lated chamber (fig. 20, ii.). The presence of this membrane enables us readily to distinguish the excurrent from the

incurrent face of the chamber, since its convex surface is always turned towards the prosopyle. In sponges with an

aphodal canal system the flagellated chambers usually pass gradually into the aphodal canal, but the incurrent canal

enters abruptly. This abrupt termination of the incurrent canal appears to mark the termination of the ectoderm and the commencement of the endoderm. The flagellated chambers differ greatly in size in different sponges, and evidently manifest a tendency to become smaller as the canal system increases in complexity; thus Sycon are always larger than Rhagon chambers, and eurypylous than aphodal Rhagon chambers. In most sponges except the Ascons the mesoderm is largely developed, and in many it undergoes a highly complex histological differentiation. In its com­monest and simplest form it consists of a clear, colourless, gelatinous matrix in which irregularly branching stellate cells or connective tissue corpuscles are embedded ; these may be termed *collencytes* (fig. 21 *a)* and the tissue *collen- chyme.* In the higher sponges *(Geodia, Stelletta)* it consists of small polygonal granular cells either closely contiguous or separated by a very small quantity of structureless jelly, and in this form may be termed *sarcenchyme* (fig. 20). Collenchyme does not originate through the transformation of sarcenchyme, as one might expect, for it precedes the latter in development. Schulze (*20*)*,* who has compared collenchyme to the gelatinous tissue which forms the chief part of the umbrella of “jelly-fish,” describes it as becoming granular immediately in the neighbourhood of the flagel­lated chambers in the bath sponge, the granules becoming more numerous in sponges in which the canal system acquires a higher differentiation, till at length the collen­cytes are concealed by them. According to this view, sarcenchyme would appear to originate from a densely granular collenchyme. Amoeboid wandering cells or *archae- ocytes* (fig. 22) are scattered through the matrix of the collenchyme. They evidently serve very different purposes : some appear to act as carriers of nourishment or as scavengers of useless or irritant foreign matter ; others may possibly contribute to the formation of higher tissues, some certainly becoming converted into sexual products. Their parentage and early history are unknown.

A tissue (c*ystenchyme)* which in some respects resembles certain forms of vegetable parenchyme occurs in some sponges, particularly *Geodinidæ* and other *Tetractinellida.* It consists of closely ad­jacent large oval cells, with thin well-defined walls and fluid contents. Somewhere about the middle of the cell is the nucleus with its nucleolus, supported by protoplasm, which extends from it in fine threads to the inner side of the wall, where it spreads out in a thin investing film (fig. 21 *c*). Cystenchyme very commonly forms a layer just below the skin of some *Geodinidæ,* particularly of *Pachymatisma,* and, as on teasing the cortex of this sponge a large number of refringent fluid globules immiscible with water are set free, it is just possible that it is sometimes a fatty tissue, and if so the contained oil must be soluble in alcohol, for alcoholic prepara­tions show no trace of it. A tissue resembling cartilage, *chondrenchyme,* occurs in *Corticidæ* (fig. 21 *b*).

Connective-tissue cells or *desmacytes* are present in most sponges ; they are usually long fusiform bodies, consisting of a clear, colourless, often minutely fibrillated sheath, surrounding a highly refringent axial fibre, which stains deeply with reagents (fig. 21 *d).* In other cases the des- macyte is simply a fusiform granular cell, with a nucleus in the interior and a fibrillated appearance towards the ends. The desmacytes are gathered together, their ends overlapping, into fibrous strands or felted sheets, which in the ectosome of some sponges may acquire a considerable thickness, often constituting the greater part of the cortex. The spicules of the sponge often furnish them with a sur­face of attachment, especially in the *Geodinidæ,* where each sterraster of the cortex is united to its neighbours by des­macytes, in the manner shown in fig. 10.

Contractile fibre cells or *myocytes* occur in all the higher sponges. They appear to be of more than one kind. Most usually they are fine granular fusiform cells with long filiform terminations, and with an enclosed nucleus and nucleolus (fig. 21 *e).* In the majority of sponges both excurrent and incurrent canals are constricted at intervals