

geographical connection between the Atlantic and Pacific provinces, but in the similar climatal conditions of the different areas, which have ensured the survival of species once much more widely distributed; this explanation derives support from the fact that the representative species all belong to genera which are markedly peculiar in character, and extremely poor in species: the three Lithistid genera cited do not possess so far as we know any other species than those mentioned, *Placospongia* is an aberrant genus with but three known species, and *Tribrachium* and *Disyringa* are equally aberrant genera of Stellettidæ, but they are also sufficiently distinct from each other to deprive their representative character of any great value. The great cup-shaped *Synops* of the Brazilian province is represented by the cup-shaped *Cydonium* of Japan; cup-shaped Geodiids occur nowhere else.

The South Australian province is characterised by the genus *Anthastra*, which is peculiar to it, and which seems to represent the genus *Myriastra* of the Indo-Pacific province; the genus *Psammastra* with its two species, *Psammastra murrayi* and *Psammastra geodides*, is also peculiar to this region; the Theneid—*Thenea grayi*—is not a very distinct form, since it much resembles *Thenea muricata* of the Arctic province; *Chrotella simplex* is characteristic and represents *Chrotella macellata* of the Indo-Pacific province; similarly *Cydonium eosaster* represents *Cydonium globostellifera*; *Synops nitida* is a very distinct and characteristic species. One marked feature which appears to distinguish this region from the Indo-Pacific is the rarity of Lithistida: only one species—*Discodermia discifurca*—was obtained by the Challenger, and Dr. von Lendenfeld informs me that he did not succeed in obtaining a single specimen from Port Jackson. It is possible that this distinction is correlated with difference in climate, Lithistids preferring warm seas, and thriving best in water constantly over 40° in temperature.

From the foregoing account it would appear that the distributional areas which serve in the case of the Mollusca are, with certain modifications, also applicable to that of the Sponges, and furthermore, that the deep-water and shallow-water Sponges are referable to the same provinces.

The existence of these provinces is probably to be explained by the existence of ocean currents, and if we had but a complete and exact knowledge of these the mysteries of the distribution of marine forms would be, to a great extent, revealed. Where a current flows along a coast it will act as a distributing agent, and its action will be aided by surface drifts, which on the average will have very much the same direction as its own, but when it crosses an ocean almost bare of islands its power as a distributing agent is lost; it is therefore possible that the North Atlantic, though so much narrower than the Pacific, acts as a more efficient barrier to the passage of species from one side to the other owing to the comparative absence of islands, which in the Pacific are so plentiful; on the other hand where islands lie thickly scattered in the path of a current they cannot fail to serve as settling places to crowds of larval forms, and thus afford stepping stones