

is commonly placed excentrically, and most usually in the apical or aboral portion of the central capsule, either between its apex and the podoconus, or quite excentrically on the dorsal aspect. The simple nucleus of the NASELLARIA usually appears to be vesicular and to possess a somewhat firm membrane, clear contents, and a rather large, dark coloured nucleolus. In many NASELLARIA the nucleus is spherical or ellipsoidal (Pl. 53, fig. 11); whilst in many Stephoidea and Spyroidea, where the central capsule is constricted by the sagittal ring and divided into two symmetrical lateral lobes, the nucleus partakes of the same mode of growth, and appears in the middle of the capsule as a transversely placed ellipsoid or even as a short cylinder (Pl. 90, figs. 7, 9). The most remarkable modification in the form of the nucleus is to be found in the multi-articulate Cyrtoidea. Here it is usually enclosed in the cephalis and is spherical, ellipsoidal or spheroidal, often flattened almost into a disc. If now the central capsule increase greatly in size and put forth three or four clavate lobes which hang down through the pores of the cortinar septum into the thorax (or even into the succeeding joints), the nucleus usually undergoes similar modification, and three or four finger-like apophyses are developed from its base, which project into the corresponding lobes of the central capsule (Pl. 59, figs. 4, 12, 13).

The numerous small, spherical, homogeneous nuclei which are to be found in the central capsules of those NASELLARIA, which are ripe and about to develop spores, were described in 1862 in my Monograph, as "numerous, small, transparent, spherical cells" in the case of various Cyrtoidea (*Arachnocorys*, *Lithomelissa*, *Euccryphalus*, *Eucyrtidium*, &c. (*loc. cit.*, pp. 302, 305, 309, 321, &c.), and I find them of the same form and dimensions, but deeply stained with carmine in many preparations in the Challenger collection. R. Hertwig has delineated them very accurately in the case of *Tridictyopus* (1879, *loc. cit.*, p. 84, Taf. vii. fig. 3). He was also the first to recognise the uninucleate condition of the NASELLARIA, which is much more frequently observed than the serotinous multinucleate condition, and he described very clearly the peculiar lobed nuclei which arise in Cyrtoidea, owing to the protrusion of the nucleus through the cortinar septum (*loc. cit.*, p. 85, Taf. viii. figs. 3-8).

70. *The Nucleus of the Cannopylea.*—The nucleus presents the same remarkable structures in all species of the PHÆODARIA or CANNOPYLEA which have been examined, and closely resembles the germinal vesicle of an amphibian ovum, being a large spherical or spheroidal vesicle with numerous nucleoli. Its diameter usually amounts to half or two-thirds, sometimes even three-quarters, that of the central capsule. The vertical main axis of the latter is also that of the nucleus, which usually lies somewhat nearer to the aboral pole. The nucleus is generally rather more strongly compressed in the direction of the main axis than the capsule itself. The membrane of the vesicular nucleus is thin, but firm, and encloses a clear or finely granular mass of nuclein. The number and size of the contained nucleoli are variable even in one and the same species, and stand in inverse ratio to each other, an obvious result of the gradual process of division. Commonly