

Islands, and thinks that the presence of the same plants in Arctic and Antarctic regions may be accounted for possibly by this fact. I was much struck at Marion Island of the Prince Edward group by observing that the great albatross¹ breeds in the midst of a dense low herbage, and constructs its nest of a mound of turf and herbage. Some of the indigenous plants, *e.g.*, *Acæna*, have flower-heads [fruits], which stick like burrs to feathers, &c., and seem specially adapted for transportation by birds. Besides the albatrosses, various species of *Procellaria* and *Puffinus*, birds which range over immense distances, may, I think, have played a great part in the distribution of plants, and especially account, in some measure, for the otherwise difficult fact (when occurring within the tropics) that widely distant islands have similar mountain plants. The *Procellaria* and *Puffinus* in nesting burrow in the ground, as far as I have seen, choosing often places where the vegetation is thickest. The birds in burrowing get their feathers covered with vegetable mould, which must include spores and often seeds. In high latitudes, the birds often burrow near the sea-level, as at Tristan da Cunha and Kerguelen Islands, but in the tropics they choose the mountains for their nesting-place (Finsch and Hartlaub, Ornithologie der Viti- und Tonga- Inseln, 1867, Einleitung, p. 18). Thus *Puffinus megasi* nests at the top of the Korobasa Basaga Mountain, Viti Leon, fifty miles from the sea. A *Procellaria* breeds in like manner in the high mountains of Jamaica, I believe, at 7000 feet. Peale describes the same habit of *Procellaria rostrata* at Tahiti, and I saw the burrows myself amidst a dense growth of fern, &c., at 4400 feet elevation in that island. *Phæthon* has a similar habit. It nests at the crater of Kilauea, Hawaii, at 4000 feet elevation, and also high up in Tahiti. In order to account for the transportation of the plants, it is not of course necessary that the same species of *Procellaria* or *Diomedea* should now range between the distant points where the plants occur. The ancestor of the now differing species might have carried the seeds. The range of the genus is sufficient."

We have already alluded (Part III., p. 313) to Dr Guppy's assumption that it is possible that a seed might be transported by a bird from South Trinidad in the Atlantic to Amsterdam Island in the Indian Ocean. In connection with this, he mentions having found a small hard seed in the gizzard of a Cape pigeon, or Cape petrel, *Daption capensis*, taken about 550 miles east of Tristan da Cunha; a species of bird which he observed a little southward of South Trinidad, and traced as far as Amsterdam Island.

Mr John Murray (*in litt.*) mentions that when birds break their eggs, the matter often hardens on their feet and plumage, and he has seen seeds and small sticks embedded in it; but this happens at a season when birds are unlikely to fly long distances.

From the small collections of seeds and fruits taken from the crops of pigeons by Mr Moseley and Dr Guppy, plants of the following genera or species are known to be dispersed by birds in Polynesia: *Oncocarpus vitiensis*, *Elæocarpus* spp., *Soulamea*

¹ See Narr. Chall. Exp., p. 294, 1885.