

motion. The small part of it nearest land (called fast ice) is stationary, but in the great open stretches of the Arctic and Baffin Bay and Hudson Bay the ice is as restless as the sea below, moving with the winds and currents, following surprisingly constant paths, breaking up — there are always pools and leads of open water — crashing and throwing up great ice ridges, 10 to 20 feet high. This movement and its consequences made man's exploration of the Arctic with sledges and dogs perilous. The ice moved under the explorers, drifting (they could not tell in what direction) and the ridges and open leads prevented them from moving far in a straight line.

Today the Arctic is explored and charted from planes and helicopters. The Canadian Meteorological Service forecasts the movement of ice with great accuracy and it is possible to chart the passage of ships through much of the pack.

But there are new kinds of hazards. Because an oil spill in the Arctic would linger on and have uncalculated effects on its fragile eco-

system, Canada exercises ecological control. There are other factors at work, however, over which no one has control. The northern ice reserve — the ice on the sea and the glaciers on the land — has been melting for a century. It has lost about one per cent of its mass — a trifling percentage which is, nevertheless, the equivalent of all the water contained in all the fresh water lakes in the world. The ice mass has been growing and diminishing since the world began, following laws of which man still has little grasp, but in recent years new elements have entered the unknown equations. Industrialization has changed the geo-chemical composition of the earth's atmosphere. It has been polluted by sulphur, rhodium 102, carbon dioxide and other substances.

Some scientists believe that the increase in carbon dioxide alone could raise the earth's temperature and melt the ice. Many disagree; they believe that the ice reserve is too cold to be affected. But at this point no one knows very much about the Arctic ice.

*Below, a ship makes its way slowly through a field of pancake ice. Pancake ice is new ice in nearly circular pieces about 30 cm and 3 m in diameter. The raised rims are formed when the rotating pieces strike against each other. At right is a pair of pingoes in the Mackenzie River Delta in Canada's Northwest Territories. These volcano-shaped cones have a permanent core of solid ice and an outer coating of soil, sometimes with vegetation on it. In 1970, the Canadian scientific ship Hudson found ranges of submerged pingoes in the Beaufort Sea. The discoveries meant that the long-sought Northwest Passage around the top of North America was still blocked for large ships. The submerged pingoes could pierce and rip the bottom of an unsuspecting deep-draft ship the way a kitchen knife can cut a fish.*

