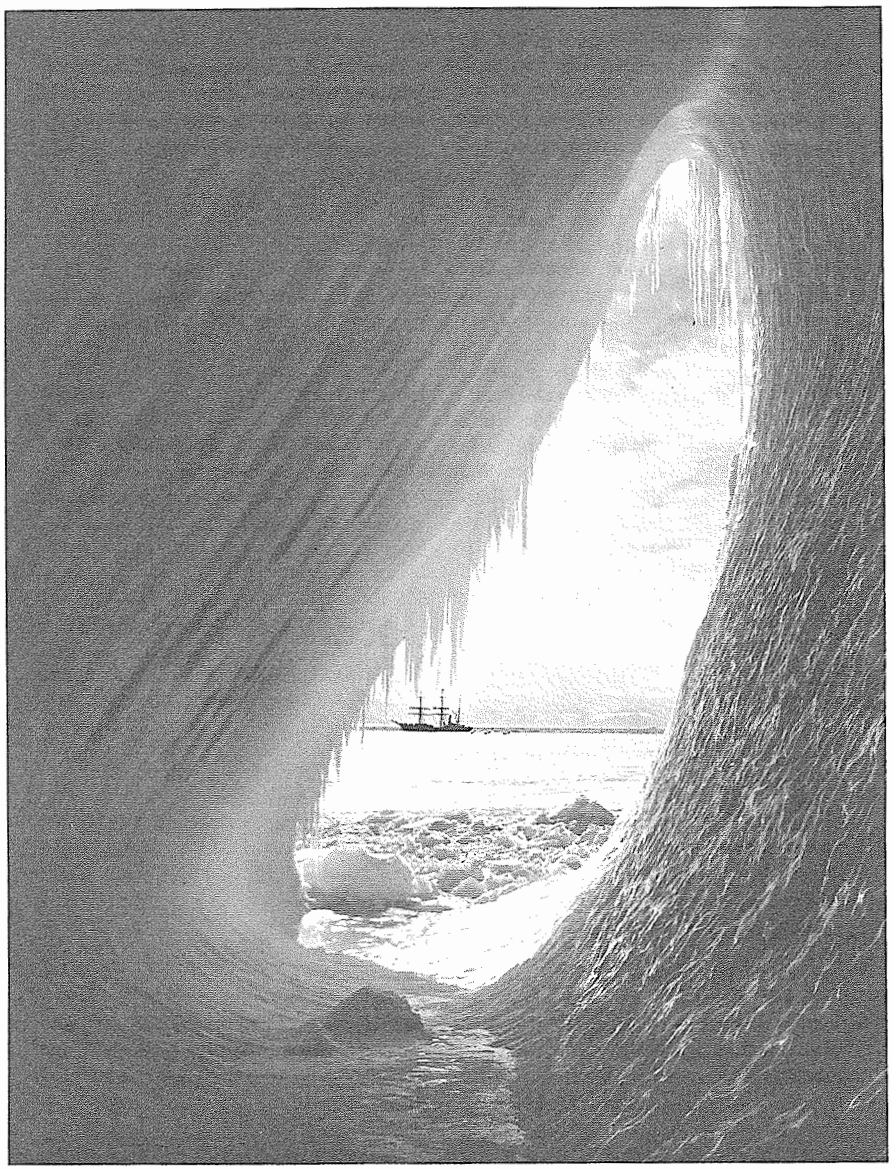

Courtesy Paul Popper Ltd., London.

The Terra Nova, *Captain Robert Scott's ship, photographed in 1911 by Herbert Ponting from a cavern in an Antarctic iceberg. The deaths of Scott and four companions as they tried to get back to the ship from the South Pole climaxed the "heroic age" of Antarctic exploration.*

Antarctica

Two hundred years ago, Captain James Cook circled Antarctica, saw that it was ice-covered, and lamented that man would "derive no benefit from it." But European and, later, American explorers still pushed south, driven by what one of them called the "Intellectual Passion"—the pursuit of knowledge for its own sake. By the end of the 19th century, Antarctica was the last uncharted territory on Earth. Today, the geography of the continent is less mysterious; scientists probing beneath the ice have found coal, uranium, titanium, and strong evidence of oil deposits. Here, historian Peter Anderson describes the great age of exploration. Political scientist Barbara Mitchell assesses recent developments. Antarctica, she writes, has become a "giant, open-air laboratory" for experiments in science, in fisheries, and, willy-nilly, in international relations.

HOW THE SOUTH WAS WON

by Peter J. Anderson

As the age of the dinosaurs dawned 225 million years ago, the land mass of Pangaea—mother of continents—was being broken apart by earthquakes and volcanoes. Lava surged through great rifts in the Earth's crust, and the continent was split in half. A sea began to form, separating the southern "supercontinent" that geologists have named Gondwana (comprising South America, Africa, Australia, India, and Antarctica) from its northern twin, Laurasia.

