Fritjof Nansen was born in Oslo (then Christiana), Norway on 10 October 1861. He was raised mostly by his older half-brothers and spent much of his youth outside in the forests and open country surrounding Oslo. In 1881, Nansen began studies in zoology at the University but soon was offered, by a friend of his father’s, an opportunity to join an Arctic Ocean whale and seal hunting expedition. He learned during this expedition to work with nature and not against it, an approach that became the keystone to his many successes.

During this voyage Nansen observed the currents to flow from eastern Siberia towards Greenland, and he found driftwood that must have drifted with the ice from Siberia. On the ice he found organic matter that was proved to come from near Bering Strait. This indicated to Nansen that ice drifted from the sea north of Siberia, over the central polar sea, toward Spitsbergen, and he began to think that a vessel frozen in the ice could transit the Arctic Ocean.

In 1882 he was appointed as curator at the Bergen Museum and began his scientific studies. The idea that one could cross Arctic ice and reach land by walking or skiing and pulling equipment on sledges took hold. Nansen proved this possibility by sledging across the Greenland ice with five others. The left on 15 August, 1888 and reached Gotthab (Nuuk) in early October. The expedition was strenuous and its success heroic. On reaching the west coast...
of Greenland, the ship they expected to meet and return them home was long gone, and Nansen and his men overwintered. After his return to Norway, Nansen wrote “Eskimo Life” in 1891 where he described Greenland and its inhabitants.

By the summer of 1891 Nansen was preparing for an expedition by ship across the Arctic Ocean. He had already observe currents north of Siberia that flowed towards Greenland and Alaska. Additionally, pieces from the wreck of the Jeannette, which sank north of Siberia in 1879-80, were found on the south-west coast of Greenland in 1884, three years and 2900 nautical miles later, further evidence of the trans-polar drift currents.

Nansen would need a ship built to withstand the strain of the ice, so he designed and constructed one “as enduring and as strong as possible; it shall be just big enough to carry supplies of coal and provisions for 12 men for 4 years. A vessel of approximately 170 tons (gross) would probably be adequate. It will have an engine strong enough to be able to operate at a speed of 6 knots, but in addition will also have a full rig of sails”.
Nansen expected to enter the Arctic through Bering Strait, but knew that sailing through the Mediterranean Sea, the Suez Canal, the Pacific Ocean, and through Bering Strait would take too long. He decided to enter along the Siberian coast into the Kara Sea and sail towards the New Siberian Islands.

The *Fram* departed Bergen, Norway on June 24, 1893 and headed eastward through the Northeast Passage, into the ice pack north of the Lena River, and reached the New Siberian Islands by the end of September. Here the *Fram* froze into the arctic ice.

Their drift was erratic and the current was slow. At Christmas Nansen calculated it would take *Fram* seven years to drift across the Arctic. On February 2 *Fram* was at 80° N and -50°C. On May 28 they reached 81° 34’ N where Nansen began to realize that they would not drift over the actual pole.

Nansen and Hjalmar Johansen left the *Fram* on February 26, 1895 to attempt to reach the pole on skis. *Fram* was left to Captain Otto Sverdrup and the remaining crew. Gear and kayaks were lashed to sledges, and they headed north with six dogs. Retreat was impossible because they would have no chance of finding the *Fram* again. After reaching the Pole, they planned return to Spitsbergen or Franz Josef Land.

On the first attempt, however, the sledges were found to be too heavy and the ice conditions too difficult to proceed. They returned to *Fram*, reduced their equipment load, and improved the sledges. A second attempt was made but failed as well. On 14 March with *Fram* at 84° 4’ N, they left in -32 °C weather. By early April Nansen realized the impossibility of attaining the pole. The ice was difficult and open water caused long detours that cost time and energy. By April 7 they were at 86° 14’ N, the farthest north any person had reached to date, and Nansen decided to head south. Hjalmar Johansen writes that he would “have liked it if we could have got further. It is our consolation that we have done
what we could and that we have even lifted a little more of the veil which conceals this part of our planet”.

Heading south they advance by sheer willpower as far as possible before the ice began to give way to more open water, working stints of 36 hours without resting. By May 14 they had two sledges and 12 dogs of the original 28. Each sledge weighed over 250 kilograms (~550 pounds).

By June they have six dogs left, there are long stretches with open water or slush ice, and there was little food. By late June they are kayaking across open leads, but then have to pull the kayaks onto the ice, re-hitch the sledges, and ski or walk on.

In very rough ice near an open lead, Johansen is attacked by a polar bear on August 5 as they are about to launch the kayaks. Nansen, holding onto a sledge to prevent it from sliding into the water, hears Johansen shout “Get the gun!” and turns to see the bear over Johansen. But the gun is by the kayak which is in front of the sledge Nansen is holding. He lets go, it slides into the water, and all of this is taking time. Johansen says, calmly, “You had better hurry, otherwise it will be too late!” Johansen is between the bear’s legs and has the bear’s throat in both hands, hanging on for dear life. But the bear is momentarily distracted by the dogs and swats them across the ice with its huge paws. By now Nansen is at close range and shoots, killing the bear. Johansen, unhurt, has claw marks raked in the the layers of grime and grease on his cheeks.
They press on, and by August 15 reach the northern tip of Franz Josef Land. It is late in the year and they prepare to spend the winter. A shelter of stone is built with walls packed with moss. A pine drift log is the ridge-piece and holds a roof of walrus skin. They shoot polar bears and seals for food and use the skins for clothing and flooring. They refashion and share their wool sleeping bag. There was little to do once winter sets, and they pass the long winter night.

By May, sunlight and spring-time conditions allow them to head towards Spitsbergen. They are out of shape from their winter sloth, and make much of the journey by kayak. Without kayaks they are dead men, and on one flow the kayaks float off. Nansen swims for them in the cold arctic waters.

On June 17 1896, out of sheer luck, they come upon members of a British expedition on Franz Josef Land, and Nansen and Johansen are warmly received by the British expedition who take them by ship back to Norway. They arrive in Norway in August 1896.
Meanwhile, the *Fram* has continue to drift across the Arctic Ocean towards Spitsbergen, and upon clearing the ice, sets sail for Norway arriving there just five days after Nansen and Johansen. It is a hero's welcome home for all, and Fridtjof Nansen is instantly famous.

The Fram expedition ends the notion of an "Open Polar Sea." It has completed numerous observations of scientific value, and collected the first oceanographic data from the central Arctic. Nansen has confirmed the presence of the Transpolar Drift and their soundings demonstrate that the Polar Basin is deep.

During *Fram*'s drift, Nansen had noticed that ice drifted to the right of the wind, not with it, and suggested that it was due to the rotation of the Earth (Coriolis force). The Norwegian V.W. Ekman derives the mathematical theory to confirm this observation, describing wind driven surface currents as the Ekman Spiral.

The Fram was later used by Sverdrup in the Canadian Arctic in 1898-1902, and by Roald Amundsen on the expedition to claim the South Pole in 1910-1912. It is now the centerpiece of the Fram Museum in Oslo.
The Fram goes to the Arctic (1893-1896)

A polar view of the Arctic Ocean. Alaska is at the bottom.

New Siberian Islands
The circulation of the Arctic Ocean as we know it today. The blue arrows show the surface circulation including the Transpolar Drift that flows from the East Siberian Sea to Spitsbergen and Fram Strait. The red arrows show the deeper flow which is warm and circulates the Arctic Basin following the bathymetry of the ocean floor.