distinguished as a separate group, not only in the substance out of which the skeleton consists, but also in the form of the component spicules.

One is therefore inclined to suppose their very early divergence from the great sponge stem. On the other hand, the marked uniformity of their skeletal elements lead one to suppose that they have had a common starting point, *i.e.*, a monophyletic origin. This supposition is confirmed by the certain fact that the Sycones in their ontogenetic development pass through a distinct Ascon stage, and that between the Sycones and Leucones recent investigations have discovered many connecting links, as has been shown especially in the Challenger Report on Calcareous Sponges by Polejaeff, and von Lendenfeld's researches on Australian forms.

A closer relationship connects the siliceous, horny and soft sponges. In regard to the last I have previously shown, that both on account of the incongruity between the different members of the group, and the obvious relationship between certain forms and indisputable horny and flinty sponges, the group cannot be regarded as independent, closed and natural, but must be split up and its members referred to different positions on the genealogical tree near their various congeners, and regarded as twigs degenerate in respect to their skeleton.

In regard to the horny sponges there seems to me no other supposition possible, but that of regarding them as originating from flinty or flinty-horny sponges by the gradual reduction and final disappearance of the siliceous spicules.

The more abundant and differentiated the horny substance the more degenerate the flinty skeleton, until finally, as in many Chalinidæ, which approach the true Keratosa, we find only very simple smooth spindles, which I am compelled to regard as the extreme of the phylogenetic series of siliceous spicule modification.

In my memoir on the family of Plakinidæ, I have shown in detail why it is that in the long and continuous series of transitions between the typical regular tetracts and the simple straight spindles, exhibited both in individual species and often in one individual, as well as in the skeletons of nearly related species, it is impossible to regard the straight spindle as the primitive form from which the triacts and tetracts have been formed by the growth of new rays, but necessary to regard the tetracts as primitive and ancestral, from which the triacts and diacts have arisen by atrophy and degeneration of the various rays. Oscar Schmidt[1] was led to the same conclusion by a detailed investigation of other Tetractinellida, and especially of the Ancorinidæ, where it may be very readily seen how gradual reduction of the typical tetracts, only modified into anchors by the elongation of one ray, leads finally to simple rod-like spicules, and further how within those genera, which, like *Caminus*, have acquired rod-like spicules, degenerate anchors here and there persist, showing the mode in which the rods have originated from tetracts.

[1] Entstehung neuer Arten durch Verfall und Schwund älterer Merkmale, *Zeitschr. f. wiss. Zool.*, Bd. xlii. p. 639.