

The polar ship *Scotia*

Angus B. Erskine

16 Braid Farm Road, Edinburgh EH10 6LF

Kjell-G. Kjær

Torbeinsund, 9136 Vannareid, Norway

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ABSTRACT. The ship that the oceanographer Dr William Speirs Bruce used on the Scottish National Antarctic Expedition, 1902–04, was originally a sealer named *Hekla*, built in Norway in 1872. In 1889 the Norwegian skipper Ragnvald Knudsen explored the northeast coast of Greenland between latitudes 74° and 75°, and in 1891–92 the ship was used by the Danish naval officer, Lieutenant C. Ryder, to explore the inner recesses of Scoresby Sund, finally visiting Angmagssalik. In 1902, re-named *Scotia* and captained by Tam Robertson from Peterhead, she sailed to the Weddell Sea under the leadership of Bruce. The southern winter of 1903 was spent at Laurie Island in the South Orkney Islands, and in March–April 1904 the party discovered 150 miles of previously unknown coastline of the Antarctic continent, reaching a farthest south of 74°01'S, 22°00'W. An extensive programme of marine survey and biological research was carried out. Back in the UK, Bruce sold the ship, and she returned to sealing, based in Dundee until appointed to be the first international North Atlantic Ice Patrol ship after the tragedy of *Titanic*. The Great War caused her to become a freighter in the English Channel area until she caught fire and was burnt out on a sandbank in the Bristol Channel on 18 January 1916.

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Early days as a sealer

The ship that became famous in the Antarctic as *Scotia* was built at the Jørgensen & Knudsen yard at Drammen on the Oslo Fjord, Norway, in 1872, where she was originally named *Hekla*. She was rigged as a three-masted wooden barque, 140 feet long, with a registered tonnage of 400 tons and powered by an auxiliary steam engine (Lloyd's Register of Ships 1888). She was immensely strong, with some 10 feet of solid timber in the bows, and a sheathing of greenheart wood on the outside of the hull. Jørgensen & Knudsen was renowned for the construction of ice-ships, having built *Cap Nor*, renamed *Antarctic*, used by H.J. Bull on his Antarctic voyage in 1894–95; *Mjølner*, re-named *Balaena*, the famous Scottish whaler; and many other polar ships, such as *Diana* and *Viking*. The first owner of *Hekla* was Søren Suur Svendsen. Every year from 1872 to 1882 the ship was employed from March to June sealing out of Tønsberg, going to the Norwegian Sea, in the area 150–250 miles east and northeast of Jan Mayen, along the edge of the pack ice. In 1873, 10,607 seals were killed (*Hekla*: Logbook). In 1877, 1878, and 1879 she took a load of pelts to Dundee each summer. During this period, her masters included: A. Marcusen (1872–73),

H.H. Sundene (1873–74), P.H. Evensen (1875–76), L. Støkken (1877, 1879), and J. Nielsen (1879). In 1883, the ownership changed to N. Bugge.

Captain Ragnvald Knudsen

In 1888 Ragnvald Knudsen became master of *Hekla* (Fig. 1). He had had a meteoric career in the Norwegian Navy and Mercantile Marine, being awarded his Master's certificate at the age of 21. However in 1888 he had no experience of sealing. Nevertheless, he took *Hekla* to the Eastern Ice (the White Sea), one of the first times a sealer from southern Norway had visited these waters, and the ship came home heavily loaded with pelts and blubber. The next year, Knudsen's voyage was a momentous one, in more ways than one.

He left Tønsberg on 25 February 1889, heading again for the White Sea. Soon after leaving Hammerfest, where more crew had been picked up, the ship was hit by a violent storm while under sail. They were swept close to the rocks before Knudsen managed to start the engine and manoeuvre her clear. The White Sea spring season starting poorly, Knudsen took the ship to Svalbard. While sealing among ice floes a thick fog descended and he lost sight of a boat. Luckily, the boat with its crew was found by the Dundee whaler *Active*, commanded by Captain Tam Robertson, which transferred them to the smack-rigged sealer *Haabet* from Tromsø. By another stroke of luck, *Haabet* met *Hekla* and the men, somewhat battered, were restored to their parent ship. Knudsen moved on to the Greenland Sea, but catches were still low. Other Norwegian sealers decided to sail east to Novaya Zemlya.

Knudsen thought there would be too much competition for sealing there, and he had information (presumably from Karl Koldewey's German exploring expedition of 1869–70) about the abundance of seals, walrus, polar bears, and muskoxen in East Greenland, so he took a



Fig. 1. Captain Ragnvald Knudsen in 1891.

gamble and sailed into the fjords of northeast Greenland, where no Norwegian sealer had ever been before. He penetrated the coastal ice and by mid-July had reached Gael Hamkes Bugt (74°N). Stopping off the east coast of Clavering Ø — where the British naval officer Douglas Clavering in HMS *Griper* had encountered a group of Eskimos in 1823 — Knudsen and some sailors rowed in one of the ship's boats up Young Sund and back, and again up Tyroler Fjord (Fig. 2). They landed in various places and made careful observations of muskoxen, foxes, walruses, seals, butterflies, Arctic char in the streams, many species of flowers, and Eskimo tent-rings, but met no Eskimos. Knudsen took soundings and water temperatures, made improvements on Clavering's map, and collected rock specimens. In fact, he copied William Scoresby Jr's techniques: he was not just a sealer, but was an all-round explorer.

