

Philatelic Panorama of Some Belgian Antarctic Marine Contributions, 19th–21st Centuries: From *Belgica* to *Princess Elisabeth*

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ABSTRACT

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Belgium has been interested in and involved in Antarctic studies for over a century. The name of Adrien de Gerlache is indelibly linked with that of his ship, the *Belgica*, the first vessel to ever spend a winter trapped in the ice of the southern continent. The former Norwegian sealer-whaler had a multinational crew of scientists and sailors. If it brought back a trove of information, it also did a tale of hardships and fears. The postal administration of Belgium—and to a more modest extent that of Romania and Poland—have illustrated the expedition, its anniversaries, and the further research carried out by Belgians in Antarctica. The *Belgica* was sunk by the German invasion forces in World War II. Efforts are underway to refloat the vessel and make it into a museum, as was done, *e.g.*, for the *Fram*.



Le Pôle Sud fut conquis parce que Adrien de Gerlache, le premier, osa affronter un hivernage antarctique.

Jean Charcot, French explorer¹

INTRODUCTION

Oceanographic research has not been solely the *apanage* of the major nations; the smallest ones—Liechtenstein, Monaco (Albert I, 1966)—contributed substantially. Belgium hosted the first international meteorological and oceanological conference in Brussels (1858; Charlier, 2003, 2004a, 2004b) and for 112 years has been involved in Antarctic studies. The Netherlands joined their southern neighbors in the polar station for several years during the 20th century. Belgium is a signatory of the Antarctic Treaty, and it inaugurated a new station in 2009. This is illustrated by the Belgian philatelic history and also by Romanian and Polish stamps (Figure 1a).

The statement of Charcot, cited above, is certainly accurate, but the distinction of the de Gerlache expedition is not only having been an effort to reach as a “first” the South Pole—which it did not manage to achieve as did another attempt (Amundsen’s)—but also to have been a major scientific effort, not limited to but including concerns about climate change.

If *Calypso* rhymes with Cousteau, so does Antarctica (Figures 2 and 3) with *Belgica*, and if Cousteau’s name is indelibly linked with the *Calypso*, so is de Adrien de Gerlache’s (Figure 4) with the *Belgica*. Belgium has a long tradition of Antarctic study, perhaps best illustrated by the de Gerlache end-of-19th century *Belgica* expedition (1897–1899).

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¹ The South Pole was conquered because Adrien de Gerlache, the first, dared to attempt a winter stay in Antarctica.

THE 19TH CENTURY

Part of the century has been referred to as the heroic period of the Antarctic, and the *Belgica* (Figures 5 and 6), due to her wintering over in the Antarctic, is often considered as a participant in the beginning of that period. In 1822, American Captain Benjamin Morrell (1795–1839)² had reached 75° south latitude. At the time, interest in Antarctic research centered about Victoria Land, where the expedition led by Carstens Borchgrevink (1864–1934)³ headquartered. De Gerlache (1866–1934) intended originally to concentrate on Victoria Land but switched his attention to the first Antarctic land to be discovered, Graham Land. Graham Land was discovered by another American, whaling Captain Nathaniel Palmer (1799–1877), in 1821. Biscoe (1794–1843) in 1831, Bellingshausen (1778–1852) in 1832, and Dumont d’Urville (1790–1842) in 1837 mapped out Graham Land and its islands, but only in 1893 did Captain Carl Anton Larsen (1860–1924), after whom the Larsen Ice Shelf is named, a Norwegian, steam along some 500 km of the coast line (*The Geographical Journal* 4, 5, 466–467). His geological and botanical observations awoke renewed interest.

The 1894–1895 *Antarctica* cruise in Victoria Land rekindled curiosity about a south polar continent that Magellan (1486–1521) had led people to believe in during the sixteenth and seventeenth centuries. Captain James Cook (1728–1779) in the eighteenth century and British explorer, Sir James Clark Ross (1800–1862), in the 1840s did not believe in Antarctica; Ross,

² Morrell seems to have been somewhat controversial and his claims were disputed to the extent that some of his detractors stigmatized him as a Baron von Munchausen, a notorious German character known for his fantasies and fibs. This negative opinion of Morrell is, however, far from universally shared.

³ A Norwegian explorer.

