

tory, and during that eventful week in August, it was moving into the last phases of a year-long, 58,000-mile trip from Halifax to Halifax, down the east coasts of the Americas, around the Horn, up (or down) to Antarctica, along the west coasts to Vancouver, through the Beaufort Sea and Baffin Bay, around Newfoundland and home. It carried a computer; instruments to measure currents, gravity, sonic waves, microscopic organisms and chemical traces in the sea; a dog and, at one time or another, 120 scientists of all stripes and several nationalities.

The voyage of the Canadian scientific ship *Hudson* was one of the most significant explorations in the history of the oceans. The Department of Energy, Mines and Resources budgeted \$1,500,000 for it, and Dr. Cedric Mann, a physical oceanographer from the Bedford Institute of Oceanography, began planning it in 1967. It was to be called *Hudson 70* and was to be a major, broad-scale oceanographic exploration involving a variety of scientific disciplines, with a heavy proportion of biologists. It established Canada, appropriately, as a leader in a relatively new field, oceanography. Canada has oceans on three sides (the Atlantic, the Arctic, and the Pacific) and the longest coastline in the world. Its continental shelf, the part of the land mass which extends like a submerged threshold into the seas, is 1,400,000 square miles, half as big as the country itself. The shelf is also a storehouse of natural resources, including oil.

The *Hudson* left Halifax on November 19, 1969, with Capt. David W. Butler in command, Dr. Mann as Chief Scientist, scores of other scientists on board or expected, each with his own mission, and a crew composed mostly of Newfoundlanders. Dr. Mann would attempt to

lay current metres across the five hundred mile wide Drake Passage (the passage which in navigational terms corresponded to the Northwest Passage) between Cape Horn and the northernmost tip of Antarctica; Carol Lalli, a biologist from McGill University, would come aboard at Rio de Janeiro to collect samples of two species of tiny sea creatures called pteropods; Peter Beamish, a biologist with an acoustical engineering background, would try to record the ultrasound emitted, he believed, by baleen whales; Bill Sutcliffe would measure the ribonucleic acid in zooplankton; Bill von Arx, of Woods Hole Oceanographic Institution in Massachusetts, would try to measure the gravitational shape of the Pacific.

In the next eleven months, the sailors and scientists would work their way through hundreds of stations—places where the scientists dropped instruments into the deep while the *Hudson* stood still. (To keep the ship from moving with the current, the *Hudson* had a propeller in the bow to balance the push of the water.) The voyagers suffered the mild hardships of twentieth century seafaring: bouts of seasickness despite the ship's stabilizers, the discomfort of a malfunctioning air conditioning system, and the exasperation of constant exposure to each other. They visited some of the world's stranger ports: the abandoned British base at Admiralty Bay in

Dr. Bosko Loncarevic checks the geophysics console while surveying the Beaufort Sea. The Hudson and her sister ships found ancient ice pinnacles jutting up from the bottom, as indicated at right, and deep cuts in the bottom caused by keels extending down from the ice pack, as evidenced below.

