



Side scan sonar gave graphic pictures of the newly found perils to navigation. The pingo-like peaks could rip open ship bottoms and the threat of new gouges in the bottom made conventional pipeline impractical.

keels hit the bottom even sixty miles out where the water was three hundred feet deep.

The following week the *Hudson* found that, for a time at least, tankers were as impractical in arctic waters as pipelines. The previous summer a Canadian ship, the *Sir John A. Macdonald*, had escorted the *Manhattan* on her historic voyage. The *Macdonald's* sonar had picked up an unexpected shoal, rising to within fifty-three feet of the surface. Rear Adm. A. H. G. Storrs, who was aboard, had been so startled that he poked his finger through the sonar chart. The shoal was informally named the "Admiral's Finger."

The *Hudson* would now find that the name was more appropriate than imagined—the side-scan sonar showed that the Admiral's Finger was not a proper shoal but a pingo, a finger of ice sticking up from the bottom. It was within fifty-three feet of the surface, and, since the *Manhattan* drew fifty-six feet, the pingo could have opened up its hull from bow to stern. In the next few days, the *Hudson* and the smaller ships working with her, the *Richardson*, the *Baffin* and the *Parizeau*, would find that there were more dangerous fingers in the Beaufort Sea than at a convention of eye gougers. They could (and would) be charted, but there was no way (or at any rate no way yet imagined) by which the Beaufort Sea could be made safe for deep-draft ships. Any ship in the Sea must contend with the ice pack. Once locked in the pack, a ship moves with the pack and the pack could drag the ship across the pingoes.

As a result of the *Hudson's* disconcerting discoveries, the Canadian government is now very reluctant to have ships travel through the Northwest Passage. Also, it cannot allow pipelines (as now conceived) on the continental shelf. One

tanker ripped open by a pingo or one offshore pipeline sliced by an ice keel could disrupt the fragile ecological balance of much of the Arctic.

The last leg of *Hudson 70* began at Resolute, an outpost just about at the center of the width of the Americas (if you dropped a line down from Resolute, it would go through the Hudson Bay and the Gulf of Mexico; most of North America would be to the left and all of South America to the right).

Ahead was Baffin Bay, a loop around Newfoundland (to please the Newfoundlanders in the crew) and Halifax. There was to be one last major discovery: Baffin Bay is not a bay at all but an ocean. An ocean is a body of water between two distinct land masses. Each land mass rests on its own plate and each plate moves, though slowly, on the molten core of the earth. The *Hudson*, working with the *Baffin* and a U.S. Coast Guard cutter, the *Edisto*, took seismic, gravity and magnetic readings across the Bay. They found that the Bay indeed separated the North American plate from the Greenland plate. Its own bottom was much thinner than the two plates, having been formed (probably) by new material seeping up from the plastic mantle of the earth, as Greenland and Canada drifted apart.

On October 16, 1970, the *Hudson* came home to Halifax, having gone 57,956.5 miles and having determined or discovered along the way the scientific facts listed above and no doubt a good many others which will take some additional time to work up. To a Canada which has become increasingly aware of the fragility of the Arctic ecology, and to a world which shares common problems of pollution, fuel and food, it was a voyage of historic importance.