

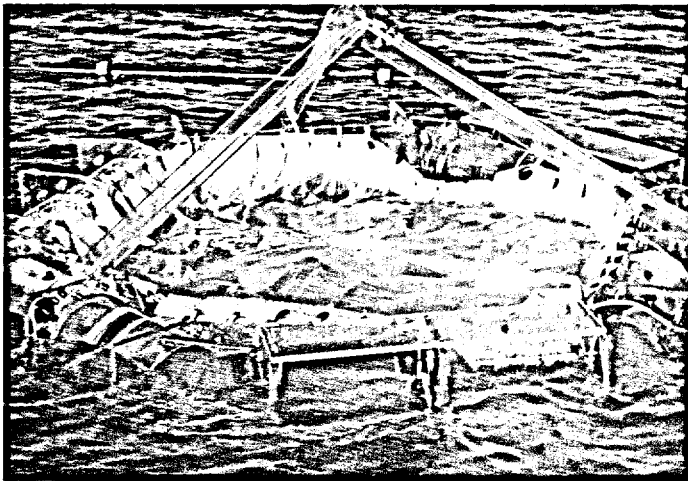
FISHERIES RESEARCH CENTRES

Recently completed is Canada's Northwest Atlantic Fisheries Centre (NAFC), one of the world's foremost fisheries research facilities. Built on a 12-hectare site in the rugged White Hills area overlooking St. John's, Newfoundland, NAFC's futuristic exterior is a perfect mirror for the leading-edge technologies found inside.

About 400 people work in the 30 buildings stretching across the site. The NAFC complex houses some of the most advanced equipment and testing facilities available anywhere.

The major research areas of interest to the centre include: marine, freshwater and anadromous fish management; habitat protection; and experimental ecology. NAFC is also responsible for looking after the 500 small craft harbours which indent the Atlantic coastline throughout this rich fishing region.

The Pacific Biological Station in Nanaimo, British Columbia is a fisheries research station that specializes in studies and enhancement of the Pacific salmon species, as well as other west coast species; the Freshwater Institute, in Winnipeg, Manitoba, is engaged in research of freshwater species; the Sea Lamprey Control Centre in Sault-Sainte-Marie, Ontario is headquarters for work controlling sea lamprey in the Great Lakes; the Arctic Biological Station in Sainte-Anne-de-Bellevue, Quebec specializes in the study of marine mammals; and the St. Andrews Biological Station in St. Andrews, New Brunswick specializes in the study of Atlantic salmon and other east coast species.



Ocean enclosure used for pollutant pathway studies by international groups.

OCEANOGRAPHY

Oceans cover 70 per cent of the globe. Oceanography is an international science. No one nation possesses the resources—financial or otherwise—to investigate the oceans in isolation.

Still less than 150 years old as a science, oceanography has

been shaped by the sheer impossibility of trying to deal with or even understand global phenomena from the limited perspective of a single discipline. It has developed in Canada, and elsewhere, not so much as a science of its own, but as a multidiscipline — including physics, chemistry, biology and mathematics — on ocean questions. Studies of the oceans would be hopelessly inadequate if not co-ordinated with investigations of the atmosphere or of the land mass. Oceanography is closely linked with meteorology, geology and geophysics.

Ocean research is the responsibility of the Ocean Science and Surveys (OSS) section of the Department of Fisheries and Oceans. OSS defines its mandate as "research and development of the marine environment around and within Canada — and the optimum use of renewable and non-renewable resources". This covers a very long waterfront. Canada's coastline, measured at 131 650 nautical miles, is the longest in the world. The nation's ocean research effort, or at least that part of it conducted by the federal government, is carried out by roughly 112 scientists backed by support staff operating in research establishments on the Atlantic and Pacific coasts, and at other locations inland.

The Bedford Institute of Oceanography and the Institute of Ocean Sciences are the Atlantic and Pacific bases for Canadian oceans studies. Both enjoy an international reputation for excellence and innovation in the field. The Bayfield Laboratory for Marine Science and Surveys in Burlington, Ontario and the Champlain Centre in Quebec City, Quebec also conduct oceanographic research.

OCEAN CLIMATE

In modern times, the cliché question, "can't anyone do something about the weather"? has taken a remarkable twist. The answer is that man does seem to be changing the climate, with undetermined implications for the future.

That the climate of earth is relatively moderate, and not a Venus-like inferno is due to the fact that radiation reaching it from the sun is reflected back into space as infra-red radiation. The growth of a layer of carbon dioxide (CO₂), produced by decades of burning of fossil fuels, overlaid on natural CO₂ production in photosynthesis, may be blocking the escape of the sun's radiation. The phenomenon expected as a result is called the greenhouse effect: heat energy enters the earth's atmosphere but cannot be reflected back into space. This "extra" heat is dissipated within the atmosphere, and a general warming of world temperatures may result. Some scientists are predicting that temperatures may rise by about 3 degrees C for most of the globe, ranging as high as 10 degrees C in northern latitudes. Other scientists believe that the world is now in a cooling cycle and any such additional heat inputs would simply help to reduce its effects.

Many nations have been conducting independent climate studies for some time. But now, this subject seems to be at least one area which most agree transcends national boundaries. For the past 13 years, Canada has actively participated in a program conducted by the World Meteorological Organization (WMO) to study climate, and the way it is shaped by the sea, the atmosphere and, particularly, by the interactions of both.