

wall contain a certain amount of siliceous or calcareous sand, and the same condition has been observed by Carter in the earlier stages of the shell.

With respect to the general structure of the test, Mr. Carter has pointed out the "resemblance that exists between the spicular bodies and the scales of *Euglypha alveolata*, &c., among the fresh-water Rhizopoda, inasmuch as the 'scale,' like the spicular body, is formed by the *animal itself*, and subsequently cemented together by chitinous substance to form the test—thus differing from the tests of other Rhizopoda (where the particles are *foreign* and all of the same size) in being *proportioned in size* to that of the chamber which they respectively cover." The last clause of this quotation refers to the smaller size of the spicules in the earlier portions of the test. It may just be added that the cement appears to be in part at least calcareous.

The student of the Foraminifera accustomed to the spicular tests of *Marsipella*, *Haliphysema*, and *Pilulina*, will naturally ask how far it can be demonstrated that the spicules of *Carterina* are secreted by the animal itself, and are not extraneous bodies, selected as building material, in the same way as siliceous spicules are employed by the aforesaid genera. The following considerations bear upon this point:—there is no admixture of different sorts of spicules, as in the cases referred to, but they are all of the same form and character; there are no broken spicules, such as invariably exist in large proportion in the composite tests of other genera; in each test spicules are found in different stages of growth, and in the investment of the smaller chambers the spicules are of correspondingly smaller size; specimens of the organism obtained from areas very far apart, and under different external conditions, have spicules identical in size, shape, and composition; other arenaceous Foraminifera from the same localities have no spicula of similar character; and lastly, in no specimen of *Carterina* has any spicule been identified as pertaining to any particular species of sponge.

In connection with this subject, attention may be drawn to an interesting organism described by Mereschkowsky,¹ under the name *Wagnerella borealis*, and treated by him as a Sponge nearly allied to the *Physemaria* of Hæckel. In form and habit it resembles *Haliphysema*; and, in addition to the brush of spicules at the distal extremity, the chitinous peduncle has embedded in it numerous calcareous bodies of the same general character as the spicules of *Carterina*. Since the foraminiferal affinity of *Haliphysema* has been established, and the existence of calcareous spicula in the test of a well-defined type of Foraminifera has also been demonstrated, it would be interesting to know more of the actual structure of an animal, which, to judge by its investment, appears more or less related to both.

Of the distribution of *Carterina spiculotesta* little is known beyond the fact that it has been found attached to pieces of coral, nullipore, and the like, from the comparatively shallow water of tropical and subtropical seas. Mr. Carter's original specimen was from

¹ *Ann. and Mag. Nat. Hist.*, 1878, ser. 5, vol. i. p. 70, pl. vi.