At the time, Gondwana probably lay somewhere in the vicinity of the equator, surrounded by a warm-water ocean. The portion of Gondwana that would become Antarctica—and eventually be covered by a crushing ice sheet—was once, it seems, a hospitable place. Parts of it may have resembled the Pacific Northwest, with thickly forested mountains giving way to lush

lowlands drained by meandering rivers and streams. Eruptions by Gondwana's many volcanoes occasionally spewed hot ash and lava across the countryside, possibly contributing to a gradual warming of the planet. (Antarctica today is pockmarked with extinct volcanoes.) Tall, pine-like trees flourished from the rainy uplands down to the warm, flood-prone plains. Cooler, danker locales sustained giant ferns and 30-foot-tall *Glossopteris* trees with large tongue-shaped leaves.

Wandering Continents

One of the earliest inhabitants of the land was the carnivorous *Labyrinthodont,* which appeared even before Pangaea began to break apart. These primitive amphibians probably shared their watery habitat with the *Lystrosaurus,* a vegetarian reptile and an ancestor of the hippopotamus. In 1971, paleontologists found fossil skeletons of the *Thrinaxodon,* a spry, reptilian carnivore built somewhat like a weasel. In the trees lived the *Prolacerta,* a foot-long, lizard-like reptile with powerful limbs and a supple body. It probably fed on insects and on the young of other creatures. Antarctica's exposed rock has yielded other reptile fossils, suggesting that a rich and varied history of animal life may lie buried beneath the ice. Whether Antarctica was ever inhabited by dinosaurs or their relatives is not known.

Even as the Antarctic menagerie evolved, all of Gondwana was slowly drifting south and beginning to break apart. First, South America and Africa tore away from the mother continent, the Atlantic Ocean ultimately forming between them. Antarctica, Australia, and India, still linked together, continued to move slowly to the south, arriving near the South Pole about 100 million years ago.

Some 35 million years later, Australia and India broke free and began edging north toward their present positions; India eventually collided with the Asian continent, plunging under it and forming the great "uplift zone" that we call the Himalayas. Antarctica was now alone at the South Pole.

The once-pleasant continent began to ice over between 10 and 25 million years ago, for reasons that are little understood.

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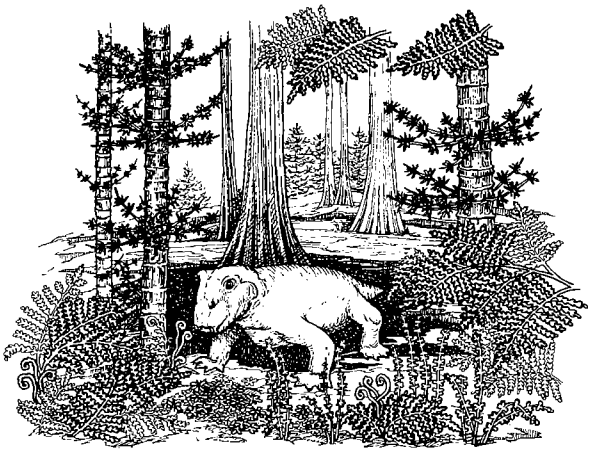


An artist's conception of a Gondwana forest, depicting the reptile Lystrosaurus *beneath the overhanging leaves of a* Glossopteris *tree.*

From This Is Antarctica, *by Joseph M. Dukert.*

It became a great frozen desert, larger than the continental United States and Mexico combined, with a meager annual precipitation of only two inches in the vast interior plateau. But the long Antarctic night (during the March to September winter, the sun skirts the horizon, disappearing for months at a time) and the reflective qualities of the ice cover ensured that very little ice would ever melt. So it accumulated, layer by layer.

Today, 98 percent of the continent's surface is covered year-round by ice. Only in a few coastal areas does the summer temperature rise to near freezing, and inland it commonly drops to near −100°F during winter. The coldest temperature ever recorded anywhere in the world was almost −127°F, reported by the Soviets' Vostok station in the interior in 1960. On the Antarctic Peninsula, the continent's long "tail," the climate can be far more hospitable. Balmy 40°F temperatures have been reported there in summer, and precipitation is relatively heavy.

As the ice built up, it became so heavy that the land beneath it was pushed, on average, about 2,000 feet into the Earth's crust. (Much of the original Antarctic land mass now lies well below sea level.) Mile-high mountains were buried up to their tops. Today, their summits (called "nunatuks") protrude modestly above the thick ice cover, some of them only a few feet high. Yet, in other places, mountains unconquered by the ice draw themselves up to their full height—almost 17,000 feet.

Homo sapiens evolved long after the continent froze over. But philosophers and explorers have presumed its existence since the beginning of Western civilization.

The Greek philosopher, Crates of Melos, speculated in the second century B.C. that the Earth was a sphere composed of four separate, equal-sized continents, with two in the Northern Hemisphere and two in the Southern. The Greeks already knew about one of the southern continents—Africa—but the other was unknown to them. They envisioned it as temperate in clime, a land of abundance inhabited by a peaceful people.