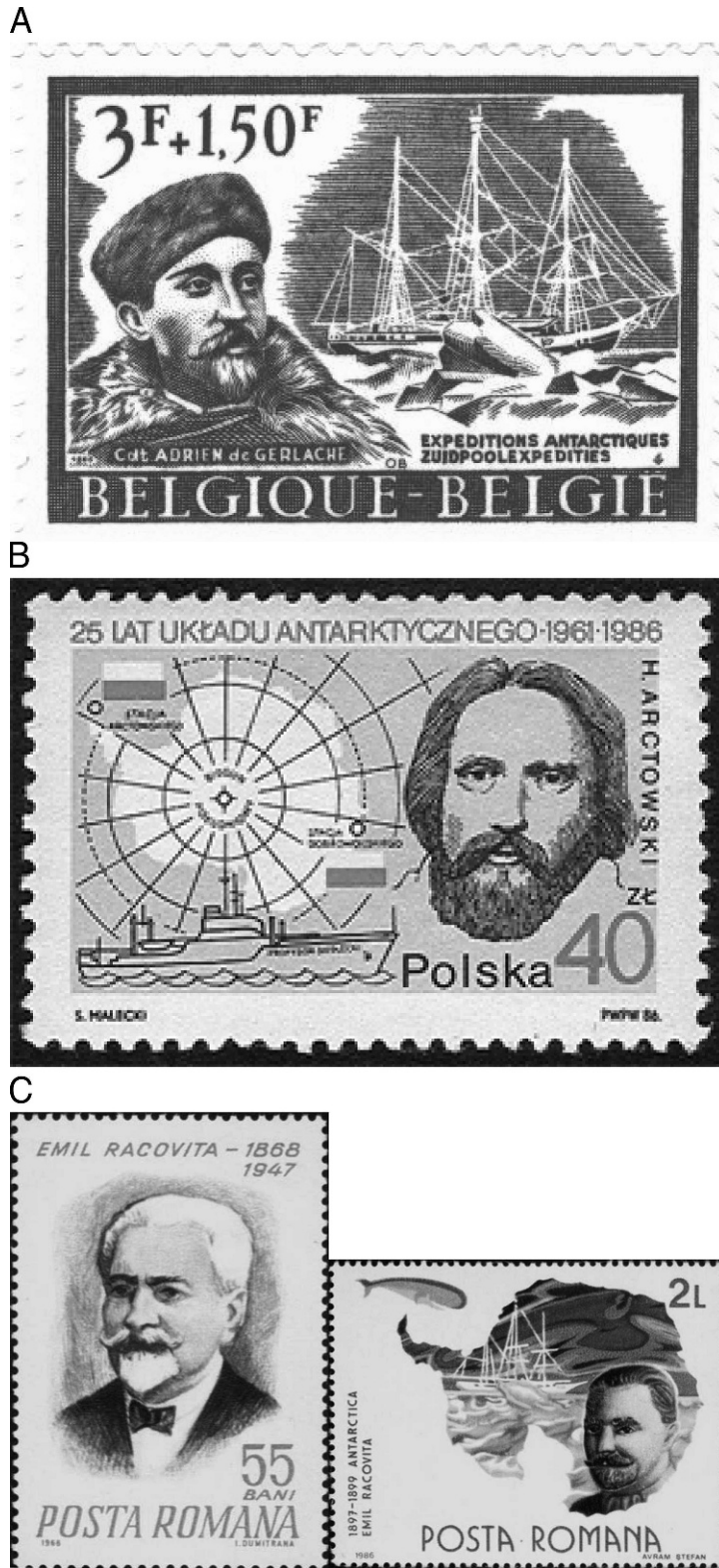


Figure 1. Stamps honoring (a) Adrien de Gerlache de Gomery, (b) Arctowski, and (c) Racovița.

