

*Echinanthus*, and others, which are in our day still so characteristic of the Australian region.

But there was a time when the peculiar Australian genera of the present day extended far to the westward. Laube<sup>1</sup> figures a most interesting species under the name of *Chrysomelon vicentia* and *Chrysomelon pictum*, of which most certainly the nearest allies are not, as he suggests, *Melonites*, but the Australian generic types *Holopneustes* and *Amblypneustes*. In addition to the above the species with decided Pacific affinities are *Sismondia planulata* closely allied to *Laganum bonani* and *Clypeaster breunigii* to *Laganum decagonum*, while *Scutella tenera* represents the American Tertiary element together with a number of species of *Clypeaster* proper and of *Echinanthus*, which, as is well known, obtained a great development in the Tertiaries of Southern Europe, as well as *Echinolampas*, *Hemiaster* proper, and *Schizaster* of a more or less Hemiasteroid facies. From what has preceded, it is evident that, in making these comparisons between the fossils of a district with those still found living at great depths in other areas, we at once find how impossible it is to establish a synchronism from the comparison of identical species in distant formations. Palæontologists have frequently enough felt the futility of attempting to establish merely upon palæontological evidence the synchronism between distant beds supposed to belong to the same formation. This brings us, it seems to me, face to face with the identical problems we are attempting to solve to-day, when stating that the typical Australian Echinids belong to the present Fauna. What have we to support that assertion?—A single species of *Psammechinus*, a few Triplechinidæ, a few Clypeastroids and Spatangoids, and a couple of species of *Cidaris*.

Now, what has taken place in Australia? We may picture to ourselves in other times and places the gradual extinction of the Cidaridæ and of the Clypeastroids; the total disappearance of species still found fossil, but now no longer living, which connect them with the Tertiary period, and only the types of *Psammechinus*, *Goniocidaris*, and a few types characteristic of the Indo-Pacific realm, with the present Fauna, while the typical form *Amblypneustes* is most evidently descended directly from the Chalk, and the wider geographical distribution in space which we have begun to trace among the fossils was also accompanied by a greater persistency in time; as different a condition of things as possible from the state of things of the present day.

From the comparative lists of Corals from the Tertiaries of the West Indies made by Duncan, it is very evident that the affinities of by far the greater number are with the recent coral Fauna of the Pacific, the Indian Ocean, and the Red Sea, with the Miocene period of the Australian, Java, Indian, and European Tertiaries. What trace there is of the connection claimed by Duncan to have existed between South Europe and the West Indian Islands I fail to see. That this connection of South Europe existed with the

<sup>1</sup> Dr Gustav C. Laube, Ein Beitrag zur Kenntniss der Echinodermen des Vicentinischen Tertiärgebietes. Denk; d. Kais. Akad. d. Wiss. Wien., xxix., 1868.