

France, Delesse studied those of the Mediterranean, Atlantic, English Channel, German Ocean, and also the ancient seas and great lakes. He traces the orography of America, its hydrographic basins, and rainfall; he gives a lithological description of the great North American lakes, Caribbean Sea, Gulf of Mexico, the American Atlantic Ocean from the West Indies to Labrador, part of the Arctic Seas, and the American Pacific Ocean. His results are given in three large maps, remarkable for their execution: 1st, of the French seas; 2nd, of the European seas; and 3rd, of the North American seas. He then applies himself to the study of the French seas during the principal geological periods, and in five special maps indicates the submarine orography of the Silurian, Triassic, Liassic, Eocene, and Pliocene seas. A sixth map affords a large amount of information relating to the depths of the French seas, the quantity of carbonate of lime in the coast sediments, the beds of shells, the distribution of the oyster, and the slow oscillations of the coasts. In seven tables he summarises his results as regards the relative frequency of the winds, the materials forming dunes, the distribution of rain, the river deposits, the deposits in littoral lakes and ponds, the littoral marine deposits, and the submarine deposits.

The subject of deep-sea dredging was not neglected in Great Britain. In the autumn of 1868, in consequence of a suggestion of Professor Wyville Thomson to Dr. W. B. Carpenter, the Royal Society laid before the Admiralty a statement of the advantages to science likely to result from a short dredging cruise in the North Atlantic. The Admiralty responded by placing the surveying ship "Lightning," Captain May, at the disposal of Drs. Thomson and Carpenter. The conditions of work in the "Lightning" were very unfortunate both as regards the vessel and the weather which prevailed during the six weeks that the cruise lasted. In spite of all difficulties, dredging was carried on to a depth of 650 fathoms, and temperature results of the greatest interest were observed, which ultimately led to the discovery of the Wyville Thomson Ridge in the Faroe Channel in 1880 by Tizard and Murray. Professor Wyville Thomson thus sums up the results of the "Lightning" expedition:—

WYVILLE THOMSON'S STATEMENT OF RESULTS OF DEEP-SEA EXPLORATION IN 1868.

"It had been shown beyond question that animal life is varied and abundant, represented by all the invertebrate groups, at depths in the ocean down to 650 fathoms at least, notwithstanding the extraordinary conditions to which animals are there exposed.

"It had been determined that, instead of the water in the sea beyond a certain depth varying according to latitude having a uniform temperature of 4° C., an indraught of Arctic water may have at any depth beyond the influence of the direct rays of the sun a temperature so low as -2° C.; or, on the other hand, a warm current may have at any moderate depth a temperature of 6·5 C., and it had been shown that great masses of water at different temperatures are moving about, each in its particular course; maintaining a remarkable system of oceanic circulation, and yet keeping so distinct from one