

7. Calcareous Algæ, called Nullipores (page 147), serve to protect growing Corals and the margins of coral reefs from wear. Ordinary seaweeds often cover and protect the rocks of a coast nearly to high-tide level; in the higher latitudes the Fucoids (as *Macrocystis pyrifera*) are sometimes 200 to 300 yards long, and the broad green belt off a coast breaks the force of incoming waves so that the rocks are saved from their destructive action.

The common earthworm, as Darwin has shown (1881), transfers a great amount of earth or soil in the pellets it discharges at the surface. He found that the weight so transferred per acre in a year in four cases was 7.56, 14.58, 16.1, and 18.12 tons. Lobworms, of seashores, are even greater workers, according to C. Davison, who reports that the amount of sand carried up each year on the shores of Holy Island, Northumberland, was equivalent to 1911 tons per acre (1891). Marmots (*Spermophilus Eversmani*), in the Caspian steppes, bring great quantities of earth to the surface. In a few years after their introduction they had brought up 75,000 cubic meters of earth to the square mile. (Muschketoff, 1887.)

TRANSPORTING EFFECTS.

1. Seeds caught in the feathers, hair, or fur of animals, or contained in the mud adhering to their feet, are transported from place to place.

2. Seeds are eaten by animals as food, or in connection with their food, and are dropped in another region undigested. At the Solomon Islands, fruit-pigeons carry fruit and seeds in their crops, and have thus planted the land with trees from other islands. (Guppy.)

3. Ova of fish, reptiles, and inferior animals are supposed to be transferred from one region to another by birds and other animals. Authenticated instances of this are wanting.

4. Floating logs and seaweeds carry Mollusks, Crustaceans, Worms, and other species from one region to another, over the broadest oceans, along the courses of marine currents. In tropical countries, islands of shrubbery and trees often float away from estuaries into the sea, bearing with them land, fresh-water shells, and other terrestrial species, which there become mingled with marine shells. A Boa constrictor once floated, on the trunk of a cedar, from Trinidad off South America to the island of St. Vincent — a distance of at least 200 miles. The great floating seaweed areas of the Sargasso Sea in the Atlantic are the dwelling-place of vast numbers of marine species, including Fishes, Mollusks, Crustaceans, Worms, etc.

5. Migrating tribes of men carry, in their grain, or otherwise, the seeds of various weeds, and also, involuntarily, Rats, Mice, Cockroaches, and smaller vermin. The origin of tribes may often be inferred from the species of plants and of domesticated and other animals found to have accompanied them.¹

¹ On this general subject consult Wallace's *Island Life*.