

ARYBALLOMORPHA

Martin & Yin 1988

Type species: *A. grootaertii* (Martin 1984) Martin & Yin 1988

Genus ARYBALLOMORPHA gen. nov.

Type species. *Aryballomorpha grootaertii* (Martin) comb. nov. et emend.; here designated; described below.

Etymology. Greek, *aryballos*, purse; *morphos*, form.

Diagnosis. Vesicle globular in both polar and lateral views. Oriented laterally, most specimens show prominent, apical tubular extension with circular, distal opening. No evidence of operculum. External surface psilate to echinate. Numerous flexible processes distributed evenly over all surface except that of tubular extension. Each process cylindrical or slightly conical, hollow; exceptionally interior communicates with that of vesicle, but otherwise the two are separated by continuation of vesicle wall. Distal extremity of each process divided into narrow straps that anastomose with those of neighbouring processes to form delicate, peripheral network with fine, dense mesh.

Discussion. The number of wall layers of the vesicle is not stated in the diagnosis; in most cases there is apparently a single layer, but exceptionally a double layer is observable locally at the base of a damaged tubular extension. Within a single slide the colour of the vesicle is generally darker than that of the processes. However, certain specimens are entirely transparent, even in material unoxidized with nitric acid, and in these cases the membrane of the vesicle has a thickness apparently identical with that of the processes. *Aryballomorpha* is distinguished from *Aremoricanium* Deunff, 1955 by the distal ramifications of the processes, which form a network or reticulum surrounding the vesicle. As stated by Jacobson and Achab (1985, p. 171) the latter genus, recorded from Arenig to Llandoverly, is in need of revision, for the species included in it by Loeblich and MacAdam (1971) vary considerably

in both the general form of the central body and the ornamentation and number of vesicle layers. In particular an SEM revision of *A. tosotrichion* Loeblich and MacAdam, 1971 may show it to belong to *Aryballomorpha*. This species, which occurs in the Middle Lake Member (?Llandeilo to early Caradoc) of the Bromide Formation in Oklahoma, USA has, according to its original diagnosis, a vesicle covered with very fine, hair-like processes 'matted along the periphery'. The original, optical microscope illustrations (Loeblich and MacAdam 1971, pl. 19, figs. 1, 3, 4, 6, 7) do not permit the tips of the processes to be distinguished, and an SEM photograph of an entire specimen (op. cit., pl. 19, fig. 2) is too uneven for unambiguous interpretation. *Aryballomorpha* differs from *Tunisphaeridium* Deunff and Evitt, 1968 in having a distally open tubular extension and processes that are hollow, as opposed to apparently mostly solid, so that their interiors may communicate with the vesicle cavity.