

later memoirs, associates *Pullenia* with *Cristellaria* to form the Family CRISTELLARIDEA,¹ and the same course is adopted by Hantken.² Schwager makes the genus the type of a distinct Family, PULLENIDÆ, which includes *Nonionina*, *Polystomella*, *Fusulina*, and *Melonia*;³ whilst with Bütschli it serves as the type of the *Pulleninæ*, a Sub-family of NUMMULITINÆ, and is therein associated with *Sphæroidina*, *Endothyra*, *Amphistegina*, &c.⁴

The test of *Pullenia* is a nautiloid spire of two to four convolutions, either regular and equilateral in its mode of growth or one-sided and oblique, each convolution completely enclosing the preceding one. The segments number four to six in each circuit; the sutures are flush in the smaller varieties, whilst those of the larger forms are somewhat depressed externally. The septal face is comparatively narrow, and the aperture is either an arched fissure extending nearly from pole to pole, or in the oblique forms a long gaping orifice at the inner border of the final segment. The surface of the shell is smooth and glassy, and the pores are very minute, as compared with those of most of the other Globigerine types.

The separation of *Pullenia* from *Nonionina*, to which it has considerable resemblance at first sight, is dictated partly by the nature of the aperture and partly by the absence of the Polystomelline characters, which, though often feebly developed, may always be detected in one guise or other in specimens of the latter genus. The relationship of the large, oblique, subglobular forms of *Pullenia* to *Sphæroidina* and *Globigerina* is tolerably apparent when a number of specimens are seen together, and the affinity of the three genera is further suggested by their remarkable similarity of distribution.

Of the three recent species of *Pullenia*, one has been taken living at the surface of the open sea, the others are known only from bottom-specimens. The genus has been found at every latitude and at almost every depth hitherto explored by sounding-line or dredge. It is also a well-known fossil type, occurring in marine strata of every geological age from the middle of the Cretaceous period down to recent times.

Pullenia sphæroides, d'Orbigny, sp. (Pl. LXXXIV. figs. 12, 13).

- Nonionina sphæroides*, d'Orbigny, 1826, Ann. Sci. Nat., vol. vii. p. 293, No. 1.—Modèle, No. 43.
 „ *bulloides*, Id. Ibid. p. 293, No. 2 (name only).
 „ „ Id. 1846, For. Foss. Vien., p. 107, pl. v. figs. 8-10.
 „ *quaternaria*, Reuss, 1850, Haidinger's Naturw. Abhandl., vol. iv. p. 34, pl. iii. fig. 13.

¹ Denkschr. d. k. Akad. Wiss. Wien, 1866, vol. xxv. p. 206.

² Mitth. Jahrb. d. k. ung. geol. Anstalt, vol. iv. p. 59.

³ Saggio di una Classificazione dei Foraminiferi, p. 14.

⁴ Bronn, Kl. u. Ord. des Thier-Reichs, 1880, vol. i. p. 210.