The first man thought to have actually approached Antarctica was the Polynesian sailor Ui-te-Rangiora in about A.D. 650. According to Polynesian legend, Ui-te-Rangiora sailed south in a large open canoe called *Ti-Ivi-o-Atea* until he reached an immense frozen ocean.

During the Middle Ages, the dream of a fabulously rich southern continent took hold in the West. European thinkers then had no contact with the Polynesians. Little by little, however, evidence supplanted supposition. In 1497, for instance, the Portuguese navigator Vasco da Gama sailed around the Cape of Good Hope at the southern tip of Africa, disproving a popular notion that the "southern continent" was really just an extension of Africa.

Dashed Dreams

Early maps typically reflect Europeans' hopes and ignorance more accurately than Antarctica's shape and position. Yet there are some mysterious exceptions. In 1532, for instance, a French cartographer named Oronce Finé published a remarkable map in Antwerp showing the Antarctic coast as it would appear today if free of ice. A terse notation says only that the continent was "recently discovered, but not yet fully known." Possibly, then, Antarctica's glaciers had receded considerably by the 1400s, and some now unknown sailors had visited the continent.

The old dreams of riches persisted until Britain's George III dispatched his kingdom's finest navigator and explorer, Captain James Cook, to settle the issue once and for all in 1772. Cook was directed to survey the southern seas, partly to aid British merchant ships. But his "prime object," as he saw it, was to discover the southern continent.

Between 1772 and 1775, Cook circumnavigated Antarctica, braving high winds and severe cold. But he was unable to penetrate the barrier ice packs that girdle the continent. While Cook never saw land, he realized that any continent beyond the pack ice would be no paradise and remarked that it would "afford no better retreat for birds, or any other animals, than the ice itself,

with which it must be wholly covered."

Cook's voyage was a remarkable achievement. The southern seas are among the world's stormiest, because the continent's cold air collides with the much warmer air from the north, creating constant high winds that circle Antarctica. Closer to the mainland, the ocean is studded with icebergs, formed when slices of the permanent ice shelves that cover the continent's embayments break away. These flat-topped, "tabular" bergs may be hundreds of feet tall and the size of a small country. (During the 1970s, a tabular iceberg the size of Luxembourg was seen.) Tabular bergs in turn "calf" dozens of smaller icebergs.

