

Michael Carroll and Rosaly Lopes

Antarctica

Earth's Own Ice World

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Michael Carroll and Rosaly Lopes

Antarctica: Earth's Own Ice World



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Cover photo by the authors. In the background rises the mist-shrouded summit of Mount Erebus.

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Preface: Beginnings of an Adventure



Fig. A The simmering cauldron atop Mount Erebus drapes icy mists across a royal blue Antarctic sky (photo by the authors).

viii Preface: Beginnings of an Adventure

Rising 3795 m (12,448 feet) above the glistening plain of Antarctica's Ross Sea Ice Shelf, Mount Erebus is the southernmost active volcano on Earth. First seen by James Clark Ross' expedition of 1841, the volcano offers insights into discoveries never dreamed of by those early explorers, revelations that extend across the moons and planets of our Solar System. The mountain's resemblance to other worlds draws researchers from diverse fields, and in 2016, it drew us on a 30,000-km voyage to its flanks. To the sponsoring agency, the National Science Foundation, seasoned researcher Rosaly Lopes was a must: she is a planetary geologist at the Jet Propulsion Laboratory in Pasadena, California, an expert on volcanoes of the outer Solar System. Space artist and science journalist Michael Carroll's appeal to the NSF lay in the fact that he has often depicted volcanic landscapes on other worlds and written about them as well. Together we travelled to the Harsh Continent under the auspices of the National Science Foundation's *Artists and Writers program*, part of the United States Antarctic Program. Our trip was made possible by the networks and resources laid down across the southern regions over more than a century of exploration and discovery.

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1



The Lure of the Poles



Fig. 1.1. Mount Erebus rises some 3,795 meters (12,500 feet) above the Ross Ice Shelf. Fuel depots line a roadway emblazoned across the snow and ice, while flags mark dangerous sites or routes back to safety in a whiteout (Photo by Michael Carroll)

2 The Lure of the Poles

Goethe said, “The ideal of beauty is simplicity and tranquility.” He never saw Mount Erebus. The 3,795 meter (12,448 foot) tall volcano soars majestically into Antarctic skies, collared by mist and fog. Multiple craters crown its summit, while its fumaroles and vents build complex towers and ice columns. Erebus eruptions generate the rarest of volcanic crystals, seen on only one other volcano on Earth. And while the mountain may seem tranquil most of the time, its beauty has come at the hand of violent forces.

Erebus is the southernmost active volcano in the world, and it is very active. Meter-sized lava bombs occasionally soar over the rim, impacting its flanks with molten rock. In fact, a science outpost called the Upper Erebus Hut had to be abandoned when two such projectiles landed just beyond the structure. Erebus presents a hostile environment to explorers, but one with unique formations that may offer some of the best terrestrial insights into the features on the icy moons of the outer Solar System and, in particular, Saturn’s dynamic moon Enceladus. With Enceladus in mind, the authors Lopes and Carroll embarked on their 2017 expedition to Antarctica. Our trip added to a rich litany of explorations completed over several centuries.

Legends Before History

Writings of the ancient Greeks mention a theoretical southern continent as early as 350 BC. The Greeks reasoned that since the northern part of the world, the arctic, was watched over by the constellation of the bear (Arktos), it made sense that the world’s equilibrium would demand a similar cold region in the south. They coined the term “Ant-Arktos” for the region opposite the lands watched over by the bear. Greek astronomer Ptolemy suggested the existence of an “unknown southern land” that would balance out the continents farther north in the known world. Yet for the Greeks, Antarctica did not extend beyond theory (it is worth noting that Greek sailor Ptheas may have reached as far north as Iceland, making him perhaps the first polar adventurer). Terra Australis, the great southern continent, appears in legends as early as 650 AD, centuries before medieval Europeans theorized its existence. The Maori, indigenous people of New Zealand¹, tell of a great war canoe that ventured to the southern sea ice. Captained by the mariner Ui-te-Rangiora, the small fleet of reed boats may have made it far enough south to see the Ross Ice Shelf. The legend refers to the southern ocean as Tai-uka-a-pia, Maori for “sea foaming like arrowroot” (when scraped for cooking, arrowroot is the consistency of snow). The ancient text says, “These were those wonderful things: the rocks that grow out of the sea, in the region beyond Rapa.”² The rocks growing from the sea may well be a phrase signifying icebergs and floes.

