

to oceanic conditions. This Shelf is distinguished by great width and diversity of relief. From the coast of Nova Scotia its width varies from 60 to 100 miles, from Newfoundland 120 to 50 miles (at the entrance of Hudson Strait), and northward it merges with that of the Arctic Ocean. The outer edge of the Shelf, known as the Continental Shoulder, is of varying depths of from 100 to 200 fathoms before the Shelf suddenly gives way to the steep declivity leading to abyssal depths. The over-all gradient of the Atlantic Continental Shelf is slight but the whole area is studded with shoals, plateaux, banks, ridges and islands and the coasts of Nova Scotia and Newfoundland are rugged and fringed with islets and shoals. Off Nova Scotia the 40 fathom line lies at an average of 12 miles from the shore and constitutes the danger line for coastwise shipping. The whole floor of the marginal sea appears to be traversed by channels and gullies cutting well into the Shelf.

The main topographical features of the Atlantic marginal sea floor are attributed to glacial origin but land erosion is an important factor. Eroded materials are carried seaward by rivers, ice and wind, and wave action against cliffs and shorebanks washes away enormous masses that are deposited over the surrounding sea floor. The topography of the continental sea floor is therefore constantly changing and navigation charts of Canada's eastern seaboard must be continuously revised.

*Arctic.*—The submerged plateau protruding from the northern coast of North America is a major part of the Great Continental (or Polar) Shelf surrounding the Arctic Ocean on which lie all the Arctic Islands of Canada, Iceland, Greenland and most of those of Europe and Asia. This Shelf develops its maximum width on the 80th meridian of west longitude where it extends from the south of James Bay to the north coast of Ellesmere Island, a distance of over 2,000 miles.

The floor topography of this continental margin is somewhat hypothetical but sufficient has been charted to indicate an abrupt break at the northern oceanward edge. This steep continental terrace borders the whole western side of the Canadian Archipelago and constitutes one of the most striking and significant features of the Polar regions. From this declivity, deep well-developed troughs cut by glaciers enter between the western group of islands. A ridge across Davis Strait on which the depth is about 200 fathoms separates this basin from the open Atlantic.

Hudson Bay and Hudson Strait bite deeply into the continent. Hudson Bay is an inland sea 250,000 sq. miles in area having an average depth of about 70 fathoms; the greatest charted depth in the centre of the Bay is 141 fathoms.

Hudson Strait separates Baffin Island from the continental coast and connects Hudson Bay with the Atlantic Ocean. It is 430 miles long and from 37 to 120 miles wide and its greatest charted depth of 481 fathoms is close inside the Atlantic entrance. Great irregularities of the sea floor are indicated but except in inshore waters few navigation hazards have been located.

*Pacific.*—The marginal sea of the Pacific differs strikingly from the other marine zones of Canada. The hydrography of British Columbia is characterized by bold, abrupt relief—repetition of the mountainous landscape. Numerous inlets penetrate the mountainous coast for distances of 50 to 75 miles. They are usually a mile or two in width and of considerable depth, with steep canyon-like sides. From the islet strewn coast, the Continental Shelf extends from 50 to 100 sea miles to its oceanward limit where depths of about 200 fathoms are found. There the sea floor drops rapidly to the Pacific Deep, parts of the western slopes of Vancouver Island and the Queen Charlotte Islands lying only four miles and one mile respectively from the edge of the declivity. These great detached land masses are the dominant features of the Pacific marginal sea. Along the whole coast continuous navigation is afforded through an inside passage sheltered from the sea by a protective barrier of islands. As is to be expected in a region so irregular in hydrographic relief shoals and pinnacle rocks are numerous, necessitating great caution in navigation.