

## LOREX

In March 1979, the Department of Energy, Mines and Resources began a \$1.2 million interdisciplinary project to study the geologic nature and origin of the Lomonosov Ridge, a mountain range on the floor of the Arctic Ocean. The team of forty-two scientists and technicians also included participants from the Department of Fisheries and Oceans, and from McGill, Dalhousie and the University of Washington. It was called LOREX and was the largest scientific expedition ever conducted that far north.

The Lomonosov Ridge stretches for nearly 1,250 miles beneath the Arctic Ocean, from the northern tip of Ellesmere Island toward the continental shelf of the USSR. Its width ranges from 15 to 125 miles, and its submerged peaks rise 10,000 feet above the seabed.

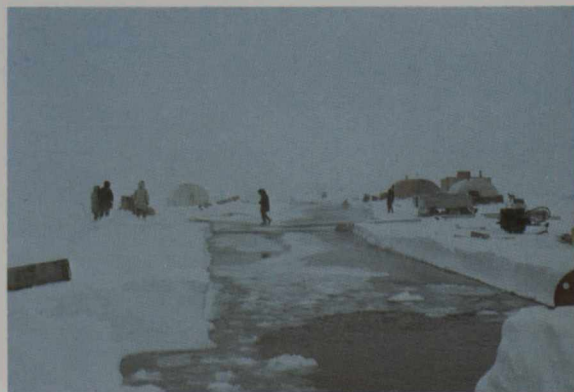
The expedition established a base camp on a two- and one-half square mile chunk of floating pack ice, fifty-six miles from the North Pole. The nearest land was 550 miles south. It took the scientists nine days to set up camp on the moving ice and three days to take it down two months later. Temperatures dropped as low as  $-40^{\circ}\text{C}$ ., and the winds sometimes blew at over 60 m.p.h. The ice pack drifted at widely varying rates, from 0 to 4,000 feet per hour, and at one point the camp was only twenty-two miles from the Pole.

The men lived and worked in heated tents and huts. They cut four hydroholes into the ice, which was six or more feet thick, through which they lowered their equipment.

Interlocking experiments were designed to provide a complex survey of the ridge. These

included gravity observations; plumbline deflection measurements; seismic reflection profilings; geomagnetic soundings; biological tests; heat flow, ocean current and acoustic measurements; and sediment and core analyses. Eleven hundred photographs, black and white and colour, were taken from sixteen locations with the use of an undersea camera developed by the Bedford Institute of Oceanography in Dartmouth, Nova Scotia.

The experiments appeared to confirm that the ridge is a fragment from the Eurasian continental shelf rather than an oceanic formation, and that it broke off in the mid-cretaceous period or later. It will take several years, however, before the results are fully analyzed. Information gathered during the LOREX project will undoubtedly be valuable in future oil and gas exploration in the Arctic basin.



*After a storm, cracks and leads appeared in the pack ice, and the camp had to be moved.*



*LOREX geophysicists at work in their hut.*