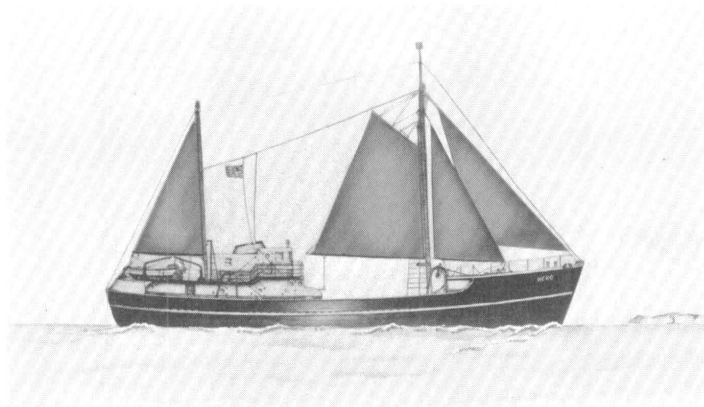


Hero: A New Antarctic Research Ship

Adjunct to Palmer Station Permits Diversified Research Program



(NSF Drawing)

Artist's concept of Hero

In 1820, a flotilla of five vessels from Stonington, Connecticut, sailed across the Drake Passage and dropped anchor in the sheltered waters of a group of islands now known as the South Shetlands. Its mission was to hunt the southern fur seal. Toward that end, the flotilla's leader, Captain Benjamin Pendleton, instructed Nathaniel B. Palmer, 20-year-old skipper of the sloop *Hero*, to explore the waters southward. Palmer sailed his 30-foot vessel first to Deception Island, crossed a broad strait toward the next high land visible to the south (Trinity Island), skirted it, and then saw a narrow stretch of water (Orléans Strait) between that island and a long, rugged coast backed by a high range of mountains (now known to be part of the Antarctic Peninsula) that lay still farther south. Fast ice kept *Hero* from reaching land, and Palmer was soon forced to rejoin the Stonington fleet in the Shetlands. Whether the young skipper found fur seals in commercially attractive numbers on this voyage is not recorded, but it is likely that he saw many of them. In addition, he has been credited as being the first person to view the antarctic mainland.¹

In recognition of that discovery, Palmer's name has been officially identified with the southern part of the Antarctic Peninsula (Palmer Land)² and

¹ The British sea captains William Smith and Edward Bransfield, in the brig *Williams*, and the Russian captain Thaddeus Bellingshausen, in *Vostok* and *Mirnyy*, have also been credited with the first sighting of the Continent.

² The Peninsula was previously known by different names to different countries (Palmer Peninsula to the United States). In 1964, the United States and United Kingdom agreed to call it the Antarctic Peninsula; subsequently, several other Treaty nations have accepted this name.

with the U.S. research facility (Palmer Station) on Anvers Island, off the Peninsula's northern coast. Most recently, in further recognition of Palmer's bold voyage of discovery, the National Science Foundation named its new, 125-foot antarctic research ship in honor of his sloop *Hero*.

The new *Hero*, a diesel-driven, but sail-equipped, wooden, trawler-type ship designed to round out the facilities at Palmer Station, was launched on the high tide of March 28, 1968, at South Bristol, Maine (see next page). By June, *Hero*'s masts and rigging will have been added and she will have been thoroughly outfitted for a series of shakedown cruises. In late summer, when these have been completed, she will sail south towards the Strait of Magellan and her antarctic port at Palmer Station.

Like her namesake, the new *Hero* will operate in Antarctic Peninsula waters, but, unlike the sloop, she will be devoted to research instead of commerce. Specifically, *Hero* will contribute to scientific knowledge of the Peninsula and nearby waters as part of the U.S. Antarctic Research Program. In doing so, she will (1) transport scientists to points of interest on the Peninsula's coast and islands, (2) serve as an oceanographic station for biological, geological, and other studies in-shore and along the continental shelf of the Peninsula, and (3) provide transportation between ports in southern Chile and Argentina and Palmer Station, as well as between Palmer and the scientific bases of other nations in the Peninsula region.

Region of Operations

The Antarctic Peninsula, which stretches in a serrated arc from about 73°25'S. to 63°20'S., is a

The Launching of Hero

At about 1030 (local time) on March 28, 1968, the National Science Foundation's new research ship began sliding down the ways at the Harvey F. Gamage shipyard in South Bristol, Maine. At that moment, the ship's sponsor, Mrs. Leland J. Haworth, wife of the Foundation's director, cracked the traditional bottle of champagne against the vessel's bow and declared, "In the name of the United States, I christen thee *Hero*."