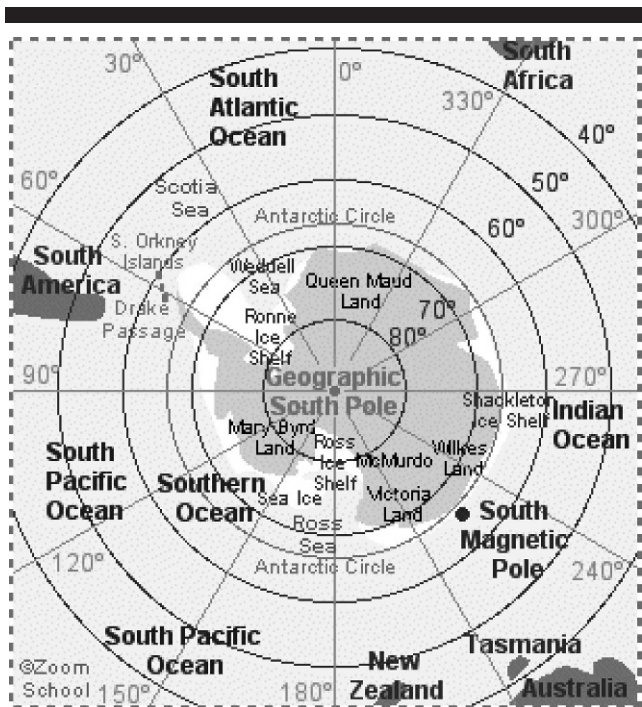


Figure 2. Map of Antarctica.

who entered the Royal Navy at the tender age of 11, had discovered Victoria Land in 1841 (Dyche, 1899).

The July 1895 London-held meeting of the Sixth International Geographical Congress adopted this resolution: “That this congress record its opinion that the exploration of the Antarctic Regions is the greatest piece of geographical exploration still to be undertaken. That in view of the additions to knowledge in almost every branch of science which would result from such a scientific exploration the Congress recommends that the scientific societies throughout the world should urge in whatever way seems to them most effective, that this work should be undertaken before the close of the century.” It



Figure 3. Antarctica on a sunny balmy day (public domain photo, originally in CIA dossier).



Figure 4. Portrait of de Gerlache.

came on the heels of de Gerlache’s plans, but it was unfortunately ill timed. National resources were allocated to the Belgian king’s Congo, of which Leopold II (1835–1909) was also the sovereign. Nevertheless, de Gerlache managed to kindle the interest of the Brussels-based Belgian Geographical Society, which organized a national subscription. Eventually the Belgian Parliament finally dug in its coffer and came up



Figure 5. *Belgica* anchored at Mount William.

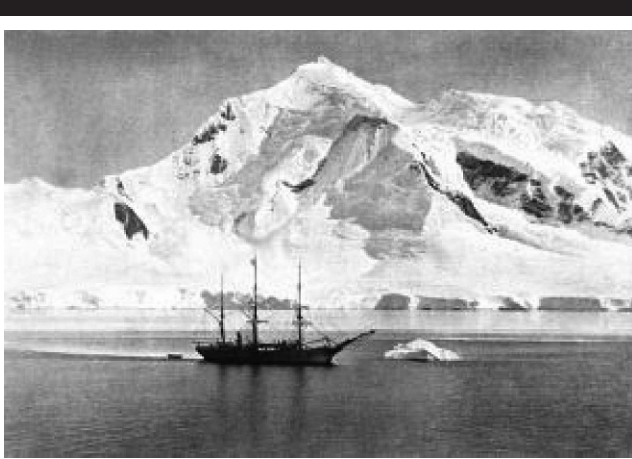


Figure 6. *Belgica* in front of Mount William.

with 60,000 gold francs. At the subscription lists' closing, de Gerlache had close to 300,000 francs in his fund. The 250-ton three-masted whaler *Patria*, built for Arctic waters, was then purchased for 70,000 [gold] francs in Norway. She underwent extensive refitting, was rechristened the *Belgica*, and came to Antwerp, but the voyage was not the end of de Gerlache's financial troubles.

The departure was preceded by *rocamboliques* events. The expedition may have thought it was on its way, but it was far from it! Indeed, stevedores and others found themselves creditors and were not about to let the ship slip away before being paid. There were no funds to satisfy their apparently legitimate claims. And had it not been for last-minute generosity of Antwerp *mecenae*, the *Belgica* might well never have sailed.

A detail of history may be added here: de Gerlache was born in Hasselt, currently the administrative capital of the Belgian province of Limbourg (Limburg in Flemish) and thus was Flemish, but he, like many Flemings at the time, was a francophone. Adrien de Gerlache passed away in Brussels—according to records from paratyphoid fever—and his son and disciple Gaston was also Flemish, born in Antwerp. Gaston (1919–2006) died in Oudenaarde (Audenaerde in French). Considering contemporary longevity, both Adrien and Gaston lived relatively short lives (Figures 1a, 4).

