

Sarcosporidia, (3) Myxosporidia, (4) Microsporidia; these may be shortly characterized before dealing with the forms of special interest to the medical practitioner.

1. The first Order, that of the Gregarinidia, is best known as furnishing the minute vermiform intestinal parasites of insects and other invertebrates. The unicellular nature is obvious in those which are known as *Monocystidea* (Fig. 1a), but masked in the *Polycystidea*, in which the cell shows a tendency towards sub-

porary character, being discarded before the Gregarine enters into conjugation (Fig. 1c). The result of such conjugation is the fusion of the two cells within a single cyst, and is the general precursor in the intestinal Gregarines of sporulation, which consists in the segmentation of the protoplasmic mass from the periphery inwards (Fig. 1d) into globular clumps of protoplasm, each of which eventually gives rise to a spore with a resistant shell of characteristic form (Fig. 1e and f); such spores, from a fancied re-

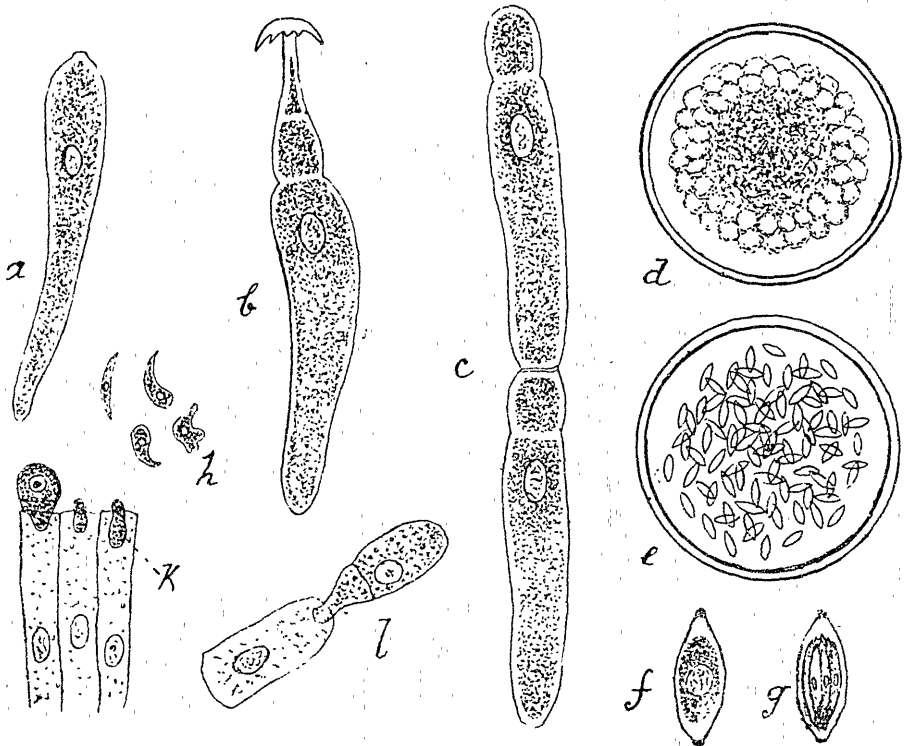


FIG. 1. DIAGRAM OF THE LIFE-HISTORY OF A GREGARINID.

a, A Monocystid form; b, a Polycystid form; c, two individuals of the latter, which have cast off their epimerites, are in conjugation; d, the resulting cyst containing the combined protoplasm of the two cells undergoing segmentation into spores; e, cyst containing the spores, each now encased in its hard shell (pseudonavicella stage); f and g, such spores enlarged, the contents segmented into crescentic germs; h, amceboid movement of the crescents; k, penetration of these into intestinal epithelial cells of insect; l, attainment of adult gregarina-form by same, while still adhering to epithelial cell by epimerite.

division into different regions. In all, however, the structure is substantially the same, the protoplasm surrounding the nucleus admitting of the recognition of two regions, the granular endoplasma and the hyaline ectoplasma, the latter the seat of the contractions which lead to the vermiform movements of the body. The cuticle through which the nourishment is absorbed, is frequently provided with an apparatus of attachment (Fig. 1b), but this may be of a tem-

semblance in form to the minute hard-shelled diatoms, used to be called *Pseudonavicella*. The spore-cases are voided through the intestine of the host, and the spores, escape either through the rupture of the cyst or by special ducts, and are protected by their hard shells till they reach favourable conditions for further development. This consists in the segmentation of the contents of each spore into two or more sickle-shaped or crescentic germs (Fig. 1g), which are