

axes on the one hand (§§ 44, 45), and the differentiation of the various parts of the unicellular organism with the formation of the skeleton on the other, are of pre-eminent significance. Even in the varying growth of the central capsule in the different dimensions of space in the skeletonless Colloidea, four different modes may be distinguished, which further, in the corresponding development of the skeleton, furnish the basis for the origin of the four orders of Sphærellaria. The most primitive and simplest form of growth, equal extension in all directions, is found in the spherical central capsule and the concentric spherical skeletons (*Procyttarium*, Sphæroidea). When the growth of the central capsule proceeds more rapidly in the direction of the vertical main axis than in any other direction, the ellipsoidal or cylindrical central capsule (*Actiprunum*) arises, and the vertically elongated skeleton of the Prunoida, which is derived from it. When, on the contrary, the growth of the central capsule and lattice-shell is less in the direction of the vertical main axis than in any other direction, the lenticular or discoid central capsule (*Actidiscus*) arises, and the corresponding lenticular shell of the Discoidea. Finally, even quite early in many SPUMELLARIA, the growth of the central capsule and of the corresponding lattice-shell in the three dimensionive axes is different, and hence arise the lentelliptical forms whose geometrical type is the triaxial ellipsoid or the rhombic octahedron (*Actilarcus*, Larcoidea). Thus the origin of the four orders of Sphærellaria is simply explained by a varying growth in the different dimensionive axes. The *primary* (innermost) lattice-shell is in this legion always *simultaneously* developed (suddenly excreted at the moment of lorication from the sarcodictyum). The *secondary* lattice-shells, on the other hand, which surround the former concentrically, and are united with it by radial bars, arise *successively* from within outwards.

147. *The Ontogeny of the Acantharia.*—The individual development of the ACANTHARIA in the simplest case (*Actinelius*) stops at a point which differs from the *Actissa*-stage only in the change of radial axial threads into acanthin spines. In the small group Actineliida, their number remains variable and usually indeterminate (*Adelacantha*), whilst in the great majority of the legion (*Acanthonida* and *Acanthophracta*) the number is constantly twenty, and those spines are regularly arranged according to the Müllerian law in five parallel circles, each containing four crossed spines (*Icosacantha*). The simplest form among these latter is *Acanthometron*, which may be regarded both ontogenetically and phylogenetically as the common starting-point of all the Icosacantha. Within this extensive group variations in the length of the dimensionive axes appear, similar to those observed in the SPUMELLARIA. In the Astrolonchida and Sphærophracta the central capsule remains spherical, extending equally in all directions; and correspondingly the lattice-shell, which is excreted on the surface of the spherical calymma, remains spherical. In the Belonaspida (just as in the Prunoida)