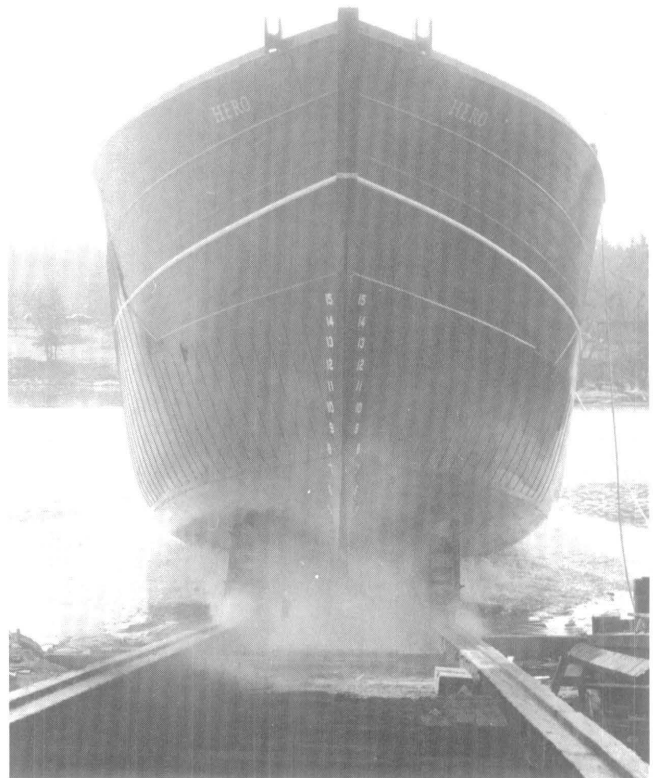
The event, which culminated several years of ship design and construction, was witnessed by many local citizens and about two dozen distinguished guests. In addition to Mrs. Haworth, they included Representative Peter N. Kyros (D-Maine); Dr. Leland J. Haworth, Director of the National Science Foundation; Dr. T. O. Jones, Director of NSF's Environmental Sciences Division; Mr. Thomas Pross, U.S. Maritime Administration; Mr. Stanley Potter, the ship's designer; and Mr. Harvey F. Gamage, her builder.

Following an inspection of the ship, a luncheon was held at the Naval Air Station, Brunswick, Maine, for the distinguished guests. Mrs. Haworth was presented a plaque (carved from South American greenheart, the same kind of wood with which the vessel is sheathed) evidencing her sponsorship of the new ship. Congressman Kyros was the principal speaker.

Mrs. Leland J. Haworth christens Hero. Looking on are Mrs. Thomas O. Jones, matron of honor, and Vice Admiral Roy A. Gano, USN (Ret.), master of ceremonies.

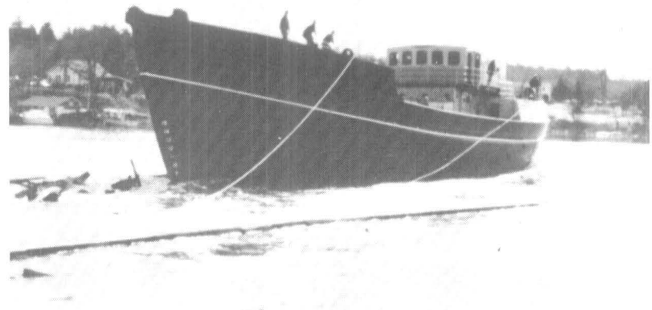


(Photo by U.S. Maritime Administration for NSF)



(Photo by U.S. Maritime Administration for NSF)

Above, Hero leaves shipyard at South Bristol and, below, moments later, floats in adjoining harbor.



(NSF Photo)

complex geographical feature. It consists essentially of an ice-capped central plateau, in places more than 8,000 feet high, and of ragged, rocky coasts sprinkled with numerous islands. Huge glaciers flow from the ice cap to the sea.

In contrast to the climate of the interior, which is characterized by dry air masses, the climate of the Peninsula is of the polar maritime type, much like that of the Aleutians. Along the coasts, temperatures range from -29°C . to $+4.5^{\circ}\text{C}$. and average about -4.5°C . Severe storms occur frequently as low-pressure systems cross from the South Pacific to

the South Atlantic. Persistent low-lying clouds present a further hazard to ship operations and preclude aerial search-and-rescue activity much of the year.

The Peninsula is flanked on the east by the ice-covered Weddell Sea and on the west by the South Pacific Ocean. It is separated from South America by the 600-mile-wide Drake Passage, whose waters are generally considered the stormiest in the world.

