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Tidal power may meet energy needs of the future

For centuries man has watched the ebb and flow of the tides and dreamed of tapping off the huge amounts of energy in the moving mass of water. Although modern technology derives its hydraulic power almost exclusively from the damming of rivers and streams, the "tide mill" or paddle wheel driven by tidal waters has been used in Europe since antiquity. This ancient invention (the oldest known examples date back to 1100 A.D. in Britain and France) has been neglected as a means of securing power largely because of the difficulties of expanding the simple mill into a larger power plant operation; compared to river plants, the energy output is not only intermittent (dependent on the tides) but the problems of damming estuaries and building suitable turbines are technically more difficult.

Until recently, electricity generated from dammed rivers or coal-driven thermal plants has been so cheap that the relatively high construction costs involved in tidal power development could not be economically justified. Apart from the tidal power plants at La Rance on the Brittany coast of France and in the Kislaya inlet on the shore of the Soviet Union's White Sea, the tides have not been exploited as a source of energy.

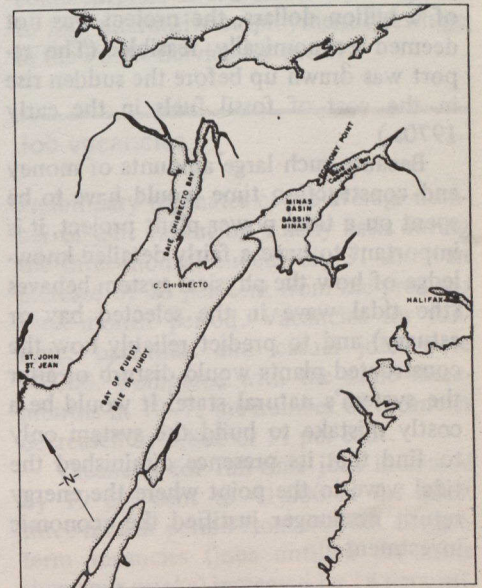
Renewable and pollution free

However, with the increasing scarcity of fossil fuels and the exploitation of many of the best river sites for hydroelectric power generation, other sources of energy have taken on increased importance. Along with the energy derived from the wind, the sun, molecular hydrogen combustion, and nuclear fusion, the tides are being seriously considered as a possible power source to meet the needs of the future. In a time of ecological sensitivity, tidal power has two very attractive characteristics, neither of which is shared by fossil or nuclear fuels: it is a constantly renewable energy source, and no pollution arises from the generation procedure.

The structure of a tidal power plant takes the form of a dam or dike across an inlet with sluice gates and turbines spaced along its length. The simplest type of operation is to admit the rising tide through the sluice gates into the basin behind the barrier and close them at high tide; when the tide falls the water is then released through the turbines with the generation of electrical power. This is known as a "single-effect" operation. Using more sophisticated two-way turbines, power can be generated in both the ebb and flow periods of the tide. This "double effect" operation is used at the La Rance power plant in France.

Canadian sites

Of the important sites in the world suitable for tidal power generation, several are located in Canada; examples are



Map of the Atlantic coast showing the Bay of Fundy and its two main headwaters, Chignecto Bay and the Minas Basin, separated by Cape Chignecto. Economy Point, shown on the western side of the Minas Basin, is considered one of the best sites for construction of a tidal power plant.

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Fifty-two years ago tomorrow...

William Mackenzie King led the Liberals to victory for the second time in a general election. He was re-elected in 1935. King, who was prime minister from 1921-1926, 1926-1930 and 1935-1948, held the office longer than any other Canadian prime minister.