Even into the Middle Ages, legends spoke of a vast continent spreading across the South Pole. 16th century exploration by sea pushed farther south than before. In 1520, Magellan suggested that the territory south of the Strait of Magellan – Tierra del

¹The Maori, peoples migrating from eastern Polynesia, populated New Zealand in several waves between 1250 and 1300 AD.

²As related in the text *Hawaiki: the Original Home of the Maori*, by S. Percy Smith (Cambridge University Press 1910)

Fuego – could be the northern edge of the long-theorized vast southern continent (it is not in fact a solid landmass, but rather a series of islands at the tip of South America). In 1578, Sir Francis Drake sailed his ship, the famed *Golden Hind*, through the same waters. A storm blew him southeast around Cape Horn. On this journey, he observed the true nature of Tierra del Fuego and declared that any southern continent must be much farther south.

Yet more stormy weather contributed to southern exploration in 1619, when Spanish sailors Bartolome and Gonzalo Garcia de Nodal found themselves within the chain of islands called Islas Diego Ramirez. Their unplanned journey marked the farthest south venture for the next 156 years. Another tempest carried the English trader Anthony de la Roche to the 55° south line, where he found refuge in a bay on what was probably South Georgia Island. On the trip, he sighted what he thought was the coastline of the southern continent. His conclusion was undoubtedly influenced by maps published at the time by the Dutch East India Company, which delineated the shoreline of the imaginary “Terra Australis Incognita.”

The true extent of any mythical continent was constrained by the voyage of the British explorer Captain James Cook, who circumnavigated the globe in the high southern latitudes in 1772-1775. At one point, Cook reached a southern latitude of 71° before being blocked by the ice pack. Cook’s route demonstrated that if a southern continent existed, it must have been south of the 60° parallel.

The First Breakthrough

Dante’s medieval literary masterpiece *The Inferno* describes Hell as a place arranged in concentric circles. The heart of the dark realm is accessible only through various outer boundaries, each more treacherous to cross than the last. At Hell’s center, Satan holds court within a lake of eternally frozen ice. To early explorers, reaching the heart of Antarctica posed a similar challenge. The earliest adventurers reached only the outer fringes of the sea ice, a seemingly impenetrable wall blocking the way south. Beyond the sea ice, others caught glimpses of frozen walls and icebergs rearing up, the solid cliffs of the permanent sea ice sheet. Beyond it, the mountains of the Antarctic continent rose, at first viewed only at a distance but then seen progressively closer as explorers ventured into the interior. The revelations of Antarctica’s true nature initially came in starts and stops. Travelers reported northward-drifting icebergs with rocks sticking out of their flanks, but had they come from solid land or an archipelago of Antarctic islands? As travel became more reliable, the push into the mysterious frozen lands became more sustained and steadier. Still, the coastal explorations and first tentative outposts would not give way to more permanent bases for many decades, and the remote camps of the interior had to wait even longer.

Half a century after Cook, sea-going pioneers finally glimpsed the shoreline of Antarctica, although which explorer was first is still a matter of contention. The Russian voyager Fabian Gottlieb von Bellingshausen is one of three candidates. Bellingshausen was an admiral in the Russian navy. While commanding the ships *Vostok* and *Mirny* in 1820, the admiral’s crew sighted the islands of Peter I and Alexander I. This may have been the first solid land seen within the Antarctic Circle.

4 The Lure of the Poles



Fig. 1.2. Maori totara wood sculpture *Pou Whenua* (“Navigator of the heavens”), dedicated by the Maori people to New Zealand’s distinctively green Scott Base in 2013. The event commemorated Scott Base’s 56th anniversary (Photo by Michael Carroll)

Another early sighting took place on November 17, 1820. At the time, several sealers, most notably the Englishman James Wedell, ventured into Antarctic waters in search of new hunting grounds. Wedell made it as far as 74°S, a record that was to stand for 80 years (although it is possible that the American sea captain Benjamin Morell may have made it

that far just a month later). American sealer Nathaniel Brown Palmer made landfall in Antarctica while in search of seal rookeries. Remarkably, he made the voyage in a small, 14-m (47-foot) long sloop named *Hero*. The able seaman called the area “Palmer Land.” Today, the coast and several islands on this part of Western Antarctica, bordering the Orleans Strait, bear his name. Palmer went on to become an instrumental designer of a new class of sailing vessel known as the clipper ship.³

At the same time, British Royal Naval officer Edward Bransfield was commissioned to sail the two-masted brig *Williams* south from Chile to survey the newly discovered South Shetland Islands, scattered very near the Antarctic Peninsula. Making his way farther to the southwest, past Deception Island, Bransfield finally spotted the Trinity Peninsula. Its Prime Head is the northernmost limit of the Antarctic continent.⁴ He recorded “high mountains covered with snow.” What he saw were the mainland peaks now known as Mt. Bransfield and Mt. Jacquinet. Historians have studied and compared the journals of both Bransfield and von Bellingshausen, and most credit the latter with the actual discovery of Antarctica, as it appears that von Bellingshausen arrived two days before Bransfield.