Ocean water of the Peninsula region is highly productive of marine life because of the effect of low-pressure systems near the Continent, which cause upwelling of bottom waters and the conse-

quent occurrence of nutrient salts (silicates, nitrates, and phosphates) near the water's surface. Phytoplankton, particularly diatoms, are so numerous that in many places they form a "bloom" on the water surface and discolor vast areas of ice. Copepods, krill, pteropods, ostracods, and jellyfish "graze" on the phytoplankton. The benthic fauna on the continental shelf is luxuriant, including bryozoans, sponges, hydroids, crustaceans, molluscs, starfish, sea lilies, sea cucumbers, and sea spiders. Most fish of Peninsula waters are of the genus *Notothenia* (antarctic cod), ranging from 3 to 18 inches in length. Seven species of whales and six of seals comprise the mammalian population.

The terrestrial vegetation consists of about 70 species of mosses and about 350 of lichens. The land fauna is comprised of two species of midge and many species of mites and springtails, the latter being the largest form endemic to Antarctica. Among the many birds that visit the Peninsula during the summer, the sheathbill is unique in that it is the only one without webbed feet. Penguins occur in abundance along the coasts during the breeding season.

The continental shelf adjacent to the Peninsula is rather broad on the east side and narrow on the west. Extremely rugged bottom topography has been mapped in the vicinity of the South Shetland and South Orkney Islands.

On several of her early cruises, the antarctic research ship USNS *Eltanin* explored the Drake Passage, Scotia Sea, and waters in the vicinity of the Shetland, South Orkney, South Georgia, and South Sandwich Islands, including the northern fringes of the Weddell Sea (to about 67°S.). Off the Peninsula's west coast, she has sailed within 50 miles of Adelaide Island. Icebreaker-supported investigations have been carried out in the waters immediately adjacent to the Peninsula as far south as Stonington Island. Other recent studies have been conducted by ships of Great Britain, Chile, Argentina, and the U.S.S.R. Much of the inshore area has not been studied, however. It is for this work that *Hero* and her supporting laboratories and logistics facilities at Palmer Station were designed.

Scientific Programs

Throughout the austral summers, *Hero* will work in Peninsula waters. As the sea ice closes in, she will sail northward and operate during most winters from ports in South America.³ While in the Peninsula region, *Hero* will serve as a floating laboratory for investigations of both marine and terrestrial subjects—a unique arrangement, considering that most re-

search ships are dedicated almost entirely to oceanic research. Her commitment to land investigations comes about because most of the Peninsula is accessible only by ship and ship's helicopters and boats, and, in the past, these have been available only occasionally to Palmer Station scientists. *Hero* will provide the first access to many coastal areas.

The ship will be equipped for hydrographic studies, bathythermograph lowerings, continuous water-surface and air-temperature recordings, bottom photography, precision depth recording, magnetic and seismic reflection recording, and piston and gravity coring. Normal over-the-side biological collecting gear will be available as needed. Because of limited berthing and laboratory facilities, the shipboard research will require highly coordinated and integrated planning. It is expected, therefore, that on each cruise, investigations will be carried out either by scientists from a single institution or by representatives of several institutions who have arranged mutually complementary studies.

Development of the U.S. Antarctic Peninsula Program

The Antarctic Peninsula has been the scene of several exploratory and research efforts by the United States, including the First Antarctic Developments Project (*Operation Highjump*) of 1946-1947 (Bertrand, 1967), the Second Antarctic Developments Project ("Operation Windmill") of 1947-1948 (Smith, 1968), and the Ronne Antarctic Research Expedition of 1947-1948. The United States did not operate a station on the Peninsula during the International Geophysical Year, but the post-IGY expansion of the U.S. program to embrace biology and other sciences that had not been a part of the IGY program has again stimulated U.S. interest in the Peninsula.

Following the decision to establish a U.S. research station on the Antarctic Peninsula, a team comprised of polar scientific and logistic experts conducted an extensive survey of the region in January-February 1963. From an examination of about 30 potential station sites, Arthur Harbor on the southwestern coast of Anvers Island emerged as the one

³ In September 1965 and August 1966, reconnaissance flights were made over the Bransfield and Gerlache Straits as far south as the Argentine Islands to examine winter sea-ice conditions (Smith, 1966). Observations indicated that *Hero* probably could work safely in these waters during the winter, but that difficulty would be encountered making a passage to South America through the wide belt of pack ice north of the South Shetland Islands. Hence, there are no immediate plans for *Hero* to remain in antarctic waters in the winter.