

DIACTS.

The two rays of a diact belong either to the same or to different axes, and may resemble or differ from one another. The two rays usually form together a straight or curved rod. Only very rarely are they disposed at right angles (Pl. LIX. fig. 16).

Many diacts show traces of undeveloped rays in the form of knobs (Pl. V. fig. 7), or as a ring-like thickening (Pl. XXI. figs. 7, 8, 10), or in the presence of two or four canals crossing the main axial canal at right angles. In many cases every trace of their derivation from hexact forms has been lost (Pl. LXII. fig. 6). Where only two knots occur on the boundary between the two developed rays, or where two opposite cross canals occur, we have to deal with the derivation of the diact from a tetract form, in which the third axis of the original hexact has been entirely lost.

Many variations occur in the terminal development of the two rays, which are sometimes simply rounded, sometimes pointed, thickened, or knob-like, and often also provided with button or umbel-like structures of the most diverse kind. The two rays may be uniform, or most variably differentiated. They may be smooth or rough, wholly or partly beset with points, prongs, or spines, varying extremely in number, form, size, and direction. The direction of the prongs, with which many diacts are beset all round and throughout their whole length, usually remains the same from one end to the other (Pl. XLV. fig. 6, and Pl. LXXI. fig. 4), but the direction may be reversed on either of the two rays, so that the prongs have their points turned to either end of the diact (Pl. XVI. fig. 12), or, on the other hand, towards the centre (Pl. XL. fig. 5).

The obliquely directed prongs occasionally assume a flat form, like certain leaf buds (Pl. XL. fig. 8), or the scales of the fir cone (Pl. XXXVI. fig. 7).

A very peculiar and typical diact structure, characteristic of the whole family of the Hyalonematidæ, is found in the so-called "*Amphidiscs*," in which a terminal expansion of a disc-like, or spherical form, always curved towards the centre, is borne on the end of each ray. The disc is prolonged into several (six to twelve) tooth or shovel-like marginal protuberances, which in the peculiarities of their length, form, and direction, contribute essentially to the characteristic features of the different genera and species.

Among the asymmetrical diacts some forms occur, which exhibit a certain similarity to the terminal umbels of the *Amphidiscs*. Certain anchor-like forms exhibit curved, hook-like, more or less flat teeth, which suggest the main rays of a pentact; but the anchors exhibit, at the same time, the marginal prongs characteristic of the thickened terminal portion of a diact, which has been pulled out to a great length, and ends in a point or in a simple knob (Pl. III. fig. 29; Pl. XVI. fig. 11). The anchor teeth of such a diact do not, of course, possess any central canal, and the axial cross of the central canal is frequently clearly seen at a considerable distance from the whole terminal thickening of the anchor stalk (Pl. XVI. figs. 11, 13).