As Europe recovered from war and unrest at the opening of the 19th century, Antarctica welcomed a host of European explorers. One of the most influential was James Clark Ross, who led two expeditions to the Harsh Continent. Ross set out on the *HMS Erebus* and the *HMS Terror* (commanded by his fellow seaman Francis Crozier) in 1839. His choice of ships was a wise one: the two boats were built with reinforced hulls to withstand the stresses of the mortars they had been designed to carry (the ships were known as bomb-vessels). Their tough exteriors made them the ideal option for a voyage through polar ices. The expedition was to set up magnetic observatories at several sites to monitor the Earth’s magnetic fields, ultimately establishing a permanent station in Tasmania. Ross’s team carried out measurements at Saint Helena Island and in the Kerguelen islands at the Cape of Good Hope. Only two days after departing from the Kerguelens, a hurricane separated the ships. They were reunited at Hobart, Tasmania on August 16, 1840. From there, Ross was determined to go south to discover where the Earth’s magnetic South Pole was centered after learning that both the American Charles Wilkes and the French explorer Dumont d’Urville had been doing magnetic field research in the area. Wilkes actually gifted his charts to Ross to aid his studies.

Ross mapped hundreds of miles of Antarctic coastline. The Ross Ice Shelf is named after him (although he had named it the Victoria Barrier), as is Ross Island, home of the active volcano Mount Erebus – named after Ross’s ship. The members of the Ross 1841 expedition were the first to document an eruption of Mount Erebus, which they witnessed from afar. Erebus simmers next to an extinct volcano christened after Ross’s second ship, the *Terror*. Their voyage was one of discovery and science. Aboard ship with Ross was Joseph Hooker, who would later become president of the Royal Society and a close colleague of the naturalist Charles Darwin. Hooker took notes on the Erebus eruption, describing “dazzling beautiful peaks of snow which, when the sun approached the horizon, reflected the most brilliant tints of golden yellow and scarlet; and then to see the dark

³Palmer could never have imagined that some two centuries later, a mission called the Europa Clipper will head to the outer Solar System.

⁴Just 20 km to the south lies Esperanza Base, one of Argentina’s year-round Antarctic outposts.

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Fig. 1.3. “Erebus and Terror in New Zealand, August 1841,” painted by John Wilson Carmichael (Oil on canvas ca. 1847)

cloud of smoke, tinged with flame, rising from the volcano in a perfectly unbroken column, one side jet-black, the other giving back the colors of the sun...”

In 1838, at about the time of Ross’ trailblazing expedition, the US Congress funded an Antarctic trip led by Charles Wilkes. Antarctic exploration had fired the American imagination, and the government felt the time was ripe for a new, more well-funded and complex American mission. Congress’ mandate was to aid commerce and navigation, but they included a clause about extending information on unknown territory and promoting general knowledge. The *Wilkes Expedition* departed in 1838 and reconnoitered territory from Brazil to Chile and Tierra del Fuego, even venturing into Australia, New Zealand, the Philippines and the East Indies. Wilkes pushed down into Antarctica on two occasions, in 1839 and 1840, during the austral summers. He followed the edge of the southern ice pack for a 2,400-kilometer stretch, spotting the Antarctic landmass at a distance on several different occasions and proving the existence of a solid continent. His team returned with surveys of geology, zoology, and even anthropological specimens from some of the islands.

Over 30 years later, 1874 brought the illustrious voyage of the *H.M.S. Challenger*. In February of that year, the *Challenger* became the first steam-powered ship to enter Antarctic waters. Her primary power still came from her massive sails, some 1,480 square meters (16,000 square feet) under full sail. *Challenger* was a science vessel. The Royal Navy’s converted warship was tasked with carrying out the first worldwide oceanographic research mission, a voyage that was to cover 68,900 miles of ocean. The ship was outfitted with laboratories and a darkroom for developing photographs. It is thought that the *Challenger Expedition* was the first to make extensive use of photography as a research

tool. Engineers also outfitted the ship with a steam-powered dredging system for bringing up samples from deep water and the seabed. A globe with a hole on the side could also be lowered to the sea floor, dragged, and reeled back in for sampling.

