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93.—FOOD OF MACKEREL, PILCHARDS, AND HERRING.

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[From Land and Water.]

For a period of more than twenty years I have noticed that the whole surface of the sea off our coasts here, in the spring months of the year, at certain times assumes a deep olive color, and I have had opportunities for knowing that in favorable seasons this color is to be found stretching out full 20 miles from land. Our fishermen here call it "cowshiny" water, no doubt because of the similarity which exists between the sea at such times and the excrement of the cow when mixed with water.

Every inquiry into the matter left me without a clue as to its cause, but on looking carefully into the sea, I found it full of olive-colored forms, which for a considerable time I thought were small medusas, but under the glass it was seen they were not medusas, but globules of olive matter, varying in size from ordinary gunshot to that of small garden peas. When I had opportunities of noting them, I found they permeated the water for many yards in depth, and their number was as incalculable as that of the sands on the sea-shore.

On further observation it was noted that all our surface-feeding fishes were exceedingly fond of them as food, and that the stomachs of the mackerel, herring, and pilchards were often found distended with them. And, moreover, that the success of the inshore mackerel-fishery on our coasts in the months of March and April depended on their presence.

After considerable investigation into the matter, and comparing the undeveloped with the developed spores, I believe I am safe in saying that all these untold myriads of olive globules in our seas, which furnish such abundance of food for the fishes, which color the sea to a considerable depth, and which stretch out so many miles from the land, are nothing more than the fully developed seeds or spores of the *Melanospermeæ*, or olive seaweeds.

The number of spores thrown off by a single plant in one season is prodigious. The last I observed was a *Fusis serratus*, and the figures to represent them would be not less than two millions. The few books I have on the weeds make no remarks on rain-water playing any part in the development of the spores. But it now seems probable that there can be no fructification of the spores of the olive and green seaweeds without the genial showers of the spring and the summer.

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