

of the calymma approaches that of cartilage, the tracks of the exoplasmic threads remain constant, but accurate observations are wanting as to how far the configuration of the sarcoplegma is constant or variable in the different groups, as well as regarding its peculiar behaviour in those Radiolaria whose calymma is characterised by the formation of vacuoles or alveoles (see § 86). Usually it envelops the larger alveoles in the form of a reticulate veil. In many Collodaria the exoplasm is aggregated at certain points of the intracalymmar web, so that large balls or amœboid bodies appear to be distributed between the alveoles, *e.g.*, in *Thalassophysa pelagica* and *Thalassicolla melacapsa* (Pl. 1, figs. 4, 5). The sarcoplegma is metamorphosed directly into silex in the Radiolaria spongiosa, or those genera which possess a spongy cortical skeleton, and were formerly known as Spongurida; to this category belong the Spongosphærida (Pl. 18) and Spongodiscida (Pl. 47) as well as certain NASSELLARIA and PHÆODARIA. The single siliceous spicules, which are irregularly interwoven to form the spongy web, are to be regarded as the silicified threads of the intracalymmar sarcode network. From a physiological point of view the sarcoplegma is of importance both for the nutrition and motion of the Radiolaria, since it brings the sarcomatrix and the sarcodictyum, with the pseudopodia which radiate from it, into direct communication.

94. *The Sarcodictyum.*—The sarcodictyum may be defined as the extracalymmar network of exoplasm, and is a reticular covering which lies upon the outer surface of the gelatinous calymma. Internally, the sarcodictyum is in direct communication with the sarcoplegma, or the web of exoplasmic threads which ramifies in the gelatinous substance of the calymma; externally, on the other hand, the pseudopodia radiate freely from it; thus its relation to these is similar to that which the sarcomatrix bears to the roots of the sarcoplegma. Relations similar to those which have led to the separation of the primary from the secondary calymma, induce us to distinguish also a primary and secondary sarcodictyum. The original or *primary sarcodictyum* ramifies over the surface of the original or primary calymma, and like this is of pre-eminent importance in the formation of the primary lattice-shell; if we regard the surface of the primary calymma as the indispensable foundation for the deposition of this latter, then the primary sarcodictyum furnishes the material from which it is developed: silex in the SPUMELLARIA and NASSELLARIA, a silicate of carbon in the PHÆODARIA, and acanthin in the ACANTHARIA. It may indeed be said that the primary lattice-shell of the Radiolaria arises by a direct chemical metamorphosis of the primary sarcodictyum, by a chemical precipitation of the dissolved skeletal material (silex, silicate, or acanthin), which was stored up in the exoplasm of the sarcodictyum. Hence a deduction from the special conformation of the former to that of the latter is permissible. The particular form of the primary lattice-sphere with its regular or irregular meshes is due to the corresponding form of the primary sarcodictyum; both regular and irregular forms of this