

I have as yet only given a general survey of the anatomical and histological parts composing the organisation of the Actiniaria; it now remains for me to discuss the differentiations shown by the histological elements in their nature, distribution, and arrangements in the various parts of the body, and to show how we may thereby acquire a knowledge of the more accurate characteristics of these parts.

The pedal disk does not present much worthy of notice; it has a slightly developed endodermal muscular layer, always running circularly, which is often even wanting; in the centre there are sometimes, but rarely, one or more small openings, through which the water can find entrance and exit; as yet, however, such openings have only been observed where the pedal disk and wall pass continuously the one into the other, which condition is usually described as absence of the pedal disk. Radial furrows may also run on the outside of the pedal disk, and usually correspond to the insertions of the septa on the inside (Pl. IV. fig. 2; Pl. IX. fig. 5). The wall is much more complicated both on its endodermal and its ectodermal sides; on the former there often lies a layer of circular muscular fibres, which appears everywhere as a flat or slightly folded lamella, but is also often more strongly developed in certain places, and forms a special muscular cord acting as a sphincter. The sphincter or circular muscle usually lies immediately below the upper margin of the wall, which it draws together like a bag over the oral disk and the tentacles if the latter require shelter from any threatened danger. A second sphincter, lying further down, may also be added to the upper sphincter.

The nature of the sphincters varies greatly. We talk of a "diffuse" sphincter when it merely arises from repeated pleatings of the muscular lamella; because in that case it is not sharply defined at the upper and lower margins (Pl. V. fig. 8), it does not strike the eye in looking at the surface, and is shown in transverse section only by the local thickening of the wall in whose substance it is completely embedded. A "circumscribed" sphincter is formed when the pleated muscular mass projects above the inner surface of the wall, with which it is connected only by a narrow band, so that an annular swelling arises which is easily observed both in looking at the surface and in transverse section (Pl. VII. figs. 2, 4). Finally, in the "mesodermal" sphincter, the muscles have left their original position in the epithelium, and are completely hidden in the supporting substance, which consequently increases doubly or trebly in thickness (Pl. VII. fig. 7; Pl. VI. figs. 1-3).

The complete absence of the sphincter is comparatively rare. I have only observed it in a few species (*e.g.*, in the representatives of the genus *Corallimorphus*), almost invariably animals which are not capable of contracting the upper margin of the wall over the oral disk. This is, however, also the case in animals with a weak sphincter, such as the *Antheadæ*. On the other hand, the existence of a strong circular muscle can often be inferred with tolerable certainty from a high degree of contraction. The capacity for concealing the oral disk plays an important part in the systematic division of the