

columns often lie very close to each other, as in fig. 10, a section taken parallel to the surface of the disk on a deeper plane (fig. 9) shows their diameters to be smaller, and the intervals between them (filled-up by the shell-substance of the disk) to be wider; and another cross-section taken just above the plane of their junction with the annular cord (fig. 7) shows the still further reduction exhibited laterally in fig. 8. Now it is this deeper and slenderer pedicle of each columnar segment (fig. 8) that receives the stolon-process from the sarcodic cord of the annulus next interior to its own; and it is the connection of this pedicle with the sarcodic cord of its own annulus that brings that cord into continuous connection with that of its interior annulus. Thus, while both series of columnar sub-segments of any one annulus are all connected together by its annular sarcodic cord, the connection between the successive annuli is established by the radial stolon-processes that pass from the upper and lower margins of each annular cord to the upper and lower columnar sub-segments of the next annulus.

When this arrangement has been rightly apprehended, there is no difficulty in understanding what is otherwise somewhat perplexing in the structure of the calcareous disk. When the surface-layer of an empty disk has been removed by grinding or by the action of acid, so as to lay open the chamberlets that lodge the columnar sub-segments, these chamberlets are looked into from above (Pl. III. fig. 12), not in the direction of their axes, but in lines more or less oblique to them; so that, instead of seeing downwards into

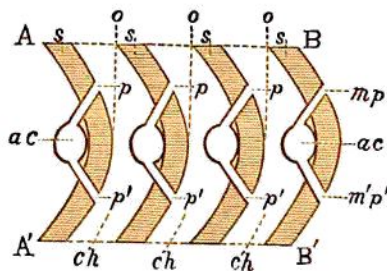


FIG. 4.

the annular canals, we are really looking, in each chamberlet, against the oblique septum that separates it from the chamberlet of the next interior annulus,—as is shown in the accompanying diagram (fig. 4), in which A B, A' B' are the superficial planes of the disk, *ch, ch*, the chamberlets lying obliquely to it, *s, s*, the septa that divide them, and *o, o, o, o*, the lines of sight. The pores, *p, p'*, seen in each hollow correspond to the marginal pores, *mp, m'p'*, of the peripheral ring;

being the outlet of the passages which lead into each chamberlet from the annular canal, *ac, ac*, of the interior ring, and which convey from its sarcodic annulus the radial stolon-processes that originate the new columnar sub-segments. When, again, we carry our section through the median plane of the disk, we lay open the concentric annular galleries (Pl. III. fig. 11); and along the *concave* (or *inner*) borders of the septa that divide them, we see the small pores forming the entrances of the passages just described, which lead to the chamberlets of the next annulus; while along their *convex* (or *outer*) borders of the septa (as shown also in the transparent section, Pl. IV. fig. 7) are seen the larger oblique passages, which are occupied by the pedicles of the columnar sub-segments of their own annuli. When this median stratum has been removed, the chamberlets of the lower layer are laid open (Pl. III. fig. 9, *a*); and these being viewed, like those of the upper, in an oblique direction, but being seen from their