

columns) having exactly the same aspect when viewed from above, as have those of the "duplex" type (fig. 1), whilst those of its *peripheral* portion have the equally characteristic form of the sarcodic "blocks" (fig. 13), of which the superficial layers of the "complex" type are composed.

But it is in *vertical sections* of the calcareous disk (Pl. VI. figs. 5-10) that the passage from one type to the other, and the mode in which it is effected, can be most distinctly traced out. The absence of an intermediate stratum, and the "simplicity" of the plan of growth, are marked in the singleness of the annular canal, which lies in the middle plane of the section, as is seen in the whole of that portion of the disk whose vertical section is represented in fig. 5, which extends from *a*, the nucleus, to *b, b*, the *twenty-third* zone. In fig. 6, on the other hand, the singleness of the annular canal extends only to the first *three* zones; the zone *b, b* is formed on the "duplex" plan, the annular canal being still single, but the radial passage being doubled, so that there would at that stage have been a double row of marginal pores; whilst in all the later annuli the annular canals are double, and the intermediate portion becomes progressively thicker. In fig. 8, again, the *five* annuli, *a, a*, to *b, b*, that immediately surround the nucleus, are formed on the "duplex" type, the annular canals being single, but the radial passages double; whilst from *b, b* to *d, d* the annular canals are double, and the intermediate portion progressively increases in thickness. If, then, the growth of either of these disks had been checked within the first zone at which its annular canal becomes double, it would have been accounted as belonging to the "simple" type; and the wide variation that shows itself in regard to the stage of growth at which the transition takes place, sufficiently shows that these intermediate forms are not entitled to rank as constituting a separate group, but that their peculiarities are to be regarded as individual.

Looking, then, at the morphological relations of the "simple" and the "complex" types, we see that the passage from one to the other does not consist (as might at first sight appear) in the development of the two superficial layers of chamberlets as additions to the intermediate stratum, the latter representing the original disk; but in a separation of the two superficial layers of the original disk by the interpolation of the intermediate stratum between the duplicated annular galleries; it being in this duplication that the transition essentially consists. Under this aspect the previous duplication of the radial passages, which is the distinctive feature of the "duplex" type, is of peculiar interest; for while in itself quite conformable to the original "simplicity" of the Orbitoline plan, it is obviously a preparation for the assumption of the "complex."

In the first stage of that assumption, the three parts of each cylindrical chamberlet all lie in the same line, the annular galleries making no break in the continuity between the superficial and the interpolated portions of the columnar cavities, as is shown in the first zones beyond *b, b*, figs. 6 and 8. But as we pass towards *d, d*, we see a change taking place in the relative positions of the zonal septa of the three planes; those of the