On 29 July 1896, Adrien de Gerlache received a letter from Norwegian Roald Amundsen (1872–1928; Figure 7), future discoverer of the South Pole (15 December 1911), who requested to sail, unpaid, aboard the *Belgica*. De Gerlache accepted his request, and Amundsen joined the multinational scientific crew. Thus, in 1897, 29-year-old Royal Belgian Navy Senior Lieutenant Adrien Victor Joseph de Gerlache de Gomery (1866–1934) organized the Belgian Antarctic Expedition.⁴ *Belgica*, badly overloaded, left Antwerp with a multinational crew. Unable to do better than 6 nautical miles per hour

⁴ De Gerlache had studied engineering at the Université libre de Bruxelles (ULB), then attended the Naval School at Ostend. The ULB split up in the 1970s into one keeping the original name and the Vrije Universiteit Brussel (VUB). At this writing (2009) steps are underway to set up an overarching anglophone University of Brussels with a specifically international vocation.



TAKING AN OBSERVATION AT THE POLE.

Figure 7. Purported to be Amundsen at South Pole, planting Norwegian flag and making measurements.

(11.11 metric miles/hr) under steam with decks barely 70 cm clear of water, she took 3.5 months to reach Punta Arenas (1 December 1897). The crew included Romanian zoologist Emile Racovitza⁵ (Figure 1c); Polish geologist Henryk Arctowski (1871–1958)⁶ (Figure 1b); Polish sailor turned meteorologist Antoni Dobrowolski (1871–1954)⁷; Belgian navigating officer and astronomer Lieutenant Georges Lecoq (1869–1929); Belgian lieutenant Emile Danco (1868–1897; Figure 8), personal friend of de Gerlache, who died in the early stages of the expedition; several Norwegians; the Russian laboratory assistant; and ship surgeon Dr. Frederick A. Cook, a New Yorker.

De Gerlache did not forget the generosity of well-to-do sympathetic *Anversois* or *Antwerpenaren*, and he christened the first uncharted island he and his crew discovered Ile Anvers (Table 1). He also remembered Danco's *alma mater* by naming another island Liège. The name Brabant, given a third island, was to express gratitude for the financial support given by people of the province of Brabant⁸ (Table 1). The narrows he chartered he called the Belgica Strait, but later on navigators felt he deserved to be remembered and Belgica Strait became de Gerlache Strait (Table 2).

History does not tell us why several crew members deserted, leaving only 19 men, or the names of all who stayed with the

⁵ Racovitza played a prominent role. His country honored him on two postage stamps. Racovitza is also hailed among Romania's pioneers of oceanography, together with G. Antipa and I. Borcea.

⁶ A graduate of Liège University (Belgium), who majored in geology and chemistry, and the Sorbonne (Paris, France). He also is mentioned at Lwow University as a faculty member. His studies in Liège, his important role aboard the *Belgica*, and his later long residence in Brussels have led to occasional erroneous reference to him as a Belgian. He passed away in the United States. On his experiences he published Arctowski, H., 1904, *Au pays des manchots: Brussels, Scheppens*, and also 1908, *Résultats du voyage de la S.Y. Belgica en 1187–1898–1899. Océanographie. Les glaces, glace de mer et banquises*.

⁷ Poland named a research vessel after Arctowski and Antarctic stations after both Arctowski and Dobrowolski.

⁸ The Belgian province of Brabant was split up in the late 20th century for linguistic reasons into the two present-day provinces of Brabant Wallon and Vlaams Brabant.



Figure 8. Photograph of Emile Danco, who with sailor Wiencke and the ship's cat "Nansen" were the casualties of the *Belgica* expedition. (Photo archives of "Belgica Vereniging" provided by Dr. P. Vanouplines, V.U.B.)

ship. After scientific observations, which took more time than originally planned, on Tierra del Fuego, the *Belgica* departed southward (14 December), reaching Antarctic waters on 20 January 1898. She was running the risk of being forced to spend the winter in Antarctica.

Tragedy struck on 22 January when an unexpected strong storm hit. The containers of coal broke free and spilled out over the deck as huge waves flooded over the sides. Sailors scrambled. Cook's notes include this passage (Cook, 1908): "While thus engaged we hear an unearthly cry—a cry which made me shiver because of its force and painful tone. We turned about quickly, but saw nothing to indicate the direction of the noise. Amundsen, thinking there'd been an accident in the engine room, rushed in that direction. I went to the quarter-deck, looked astern and saw a man struggling among the white crests [Sailor (Carl) Wiencke, trying to free the scuppers,] lost his balance, and in falling he uttered the awful cry. With a quick presence of mind he grasped the log-line. I began to draw it in, but he slipped until his hand was stopped by the log. He held on to this with a death-like grasp . . . but there was little to be done. With bravery impossible to appreciate, Lieutenant Georges Lecointe offered to be lowered into the sea to pass a rope around Wiencke. With two men on deck, Lecointe was lowered, but he sank at once with the counter-eddies and nearly lost his life [see Lecointe, 1903]. We managed to tow Wiencke to the side of the ship . . . but he gave up his grip on the log-line, and sank. Wiencke was a boy with many friends, and his loss was deeply felt." The storm subsided the following day.

