OCEANOGRAPHY

Dyes to Mark Icebergs

Ten-foot patches of green, red and four shades of blue will warn approaching ships of dangerous icebergs as they make their way to the Gulf Stream—By Barbara Tufty

➤ ICE SCIENTISTS will tag migrating icebergs with colorful dyes this year, just as bird researchers tag migrating birds with color to keep track of their journeys.

As huge chunks of ice drift toward Newfoundland's Great Banks area, the world's busiest shipping lanes, they will be marked with 10-foot patches of high-intensity dye, shot by arrows from the deck of the U.S. Coast Guard oceanographic ship, Evergreen, about 100 to 150 yards away.

About 25 icebergs will be spotted with green, red and four shades of blue in a brand new experiment.

The best method of keeping ships from colliding with icebergs is to warn pilots about their exact location, said Lt. Cmdr. Ronald C. Kollmeyer, oceanographer with the U.S. Coast Guard, which operates the 51-year-old International Ice Patrol.

Man still has not learned how to destroy these huge mountains of ice, he said. Researchers have tried to bomb them with high-intensity fire bombs, crack them by shooting them with cannon, and cover them with lampblack to trap the heat from the sun to melt them—all to no avail.

Icebergs are formed from glaciers as they grind and flow into the seas. The front ends of these rivers of ice break off in chunks, sometimes 10 times the size of the Empire State Building.

Some of the 20,000 icebergs that are created each year come from Arctic islands, but most come from the west coast of Greenland where about 20 active glaciers constantly slip to the sea and manufacture the bergs. Once created, or "calved," as researchers say, these ice chunks move on a 1,800-mile journey that may last two or three years before they drift into the shipping lanes. Traveling about 10 miles a day they are first swept northward by the West Greenland Current into Melville Bay where they are frozen solid by the first winter. The next melting spring and summer they voyage south down the Labrador current as far as Cape Dyer on the Baffin Island coast. Here winter catches them again and they freeze for several months, only to continue the next spring past Labrador and Newfoundland into the warm Gulf Stream.

About 40 icebergs each year are large enough to worry the scientists and shipping industry, reports Lt. Comdr. Kollmeyer. Once they drift into the Gulf Stream, they are quickly melted down in a week or 10 days.

With 80% to 95% of their bulk hidden under water, icebergs menace the passenger freight and fishing vessels, especially in the fog-enshrouded area off Newfoundland. Radar is somewhat ineffective because of the distorted image reflected from the many-faceted crevices, pinnacles and cracks.

With accurate information on the position and drift of the icebergs, ships can avoid them. This year the Coast Guard will use an oceanographic radar-transmitting buoy to serve as a fixed point from which ships can measure the ice movements with information from Coast Guard planes.

The Coast Guard maintains a base in Argentia, Newfoundland, all year, but during the most dangerous months from February to July, flights are increased to patrol the drifting icebergs and warn vessels of their movements. The Guard is also conducting scientific studies to determine rate and causes of melting and the factors that influence their drift.

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Modern Sea Search Uses Sonar, Television

➤ UNDERWATER TELEVISION and high-frequency sound waves, man's most modern methods for searching the ocean floor for wrecks of ships and airliners, were utilized when the search began for the Eastern Air Lines plane that crashed Feb. 8, in about 75 feet of water in the Atlantic Ocean, south of Long Island.

Sunken objects are difficult to find under water, since light waves are absorbed in only a few feet of water. Artificial lighting is effective only for about 30 feet.

Sometimes when the weather is fair and few waves ruffle the ocean surface, wrecks near shore can be spotted from ships or airplanes.

Underwater objects can also be located by sonar sound waves created by bells, explosions or hammers. The distance of an object can be determined by measuring the time it takes for the echo to bounce back.

Latest method of scanning the ocean floor is with a new sonar system that sends out ultrasonic energy waves, then picks up the echo and reproduces the results in a series of visual television images, as shown in the photograph below.

The ultrasonic sonar equipment, developed by Westinghouse Electric Corporation, is enclosed in pressure-tight casing and towed from a surface or submerged vessel at a distance of about 200 to 400 feet above the ocean bottom. Transmitters send out narrow fan-shaped beams of sound energy that are reflected back off objects, picked up by receivers and sent over cables to produce visual images on a television-type screen.

The term "sonar," formed from the first syllables of the words "sound navigating ranging," originally was applied only to underwater equipment that transmitted sound waves and received the echoes. More recently the term describes any system where high-frequency sound energy is used to observe objects under water.

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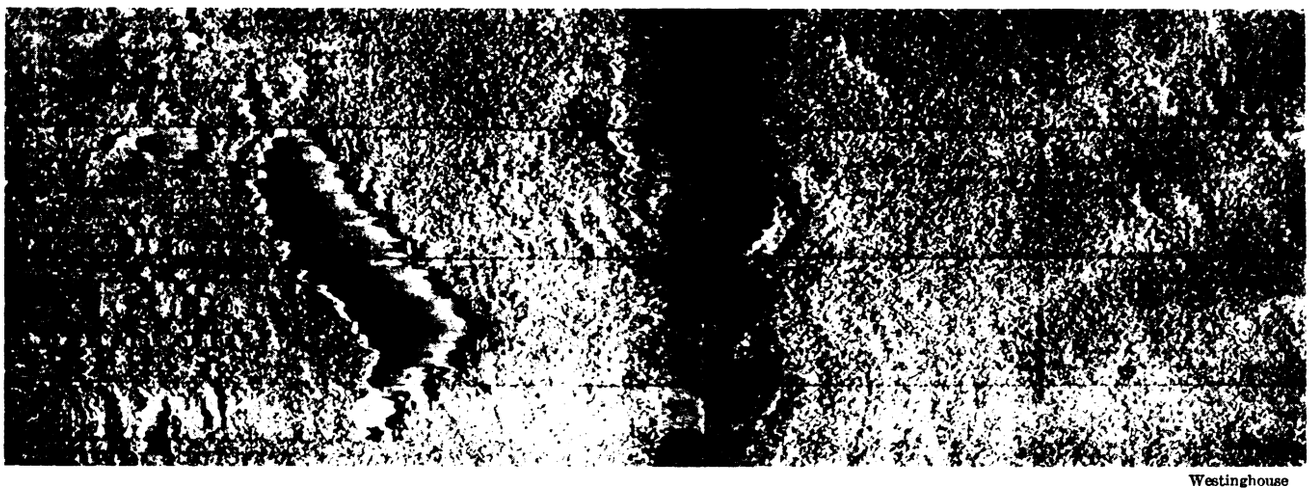

Westinghouse

OCEAN FLOOR—The floor of the Atlantic Ocean 8,000 feet deep is scanned by the new Westinghouse ultrasonic system. The chasm or ravine to the left is about 600 feet long. The dark central streak is the unscanned portion directly beneath the vehicle.