

toward the apical end. This can be easily explained by the fact that the endosiphococone in its anterior part needed the most guy ropes on account of the greater weight of the visceral cone there. Therefore also the number of endosiphofunicles diminishes so greatly from the outer zone to the next, because the outer endosiphosheath inclosed a much larger section of the visceral cone at the plane of the section than the later inner endosiphosheath did at the same point.

In section I the endosiphofunicles of the outer whorl appear distinctly as fine tubes with thin conchiolinous walls, their lumen

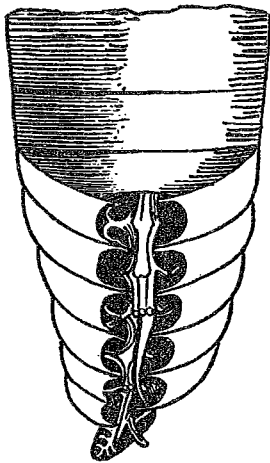


Fig. 22 *Actinoceras abnorme* Hall (sp.). Section showing the endosiphuncle and tubuli. (Copy from Zittel)

being filled by a milk-white calcite which strongly contrasts with the more limpid calcite crystals surrounding the tubes. Many of these tubes bifurcate near the ectosiphuncular wall, one several times. There is secured by this mechanical contrivance a larger base of fixation, which insures steadiness and freedom from vibrations for the visceral cone during the movements of the animal.

Whether the numerous endosiphofunicles were but a modification of the endosiphoblades which, as we have seen, hold the endosiphocoleon and endosiphosheaths in position in *Proterocameroceras brainerdi* and originated by a dissolution of these suspensory membranes in numerous strands, or are a new formation induced by the necessity of supporting the heavy visceral cone hanging free within the broad siphuncle, is a question which we can not con-

NOTE. We can not yet determine whether these endosiphofunicles are homologous to the remarkable verticils of sometimes branching tubuli which in some species of *Actinoceras* connect the endosiphuncle with the ectosiphuncle. Both undoubtedly are quite similar in appearance. The tubuli of *Actinoceras* [see e. g. *Actinoceras abnorme* Hall, N. Y. State Mus. 20th An. Rep't, pl. 18, fig. 10 (copied here after Zittel)] are by Foord described in *Actinoceras bigsbyi* [see 1888, p. 166] as penetrating the siphuncular wall, and it has been suggested by Owen [Pal. 1865, p. 85] that they served for the passage of blood vessels to the living