with but slight modifications to the present day, or at the same time may become modified in endless ways, and form the innumerable combinations with other structural features which have given to the Echinid fauna of any period or to that of the present day its typical features.

Connection between the Cretaceous and the Recent Echinid Faunæ.

One of the very first results clearly indicated by the deep dredgings of Count Pourtalès, and the subsequent investigations of the "Porcupine" expedition, was the antique character preserved by many of the new genera discovered in deep water, and especially their resemblance to Cretaceous genera; and the study of the Challenger Echinids has brought this out still more plainly.

For the purpose of making the comparison of the Challenger Echinids with the earlier Cretaceous types as complete as possible, it will be interesting to take a rapid review of the Cretaceous Echinid fauna, and contrast it with the abyssal fauna taken as a whole, independently of its combinations in time with the littoral and continental types, but not independently of its combination with those types which extend into the abyssal fauna either from the littoral or from the continental fauna.

On comparing the genera characteristic of the Chalk with those now found living, we find that a considerable number of the latter date back to the Cretaceous period; and a few of the Cidaridæ, the Echinidæ, the Salenidæ, the Echinoconidæ, and the Petalosticha, even to earlier epochs, to the Jurassic beds, the Lias, and the Trias. The genera *Dorocidaris*, *Phyllacanthus*, *Porocidaris*, *Salenia*, *Podocidaris* (*Magnosia*, *Codiopsis*), *Asthenosoma*, *Phormosoma* (*Echinothuria*), *Temnechinus*, *Cottaldia*, *Phymosoma*, *Holopneustes*, *Hemipedina*, *Echinus*, *Echinocyamus*, *Fibularia*, *Echinolampas*, *Rhynchopygus*, *Conoclypus* (J.), *Echinobrissus*, *Catopygus*, *Pygaster*, *Pourtalesia* (*Infulaster*), *Hemiaster*, *Periaster*, are in this category, so that a good proportion of the genera of Echinids still living in the present epoch belong to genera already existing at the time of the earliest Cretaceous formations; and leaving out for the present the genera which have disappeared during Tertiary times, we find in the Tertiaries, in addition to the above genera, the following which have continued to the present time:—*Arbacia*, *Cœlopleurus*, *Echinometra*, *Stomopneustes*, *Strongylocentrotus*, *Sphærechinus*, *Temnopleurus*, *Trigonocidaris*, *Salmacis*, *Amblypneustes*, *Toxopneustes*, *Hipponoë*, *Clypeaster*, *Echinanthus*, *Laganum*, *Echinarachnius*, *Arachnoides*, *Echinodiscus*, *Mellita*, *Encope*, *Echinonëus*, *Nucleolites*, *Homolampas*, *Paleopneustes*, *Spatangus*, *Maretia*, *Eupatagus*, *Lovenia*, *Breynia*, *Echinocardium*, *Brissopsis*, *Agassizia*, *Brissus*, *Metalia*, *Meoma*, *Linthia*, *Schizaster*, *Moira*.

Leaving as genera belonging strictly to the present epoch, which for the present we may take as the result of the existing condition of things, and as the successors of