

to the depth of four thousand and sometimes six thousand feet, they became impregnated with sea-water, and when drawn up again, after immersion, for an hour, would no longer float. The effect of this impregnation was to increase the dimensions as well as the specific gravity of the wood, every solid inch having increased one-twentieth in size and twenty-one twenty-fifths in weight.*

Drift-wood of the Mackenzie River.—When timber is drifted down by a river, it is often arrested by lakes; and, becoming water-logged, it may sink and be imbedded in lacustrine strata, if any be there forming: sometimes a portion floats on till it reaches the sea. In the course of the Mackenzie River we have an example of vast accumulations of vegetable matter now in progress under both these circumstances.

In Slave Lake in particular, which vies in dimensions with some of the great freshwater seas of Canada, the quantity of drift-timber brought down annually is enormous. "As the trees," says Dr. Richardson, "retain their roots, which are often loaded with earth and stones, they readily sink, especially when water-soaked; and accumulating in the eddies, form shoals, which ultimately augment into islands. A thicket of small willows covers the new-formed island as soon as it appears above water, and their fibrous roots serve to bind the whole firmly together. Sections of these islands are annually made by the river, assisted by the frost; and it is interesting to study the diversity of appearances they present, according to their different ages. The trunks of the trees gradually decay until they are converted into a blackish brown substance resembling peat, but which still retains more or less of the fibrous structure of the wood; and layers of this often alternate with layers of clay and sand, the whole being penetrated, to the depth of four or five yards or more, by the long fibrous roots of the willows. A deposition of this kind, with the aid of a little infiltration of bituminous matter, would produce an excellent imitation of coal, with vegetable impressions of the willow-roots. What appeared most remarkable was the horizontal slaty structure that the old alluvial banks presented, or the *regular curve* that the strata assumed from unequal subsidence.

"It was in the rivers only that we could observe sections of these deposits; but the same operation goes on, on a much more magnificent scale, in the lakes. A shoal of many miles in extent is formed on the south side of Athabasca Lake, by the drift-timber and vegetable debris brought down by the Elk River; and the Slave Lake itself must in process of time be filled up by the matters daily conveyed into it from Slave River. Vast quantities of drift-timber are buried under the sand at the mouth of the river, and enormous piles of it are accumulated on the shores of every part of the lake."†

The banks of the Mackenzie display almost every where horizontal

* Account of the Arctic Regions, vol. ii. p. 202.

† Dr. Richardson's Geognost. Obs. on Capt. Franklin's Polar Expedition.