillæ are superposed the one on the other, so as to recall a bunch of grapes, or they may present all the irregularities of certain volcanic scorixæ. The majority of these irregular forms, however, have internal alternating bands, more or less resembling those shown in fig. 3*a*. The peculiarities of this pyramidal and irregular variety of nodules might be explained by supposing the central parts with the alternating bands to have once formed parts of a larger nodule, which had been broken up along the radii, and these broken fragments to have been subsequently surrounded by the deposition of the more compact external layers.

There were about fifteen nodules belonging to the second, spherical or ellipsoidal, variety, resembling in form the nodule figured on Pl. IV. fig. 8 from Station 276. They have a diameter of 1 to 5 cm., are much less mammillated than the irregular varieties, and consequently preserve their spherical form more or less perfectly. They have a fine concentric structure, like that represented in Pl. IX. fig. 7, showing a section of a nodule from Station 252. The zones surround a central nucleus of volcanic glass, palagonite, shark's tooth, or bone; two palagonite nuclei are shown in Pl. XVI. fig. 2 and Pl. XVII. fig. 3. Sometimes, however, there is no apparent nucleus. These nodules are more compact, heavier, and break less easily than the preceding variety. Their fractures are, however, very well defined, and always follow the rays and concentric layers. They take a beautiful metallic polish, and on the polished surface the fine concentric arrange-

¹ The dendritic arrangement of the manganese is well seen in the thin sections of the nodules under the microscope, as shown in Pl. XXVIII. figs. 1, 2, 4, 5.