The *Belgica* cruised along the east coast of Graham Land and near the Weddell Sea, a water body named after James Weddell (1787–1834), British sealer, who, skirting the ice barrier to the

Table 1. Islands discovered and named by the de Gerlache Expedition to Antarctica.

Island name	Size (km ²)	Geographical location
Anvers*	2432	64°46'S, 64°05'W (64°33'S–63°75'W)†
Brabant	977	64°15'S, 62°20'W
Danco‡	>2	64°44'S, 62°37'W
Lecointe§	>7	close to Brabant Island
Liège	70	64°02'S, 61°91'W
Wiencke	67	64°54'S, 63°43'W

*Also known by names in other languages: Antwerp Island, Antwerpen Island, Isla Ambérès. Anvers Island—the official name—is listed among the "Antarctic islands." The other islands in this table are "sub-Antarctic islands."

†At least three sets of geographical coordinates have been given; the third set is 64°46'S, 63°30'W–63°30'W).

‡Also known as Isla Dedo.

§Lecointe Island, named after the second in command of the *Belgica*, received this official designation from the British Expeditions in the period 1955–1958.

southeast of Cape Horn in 1823, penetrated as far south as latitude 74.15, a little west of longitude 40 west of Greenwich. Between 23 January and 12 February 1898, the Belgian Antarctic expedition made several landings on the islands, charted and named the islands of Brabant, Liège, Anvers, and, in memory of the sailor lost at sea, Wiencke Island (Table 1). Throughout early February the ship sailed along the far north of the Antarctic peninsula through a strait, now known as de Gerlache Strait, between the edge of Graham Land and a string of islands on which they made numerous landings. On 28 February the explorers entered the ice pack, and at 71°20'S and 85°W the vessel became wedged in the pack ice. All efforts to free the ship came to naught, and the crew accused de Gerlache of having brought this about on purpose.

In the words of Gaston de Gerlache, "On February 16, the *Belgica* left [the newly discovered] strait and during almost a fortnight hugged the edge of the pack ice. From 3 March 1898 to 14 March 1899, during 380 days, the vessel remained at the mercy of the elements. She would only break free of the ice after superhuman efforts by the crew weakened by the long Antarctic night."

Records and books spell out the apparently desperate fate in which de Gerlache had plunged the *Belgica* as the long polar night descended on the 17th of May. Food was in short supply, mostly soft and tasteless, a daily diet of canned meatballs, canned fish, and canned vegetables.

The crew quickly tired of the canned supplies and of each other's company, a situation worsened by the language barrier. A small hut was constructed on the ice, but the cold took its toll, and on 5 June Lieutenant G. Danco (1869–1897) died from the cold and a weak heart. A newly discovered island was named after him.

Henryk Arctowski (1871–1958) wrote in his 1904 book of Memoirs on the expedition: "In the obscurity of the midday twilight we carried Lieutenant Danco's body to a hole which had been cut in the ice, and committed it to the deep. A bitter wind was blowing as, with bared heads, each of us silent, we left him there. . . . And the floe drifted on" (Arctowski, 1904).

The men's distrust and dislike of each other grew, and so began a rapid descent into madness and despair. One of the

Table 2. Expeditions and similar events to Antarctica (adapted from Wikipedia Encyclopedia).

