of rain or of a rainy month on mackerel spawn, would be equally prejudicial, by causing it to sink below the surface and be removed from those conditions of light and oxygen which are essential to the development of the embryo.

On the other hand, the spawn might be driven in an easterly direction, or in a westerly direction, and be hatched so memiles off the coast in great abundance. These new schools might attain great magnitude in three or four years, being unobserved, and might so remain for several years, pursuing their circular feeding movements until noticed by the fishermen. The same contingencies occur in the Gulf of St. Lawrence, and similar distribution arising from winds or tides drifting the spawn far from the spot where it was shed, often lead to the establishment of new schools of fish in different localities.

This feature in the natural history of the mackerel has already been noticed with regard to the Bay of Fundy schools. (Page 84, Part 1.).

The occurrence of mackerel in great abundance on the north east coast of Newfoundland, and their subsequent disappearance may be explained in a similar manner, and may be attributed to unfavorable meteorological conditions, which would drive the floating spawn on shore, or far out to sea. There are, however other probable reasons for the observed annual variations in the schools which which will now be noticed.

In the foregoing paragraphs it is assumed that the fluctuations in the numbers of Mackerel observed by fishermen, correctly interpret a phenomenon which appears to be generally recognized.

But while it is right to receive the statement that very large fluctuations in the numbers seen, usually occur, it is wrong to infer that because the schools are not visible, proof is afforded that they do not exist. There are strong reasons for believing that during many seasons the schools escape the notice of fishermen on account of their finding their food in a lower and colder stratum of water, and more rarely coming to the surface than during other seasons, It will now be shown how a cold stratum is produced, and that as a necessary result of the mode of its formation, it varies each year and during every month of the year in vertical position and thickness, and that it is constantly brought to or near the surface on banks and shoals within certain geographical limits. These variations in depth of suitable feeding zones throw light upon the alleged inconsistancy of the appearance of the Mackerel, and its selection of coastal waters in some sea-areas and offshore waters in other areas, and variations in both during different seasons.

In European seas the depth at which the fishermen look for cod varies with the season of the year, and is a point towards which much attention is paid in Norway and England. On the Dogger Bank, the smacks fish at the following depths during the months named:—(1)

December	12	to	15	fathoms	waters.
January	.14	to	18	"	
February	18	to	22	" "	66
March	10	to	12	"	•6
	-				

The fish are caught with long lines (trawls) at the bottom during these months. From July to September hand lines are used on the Dogger Bank, the fish being found four or five fathoms from the bottom. The peculiarity in the habits of the Cod at different seasons of the year, can not be too constantly or forcibly impressed upon British American fishermen, especially in those waters where both summer and winter fishing is practicable.

<sup>(1.)</sup> Sea Fisheries Commission-Minutes of evidence, 1864.