THE RELATION OF THE MOVEMENTS OF MACKEREL IN THE GULF OF ST. LAWRENCE TO TIDAL CURRENTS.

The fishing grounds for mackerel in the Gulf of St. Lawrence are so well defined from year to year that physical causes must affect, in a very large degree, the distribution of the food which attracts this fish, and either brings them to the surface or lures them to particular coastal areas.

There is perhaps no part of the world where the tidal waves and resulting currents are distributed in such a remarkable manner as in the Gulf and estuary of the St. Lawrence.

The meeting and overlapping of tidal waves of different ages, that is to say, the tide of to-day meeting the tide of twelve hours ago, and producing a double overlapping tide, is of rare occurrence, and is due to the configuration of the sea bottom conjointly with the relative position of islands and neighbouring coastlines.

Northumberland Straits and the north shore of Prince Edward Island afford the most remarkable instances on the American continent of the meeting of tides of different ages, and it can scarcely be doubted that the long and continuous line of inshore eddies, produced in a large measure by this singular confluence, conjointly with the low temperature resulting from the mixing of cold underlying, with warm surface, sea-strata, is the chief cause why mackerel fishing grounds should be there so close inshore with such undeviating constancy.

a. THE PRINCE EDWARD ISLAND DOUBLE TIDE.

The tidal wave entering the Gulf of St. Lawrence between Cape Breton and Newfoundland rushes with great rapidity along the edge of the bank forming the boundary of the sixty fathoms line of soundings.

It sends off lateral waves towards the Straits of Belle Isle, and towards Prince Edward Island, while the main wave, following the deep water at the edge of the sixty fathoms line of soundings, pursues a rapid course towards and up the Lawrence estuary, and reaches Cape Chatte and Point de Monts precisely at noon on the days of full and change of the moon.

Regarding for the present, the lateral wave which strikes off towards the south-western portion of the Gulf, we find it split into two portions by the Magdalen Islands; one half, namely the eastern part, sweeps past the shores of Cape Breton and reaches the east point of Prince Edward Island at 8 hours 30 minutes, Cape Bear at 9 hours, and the middle of the straits opposite Hillsboro Bay, at 10 hours. Here it meets a flood tidal wave coming down Northumberland strait from the north-west, but this wave is not the other half of the wave which was split by the Magdalen Islands two hours before, it is the tidal wave twelve hours old which has been delayed in its detour round the north part of the Magdalens and over the shallows of the Bradelle and Orphan Banks. A line drawn through the Magdalen Islands, Roche's Point and the mouth of Hillsboro River in Prince Edward Island and Wallace Harbour in Nova Scotia, will pass through the places where the overlapping of the confluent tidal waves