Pre-19th century	
600–300 BC	Greek philosophers theorize spherical Earth with the antipodes North and South polar regions
AD 150	Ptolemy published <i>Geographia</i> , which notes Terra Australis Incognita
1487	Bartolomeu Dias (Diaz) first to sail around Cape of Good Hope, crosses (40°S)
1497	Vasco da Gama sails to White River, South Africa
1522	Ferdinand Magellan, first circumnavigation, discovers Strait of Magellan (54°S)
1525	Francisco de Hoces, member Loaísa Expedition, thought to see land's end (56°S)
1578	Francis Drake discovers Drake Passage
1599	Dirk Gerritsz, potentially sails to 64°S
1603	Gabriel de Castilla, potentially sails to 64°S
1615	Jacob le Maire and Willem Schouten, first to sail around Cape Horn cross (56°S)
1619	García de Nodal expedition, circumnavigate Tierra del Fuego and discover Diego Ramirez Islands (56°30'S, 68°43'W)
1642–1643	Abel Tasman discovers New Zealand and Tasmania (44°S)
1675	Anthony de la Roché discovers South Georgia (54°15'00"S, 36°45'00"W), the first ever land discovered south of the Antarctic Convergence
1698–1699	Edmond Halley sails to 52°S
1720	Captain George Shelvocke sails to 61°30'S
1739	Jean-Baptiste Charles Bouvet de Lozier, discovers Bouvet Island (54°26'S, 3°24'E)
1771	James Cook, <i>HM Bark Endeavour</i> expedition
1771–1772	First French Antarctic Expedition, led by Yves-Joseph de Kerguelen-Trémarec, discovers Kerguelen Islands (49°15'S, 69°35'E)
1772–1775	James Cook sails <i>HMS Resolution</i> , crossing Antarctic Circle in January 1773 and December 1773. On 30 January 1774 he reaches 71°10'S, his farthest south, coming within about 75 miles of the Antarctic mainland without seeing it
19th century	
1819	William Smith discovers South Shetland Islands (62°00'S, 058°00'W), the first land discovered south of 60°S latitude
1819	San Telmo wrecks in the Drake Passage off Livingston Island
1819–1821	Fabian Gottlieb von Bellingshausen, on 27 January 1820, discovers Antarctica mainland at Princess Martha Coast (69°21'28"S, 2°14'50"W)
1820	Edward Bransfield, with William Smith as his pilot, on 30 January 1820, sights Trinity Peninsula (63°37'S, 058°20'W), now the Antarctic Peninsula
1820	Nathaniel Palmer sights Antarctica on 17 November 1820
1821	John Davis, on 7 February 1821, disputed claim of setting foot on Antarctica at Hughes Bay (64°13'S, 61°20'W)
1823–1824	James Weddell, on 20 February 1823, his ship <i>Jane</i> (160 tons) reached a new farthest south of 74°15'S (74°15'S, 30°12'W)
1830–1832	Southern Ocean Expedition, sight Enderby Land (67°30'S, 53°0'E) and Adelaide Island (67°15'S, 68°30'W)
1837–1840	Second French Antarctic Expedition, led by Jules Dumont d'Urville, discovers Adelie Land (66°S)
1838–1839	John Balleny discovers Balleny Islands (66°55'S, 163°45'E)
1838–1842	U.S. Exploring Expedition, led by Charles Wilkes to Antarctic Peninsula (69°30'S, 065°00'W) and eastern Antarctica

Table 2. Continued.

