(*ii*) When sporangium formation occurs, the plasmodium becomes denser and forms a thick sheet called **hypothallus.** The protoplasm then becomes knotted into discrete nodules that represent the sporangial promordia. [Fig. 8.2(*a-c*)]. The individual nodules elongates and as development continues the basal position decreases in diameter and becomes the stalk and the upper portion becomes the sporangium proper and develop finger like structures in *P. polycephalum*. [Fig. 8.2(*d*)]. In *D. iridis* it is single and globose.

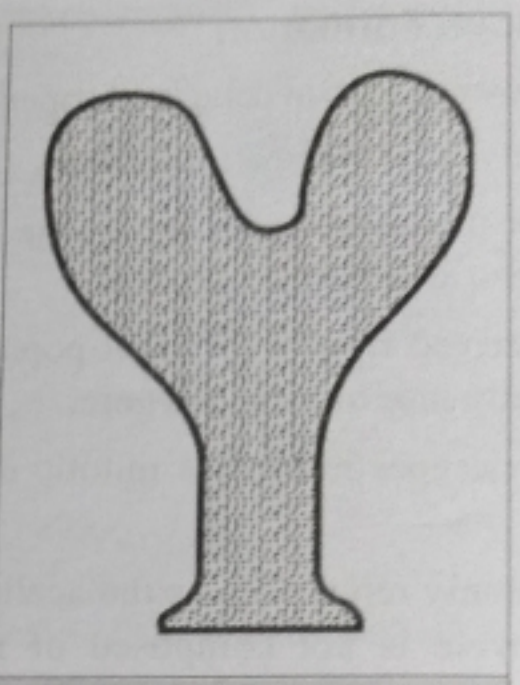

FIG. 8.2(*c*). Longitudinal section of a single developing sporangium.

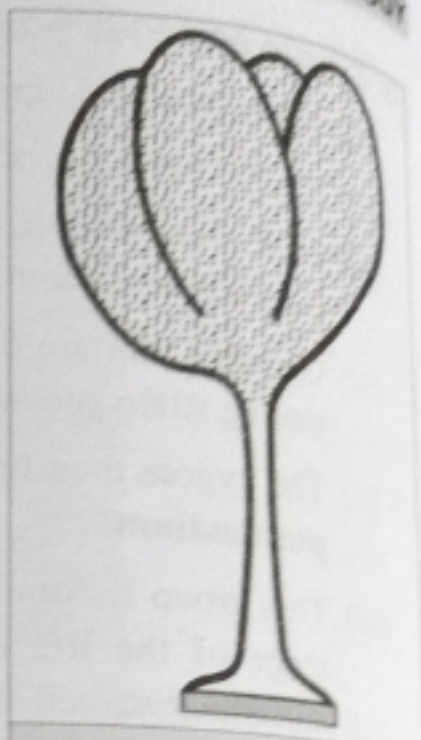

FIG. 8.2(*d*). A sporangium after development.

(*iii*) After the flow of protoplasm into the sporangium proper, the stalk is constricted, and devoid of protoplasm.

(*iv*) Spore formation starts with the formation of cell walls around the diploid nuclei.

(*v*) The nucleus in each spore undergoes meiosis to produce 4 haploid nuclei of which three degenerate and one remains. So one myxoamoeba is generated from each spore.

(*vi*) The sporangium is dark grey to black in colour in *P. polycephalum*. It is a lobed structure produced on a yellow stipe. The wall of the sporangium is called **peridium** which is persistent or may degenerate at the time of spore dispersal.

(*vii*) The sporangium also has an internal branched thread like structure called **capillitium** which arises from the coalescence of vacuoles. It is mainly composed of calcium carbonate.

(*d*) Structures and Types of Fruiting Bodies in Slime Molds

Fruiting bodies are also sometimes called **sporophores** or **sporocarps.** Fruiting bodies generally occur in four distinguishable forms or types, although there are a number of species that regularly produce what appears to be a combination of two types.

The different types of fruiting bodies are: **Sporangium, aethalium, pseudoaethalium, plasmodiocarp.**

A typical fruiting body consists of a hypothallus, a stalk, a columella, peridium, capillitium and spores. However not all these parts are present in all types of fruiting bodies.

Hypothallus is the remnant of the plasmodium sometimes found at the base of a fruiting body. The stalk (also stipe) is the structure that lifts the sporotheca above the substrate. In some species, stalk is absent and the fruiting bodies are sessile.

Peridium is the covering over the sporotheca that encloses the actual mass of spores. It may or may not be evident in a mature fruiting body. The peridium may split open along clearly discernible lines of dehiscence as preformed lid or in an irregular pattern.

Columella is an extension of the stalk into the sporotheca. The capillitium consists of thread like elements within the spore mass of the fruiting body. Many species have a capillitium either as a single connected network or as many free elements called **elaters**. The elements of the capillitium may be smooth, sculptured or spiny or they may appear to consist of several interwoven strands. Some elements may be elastic allowing for expansion when the peridium opens, while the types are hygroscopic and capable of dispersing spores by a twisting motion.

Spores are quite small and range in size from slightly less to occasionally more than 15 micrometres. All are mostly round and are ornamented to some extent. Spore size and colour vary from species to species and are of taxonomic values.

Sporangium: It is the most common type of fruiting body which may be sessile or stalked without any variations in the colour and shape. Sporotheca is the actual spore containing part of the sporangium. Sporangia occur usually in groups as they are derived from separate portions of the same plasmodium.

Aethalium: It is a cushion-shaped sessile structure. They are presumed to be masses of completely fused sporangia and are relatively large sometimes exceeding several centimetres in length.

Pseudoaethalium: It is uncommon and consists of sporangia closely crowded together. They are mostly sessile.

Plasmodicocarp: They are sessile and take the form of the main veins of the plasmodium from which they are derived.

The life cycle of a plasmodial slime mold is depicted in the Fig. 8.3.

(B) Life Cycle of Cellular Slime Molds

Cellular slime molds are also decomposers like plasmodial slime molds. These organisms have both unicellular and multicellular stages in their life cycles.

The life cycle described here refers to that of *Dictyostellium*, a common cellular slime mold which has three stages: individual, colony and spore, in its life cycle.

(*i*) Most of the time this organism remains as solitary amoeba like cell which are haploid. They use pseudopodia for motion and engulf bacteria and other foods by phagocytosis.

(*ii*) When food is plenty, they remain separate and produce asexually by mitosis.

(*iii*) When food is shortage, the cells secrete chemicals to attract other cells of the same species. When many cells come together, a slug like colony is formed.

(*iv*) This colony of cells migrate a few centimeters leaving a trail of slime. At this stage, the colony begins to show characteristics of multicellular organisms.