Back onboard *Hekla*, Knudsen continued north, circumnavigated Shannon Ø, and sailed up Ardencape Fjord, confirming Koldewey's expedition's findings, before returning to Norway at the end of August with a cargo-load of 3602 seals, 267 walruses, 220 kg ivory, 9 polar bears, and 24 muskoxen. This pioneer voyage led the way for many Norwegian hunting expeditions to these northern fjords in the next 60 years. Knudsen also took a camera with him, an unusual piece of equipment

for those days. His photographs can be studied today at the Ethnographic Museum in Oslo. Some of *Hekla's* early logbooks are in the National Library, Oslo, and Knudsen's correspondence and copy-books for the period 1886–94 are held at Statsarkivet, Oslo. His diaries were published by John Giaever in 1937.

In 1890 Knudsen took *Hekla* sealing in the Eastern Ice in the spring and in the Western Ice later. On 4 March, off the northwest coast of Norway, a hurricane struck the vessel. The main hatches were blown off and water poured in. The crew managed to rig an emergency cover. With 10 feet of water in the hold, the pumps struggled to cope, and when wet coal dust blocked them, causing the situation to become critical, Knudsen decided to seek shelter. He succeeded in piloting the ship into an unfamiliar fjord and signalled for assistance. A boat came out from Stad to guide him to an anchorage but capsized in the heavy sea. Luckily the crew of two managed to clamber aboard *Hekla*, and Knudsen brought his ship home safely by consummate seamanship, a feat for which he was rewarded financially by the insurance company.

When he returned to Tønsberg on 20 August he discovered that his fame as an ice-pilot was already spreading. He was already known for maintaining good standards of health and hygiene on his ships. He heard that Lieutenant C. Ryder of the Royal Danish Navy wanted him to command an expedition ship to explore an unknown part of the east coast of Greenland between 73°N and Angmagssalik, 65°N, which Lieutenant Holm had reached from Kap Farvel by small boat in 1884. In the middle of this coastline lay the 20-mile wide entrance to Scoresby Sund, which had been explored to a length of about 70 miles by the British whalers William Scoresby, father and son, in 1822. This new expedition was to be sponsored by the Danish government. In the next few months there was considerable negotiation between Ryder, Knudsen, the owner of *Hekla* and the owners of other ice-ships, but eventually in November 1890 a contract was signed. Ryder chartered *Hekla* with Knudsen in command.

Danish East Greenland Expedition, 1891–92

Lieutenant Ryder was the expedition leader. There were also seven Danish scientists and one Greenlandic interpreter. The crew were all Norwegians. The plan was to land the expedition members, with a hut, somewhere in Scoresby Sund, where they would winter. The ship would collect them the following summer. The coastal survey was to progress as much as possible, north and south of Scoresby Sund, in the summers of 1891 and 1892. However provisions were taken for the ship and its entire crew to winter, should it prove necessary. This was a wise precaution. (The description of this expedition is based on Ryder 1895 and Giaever 1937.)

Hekla departed Copenhagen on 18 June 1891. That year turned out to be unfavourable for ships in East Greenland. Stopped by thick ice at 68°12'N, Knudsen had to go east of Jan Mayen and north to 76°13'N

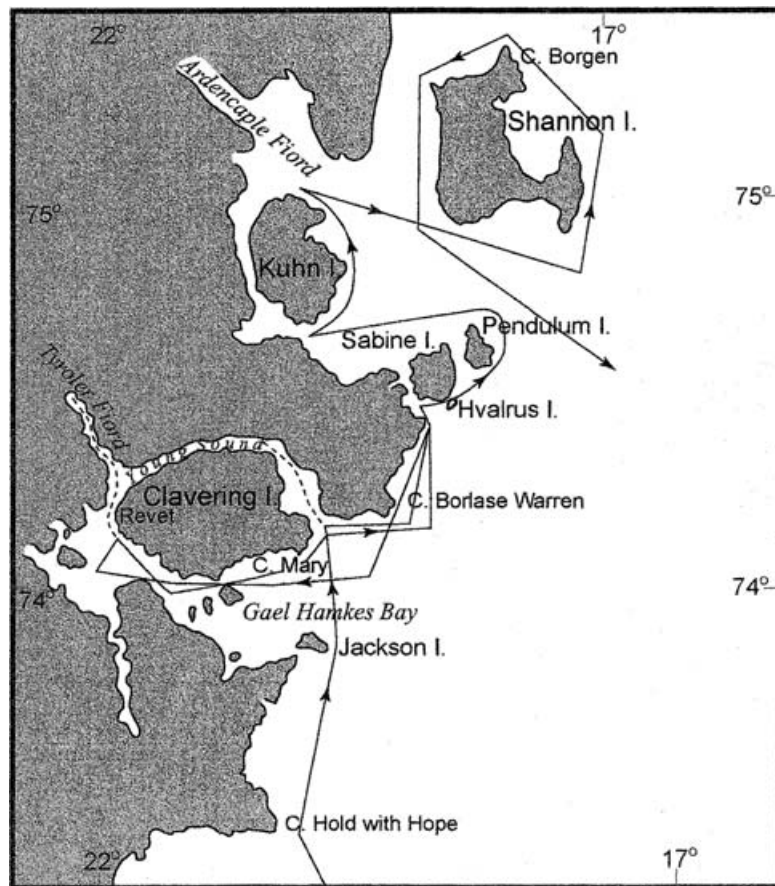


Fig. 2. Knudsen's voyage to northeast Greenland with *Hekla* in 1889. Approximate route is based on the logbooks of *Hekla* in the National Library, Oslo. (Map by Anona Lyons)

before he could alter course to the west. He encountered two Scottish whalers, *Eclipse* and *Hope*, commanded by the famous Peterhead brothers, John and David Gray, and exchanged information about the ice conditions. He reached the Greenland coast at Gael Hamkes Bugt and made his way south to Scoresby Sund, he and Ryder surveying as best they could. They had a copy of Scoresby's chart but could not always recognise the features. Scoresby Sund was finally reached on 2 August. A depot was left at Kap Stewart on the north shore, then the southern shore and Gåsefjord were explored. A sheltered harbour was eventually found on an island that they named Danmark Ø on the south side of Milne Land, which they later discovered was also an island (Fig. 3). The decision was made on 23 August to keep the ship there for the winter. A wooden living hut was built ashore for the Danish scientists along with three other small huts: a magnetic observatory, an astronomic observatory, and a store hut. Before the fjord iced over, boat expeditions, both in rowing boats and in the steam launch, were despatched to explore the fjords west of Milne Land and the approaches to Nordvestfjord. The decision to keep the ship there for the winter resulted in an action in a Danish court whereby the Danish Navy paid *Hekla*'s owner compensation for loss of sealing income.