On February 24, 1874, *Challenger* nearly met with disaster. In the early morning hours, the crew was in process of dredging—an operation often met with curiosity—when a gale-force blizzard arrived. Pulling the dredge up as quickly as possible, the ship used steam and sail to head for shelter on the leeward side of a large iceberg. But the stormy whitecaps threw the ship against the iceberg, tearing away the jib boom. The crew fired up all four of the ship's boilers and steamed away from the berg, dragging the jib behind them. Although it was recovered, the ship now faced low visibility and rough seas. At 3 pm, another iceberg loomed dangerously close. The ship had to ply full steam astern with all hands on deck, but as the weather calmed, the ship made it through the bergs. Three days later, with a battery of experiments, surveys and investigations complete, the ship again raised all sails and headed northeast toward open sea and civilization in Melbourne, Australia.

Among the *Challenger's* 243-strong crew of engineers, scientists, officers, and seamen was John James Wild, an oceanographer and artist. Wild was one of a growing number of scientists who documented their research in the form of meticulously detailed art. After the four-year voyage, Wild wrote the book *At Anchor, a Narrative of Experiences Afloat and Ashore During the Voyage of H.M.S. Challenger from 1872 to 1876*. In conjunction with the *Challenger's* expedition, he wrote the paper *Thalassa, An Essay on the Depth, Temperature and Currents of the Ocean*. Wild was Swiss, and for his work, he received an honorary doctorate degree from the University of Zurich. Wild's presence on the *Challenger* team prophesied the spirit and intent of the NSF's artists and writers program over a century later.

Building on the rich return of specimens by Wilkes, the *Challenger* crew and others, the 1892 Norwegian expedition of Carl Larsen landed on the Seymore Island just off the Antarctic Peninsula, where they unearthed a host of fossils. These specimens became the first evidence that Antarctica may have enjoyed a warmer climate in its past. Larsen went on to build the first whaling station in Antarctica on South Georgia Island. Swedish and German researchers soon followed. In 1895, Norwegian whaler Henryk Johan Bull led a two-year expedition that included a landing at Cape Adare, Antarctica. On board was pioneer explorer Carsten Borchgrevink, who was first to collect plant life in Antarctica in the form of lichens. Up until his discovery, the scientific consensus was that plants could not survive so far south.

By 1902, the stage was set for the Heroic Age of Exploration. Robert Falcon Scott set out from what is now known as the McMurdo Sound, bound for his first attempt at the South Pole, with Edward Wilson and Ernest Shackleton in tow. Suffering from malnutrition and snow blindness, the brave trio had to turn back at 82°17' S. They survived the trek home, completing an astounding round trip of nearly 5,000 kilometers on foot.

In the late 1800s, Mount Erebus, our ultimate goal, remained a distant pinnacle of snowy mystery. The first summiting of Mount Erebus would not take place until 1908, when five members of Sir Ernest Shackleton's *Nimrod Expedition* spent nearly a week ascending the mountain, braving a blizzard and -30°F temperatures (see below). Four years later, members of Robert Scott's *Terra Nova Expedition* surveyed Erebus and took geological samples of its unique "Erebus crystals." Remnants of two of their campsites – the Upper Summit Camp and the Lower Camp E – are now internationally recognized historical sites.

The “Heroic Age”⁵ of Exploration: Northern Exposures

In the 19th and 20th centuries, the poles themselves called to explorers: there were fresh vistas to be seen, hostile environments to conquer, new frontiers to explore. In particular, the poles had a compelling attraction to those with an explorer’s wanderlust. The North Pole had another appeal: navigators yearned for a northwest passage, a shortcut over the pole from the Americas to Europe and Asia.

Norwegian adventurer Roald Amundsen, one of the great Antarctic pioneers, was first to cross the Northwest Passage, announcing his success by telegram from the tiny village of Eagle, Alaska. Although Amundsen had made it through, he found that the route was too shallow for practical shipping lanes.

