Zoology Part XXII: Report on the Foraminifera. By Henry Bowman Brady. Bound in Volume 9,1884.

as our knowledge undoubtedly is, the physical characters of the investment afford the best, indeed almost the only basis at present available for the classification of the group. Our acquaintance with the distinctive characters of the genera and their limits of variation is in like manner fragmentary and insufficient; and it is more than probable that some of the forms at present accepted as independent types may be found, on the comparison of specimens obtained from fresh localities, to be nothing more than specific or varietal modifications belonging to the same generic series.

The sequence of forms resulting from the successive modifications of the conspicuous characters of the test is less easily traced in the ASTRORHIZIDÆ than in some other families of Rhizopoda, owing to the very elementary structure of many of the types.

Perhaps the simplest conceivable sort of arenaceous investment is exemplified by the genus *Psammosphæra*, which has a globular test composed of coarse sand-grains firmly cemented together. It presents no general aperture, in the ordinary sense, and has no membranous lining, but the sarcode contained in the cavity communicates with the exterior by interstitial openings at points not filled with cement. The polythalamous condition, if such it may be called, of the same typical structure, is found in the genus *Sorosphæra*, and consists of a number of such spheres of uniform size, adhering by their exterior surfaces but unconnected by any definite sarcode stolons. In the absence of true stoloniferous passages *Sorosphæra* is more like a colony of monothalamous organisms than a single polythalamous test.

Saccammina, in its simpler recent forms, presents a step in advance of *Psammosphæra*, for not only is the shell-wall more compactly built, and under ordinary circumstances imperforate, but the test has a distinct general aperture. When polythalamous, the chambers are either fusiform and united by stoloniferous tubes, or they are arranged side by side in colonies, with the orifices directed outwards.

Storthosphæra and *Pelosina*, two genera of the sub-family ASTRORHIZINÆ, present nearly parallel characters to *Psammosphæra* and *Saccammina*, but the firm, hard, arenaceous tests of the latter genera are replaced by an investment of fine sand and mud, almost devoid of cement, with smooth interior, and, in many cases, with a chitinous lining. The superficial orifices in *Storthosphæra* differ from those of its isomorph in being placed in little, irregular, pointed projections at various points of the periphery.

Amongst the PILULININÆ the genera *Pilulina* and *Technitella* are also characterised by globular or oval tests, but they are constructed of masses of sponge-spicules, felted together, the interstices being filled with loose sand in place of calcareous cement. The distinction between these two types rests only on the shape of the test and the nature of the orifice.

Thus it will be seen that in the genera *Psammosphæra* and *Storthosphæra*, *Saccammina*, *Pelosina*, *Pilulina*, and *Technitella*, the test consists typically of a spherical or oval chamber; that in the first two interstitial orifices take the place of a general aperture,

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