

6. The abyssal fauna is certainly more nearly related than the fauna of shallower water to the faunæ of the Tertiary and Secondary periods, although this relation is not so close as we were at first inclined to expect, and only a comparatively small number of types supposed to have become extinct have yet been discovered.

7. The most characteristic abyssal forms, and those which are most nearly related to extinct types, seem to occur in greatest abundance and of largest size in the Southern Ocean; and the general character of the faunæ of the Atlantic and of the Pacific gives the impression that the migration of species has taken place in a northerly direction, that is to say, in a direction corresponding with the movement of the cold under-current.

8. The general character of the abyssal fauna resembles most that of the shallower water of high northern and southern latitudes, no doubt because the conditions of temperature, on which the distribution of animals mainly depends, are nearly similar.

*The Density of Sea-water.*—The specific gravity of the surface-water was determined daily by Mr. J. Y. Buchanan, the chemist to the expedition, with great accuracy; the specific gravity of the bottom-water was also determined so far as possible at every observing station, and every opportunity was taken to procure for physical and chemical examination samples of water from intermediate depths. On our return home through the Pacific, Mr. Buchanan, at my request, prepared a preliminary report on his method of investigation and on the general results of his work, which I received at Valparaiso; and from that report the following summary of specific-gravity conditions in the Atlantic, according to the first year's observations, is taken. The apparatus in use for procuring water from the bottom and from intermediate depths has been already described (vol. i., p. 51 *et seq.*).

Representing the specific gravity of distilled water at 4° C. by 100,000, Mr. Buchanan found that of ocean-water at 15°·56