

care following its spreading or contracting movements. At the same time an infinitely delicate sheath of sarcode containing minute transparent granules, but no oil-globules, rises on each of the spines to its extremity, and may be seen creeping up one side and down the other of the spine with the peculiar *flowing* movement with which we are so familiar in the pseudopodia of *Gromia* and of the Radiolarians. If the cell in which the *Globigerina* is floating receive a sudden shock, or if a drop of some irritating fluid be added to the water, the whole mass of sarcode retreats into the shell with great rapidity, drawing the oil-globules along with it, and the outline of the surface of the shell and of the hair-like spines is left as sharp as before the exodus of the sarcode.

Major Owen (*op. cit.*) has referred the *Globigerina* with spines to a distinct species, under the name of *G. hirsuta*. I am inclined rather to believe that all *Globigerinæ* are, to a greater or less degree, spiny when the shell has attained its full development. In specimens taken with the tow-net the spines are very usually absent; but that is probably on account of their extreme tenuity; they are broken off by the slightest touch. In fresh examples from the surface, the dots indicating the origin of the lost spines may almost always be made out with a high power. There never are spines on the *Globigerinæ* from the bottom, even in the shallowest water. Two or three very marked varieties of *Globigerina* occur; but I certainly do not think that the characters of any of them can be regarded as of specific value.

There is still a good deal of obscurity about the nature of *Orbulina universa*, an organism which occurs in some places in large proportion in the globigerina ooze. The shell of *Orbulina* (Fig. 47) is spherical, usually about .5 mm. in diameter, but it is found of all smaller sizes. The texture of the mature shell resembles closely that of *Globigerina*, but it differs in some important particulars. The pores are markedly of two