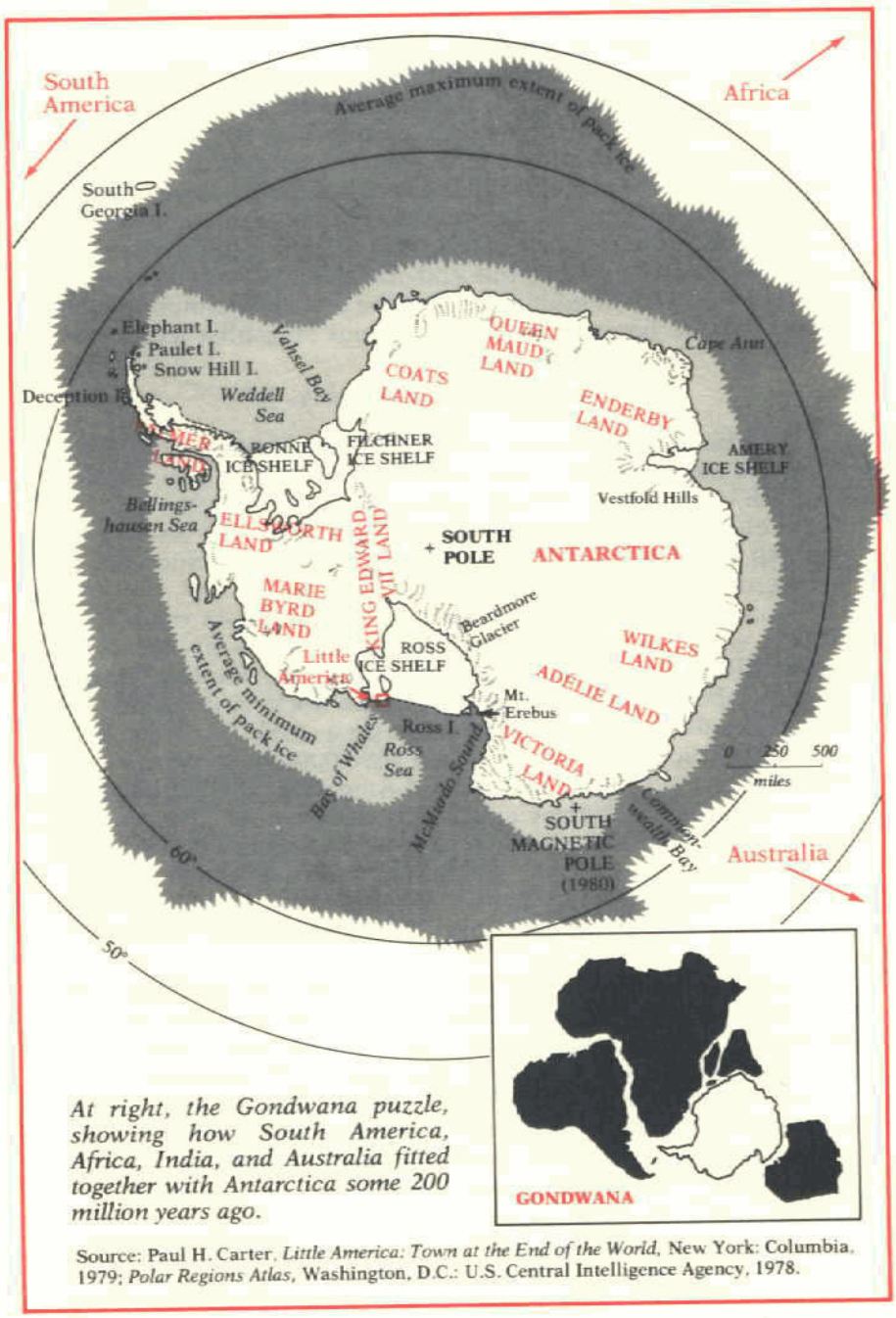
An Accidental Discovery

In winter, the Antarctic seas freeze over for up to 700 miles from the continent, virtually doubling its "land" area. As this pack ice breaks apart with the approach of summer, the floating bergs cluster together in the surrounding seas. The pack is inhabited by penguins and seals, who visit the mainland only to breed, and is frequented by killer whales.

Antarctica itself was not sighted until some 45 years after Cook's expedition. It seems to have happened by accident. Around 1800, American and British sealers and whalers, having depleted their quarry in the Arctic, began working the South Atlantic. Small fortunes could be made on a single trip. (The brig *Betsy* took 100,000 seal pelts worth $680,000 in one season.) On November 17, 1820, a 19-year-old American sealing captain named Nathaniel Palmer apparently became the first man to sight Antarctica. The coastline he saw many miles distant was desolate and inaccessible: "Thought it not Prudent to Venture in ice Bore away to the Norther'd and saw 2 small Islands and the shore every where Perpendicular." The sight was of little interest to a sealer.

Actually, there are two other candidates for the honor of first to espy the continent. The Russian admiral Fabian von Bellingshausen circled Antarctica between 1819 and 1821, charting the seas and islands in the region with remarkable accuracy. He may have sighted land without even knowing it, for more than once he approached to within 20 or 30 miles of the coast. But Bellingshausen never claimed he saw land. It was not until 1949 that the Soviet Union—alarmed by new Antarctic territorial claims by other nations—asserted that he had.

Also in the region at the time was an Englishman, Sir Edward Bransfield. Like Bellingshausen, he came close to land but never claimed to have seen the continent. Bransfield sent a



At right, the Gondwana puzzle, showing how South America, Africa, India, and Australia fitted together with Antarctica some 200 million years ago.

Source: Paul H. Carter, *Little America: Town at the End of the World*, New York: Columbia, 1979; *Polar Regions Atlas*, Washington, D.C.: U.S. Central Intelligence Agency, 1978.

written account of his journey to London late in 1820, but the Admiralty promptly lost it, and it has not been seen since.

Whaling and sealing captains again dominated the region after Bellingshausen and Bransfield departed. The next wave of exploration did not come until 20 years later, and it was motivated as much by scientific inquiry as by commercial interests. Captain James Clark Ross, an Englishman, had sailed to the North Magnetic Pole in 1831. The German scientist, Johann Gauss, believed that if the South Magnetic Pole could be found, the erratic compass readings that plagued sailors near the ends of the Earth could be corrected. Three nations launched expeditions, almost at the same time.

The Redoubtable Ross

The first to head south, in 1837, was a French group, headed by Jules Dumont d'Urville commanding the *Astrolabe* and *Zelée*. D'Urville could not make it through the pack ice near the Weddell Sea. In 1839, he tried the Pacific side, encountered little ice, and eventually sighted land. On January 22, 1840, he stepped ashore on a small, rocky island 100 yards off the coast of Antarctica. Looking across the water, d'Urville saw an unbroken featureless shoreline terminating in sheer ice cliffs. He named it Adélie Land, after his wife. Antarctica, he wrote, "appears to consist of a formidable layer of ice, rather like an envelope, which forms the crust over a base of rock." Somewhere beyond its cliffs lay the Magnetic Pole, but he was not prepared to venture inland.*

An American expedition had been envisioned as early as 1821, with an eye to commercial prospects, but Congress dragged its feet for 15 years before authorizing one. Lieutenant Charles Wilkes, a stern and stubborn naval officer, was given the command, setting sail from Virginia in the summer of 1838. He felt, he said, "like one doomed to destruction." Under his command were 440 unhappy crewmen and five leaky ships. Two of them, the *Sea Gull* and *Flying Fish*, were refitted New York harbor-pilot boats. The *Sea Gull* later sank in a storm.

