annuli would completely fill up the gap, and that a continuance of subsequent growth would restore the circular figure. The specimen represented in fig. 7 is of peculiar interest, as showing the early stage of this reparation; to exhibit which more clearly the specimen has been laid open by grinding it down towards its median plane. An irregular fracture has obviously been sustained along nearly half the margin of this disk, previously to the formation of the last two concentric annuli; and these annuli can be traced along the entire length of the fractured margin (of which a portion is shown on a large scale in fig. 7 *a*), just as along the unbroken periphery,—except that while the arrangement of the chamberlets in these last two annuli is conformable to that of the annulus with whose unbroken margin they are continuous, these chamberlets lie *un*conformably along the broken edge to those of the preformed structure.

Relations to Simple Type.—We have now to consider the relations of the "complex" plan of growth which is characteristic of *Orbitolites complanata*, to the "simple" plan exhibited in *Orbitolites tenuissima*, *Orbitolites marginalis*, and *Orbitolites duplex;* and have especially to inquire whether there is any evidence of the genetic derivation of the higher type from either of the lower.

In describing *Orbitolites complanata*, I have purposely limited myself to that typical form which presents its characteristic features in their highest development, those features being (1) the origin of thedisk in a large and thick "nucleus"; (2) the immediate assumption of the *cyclical* plan of growth, as shown in the primal pullulation of chamberlets round the whole periphery of the nucleus, so as to form a complete annulus; and (3) the immediate assumption of the *complex* plan of growth, shown in the separation, even in the very first annulus, of the two superficial layers by an intervening stratum, as shown in vertical section in Pl. VI. figs. 9, 10. But I find a considerable number of disks, especially in the 18 fathoms' collection, which present that *intermediate* condition on which I laid great stress in my former Memoir (§§ 57, 58), as indicating that the "complex" type is only a more developed form of the "simple." In such disks the central portion is formed in every respect upon the "simple" plan, which afterwards gives place to the "complex," sometimes rather suddenly, but generally more gradually, at a variable distance from the centre. Such a "simple" condition may be inferred to prevail in the interior part of any disk, whose peripheral portion is shown to be "complex" by the multiple arrangement of its marginal pores, when its central portion is very thin, its nucleus small, its first formed annuli not complete, and the form of its surface-divisions circular tending to square, as in *Orbitolites duplex;* the passage to the complex type being marked by the rapid thickening of the disk, and the narrowing of the surface-divisions, so that they take-on the elongated form characteristic of the superficial chamberlets of *Orbitolites complanata.* This last change is well shown in Pl. V. fig. 11, which represents half of the sarcodic body of one of these sub-typical forms; the sub-segments of the *central* portion of the disk (which are the summits of "simple"