Many rushed to reach the north and south geographic poles. First to the North Pole may have been Admiral Robert Peary, who claimed to reach the top of the world on April 6, 1909. Peary travelled using dogsleds and set up three successive support teams along the way. His claim is in dispute. Others – most notably Frederick Cook – also claimed to have reached the pole, and still others died trying. In 1825, William Edward Parry lost his ship, the *HMS Fury*, to the ice near Baffin Island. Two years later, Parry made it to 82°45’ N, the farthest north at the time. The year 1871 saw a polar attempt by Charles Francis Hall’s *Polaris Expedition*, sponsored by the US government. The expedition was hounded by poor leadership; the crew nearly mutinied on several occasions. The *Polaris* surpassed Parry’s record but could not make it to the pole itself. As the *Polaris* crew progressed northward from a wintering site on the Greenland coast, Hall left the ship and went ahead on a sledging trip to survey. Upon his return, he fell critically ill and blamed his crew for “poisoning” him. Hall died, but no charges were filed against the crew. In 1968, his body was exhumed and an autopsy revealed high levels of arsenic.

The US again tried to reach the pole with the Navy’s *Jeanette Expedition* (1879-1881), commanded by George DeLong. DeLong’s route originated on the Pacific side, winding its way through the Bering Strait. But soon the good ship *Jeanette* found herself trapped in the ice. DeLong led his crew by boat and sled to the Lena River Delta in Siberia, but in the course of doing so, more than half of the crew – including their leader – died of cold or starvation before rescue. It took the *Jeanette* two years to sink some 300 miles north of the Siberian coast.

Famous Norwegian explorer Fridtjof Nansen attempted to reach the pole during a three-year voyage from 1893-1896 using a creative approach. The seafarer allowed his ship, the specially designed *Fram*, to become icebound in the eastern Arctic at the New Siberian Islands. From there, Nansen planned to let the trapped ship drift in the pack ice, with the Arctic’s own sea ice carrying it to the pole. His inspiration was the wreckage of the ship *Jeanette*, which appeared to have drifted across the North Pole before being discovered on the southwest coast of Greenland. Nansen’s ship drifted slowly for 18 months, and the Norwegian explorer became impatient. He set out with a colleague for the pole on foot

⁵The Heroic Age opened at the end of the 1800s and ended at the close of Shackleton’s Trans-Antarctic expedition in 1917 when its survivors arrived in Wellington, New Zealand.

with the aid of a team of dogs. The two did not reach their destination, but they did survive the trip back from the farthest north point yet explored, at the latitude of 86° 13.6' N.

Roald Amundsen was part of a 1926 expedition to fly over the pole, an excursion that recorded its first undisputed sighting (Amundsen was also first to attain both poles). The flight was carried out by Italian aviator and engineer Umberto Nobile aboard his dirigible, the *Norge*,⁶ which Amundsen had traveled to Rome to purchase. He was accompanied by his colleague Hjalmar Riiser-Larsen, founder of the Royal Norwegian Air Force. At the time, the American explorer Admiral Richard Byrd was drawing plans to make it to the pole as well, but Amundsen declared that his was a far larger vision. He wanted to do a survey of the entire region, referring to the North Pole as “merely a station on the way.” The *Norge* drifted over the pole at 1:25 am on May 12, 1926.

Two years later, the French government backed Nobile in a second series of polar flights. In the spring of 1928, the airship *Italia* departed on the first of five planned flights. The *Italia* was essentially identical to the *Norge* in design, spanning a length of 145 meters (348 feet) with a diameter of 19 m (64 ft). It carried a crew of 20. During the first attempt, the airship was forced to return after eight hours due to weather. The second flight charted an impressive 4,000 kilometers of arctic wilderness under fine weather conditions. But it was the third flight that became the most famous.

May 23, 1928 saw the departure of the *Italia* along the coast of Greenland to the North Pole. The ship carried equipment with which to deploy ground crews for surface exploration. But two days out, the weather turned. Ice buildup and engineering problems caused the *Italia* to crash on the sea ice, tearing the gondola from the gas envelope of the dirigible. Six of Nobile’s comrades were trapped in the envelope as it drifted away on the wind. Ten crew members were marooned in the wrecked gondola on the sea ice, one of whom died from the impact. The other nine erected a tent using silk from their supplies and sections of the ruined envelope. They dyed the tent red using the dye from glass altitude “bombs” used to measure the ship’s altitude during flight. They managed to save a small radio and collected food rations, many of which had been tossed to them by Chief Flight Engineer Ettore Arduino. Upon seeing the men left behind on the ice, Arduino had tossed as many supplies as he could to them as the envelope carried him and the rest of the crew away in the arctic gale, undoubtedly saving the lives of the stranded crew. Those trapped in the envelope – including Arduino – were never seen again.