Like d'Urville, Wilkes penetrated the pack ice on his second try, sighting land on January 19, 1840. He raised the Stars and Stripes over a small offshore island 26 days later. By then, Wilkes's men were exhausted, cold, and hobbled by scurvy. But

*In 1840, the South Magnetic Pole was located at some still unknown point in the Antarctic interior. But both magnetic poles are peripatetic. When T.W.E. David reached the South Magnetic Pole in 1909, it was in Victoria Land; today, it is close to 600 miles away, off the coast of Adélie Land. The "South Pole," by contrast, is a fixed geographical point.

the lieutenant pushed on. "I considered it my duty to proceed and not to give up the cruise until the ship was totally disabled, or it should be evident to all that it was impossible to persist any longer," he later recalled. His men begged him to turn back. Wilkes did, but not before completing a month-long cruise along 2,000 miles of the coast, now called Wilkes Land.*

The third man to visit Antarctica was the redoubtable Captain James Clark Ross, a seasoned Arctic explorer. The Ross expedition was well-manned and well-equipped. Ross arrived in two specially built ships, *Erebus* and *Terror,* and bearing the British flag he had flown over the North Magnetic Pole. The ships' reinforced hulls crashed into the pack ice early in January 1840. Four days later, intact, the ships broke into open seas.

Wintering Over

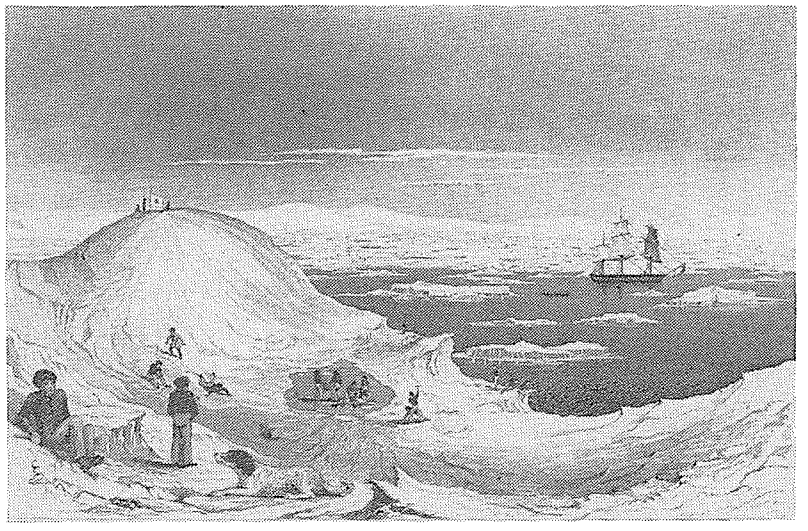
On the 11th of January, a lookout spotted a distant coastline, which Ross named Victoria Land in honor of the Queen. His two ships continued along the coast, traveling farther south than anyone yet had gone, until he reached an island with "a stupendous volcanic mountain in a high state of activity" (as one crew member put it), which he called Mount Erebus. The island, and the 400-mile-long "barrier" ice shelf along the coast beyond it, were named after Ross.

The Ross Ice Shelf would later become the "highway to the South Pole"; expeditions routinely established their base camps there. It is a floating, flat-topped piece of ice, more than a thousand feet thick in places and about the size of France. The shelf is permanently attached to the land and is fed by glaciers. Every year, it grows by about 1,000 feet along its seaward edge, but most of this growth falls off, creating tabular icebergs.

After Ross's departure, interest in the continent subsided. The next surge of exploration began after representatives to the Sixth International Geographical Conference declared at their 1895 London meeting that Antarctica represented the "greatest piece of geographical exploration still to be undertaken." Between 1897 and 1916—the period known as the "heroic age"—15 expeditions sailed for the great southern continent.

The first of them was a Belgian-led enterprise, under the command of Lieutenant Adrien de Gerlache de Gomery. In January 1898, de Gerlache's ship, the *Belgica,* reached the Antarctic Peninsula and made 19 landings. It was rough going. A small

*Wilkes was court-martialed when he went home, charged by his officers with "oppression, injustice, administering illegal punishments, falsehood, and scandalous conduct." He was acquitted, but Congress denied him the funds to publish his account of the voyage.



Lieutenant Charles Wilkes sketched members of his crew as they relaxed off-duty on an iceberg floating 75 miles off the Antarctic coast in February 1840.

party sent inland covered only one mile in seven days. The ship's surgeon, an American, Dr. Frederick Cook, reported: "On 1st of February we made another effort struggled a few hundred yards into the interior, but fog and wind and crevasses made frequent halts necessary. The sledges were difficult to drag, and altogether the work of traveling and the discomfort of camping were such that life was miserable in the extreme."

