

exhibits a beautiful Lyssacine structure. The same transition is exhibited by *Rhabdodictyum* and *Rhabdostauridium*."

"At any rate the Lyssacina were once the sole representatives of the Hexactinellida. As a Lyssacine every Dictyonal form must still begin its development, though this stage may only perhaps last for a very short time. And thus there was at any stage the possibility of the Dictyonal form becoming again reduced to a Lyssacine. The stiffest and most brittle Dictyonal framework differs after all only in degree from that of the loosest of the Lyssacina."

My own researches have convinced me that there is indeed a certain antithesis between Lyssacina and Dictyonina, which may be justly recognised in the distinction of these two systematic divisions of the order Hexactinellida, but that this difference is not fundamental, nor involving the separate origin of the two divisions, but that it is rather one of degree and in no way suggesting a hard and fast separation.

In distinguishing the two groups, Zittel laid stress, however, not merely on the simple fact whether the principal spicules were or were not united into a firm connected framework, but rather on the *manner* in which this union was effected. It must be allowed that what is regarded as the characteristic dictyonal mode of framework formation, viz., by close apposition of the two corresponding arms of adjacent hexradiate spicules, and the formation of a common sheath, is indeed very frequent, and in some Dictyonina, like *Aulocystis*, or in the youngest portions of *Farrea* stocks is even normal or perhaps constant, but it cannot be overlooked that it is extremely common to find that the mode of union of the dictyonalia is in part, or here and there throughout, essentially different. Zittel indeed called attention to the fact that beside the hexradiate spicules united as above indicated there were others "which left the series and had their rays soldered arbitrarily to the rest of the framework. When one or two rays of such irregularly disposed spicules become united by chance to the thickened centre of a hexact, the result is obviously the apparent origin of more than six rays from one centre of intersection. Other irregularities may also arise by the curvature or direction of individual rays, so that two rays in one axis come to lie no longer in a straight line." If these deviations, which may be readily detected in most Dictyonina, are really only exceptions to the typical mode of union which Zittel supposed to obtain, then the sharp and certain separation of the Dictyonina from the Lyssacina with connected framework cannot be said to be seriously affected. But there are, besides, not a few Hexactinellida in which the supposed typical mode of union is either not to be detected at all, or only here and there after careful search, and even then in a fashion so far from characteristic that among the countless deviating and arbitrary intersections of the majority of the rays the exceptional occurrence of the typical mode may be indeed regarded as a matter of chance. Thus, for example, in the different species of the genus *Aphrocallistes* known to