During the winter a curious situation developed on the personal level. The ship was moored, and iced in at the west end of the bay with the officers and crew (all Norwegians) and two Danish scientists living onboard, while Lieutenant Ryder and the other expedition members were living in the hut on the land at the east end of the bay, about half a mile away. Relationships between the two groups were rather strained, and at one point Ryder and Knudsen were sending written notes to one another (Gjaever 1937).

In March 1892, sledge expeditions were undertaken, and the inner branches of Scoresby Sund were surveyed in more detail. Scientists and ship's crew pulled the sledges together, and dogs, of which they had 10, were also used. Hurry Inlet, which Scoresby had thought might join up with Carlsberg Fjord to the north, was found to be only 26 miles long. Many observations of wildlife were made in Jameson Land, and traces of past Eskimo habitation were discovered and surveyed, particularly in Røde Fjord.

The summer arrived, the ice gradually broke up, and the expedition re-embarked. By now they had almost run out of fuel for their main engine and heaters so they dismantled the huts and loaded all the wood on board. No trace of them remains today, although a cairn marking the location has been erected. Knudsen managed to navigate

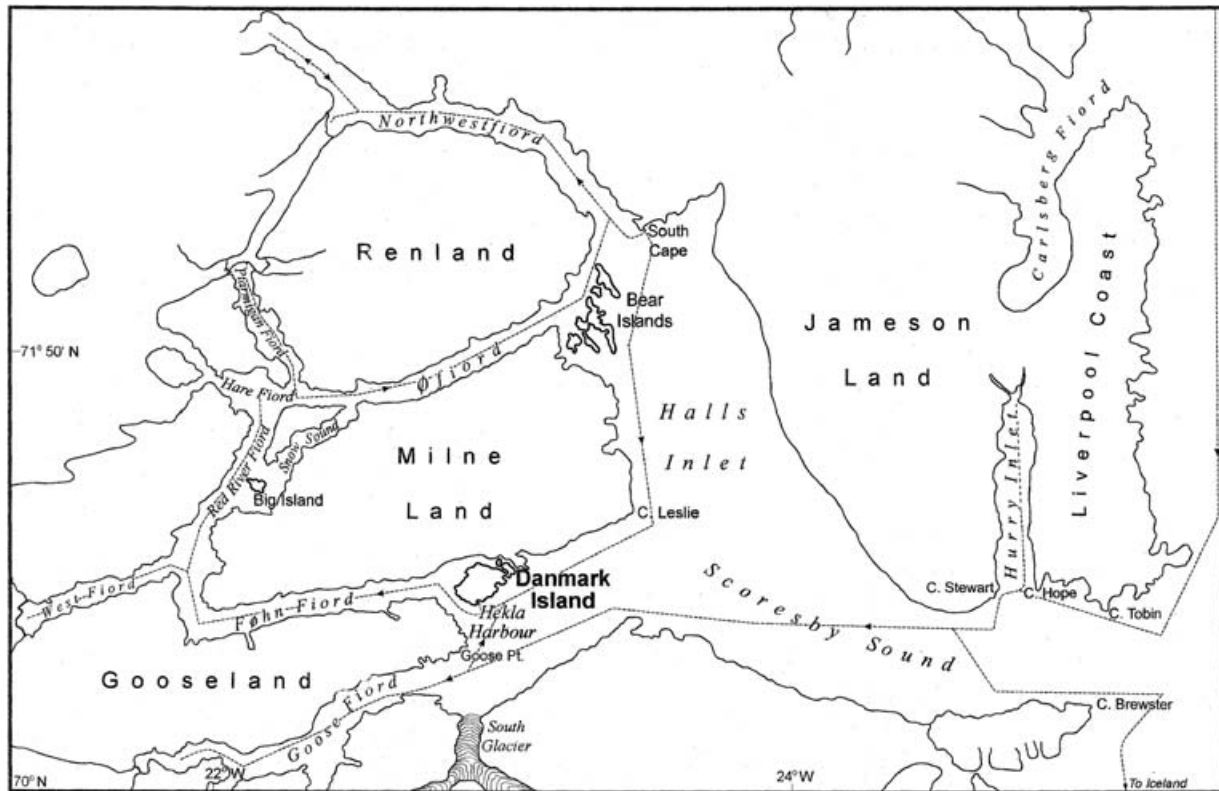


Fig. 3. Ryder's East Greenland expedition, 1891–92. Ship's route and routes of winter sledging expeditions are based on Ryder (1895). (Map by Anona Lyons)

out of the harbour on 8 August and out of Scoresby Sund on 13 August. Attempts to accomplish a coastal survey southwards to Angmagssalik were thwarted by the ice, so they crossed back to Iceland, stored up with provisions and coal, and headed straight back to Greenland. Again they could not reach the Blossville Coast but on 19 September they arrived at Angmagssalik. Knudsen anchored the ship while the boats visited the villages in the region. This was the first ship of any size that the Greenlanders had ever seen: Holm had arrived in Eskimo boats in 1884. Dresses, weapons, and utensils were purchased from the Greenlanders, and *Hekla* finally sailed on 26 September, reaching Copenhagen on 12 October 1892.