De Gerlache cruised leisurely along the coast—a bad mistake, for the brief Antarctic summer was drawing to a close. Soon, icebergs moved in, and the sea froze over, trapping the *Belgica*. Its 18 men drifted with the ice in their captive ship for 13 months. They suffered scurvy, depression, and what Cook called "polar anemia." When the sun disappeared during winter, two sailors went mad. (One recovered when daylight reappeared.) Dr. Cook wrote of life in the darkness: "The skin grows pale, muscles grow weak, and the organs are unable to function with their usual vigor. This effect is most noticeable in the action of the heart, which . . . is deprived of its regulating force, and becomes now quick, now slow, but never normal." Finally, the crew cut a channel through ice seven feet thick and reached the sea, then less than half a mile away.

Library of Congress.

In January 1912, Edgar Evans, Edward Wilson, L.E.G. Oates, and Robert Scott stand despondently beside the tent that Norway's Roald Amundsen had left behind to mark his arrival at the Pole more than a month earlier.

Another expedition faced even more extreme hardships. In February 1902, the *Antarctic* put Swedish scientist Otto Nordenskjöld and four other men ashore at Snow Hill Island, off the Antarctic Peninsula, to carry out scientific work. Nordenskjöld's men were astonished to find tiny wingless flies and mites living there—Antarctica's only year-round indigenous inhabitants apart from fleas and lice. These insects live on rocks warmed by the sun and "hibernate" for all but a few months of the year. The explorers also found fossil remains of a pre-historic penguin that probably stood between five and six feet tall.

The *Antarctic* sailed further south, planning to return during the austral spring. But in December, on its return trip, the ship became icebound. Three men were dispatched to travel over the frozen sea to reach Nordenskjöld and bring him to safety. They encountered a gulf of open water and had to turn back. But the *Antarctic* was gone.

The three men built a shelter on Paulet Island and prepared to wait out the long, dark Antarctic winter. For nine months, they huddled in a hut. Inside, the temperature hovered a few de-

grees below zero, the "warmth" sustained only by burning seal blubber, which, along with penguins, was also their main food.

By September 1903, it was clear that the *Antarctic* was not going to return. The three men set out for Snow Hill Island, where Nordenskjöld had last been seen. Although they were starving and at one point lost their tent to high winds, the trio took the time to collect rock specimens. By a lucky coincidence, they encountered Nordenskjöld, who was on a field trip. At first, the scientist mistook the men for penguins as they approached. "I am asking myself to what primitive sub-species they can belong, when one of them holds out his hand: 'You don't recognize us, do you!'" The travelers were completely blackened by blubber soot. A week later, they were all back at Snow Hill Island. On November 8, an Argentine rescue ship appeared offshore.

The Race to the Pole

The *Antarctic*, meanwhile, was at the bottom of the sea. It had been crushed by the ice, nine months before. The crew of 20 escaped and made a winter camp on the coast, subsisting, like the other scattered members of the expedition, on seals and penguins. Killing penguins was simple. With no natural land predators, the birds waddled up to a man out of sheer curiosity.

As the summer neared, the *Antarctic* crew set out for Snow Hill Island. Miraculously, they reached it on the evening of November 8, 1903, hours before the Argentinian ship was scheduled to leave with the other survivors.

Gaining scientific knowledge was but one spur to exploration during the heroic age. Above all stood the elusive, symbolic quest for the geographic South Pole, more than 800 miles inland across the highest, windiest, and coldest territory on the Earth.

The first major treks into the Antarctic interior occurred between 1901 and 1904. Robert Falcon Scott, a British Navy lieutenant with no previous experience in either polar region, had established a British Royal Geographical Society base at McMurdo Sound. Accompanying Scott was another young lieutenant, Ernest Shackleton. In November 1901, Scott, Shackleton, and Dr. Edward Wilson, a physician and painter, set out with dog sledges to cross the Ross Ice Shelf. It was a foolhardy escapade, for all three men were poor skiers and novices when it came to handling dogs. In 93 days, they made a 960-mile round trip, but they also lost their 19 huskies and nearly starved to death. Shackleton, disabled by scurvy, had to be taken back to base on a sledge hauled by his companions.

During that trip, Scott and his companions encountered

ANTARCTIC FIRSTS

First Landing (1821): Boat crew from New Haven (Conn.) sealer *Cecilia* goes ashore on Antarctic Peninsula.

First Fossil (1830): American geologist James Eights discovers 30-inch fragment of petrified wood lodged in iceberg.

First Death on Mainland (1899): Nikolai Hanson, a Norwegian taxidermist, dies of scurvy while wintering over with Carstens Borchgrevink's party.

First Motorized Vehicle (1908): Bernard Day, Ernest Shackleton's automotive expert, drives four-cylinder, 15-horsepower "Arrol-Johnston" car on the sea ice.

