

always intervenes, and the outlines of the corresponding tubercles are consequently always separately distinguishable. It frequently happens that one process of a bifid tubercle not only clasps its prisoner, but is itself attacked and partly surrounded by a third; in this and other ways the complication of the interlocking is increased almost beyond the powers of analysis. The mother-cell, increased in size, persists in the adult spicule, occupying one of the triangular depressions about the centre, from which, as a thin film of granular protoplasm, it extends over the surface. The diameter of the scleroblast of the adult desma is about 0.03 mm., of the nucleus 0.012 mm., and of the nucleolus, which is spherical, 0.004 mm. In several instances similar scleroblasts were observed in each of the other depressions about the centre of the desma, and occasionally nuclei of the same dimensions as those of the evident scleroblast were observed on the epactine at some distance from the centre; a not very good example of this is shown in Pl. XXX. fig. 19. Sometimes also a nucleus could be recognised in the material filling up the space between the syzygial tubercles of apposed cladi (Pl. XXX. fig. 18); unless these appearances are deceptive, they certainly show that more than one scleroblast may take part in the formation of the desma, and I am the less disposed to mistrust them from the fact that the nuclei associated with the desma are frequently altogether disconnected from the surrounding mesoderm, which, owing to treatment with reagents, has shrunk away from the desma, leaving the nuclei observed adherent to its surface.

*The Form of the Phyllotriænes.*—The irregularities in the form of these spicules, which appear at first altogether capricious, are determined entirely by two factors; the position of the cladus, in the first place relative to the adjacent canals, in the next to contiguous spicules. The spicules are arranged in the ectosome in five or six successive layers parallel to the surface, the rhabdomes descending inwards through the walls which bound the subdermal cavities, the cladi extending horizontally parallel to the surface within the walls which separate the poral domes from each other. The direction of the cladi is chiefly determined by the direction, in a horizontal plane, of the wall into which they extend, and the form of their marginal outline is to some extent, more particularly in the case of the more superficial spicules, determined by the outline of the poral domes. Thus, should the origin of the cladome of a spicule lie midway between three approximately equidistant domes, the cladi will radiate through the three walls which separate the domes from each other; should one or other of the cladi encounter another dome midway in its course it will bifurcate, and the resulting deuterocladi will pass one on each side of this dome, whose position thus determines the position of the point of bifurcation of the protocladus (if not actually inducing it), and the subsequent direction of the deuterocladi. The marginal outline of a cladus traversing the middle of a somewhat thick partition between two domes is not much, if at all, influenced by the free surface of the domes; but when a cladus approaches the free surface of a partition, or when the partition is so narrow that the sides of the cladus are not far from the free