true then we must expect a change in the bathymetrical distribution of deep-sea forms as they are traced backwards in time; a change which may be represented by a curve, with the depth for its ordinate and time for the abscissa, and traceable to an origin in the littoral zone.

The geologist then must not expect the zoologist to furnish him with tables for determining the probable depths at which ancient sediments have been deposited; these he must discover from other data, which are not wanting, and may then be able to furnish the zoologist with data for the construction of a bathymetrical curve changing with the time.

Another fallacy common among geologists is to suppose that a comparative abundance of Hexactinellids and Tetractinellids compared with Monaxonids in any deposit is an indication of great depth; this supposition is confuted even by the facts of existing bathymetrical distribution, which show that at all depths above 1000 fathoms the Monaxonids are the ascendant group; the comparative rarity of this last group of Sponges in stratified deposits is to be explained on quite other grounds—(1) By the fact that they, like the Choristida, are not furnished with a coherent skeleton, so that all that remains after their decay is loose and scattered spicules, which, being in the majority of cases of small size, are readily dissolved, and thus totally disappear, while when they are comparatively large they are liable to become mixed with precisely similar spicules of the Choristida, and thus cannot be separately identified. Another explanation, applicable however to only a few cases, is the erroneous identification occasionally made of some fossil Monaxonids with Calcareous sponges.

The absence of Lyssacine Hexactinellids is to be explained in the same way as the absence of Monaxonid spicules.

Schulze, after stating that the Hexactinellida of abyssal depths are almost exclusively Lyssacina, adds :—"The conclusion therefore seems warranted that in ancient times also the Lyssacina predominantly occurred in the greater depths, while the more differentiated Dictyonina inhabited as they now do relatively shallower water at no great distance from the coasts. Now if one may assume that the deepest regions of the great oceans have remained permanently covered by water since the Palæozoic period, while the shallower regions near the continents were here and there raised above water, we can understand why we find in certain Jurassic and Cretaceous deposits so many and highly differentiated Dictyonina, but very slight hints of Lyssacina, even under circumstances that would not preclude their preservation, or at least that of their characteristic spicules."[1]

This hypothesis it appears to me cannot be sustained in face of the fact that Monaxonids are as conspicuously absent as Lyssacina from Jurassic deposits, while if Schulze's view that the existing is a fair representation of the ancient distribution be true, then Monaxonids ought to be abundantly associated with the fossil Lithistids and

[1] Report on the Hexactinellida, Zool. Chall. Exp., part liii. p. 496.