First Book Published (1908): Shackleton's crew prints 90 copies of whimsical narrative, *Aurora Australis,* using wood from packing cases for covers.

First at South Magnetic Pole (1909): Australian T.W.E. David, age 51, leads three-man expedition 600 miles inland to magnetic pole.

First Plane Flight (1928): Australian Sir Hubert Wilkins flies single-engine monoplane *Los Angeles* along Antarctic Peninsula coastline.

First Journalist (1928): *New York Times* correspondent Russel Owen accompanies Admiral Richard Byrd to Little America, winning Pultizer Prize for his reporting.

many of the unique hardships that make Antarctic exploration so perilous—snow blindness, caused by the unrelieved glare off the ice; "sastrugi," the rugged ridges of hard snow; and the deep, hidden crevasses that could abruptly swallow up a man and a whole team of huskies.

Some hazards they were spared. During a brief jaunt over the sea ice on a later expedition, a photographer named Herbert Ponting encountered a school of killer whales. Swimming at top speed, these aggressive predators crash through the sea ice from below, hoping to catch an unsuspecting penguin or seal. This is what happened to Ponting. The ice suddenly heaved beneath him, breaking into small chunks. "It was all I could do," Ponting wrote, "to keep my feet as I leapt from piece to piece of the rocking ice, with the whales a few yards behind me, snorting and blowing among the ice blocks." But he escaped.

Shackleton was the first to return to the continent expressly for an assault on the Pole. He advertised in a London newspa-

First Movie Shown (1929): Members of first Byrd expedition watch *Moana of the South Seas,* a 1925 Paramount romance.

First Woman on Continent (1935): Caroline Mikkelsen, wife of a Norwegian whaling captain, sets foot on coast near snow-free Vestfold Hills.

First Act of War (1941): German raider *Pinguin* captures Norwegian whaling fleet off Queen Maud Land.

First Visit by Head of State (1948): Chilean President Gabriel González Videla lands on the Antarctic Peninsula, establishes Bernardo O'Higgins Base.

First Overland Crossing (1958): British tractor expedition led by Sir Vivian Fuchs completes 99-day, 2,100-mile passage from Weddell to Ross Sea.

First Nuclear Reactor (1962): United States activates nuclear power plant at McMurdo Station; replaced in 1972 by diesel generator.

First Women at South Pole (1969): Six women—five scientists, one newspaper reporter—jump hand-in-hand from ramp of transport plane at South Pole.

First Child Born (1978): Emilio Marcos Palma, son of Argentine Army captain, born at Esperanza Station on the Antarctic Peninsula.

First Wedding (1978): Argentine 1st Sergeant Carlos Alberto Sugliano marries Julia Beatriz Buonamio at Esperanza Station.

per: "MEN WANTED for Hazardous Journey. Small wages, bitter cold, long months of complete darkness, constant danger, safe return doubtful." The response was overwhelming. As Shackleton wrote later, "It seemed as though all the men in Great Britain were determined to accompany me." In January 1909, Shackleton and three companions came within 97 miles of their goal but were forced to turn back for lack of food.

Late in 1910, three expeditions ventured to Antarctica in search of the South Pole. The first, commanded by Lieutenant Choku Shirase of the Japanese Navy, turned back because of bad weather. Scott, now a captain, left a post at the Admiralty to head up a British effort. The third was led by the Norwegian Roald Amundsen, a veteran of the *Belgica* journey and of numerous expeditions in the north polar regions. Amundsen had actually hoped to reach the North Pole, but when Admiral Robert Peary of the United States got there first, in 1909, he secretly decided to try the remaining alternative. Amundsen feinted north,

then turned around in mid-sea. "Beg leave to inform you proceeding Antarctica," he cabled Scott. The race was on.

Amundsen was a big, bluff, plain-spoken fellow with a driving desire to be first. Scott was a stiff, old-school naval officer—he maintained separate officers' quarters even at his cramped base camp—but also a complex, sensitive man. One reason he disliked using dogs in polar exploration was that the weaker ones often had to be killed to feed the stronger. Scott settled on Siberian ponies (which, unfortunately, quickly died) and man-hauled sledges for his trek to the Pole. Amundsen, who had far more experience in polar travel, used huskies—the preferred means of transport. Scott also intended to carry out an extensive program of scientific research. "Science is the rock foundation of all effort," he once said. Amundsen, by contrast, had a single mission: to get to the Pole before anyone else.

An Awful Place

Both teams established their bases near the Ross Ice Shelf late in 1910. Amundsen gambled on a site upon the ice shelf itself, near the Bay of Whales. It was 60 miles closer to the Pole than Scott's base on Ross Island. On October 20, 1911, in the Antarctic spring, Amundsen set out with four men, four sledges, and 52 dogs. Scott left four days later, accompanied by seven men, three of whom would turn back after establishing food depots for Scott's return trip (a task Amundsen's men had accomplished the year before).