Despite the difficult ice conditions, the expedition had carried out valuable topographic surveys and made scientific field observations in meteorology, zoology, botany, ethnography, geology, magnetism, and astronomy. Ryder and Knudsen deserve more credit than is usually given them in standard historical books on the exploration of Greenland.

Some place-names relating to the expedition were given to geographical features on this coast, such as Hekla Havn and Danmark Ø, and Kap Hekla at the west end of Geographical Society Ø.

Sealing again in the Greenland Sea

In 1893 Knudsen was in the Denmark Strait again, sealing along the edge of the pack ice. But his interest in the topography of the East Greenland coast tempted him to

take advantage of a lead in the ice to approach the coast at latitude $68^{\circ}14'N$ and to undertake some simple survey work. At one point *Hekla* was badly squeezed by the ice and the rudder was damaged. The crew managed to fit a spare rudder, and Knudsen got the ship back safely to Tønsberg. This was the last year that Knudsen was at sea. These pioneer voyages of 1889, 1891, 1892, and 1893 encouraged Norwegians to start hunting inshore in north-east Greenland, which in turn led to Norwegian territorial claims to part of that coast. In 1897 C. Bryde became *Hekla*'s master, and later L. Christensen took over. The next year the ship was sold to A/S Sael og Hvalfangstskib *Hekla*, Kristiania, the manager of which was M.C. Tveit.

The Scottish National Antarctic Expedition, 1902–04

In 1902 Dr William S. Bruce (Fig. 4) initiated the Scottish National Antarctic Expedition from Edinburgh. (Actually Bruce never acquired a doctorate at any university, but an honorary degree of LLD was conferred on him in 1907 by Aberdeen University 'in recognition of his eminence as an oceanographer, explorer and naturalist.')

Bruce had considerable experience both of ice-ships in the Arctic and the Antarctic and of scientific expeditions in the high Arctic. He wanted to buy a suitable Scottish-built ship already in commission, but none was available within his budget. In December 1901 Bruce went to Norway, where he received advice from his friend Dr Fridtjof Nansen and also from Colin Archer, the designer of the famous *Fram*. He examined several Norwegian whalers



Fig. 4. William Speirs Bruce, 1867–1921. (Photo: Scott Polar Research Institute)

and finally bought *Hekla* for £2620. The account of this expedition is based largely on Speak (2003).

Early in 1902 the ship was brought across the North Sea and down the Caledonian Canal to the Ailsa Ship-building Yard at Troon on the Clyde to be overhauled and

refitted. She was renamed *Scotia*. The refit, under the supervision of the naval architect G.L. Watson, was very extensive, the ship being converted into an oceanographic research vessel (Fig. 5). It cost approximately £8000, much more than anticipated. The actual hull was not altered, nor the masts, but a new steam engine was installed. There is some confusion about the power of the engine. Although Lloyd's Register of Steam Vessels, 1915, gave a figure of 55 registered horsepower, the *Northern Whig* of Belfast, of July 1904 quoted 320 indicated horsepower, which would seem a much more likely figure for a ship that forced its way through the ice of the Weddell Sea.

Meanwhile, the accommodation and other fittings were radically changed. The crew of 20 had berths round the forecabin mess. Just aft of that was a small mess for the petty officers (chief cook, chief steward, boatswain, and carpenter) consisting of four bunks and a table. Then came a similar mess for the four officers, that is, the three mates and second engineer. A below-decks laboratory, extra storerooms, and extra coal bunkers filled the space of the old cargo hold.

Further aft, above the engine and boiler rooms, there was a saloon with staterooms leading off it — occupied by the captain, Bruce, six scientists, and the chief engineer — and a pantry and a bathroom. On the deck above, the original 'bridge' (just a canvas-protected platform with a compass, engine telegraph, and the wheel) was situated between the funnel and the mizzen mast. Between the foremast and mainmast, a new deckhouse was constructed consisting of the galley and a well-fitted-out laboratory. Above the latter stood the Lucas sounding machine and its 6000 fathoms of treble-strand wire with davits on either side, a steam winch, a Barr and Stroud range-finder, and other deep-sea sounding apparatus.

