

assure comparative uniformity of character in the shape, size, and constitution of the shell, just as buds of the same plant ordinarily assure the same varieties of flowers and fruit. On the other hand, reproduction of the Rhizopods from germs or spores would probably furnish a partial explanation of the multitudinous varieties of form.

The naked Protoplasts, as represented by species of *Amœba*, etc., at times which are apparently related with circumstances unfavorable to activity, even of an opposite character, as extremes of temperature, cold or heat, assume a condition of complete quiescence, reminding one of the winter or summer sleep of higher animals. The condition is preceded by retirement into the deeper part of the ooze in which these lowly creatures live, or by concealment in dirt and other materials accumulated around and adherent to them. Contracted into a globular form, they are purged of all remains of food and other materials, such as sand, etc., swallowed with the former. They then become gradually invested with a structureless membrane consisting of one or several layers, apparently the product of exudation and coagulation of a portion of the protoplasm of the sarcode mass of the body. In this encysted condition, the Protoplast remains an indefinite period, and perhaps usually undergoes transformation into reproductive germs or spores. Often, however, if the circumstances are changed for one favorable to activity, the creature bursts its envelope and creeps forth to feed in the ordinary manner, as if it had been passing a time in sleep.

The shell-covered Protoplasts are frequently found with the sarcode mass contracted into a ball commonly defined by a membrane of variable thickness, and apparently due to the coagulation or condensation of the ectosarc, or of an exterior more clear and homogeneous layer of the soft structure. In the formation of these quiescent balls, they are purged of all remains of the food which is often seen occupying the space between the ball and the mouth of the shell. Frequently, also, in the quiescent or encysted condition of the sarcode, the mouth of the shell is closed by an operculum apparently formed by the accumulation of successive layers of matters discharged from the sarcode ball.

The encysted ball of the shell-covered Protoplasts in many instances appears to be resolved into globules, or coarse granules of nearly uniform size, which are probably to be viewed as germs or spores.

From the researches of Mr. Carter* it would appear that in *Amœba*

* *Annals and Magazine of Natural History*, xviii, 1856, p. 226.