Amundsen's account of his trip is almost light-hearted. The men rode on the dog sledges for the first 100 miles and were pulled along on skis for many of the next 300. They encountered the usual difficulties, but these Amundsen brushed aside. His chief complaint was frostbite: "The left sides of our faces was one mass of sore, bathed in matter and serum. We looked like the worst type of tramps and ruffians."

On December 14, 1911, they reached the South Pole. Five pairs of hands grasped a flagpole with the Norwegian colors and drove it into the ice to mark the spot. Amundsen and his party stayed there for two days, taking bearings to make certain they were at the right place. By January 25, they were back at the Bay of Whales. "The going was splendid," Amundsen recalled. "We were in high spirits and bowled along at a cracking pace."

Eight days before, after an exhausting, 86-day march, Scott himself had reached the Pole. He was not so ebullient. "Great God! this is an awful place," he wrote the next day, "and terrible enough for us to have laboured to it without the reward of prior-

ity." For there to greet his team stood the small black tent and Norwegian flag that Amundsen had left behind. "Now for the run home and a desperate struggle," Scott added. "I wonder if we can do it."

They could not. The piercing wind, the unrelenting cold, and the terrible labor of pulling the heavy sledges over sastrugi and through patches of deep, soft snow began to take their toll. Because Scott and his men traveled slowly, sometimes covering only three or four miles in a day, they had to ration their food. Though aware of their peril, they spent the better part of one day "geologising," as Scott put it.

Edgar Evans died first, on February 17, probably the result of a concussion sustained when he fell into a crevasse. Captain L.E.G. Oates was next. Frostbite had blackened his feet, and he could walk only with great pain. On March 16 or 17 (the party had lost track of dates), Scott wrote: "He slept through the night before last, hoping not to wake; but he woke in the morning—yesterday. It was blowing a blizzard. He said, 'I am just going outside and may be some time.' He went out into the blizzard and we have not seen him since." The next day, Scott discovered that his own foot was frostbitten. "These are the steps of my downfall," he wrote.

Antarctica's "Mayor"

On the 21st, Scott and his two remaining men were trapped by a blizzard only 11 miles from a supply depot and forced to stay put. About a week later, still stranded, Scott wrote simply, "Last entry. For God's sake look after our people." Their bodies were found less than eight months later.

One more journey would be made before World War I closed the book on the heroic age. In 1914, Ernest Shackleton returned to Antarctica intending to cross the continent. But his ship, the *Endurance,* became icebound in the Weddell Sea and drifted for 10 months in the floe's embrace before it was finally crushed. For another five months, the entire crew drifted on the sea ice, at last escaping by lifeboat to barren Elephant Island. From there, Shackleton and five of his men made a daring voyage in a small open boat to the whaling station at South Georgia Island, 800 miles away. They arrived in May 1916, almost a year and a half after the *Endurance* was first trapped. All of the men on Elephant Island were saved.

Antarctic exploration did not resume until 1928. Now it was the Americans who led the charge, not the British and Norwegians. The Americans brought new equipment with them—air-

planes, tractors, and radios—that would dramatically change the character of Antarctic exploration.

The most colorful figure of the period was Admiral Richard E. Byrd, the first man (along with Floyd Bennett) to fly over the North Pole. He arrived in Antarctica in 1928 with the intention of flying over the South Pole as well, making sure to erect three 70-foot radio towers from which he could broadcast news of his exploits directly to the rest of the world. (When another party visited Byrd's "Little America" base near the Bay of Whales 30 years later, they found the towers almost completely buried in snow; all that remained were three steel-girder "nunatuks" barely taller than a man).

Byrd and three others flew across the Pole on November 29, 1929, and Byrd made several other flights, traversing broad expanses of previously uncharted territory. In his 19-hour flight to the Pole and back, he saw more territory than Scott and Amundsen covered in their months-long journeys. He discovered and laid claim to Marie Byrd Land (named after his wife) and mapped 450,000 square miles of the continent using aerial photography. "I am mayor of this place," Byrd proclaimed, "until the government gets around to owning it." But the State Department never pressed the territorial claims that he made. Altogether, Byrd mounted four expeditions to Antarctica before the outbreak of World War II.

Exploration ceased in 1941, after America was drawn into the Second World War. But the accomplishments of Byrd and the small group of other prewar explorers paved the way for a new era of Antarctic inquiry. They had mapped large areas of the interior, reducing the unknowns that man would have to face. They had also established the basics of contemporary polar technology. Never again would men be forced to haul sledges across vast distances or huddle, shivering, through the long Antarctic winter.

If this was gained, perhaps something was lost as well, for the ordeals they faced forged the heroism of men like Shackleton and Cook during the first 150 years of Antarctic exploration. Yet they had set the stage for another monumental effort beginning in the years after 1945, when men would flock to the continent in the name of science. These later years would also bring a growing knowledge of the continent's hidden riches, far different from those imagined in earlier ages. For the first time, thorny questions about who would own and govern this remote land would have to be faced.