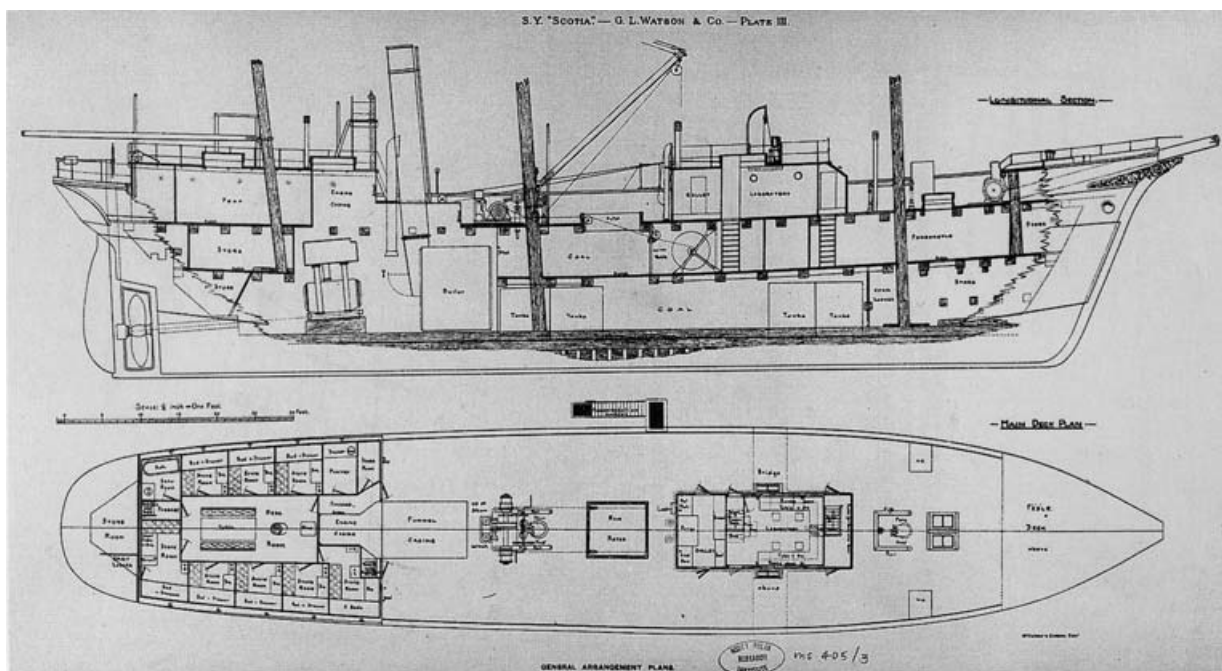


Fig. 5. Plan of *Scotia* after refit at Troon, 1902. (Courtesy of Scott Polar Research Institute)

Various meteorological instruments and gauges were positioned in suitable sites round the upper deck. Bruce was well experienced to choose the oceanographic equipment, having worked in the *Challenger* laboratory in Edinburgh under Professor Patrick Geddes and Dr (later Sir) John Murray, and having spent two seasons in the Arctic with Prince Albert, Dr Jules Richard, and J.Y. Buchanan in *Princess Alice*. Bruce later wrote (1911): 'The *Scotia*, besides being strongly fortified to battle with ice, was better equipped as an oceanographical ship than any Antarctic ship has ever been, and was thus able to carry out most important investigations in very deep water in high latitudes.'

On their way back from the Antarctic, Bruce wrote in an undated letter to J.G. Bartholomew, posted in Cape Town: 'The *Scotia* is a fine little ship having behaved splendidly in the ice and in the open sea. At present she is buzzing along at an average of more than 180 miles a day' (John Bartholomew, personal communication). Dr H.R. Mill, the Librarian of the Royal Geographical Society, who knew all the polar men and their ships at this time, mentioned 'the beautiful *Scotia*, the most graceful of all the exploring ships' (Mill 1944).

After a delay of two weeks caused by a legal complication, *Scotia* sailed from the Clyde on 2 November 1902 under the command of the experienced Scottish whaling skipper, Tam Robertson, who had been awarded his Master's Certificate in Aberdeen in 1892. Bruce knew him from his Antarctic cruise in 1893. Bruce arranged for a piper in full highland regalia to play, standing in the bows, as the ship pulled away from the jetty, and aloft flew the blue ensign, the Lion Rampant, and the burgee of the Royal Northern Yacht Club. The expedition was funded almost entirely by the Coats brothers of Paisley.

Every crew member on *Scotia* was Scottish except D.W. Wilton, the zoologist and an old friend of Bruce. Although the expedition left a year later than Scott in *Discovery*, it was in the field at the same time because of the shorter voyage south.

Bruce's team had five scientists and three additional assistants to help with taxidermy, preserving, and packing. The emphasis for Bruce's expedition was on mapping and oceanography, and the landings he made were not on the continent but on the South Orkney Islands. Bruce had onboard an extensive array of equipment for sounding, trawling, and dredging in deep water, and devices for measuring temperature and sampling sea water at different depths. The expedition also had extensive meteorological instruments, as well as a specially designed laboratory for analysing water and samples.

The *Scotia* sailed from Port Stanley, Falkland Islands, on 26 January 1903, loaded down with stores, a deck cargo of timber, and an assortment of dogs. They had no radio, neither receiver nor transmitter, so once on the high seas she was totally out of touch with civilisation. They met the pack ice earlier than expected, landed briefly on the South Orkney Islands, and forced a way southwards to 70°25'S, 17°12'W in the Weddell Sea on 22 February.



Fig. 6. *Scotia* ice-bound in Scotia Bay, Laurie Island, South Orkney Islands. (Courtesy of the Royal Scottish Geographical Society)

But the thickness and density of the ice, together with the lateness of the season, made them turn back without having seen any continental land. In fact, the depth of the water below them suggested that they were nowhere near land. They reached the South Orkneys on 25 March, found a sheltered bay at Laurie Island, and anchored there for the winter. Within days, the bay was frozen over (Fig. 6).

There was plenty of work to be done throughout the winter. The latitude at which the expedition made base being 60°S, the days were not unduly short. Bruce had expected the ship to be free of ice in six months, but it turned out to be eight. Throughout the time that they were south of the Falkland Islands, the scientists recorded the weather every hour. A dredge on an endless rope between two holes was fixed under the ice near the ship and hauled up by manpower every morning. A surprising quantity of marine fauna was brought up each day, including previously unfamiliar specimens. Baited traps were used to catch fish, and birds and seals were shot either for consumption or for preservation for scientific purposes. Tidal observations were also kept.

