

has increased to 0.008 mm. in diameter, two of the cladi are 0.0236 mm. in length, and the third, 0.004 mm. long, appears merely as a rounded tubercle. In succeeding stages the tylus and cladi increase in size; but the rhabdome grows so much more rapidly than the tylus, that eventually it becomes of the same thickness, and the distinction between the two, though it persists for some time, is finally obliterated. In a spicule with the rhabdome 0.0118 mm., the tylus is 0.0158 mm. in diameter, and the axial fibre of the third and shortest cladus is traceable into it for a distance of 0.0075 mm. The axial fibre of this third cladus, which in the adult spicule is usually entirely suppressed, can be traced for a long distance through the spicular series, indications of it persisting in some cases in spicules with a rhabdome 0.039 mm. in diameter, and therefore presumably almost adult; in this case it is represented by its axial fibre, which is about 0.0035 mm. in length. The two persistent cladi of the young spicules do not lie nearly in the same plane with the rhabdome, *i.e.*, at about 180° with each other, but diverge at an angle which is more nearly 120° than that.

Having shown that the adult diæne originates in a triæne form, and that in all probability in an oxytylote, which is descended in turn from an oxea, we may next turn to enquire into the cause of the suppression of the third cladus of the triæne. This appears to be traceable to pressure. The suppressed or arrested cladus, in the early stages of development of the spicule, is pressed against the rhabdome of the spicule next behind it in the series (Pl. XVII. fig. 12), and, considering the sensitiveness of more fully grown spicules to the slightest action of pressure, it is no wonder that a young cladus so unfavourably situated should suffer an early arrest of development. To a similar cause in all probability the suppression of one or more cladi of the anatriænes of the sponge-body is due.

The scleroblasts of the megascleres are well displayed in several preparations of this sponge. The characteristically large nucleus of the spicule-cell is situated at about the middle of the oxeate spicules, just over what we may presume is the position of the actinal origin. In the triænes it always occurs nearer the cladal than the oxeate end. In a young orthotriæne of the sponge-body the distance of the nucleus from the cladal origin measures 0.146 mm., and from the oxeate termination 0.288 mm.; in a more fully grown form these distances become 0.592 and 1.203 mm.; in an anatriæne they are 0.217 and 0.414 mm. In these three cases the distance of the nucleus from the cladal origin is about one-third the total length of the spicule, and if we suppose the actinal centre corresponds, as appears very probable, with the position of the scleroblastic nucleus, we may express this fact in the statement that the length of the cladal actine is to that of the acladal actine as 1 : 2.

Thus a kind of balance appears to exist between the two actines, the oxeate actine compensating by its greater length for the greater thickness and the branches of the cladal actine. As a notion seems to exist that this may be the case, Carter often