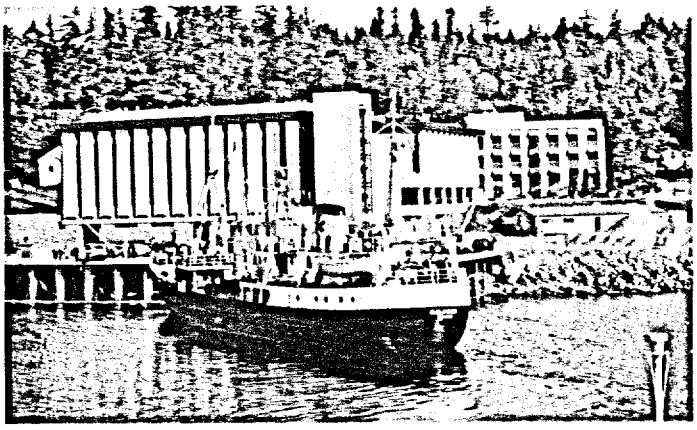
THE WORLD ACCORDING TO GARP

International co-operation is helping to increase man's collective knowledge of the oceans without placing too great a financial burden on any one nation. The Global Atmospheric Research Program (GARP) is a good example.

Jointly sponsored by WMO and the International Council of Scientific Unions, GARP was designed to develop models of the circulation of the earth's atmosphere.

In 1979, in the first GARP global experiment, about 300 drifting buoys were deployed in oceans in the southern hemisphere. Primarily set up to relay position and sea-surface temperature, the buoys transmitted data to a satellite which in turn beamed it to a receiving station in France. Data were then forwarded to the Marine Environmental Data Service in Canada, among other centres, for analysis. An enormous amount of information was gathered in the experiment. Much of it is still being studied, and the results of this international effort are bound to be far-reaching in the advancement of knowledge, and in encouraging further co-operative projects.

One reason for heavy Canadian involvement in world climate studies is that the north Atlantic is a perfect subject for investigation — an ocean which offers scientific researchers the full range of atmospheric conditions, including the vast movement of warm waters from the equator into northern latitudes, and partly into the Gulf Stream. This phenomenon does much to moderate Europe's climate, which otherwise might be harsh.



Research vessel arrives at Nanaimo, British Columbia.

Many of the studies in which Canadian scientists are engaged focus on the horizontal frontier where sea and atmosphere meet. Others are concerned with areas where masses of warm and cold water merge. From the investigations, scientists hope to learn more about how heat, salinity, wave momentum and gases are transferred across the ocean surface, how sea waves are formed and grow, and what factors control the formation, journeying and final decay of icebergs.

Much of this work is done at the Bedford Institute by the staff of the Atlantic Oceanographic Laboratory (AOL). One study, completed in 1980, has produced a new understanding of wind stress and heat exchange occurring when masses of air move over ocean areas. This particular study required 24-hour-a-day measurements of ocean temperature, turbulence and wave height over a period of months. To carry them out, AOL designed an instrument platform equipped with receiving sensors and moored it off Halifax where, for 20 months, it withstood the full blast of north Atlantic winds and waves.

The Labrador Sea is another frontier that has become the subject of accelerated research. Apart from its location on the new northern energy transportation route, the Labrador Sea is a mixing bowl for cold northern and warm southern waters. The extent of this mingling is directly related to weather and climate. If, for instance, the supply of warm waters of the south tapers off for any length of time, temperatures drop even further. If the supply is increased, northerners can loosen their parka hoods.