

sphærida (Pl. 2), and the colonial Collosphærida with a Sphæroid skeleton (Pls. 5-8) from the solitary Ethmosphærida (Pl. 12, &c.). Many species of monozootic and polyzootic forms in all three groups are so alike that they can only be distinguished by the fact that the one series are colonial, the others solitary. On the other hand, there are some reasons which would justify a monophyletic hypothesis for the Polycyttaria, *e.g.*, the precocious nuclear division; in this case it would be most natural to hold that the Sphærozoida and Collosphærida have arisen as two diverging branches from the Collozoida, whilst the latter are nothing else than colonial Thalassicollida.

169. *Phylogeny of the Acantharia.*—The legion ACANTHARIA or ACTIPYLEA is distinguished by its peculiar acanthin skeleton, which develops centrogenously, as well as by the disposition in groups of the pores in its central capsule, and its excentric usually precocious nucleus; it is thus so different from all other Radiolaria as undoubtedly to furnish, phylogenetically considered, an independent stem (§ 7). This stem is only connected at the root by *Actinelius* with the primitive form of the SPUMELLARIA, *Actissa*. The stem is monophyletic, since all the forms belonging to it may be derived without violence from *Actinelius* as a common primitive form.

170. *Origin of the Acantharia.*—The genus *Actinelius* (p. 730, Pl. 129, fig. 1), which may naturally be regarded as the common primitive form of all ACANTHARIA, possesses a spherical central capsule, which in consequence of the early division of the nucleus (§ 63), encloses numerous small nuclei; from its centre arise many simple radial spines of equal size, which penetrate the central capsule. A large number of radial pseudopodia issue between the spines from the sarcomatrix which surrounds the capsule. *Actinelius* may have been directly derived from *Actissa*, the common stem-form of all Radiolaria, by the division of the pseudopodia into two groups, myxopodia, which remained soft, and axopodia, which became firm (§ 95A). As the latter became changed into strong acanthin rods, and touched each other in the centre, they forced the nucleus from its originally central position and brought about its early division. *Actinelius* is also of all Radiolaria the form which, next to *Actissa*, most nearly approaches the Heliozoa. If the stiff axial threads of *Actinosphærium* be conceived of as partially converted into acanthin spines, and its nucleated medullary substance as separated from the alveolar cortical layer by a membrane (central capsule), then *Actinelius* would be produced.

171. *Hypothetical Genealogical Tree of the Acantharia* (see opposite page).

172. *Adelacantha and Icosacantha.*—The numerous forms of ACANTHARIA, here disposed in twelve families and sixty-five genera, may be divided phylogenetically into two main groups of very different extent—*Adelacantha* and *Icosacantha*. The more primitive group, *Adelacantha*, have an indefinite and variable number of radial spines,