Five countries carried out aerial searches after a Soviet amateur radio operator heard the crew’s SOS. Eventually, all but one of the men in the gondola were rescued in a series of flights and the arrival of the Soviet icebreaker ship *Krasin*.

The search and rescue operations for the crew of the *Italia* entailed one of the great ironies of polar exploration. After a lifetime of daring exploration, careful planning and successful triumphs to both poles, Roald Amundsen vanished while attempting to locate and rescue Nobile in the aftermath of the *Italia*’s wreck. Amundsen and a French crew of five disappeared on June 18, 1928. A wing float and fuel tank from Amundsen’s Latham 47 “flying boat” were later recovered off the coast of Norway’s Tromsø Island, but

⁶The Mariner Museum online library: <http://ageofex.marinersmuseum.org/>

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subsequent searches (most recently by a remotely operated submersible in 2004) have failed to find remains of the plane and crew.

Soviet airman Alexandr Kuznetsov carried out the first undisputed walk to the North Pole in 1948. His team of Soviet researchers landed in three Lisunov Li-2, Soviet air force modified DC-3s. They touched down near the pole and walked the rest of the way. The team carried out soundings through the ice, revealing the existence of a submarine mountain ridge on the floor of the Arctic Sea. In 2007, Russia's *Arktika Expedition* made a crewed submersible descent to the ocean floor at the North Pole. The submersible was piloted by Anatoly Sagalevich, who—apart from holding the record for the deepest freshwater dive in Lake Baikal—also has a movie credit in James Cameron's film *Titanic*.

The excursions in the Northern Arctic, both successful and tragic, taught explorers how to navigate polar terrain. At the same time some explorers continued north, adventurers were also taking on the continent of Antarctica.

Austral Adventures

Ernest Shackleton carried out several of the first wide-ranging explorations of the Harsh Continent. Taking part in three British missions, Shackleton first attempted to find the South Pole with Robert Falcon Scott on Scott's *Discovery Expedition* of 1901-04. Edward Wilson accompanied Scott and Shackleton. The three set a record for southward exploration, reaching 82°17'S before turning back. The Discovery Expedition set up a permanent hut, now known as Discovery Hut, near the site of what is today McMurdo Base.

On his second Antarctic trip beginning in 1907, Shackleton's *British Antarctica Expedition* (1907-09, also known as the *Nimrod Expedition*) came within 180 kilometers of the pole and carried out extensive exploration of Ross Island, ascending Mount Erebus for the first time (see next chapter). Three of Shackleton's men, Edgeworth David, Douglas Mawson and Alistair Mackay, set out to find the South Magnetic Pole, one of the Holy Grails of Antarctic exploration. On January 15, Mawson calculated that the trio was within miles of the South Magnetic Pole. The team abandoned their heaviest provisions and equipment, and made a mad dash for the spot. On January 16, 1909, they erected the British flag, took a photo, and then hurried back for their supplies. Once safely at home, they began to have doubts about their discovery. Mawson realized that he had not taken into account some new computations done by other researchers. But they had come close. Although the explorers fell short of their goal, the expedition gathered valuable scientific data throughout.

Just two years later, the Japanese mounted their first expedition to survey the King Edward II Land and the Alexandra mountains, but the geographic South Pole still beckoned. In 1911, a British party led by Robert Falcon Scott raced to beat Norway's Roald Amundsen to the South Pole. It was dubbed the *Terra Nova Expedition*. Scott had been to Antarctica once already on Britain's Discovery Expedition (1901-1904). But with news that Shackleton's group had narrowly failed to reach the South Pole, Scott was ready to try again.



Fig. 1.4. The ice-bound Endurance shortly before the sea ice punctured its hull, sending the ship to the floor of the Weddell Sea. Photo by Frank Hurley (Wikipedia Commons)

The Terra Nova Expedition, (more officially known as the *British Antarctic Expedition*) was backed by the Royal Geographic Society and private funding. Scott's party set out across the Harsh Continent with 65 men. Chief scientist Edward Wilson was also an accomplished artist, continuing a rich historical tradition of artists on the front lines of