Thinking the ship would be free in September, Bruce changed his plans and decided to build a small hut on shore where six men would be left to continue the observations while *Scotia* sailed back to Buenos Aires. There he would wire his office at home to confirm that there was money

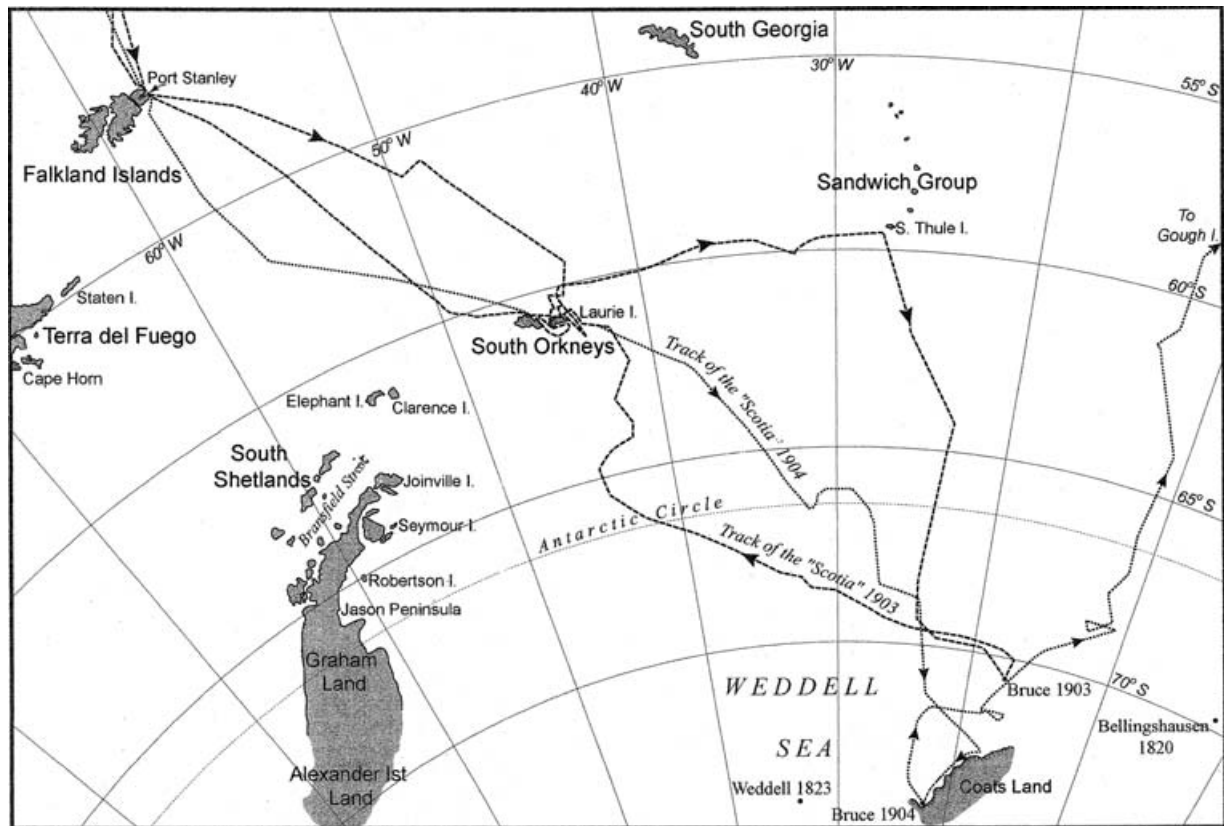


Fig. 7. Track chart of *Scotia* in the Antarctic. (Map by Anona Lyons)

available for a second year, have the ship refitted, embark fuel and stores, change some of the crew, and return to Laurie Island as quickly as possible. There would then be time for another exploratory cruise into the Weddell Sea before sailing for home. So on days of good weather in the winter, the men laboured, digging stones out of the nearest moraines, hauling them to the site, and building a single-roomed hut with one door, two windows, and a stove. It was named 'Omond House' after Robert Omond of Edinburgh, the first superintendent of the Ben Nevis Meteorological Station.

Another task was to map the island and chart the surrounding waters, the rough map then in use originating from George Powell, Nathaniel Palmer, and James Weddell in 1821 and 1822. Sledge parties started out in July, man-hauling and using the four remaining dogs. Geological and biological observations were also made as they travelled around the coast from one survey station to the next. Later in the year, as the ice began to break up, excursions were made by boat. In August, Allan Ramsay, the chief engineer, died from a heart attack and was buried near Omond House.

The ship finally escaped from the ice on 27 November and Bruce sailed to Buenos Aires, leaving six men behind to continue meteorological observations. But a combination of bad weather and bad luck delayed their return to Laurie Island: the ship went aground near Buenos Aires, there was a dock strike in the dockyard, and it took some time to obtain the money to finance a second year's

work. The cost of the dockyard refit was borne by the Argentine government. At last they sailed south again on 21 January 1904. From Port Stanley they made their final departure from civilisation, steering southeast for Laurie Island. Bruce failed to persuade the British government to accept Omond House as a permanent British meteorological station, but the Argentine government agreed to take over the administration and its annual re-supply by ship. It so happened that the director of the Argentine Meteorological Office was an Englishman who was very supportive of the project. Thus it was that Bruce landed three Argentines, R.C. Mossman (the meteorologist), and Bill Smith (the house-steward) at Laurie Island for the winter of 1904 to continue the weather observations with the promise that an Argentine ship would pick them up the following summer. This had geopolitical consequences unforeseen by Bruce. The Argentines built a station beside Omond House, which they called 'Orcadas,' and it has been occupied ever since, leading to the Argentine claim to the longest-occupied station in the Antarctic.

