randei were not found, while Megalanteris ovalis and Spirifer arenosus were questionably identified from a few fragments. In northwestern New Jersey Weller[1] notes the presence of Hipparionyx proximus but it is exceedingly rare and abnormal in its small size; Spirifer arenosus is one of the rarest shells of the New Jersey Oriskany of that region, while Camarotoechia barrandei is questionably present.

Instead of deriving an argument in favor of Helderberg-Oriskany transition beds from the practical nonoccurrence of the very typical larger shells of the normal Oriskany, and from the commingling of Helderbergian and Oriskanian species, it is believed with Clarke[2] that these beds which are stratigraphically the equivalent of the Oriskany, represent the calcareous (deep water) facies of the shallow water original Oriskany. Just as at present much of the older life, geologically considered, is found in the deeper portions of the sea,[3] so here the Helderbergian types persisted in the deeper water; not being able, evidently, to compete with the newer Oriskany fauna, they found safety in the less favorable localities, just as the Insectivores among mammals have persisted to the present, notwithstanding their low development, because, added to a maintenance of small size, they have become nocturnal in habit and in many ways have adapted themselves to the less desirable localities.

Large size is usually correlated with an abundance of food. In the sea the more abundant food supply is in comparatively shallow waters. It is here that marine vegetation flourishes, on which all sea animals primarily depend for food; it is here also that river-borne detritus, which contains a greater or less amount of food, is

[1] Geol. Sur. N. J. 1902. 3:341–64.

[2] Oriskany Fauna of Becraft Mountain. N. Y. State Mus. Mem. 3, p. 72.

[3] Alexander Agassiz discusses this point quite thoroughly in his work, the *Three Cruises of the U. S. Coast and Geodetic Survey Steamer Blake*, v. 1, from which the following conclusions are quoted:

"The abyssal fauna has descended from the littoral and other shallow regions, to be acclimatized at great depths." [p. 155]

"All the evidence thus far tends to show that the deep sea fauna originated at the close of the Paleozoic times." [p.151]

After noting that a large number of antique types occur everywhere, he continues, "We can only say that in the deep water fauna a relatively larger number of such antique forms have been found than elsewhere." [p.156]