

PLATE IV.

Structure of Calcareous Disks of *Orbitolites marginalis* (figs 1-5), and *Orbitolites duplex* (figs. 6-10), as seen by transmitted light.

Orbitolites marginalis.

Fig. 1.—Thin disk, mounted in Canada balsam, showing the general arrangement of its concentric annuli around an excentric "nucleus" and orbicoline interior. Magnified 30 diameters.

Fig. 2.—Interior portion of the same. Magnified 64 diameters.

Fig. 3.—Peripheral portion of the same. Magnified 64 diameters.

Fig. 4.—Thin section of inner portion of a disk, showing the communications between its chamberlets:—*a*, primordial chamber; *b*, circumambient chamber, leading by a single passage into next chamber, *c*, which opens by three radial passages into as many chamberlets forming the first zone *d*, and these into the chamberlets of the next zone *e*, the chamberlets of each zone communicating with each other laterally. The radial passages open at the outer side of each zone, as marginal pores, *f, f*. Magnified 90 diameters.

Fig. 5.—Sarcodic body occupying inner portion of disk:—*a*, primordial segment giving off *b*, circumambient segment, and this giving off the single segment *c*, from which proceed the stolon-processes that form the first imperfect zone of sub-segments *d*; from this, again, are given off the stolon-processes that form the more complete zone *e*; and each zone increases in length, until the ninth and tenth completely enclose the circumambient segment. At *f, f* are seen the sarcodic annuli which connect together the chamberlets of each zone, and the radial stolon-processes that issue from this to form the next annulus. Magnified 90 diameters.

Orbitolites duplex.

Fig. 6.—Section of disk through superficial plane, showing its "engine-turned" aspect. Magnified 16 diameters.

Fig. 7.—Section through median plane, showing annular canals laid open, and the large passages for the pedicles of the lower series of columnar sub-segments. Magnified 50 diameters.

Fig. 8.—Section through a somewhat deeper stratum, showing the successive septa, s^1-s^6 , that divide the annular canals, with the columnar chamberlets *c, c*, into which they open beneath, and the oblique stolon-passages *st, st*, which pass to the chamberlets of each zone from the annular canal of the preceding zone. Magnified 50 diameters.

Fig. 9.—Surface-aspect of central portion of disk, showing at *a* the primordial chamber, and at *b* the circumambient chamber, the first-formed zones around which are irregular and incomplete. Magnified 64 diameters.

Fig. 10.—Section of central portion of disk through median plane, showing at *a* the primordial chamber, and at *b, b* the circumambient chambers, from one side only of which last are given off the stolon-passages that dilate into the first imperfect zone of chamberlets. The successive zones, however, complete themselves so as to enclose the "nucleus" much more speedily than in *Orbitolites marginalis*; so that the "nucleus" has but a slight excentricity. Magnified 90 diameters.