Scotia sailed from Laurie Island on 22 February 1904 and headed southeast into the Weddell Sea for the second time. The next five weeks were the climax of the expedition. Based on the few soundings taken by ships in or near the Weddell Sea, geographers had had to guess the position of the coastline of the Antarctic continent between Enderby Land at 50°E and Trinity Land (now the northern part of the Antarctic Peninsula) at 55°W, and they drew a dotted line at 82°S (Fig. 7). While in

Scotia, Bruce sighted the coastline at 72°18'S, 17°59'W on 3 March 1904 and followed it for 150 miles in a southwesterly direction. So he changed the map radically. He saw no solid rock, only 100 ft ice cliffs and a glaciated slope stretching into the distance. Pack ice prevented him from making any landing. A sounding, two and a half miles from the 'barrier,' as they called it, gave a depth of only 159 fathoms, and dredgings nearby brought up rocks characteristic of an old continental land-surface. There were many birds flying round. Bruce named the coast 'Coats Land' in honour of the Coats brothers of Paisley, who had been the major subscribers to the expedition. On 11 March a northeasterly gale pressed the pack ice tightly around the ship, and the officers began to discuss the possibilities of being beset for the winter. The crew played football on the ice, and the piper tried unsuccessfully to entertain an emperor penguin with some Scottish tunes. But on the morning of the 14 March, under full engine power, the captain manoeuvred the ship out of the heavy pack into thinner pancake ice, and progress was soon being made towards the northeast.

No further sightings were made of the coastline, and oceanography became the prime scientific interest. On 18 March, the depth was 1410 fathoms and they had the richest deep-water haul of the whole cruise, obtaining more than 60 species. Soundings were taken on most days when the weather permitted, and trawls or tow-nets were lowered frequently on the voyage to Gough Island and Cape Town (Speak 1982).

The ship reached the Clyde on 21 July, where the expedition members were met by the Coats brothers in their yachts. Coming ashore at Millport, they were received by Sir John Murray, the famous oceanographer who had been one of the scientists in *Challenger*. There was a telegram from King Edward VII, congratulating Bruce on the achievements of the expedition, and Sir John presented Bruce with the Gold Medal of the Royal Scottish Geographical Society.

Soon thereafter, in 1905, Bruce sold *Scotia* to Robert Kinnes, a Dundee ship-owner, and she returned to her old life of sealing and whaling in East Greenland, still under the command of Tam Robertson. On her way home from her first voyage in July *Scotia* saved the crew of the Norwegian sealer *Idraett* (Captain Trandel). The crew of nine men had been in a lifeboat for 21 days when *Scotia* found them. *Scotia* took the exhausted crew to Reykjavik. Captain Robertson received a silver cup from the Norwegian government for saving their lives. *Scotia* returned to Dundee with only one whale.

Scotia continued whaling in Greenland waters the following years with rather poor catches. In 1910 she was withdrawn from whaling and sealing and laid up.

North Atlantic Ice Patrol, 1913

In April 1912 *Titanic* sank in the North Atlantic after colliding with an iceberg, and more than 1500 people lost their lives. Sam Eide, a wealthy Norwegian businessman and politician, should have been on board, but he was

delayed on his way to Britain, and therefore missed the ship and survived. Soon after the tragedy, Eide put forward a proposal for an international ice patrol in the Atlantic Ocean. In fact, various shipping companies had ordered their ships to follow certain trans-Atlantic routes south of known ice zones since 1875 and at an international Transatlantic Track Conference in 1898, these were expanded. Yet the *Titanic* tragedy occurred.

A special conference on 20 December 1912 in London recommended that during the spring of 1913 an experimental ship should be sent out to watch the break-up of the ice so as to be able to report when the ice began to move and the direction in which it was travelling (Board of Trade 1914). A staff of scientific observers would sail with the vessel and carry out oceanographic and meteorological programmes.

Several vessels were suggested, and a committee was appointed to make the final selection. The ship selected was *Scotia*, which Kinnes agreed to charter out at a cost of £750 plus the salaries of the crew. The cost of this expedition was to be shared equally between the government, represented by the Board of Trade, and the principal North Atlantic steamship lines. The White Star Line acted on behalf of these and fitted out the vessel, arranging the supply of stores and coal. The estimated cost of the scientific instruments, chemicals, books, etc, was £850. Captain Tam Robertson, who had commanded the vessel in the Antarctic, was engaged as commanding officer and awarded a bonus of £10 per month on top of his normal pay (PRO file BT 15/66, BOT 27/2/13). For the first time electric power was installed. H. Boothroyd supplied a dynamo and a motor for £225. Their installation and the fitting of winches for working the water bottles and the Lucas sounding machine were done by the Electric Telegraph Construction and Maintenance Company of London. Radio transmitter, receiver, and aerial were provided by Marconi Marine Communications free of charge; they also sent two operators. Other specialised equipment was supplied by the laboratory of the Central Council for the Exploration of the Sea at Copenhagen, and Negretti and Zambra of London.

During the cruise, *Scotia* reported to the nearest land wireless station, giving the daily observations. These reports were sent on by the coast station by telegram to the Hydrographic Office, Washington; the Superintendent of the Signal Service, Quebec; and the Meteorological Office in London. The reports were then distributed to steamship companies in the United States, Canada, and Europe, and also sent to Lloyds Register and the Shipping Gazette in London.

Three scientists were appointed to the ship: D.J. Matthews, assistant director of the Marine Biological Association in Plymouth (who was named senior scientist and hydrographer), L.R. Crawshaw (biologist) from the same association, and G.I. Taylor (meteorologist), the Schuster Reader in Meteorology at Cambridge. Matthews had already worked in this area for the Marine Biological Association in 1905. According to Crawshaw, when they

joined the ship at Dundee, ‘the scientists had a small lab in the shape of a deckhouse, nine foot by eight foot in dimension. In the floor of this is a hatchway leading down to a sort of lethal chamber below between decks where Matthews hopes to analyse his water samples’ (Board of Trade 1914). In fact they used the latter for storage.

