This result leads us to a further critical examination of the intercortical cavities of the fully grown sponges; and from it I am inclined to think that the following differences will be found to obtain generally, though perhaps not universally.

In *Stelletta*, *Geodia*, and their allies the intercortical cavities are separate and independent chones, which when traced centripetally are frequently found to open into a common subcortical crypt (Pl. XXVII. fig. 13). In *Craniella* the intercortical cavities form large subdermal chambers, which when traced centripetally are found to lead each into several separate and independent incurrent canals. The relations of the two types to each other are shown on the accompanying diagram (Fig. VII.).

The Canal-System.

The spongophare or choanosome as the case may be is folded on very different plans in different sponges, and these are expressed in the different disposition of the incurrent and excurrent canals. The arrangement of the main canals has been spoken of by Zittel as the type of canal-system, a convenient expression which has been unfortunately rendered ambiguous by other writers, since they have used it to denote the nature of the relations of the flagellated chambers to the ultimate branches of the incurrent and excurrent canals. As, however, Zittel's use of the term seems the more appropriate, and to have priority, I shall retain it in his sense, and replace it as used in the other sense by the term "type of chamber-system."

The details of the canal system can seldom be clearly traced, since in all but the youngest or smallest sponges they are obscured by metamorphosis and concrescence. No doubt a study of young examples of the larger sponges, in various stages of growth, will enable us to unravel many of the complexities presented by the adult, but this will be a laborious task, and one for which the Challenger material is not adequate. The study of this subject involves also a knowledge of the manner in which the adult increases in size, and regarding this we are at present ignorant; is growth merely additive, occurring chiefly at the superficies, or is it to any great extent also interstitial? So far as increase in size is generally concerned, I am for many considerations strongly inclined myself to regard it as mainly exogenous, occurring chiefly in a zone immediately beneath the ectosome; but that interstitial growth does also occur is certain, as observations made on the distribution of the spicules in the cloacal tube of *Tribrachium schmidtii* prove (see p. 157), the cladomes of these spicules becoming more removed from each other as they are traced from the origin of the tube towards its termination, and this can only be due to interstitial growth.

As our knowledge is so evidently limited, this chapter must be regarded rather as pointing out questions for investigation than a summary of positive results.