A narrow bridge open to the elements was carried across the deckhouse roof and fitted at each end with a davit, and a sounding platform was installed that could be folded up out of the way when not in use. These features were similar to those that had been built on the ship for the Antarctic expedition. But the winches on each side of the bridge were electric, not hand-driven, which made for much less labour. The drums held 550 fathoms of 3/8th-inch flexible steel cord, six strands of seven wires each. A 1000-fathoms hand-driven Lucas sounding machine was also fitted. In practice, 550 fathoms was the deepest they had to sound. Another hand-driven drum holding about 150 fathoms of heavier wire was fitted in the cockpit for working a full-speed Knudsen water-bottle fitted amidships. Tow-nets of various sizes were provided. Balloons and kites were available for upper-atmosphere observations.

On 8 March *Scotia* left Dundee harbour, but rough sea and strong west winds forced her to take shelter at Long Hope at the southern entrance to Scapa Flow in the Orkney Islands. On 13 March she was able to proceed to Stromness for oil and water. Ten days later the wind was favourable, and she sailed out into the Atlantic. On her way to St John’s, Newfoundland, the first large iceberg was sighted on 8 April at 46°54’N, 44°30’W. Many icebergs were spotted west of 46°W. By now, ice sightings and meteorological observations were being made regularly, and *Scotia* made contact with US Ice Patrol *Seneca*. On 14 April *Scotia* entered St John’s harbour after a run of 2752 miles.

After some repairs, *Scotia* left St John’s on 23 April for the first operational cruise to between 44 and 49°N, and as far east as 42°W. The scientific party and *Scotia*’s crew were engaged in observations and made sure that the reports reached their destinations. Fog was a problem, but the ship received vital information and observations from passenger liners in the region. Pack ice was encountered to the north, and *Scotia* turned south. The second part of the cruise reached 54°N, where there was thick pack ice so that the party was unable to reach Hamilton Inlet. On 31 May *Scotia* returned to St John’s.

On the second cruise, *Scotia* crossed between the coast and 44°W four times between 49 and 55°N, the surface sea temperature varying from 0 to 6°C, and at 50 fathoms from –1.5 to +4°C. On 20 June drift measurements were taken by means of a buoy anchored near an iceberg: the current was 0.3 mph in a southerly direction, and the berg drifted at 0.38 mph, with no wind. Measurements were also taken of temperature and salinity from the surface down to 20 fathoms here and at several other places. The ship entered pack ice off the Labrador coast on two occasions. An extensive biological programme was also



Fig. 8. *Scotia* aground and on fire on Sully Island, 19 January 1916. (*Western Mail*)

carried out. The ship finally returned to St John’s on 19 July.

On 24 July she started her homeward voyage, and initially a cruise was made to the southeast to 44°N to observe currents before turning north on 28 July along the edge of the Grand Banks. Much fog was encountered here. The Greenland pack was sighted on 9 August at 59°N and its edge followed to 62°11’N. A gale from the northeast blew the next day, so the course was altered to the southeast. *Scotia* docked at Dundee on 21 August after a total of some 15 weeks in the ice-threatened area of the North Atlantic.

On 10 November 1913, the International Conference on Safety of Life at Sea met in London. As a result, an International Ice Patrol was established and ‘will carry on the scientific work initiated in 1913 by the *Scotia*’ (Board of Trade 1914). Fourteen nations agreed to pay the costs, the major ones being Great Britain (40%), the United States (18%), Germany (10%), France and Italy (6% each), and Canada and Norway (3% each). The United States Coast Guard made two ships available and was responsible for the long-term operation of the International Ice Patrol (Mosby 1935). The scientific instruments remaining from the *Scotia* cruises were handed over to this new international service.

A freighter in World War I

Soon after the North Atlantic Ice Patrol, Robert Kinnes foresaw the coming of a European war and sold *Scotia* to the Hudson’s Bay Company. The French government, requiring more freighters for the war effort, chartered her from the HBC and used her to carry cargoes, mainly

ammunition, across the Channel from England to France under the command of various British captains.

On 18 January 1916, en route from Bristol to Bordeaux with a cargo of coal and ammunition, the ship caught fire in the Barry Roads. Two tugs from Cardiff stood by, attempting to quell the fire, but thick smoke made it difficult to approach. Captain Andrews beached her on Sully Island near Barry Dock, and the crew was evacuated. On 27 January *Scotia* was still burning and likely to become a total wreck (*Lloyd's Weekly Index* 18 January 1916) (Fig. 8). Some newspapers erroneously wrote 'Scilly Isles' instead of Sully Island. Today some remains may still be seen at low tide. On 28 January 1916, the headline in the *Barry Dock News* read 'The End of an Historic Ship.'

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References

- Board of Trade. 1914. *Report on the work carried out by the SS Scotia, 1913: ice observation, meteorology and oceanography in the North Atlantic Ocean*. London: Board of Trade.
- Bruce, W.S. 1911. *Polar exploration*. London: Williams and Norgate.
- Giaever, J. 1937. *Kaptein Knudsen's Ishavsferder*. Oslo: Jacob Dybwad.
- Hekla*. Logbook. Unpublished document. Oslo: Universitetsbiblioteket.
- Knudsen, R. 1886–94. Diaries. Oslo: Statsarkivet.
- Lloyd's Register of Ships: Steamers*. 1888–89.
- Lloyd's Register of Steam Vessels*. 1915–16.
- Mill, H.R. 1944. Life interests of a geographer, 1861–1944. Unpublished document. Cambridge: SPRI.
- Mosby, O. 1935. Chief Oceanographer International Ice Patrol. Påjakt efter isfjell i Atlanteren, Oslo. Polarboken 1935, Gyldendal Norske Forlag.
- Ryder, C. 1895. *Den Østgrønlandske Expedition, Udført i Aarene 1891–1892 under Ledelse av C. Ryder*. Copenhagen: Dreyer.
- Speak, P. (editor). 1982. *The log of the Scotia*. Edinburgh: Edinburgh University Press.
- Speak, P. 2003. *William Speirs Bruce*. Edinburgh: National Museums of Scotland.