1839–1843	James Clark Ross discovered the Ross Ice Shelf, Ross Sea, Mount Erebus, Mount Terror, and Victoria Land; extended his farthest south to 78°10'S on 23 January 1842
1892–1893	Jason expedition with Carl Anton Larsen, first person to ski in Antarctica
1892–1893	Dundee Whaling Expedition discover Dundee Island (63°30'S, 055°55'W)
1893–1894	Whaling Expedition with Carl Anton Larsen
1893–1895	Henryk Bull, Carstens Borchgrevink, and Alexander von Tunzelmann, set foot on Antarctica at Cape Adare
1897–1899	Belgian Antarctic Expedition, led by Lt. Adrien de Gerlache (Amundsen member of ship's complement)
1898–1900	Southern Cross Expedition, Carsten Borchgrevink, sails to Cape Adare, winters on Antarctica and takes farthest South on 16 February 1900 at 78°50'S
20th century	
1901–1904	Discovery Expedition, led by Robert Falcon Scott, on 30 December 1903, reached (82°17'S)
1901–1903	Gauss expedition (or First German Antarctic Expedition), led by Erich von Drygalski
1901–1903	Swedish Antarctic Expedition, led by Otto Nordenskjöld with Capt. Carl Anton Larsen
1902–1904	Scottish National Antarctic Expedition, led by William Speirs Bruce
1903–1905	Third French Antarctic Expedition, led by Jean-Baptiste Charcot (de Gerlache invited, accepted, then bowed out)
1907–1909	Nimrod Expedition, on 9 January 1909, Ernest Shackleton reached 88°23'S (farthest south), and on 16 January 1909, Edgeworth David reached the South Magnetic Pole at (72°25'S, 155°16'E) (mean position)
1908–1910	Fourth French Antarctic Expedition, led by Jean-Baptiste Charcot
1910–1912	Japanese Antarctic Expedition, led by Nobu Shirase
1910–1912	Roald Amundsen's South Pole expedition, on 14 December 1911, reached the South Pole (90°S)
1910–1913	Terra Nova Expedition, on 17 January 1912, Robert Falcon Scott, reached the South Pole (90°S)
1911–1913	Second German Antarctic Expedition, led by Wilhelm Filchner
1911–1914	Australasian Antarctic Expedition, led by Douglas Mawson
1914–1916	Imperial Trans-Antarctic Expedition, led by Ernest Shackleton
1914–1917	Ross Sea Party, led by Aeneas Mackintosh (last expedition of Heroic Age of Antarctic Exploration)
1921–1922	Shackleton-Rowett Expedition, led by Ernest Shackleton
1929–1931	British Australian and New Zealand Antarctic Research Expedition
1928–1930	Richard Evelyn Byrd, first expedition
1931	H Halvorsen, discovered Princess Astrid Coast
1931	Hjalmar Riiser-Larsen, flew over Antarctica, discovered Kronprins Olav Kyst
1933–1935	Richard Evelyn Byrd, second expedition
1933–1939	Lincoln Ellsworth, aircraft expedition
1934–1937	British Graham Land Expedition
1936	Lars Christensen, dropped Norwegian flag over Prince Harald Coast
1938	Third German Antarctic Expedition (New Swabia, or <i>Neuschwabenland</i> , claimed for Germany), led by Alfred Ritscher
1939–1941	U.S. Antarctic Service Expedition, led by Richard Evelyn Byrd
1943–1945	Operation Tabarin, led by Lieutenant James Marr
1946–1946	Operation Highjump, led by Richard Evelyn Byrd
1947	First Chilean Antarctic Expedition

Table 2. *Continued.*

1947–1948	Operation Windmill, led by Commander Gerald Ketchum
1947–1946	Ronne Antarctic Research Expedition, led by Finn Ronne
1949–1952	Norwegian-British-Swedish Antarctic Expedition, led by John Giaeffer
1955–1956	Operation Deep Freeze, led by Richard Evelyn Byrd
1955–1957	First Soviet Antarctic Expedition, led by Mikhail Somov
1956	Amundsen-Scott South Pole Station established
1956–1958	Commonwealth Trans-Antarctic Expedition, led by Vivian Fuchs
1956–1958	Second Soviet Antarctic Expedition, led by Aleksei Treshnikov
1957–1958	International Geophysical Year
1957–1958	New Zealand Geological Survey Antarctic Expedition
1957	Scott Base established
1957–1967	Belgian Base Roi Baudouin established
1957–1958	Luncke Expedition
1957–1959	Third Soviet Antarctic Expedition, led by Yevgeny Tolstikov
1958–1959	New Zealand Geological Survey Antarctic Expedition
1958–1960	Fourth Soviet Antarctic Expedition, led by Aleksandr Dralkin
1959–1961	Fifth Soviet Antarctic Expedition, led by Yevgeny Korotkevich
1960	South African National Antarctic Expedition
1960–1962	Sixth Soviet Antarctic Expedition, led by V. Driatsky
1961–1963	Seventh Soviet Antarctic Expedition, led by Aleksandr Dralkin
1962–1962	Vostok traverse, led by Australian National Antarctic Research Expeditions (ANARE)
1962–1964	Eighth Soviet Antarctic Expedition, led by Mikhail Somov
1963–1965	Ninth Soviet Antarctic Expedition, led by Mikhail Somov
1964–1966	10th Soviet Antarctic Expedition, led by M. Ostrekin, I. Petrov
1965–1967	11th Soviet Antarctic Expedition, led by D. Maksutov, Leonid Dubrovin
1966–1968	12th Soviet Antarctic Expedition, led by Pavel Senko, Vladislav Gerbovich
1967–1969	13th Soviet Antarctic Expedition, led by Aleksei Treshnikov
1968–1970	14th Soviet Antarctic Expedition, led by D. Maksutov, Ernst Krenkel
1969–1970	New Zealand Geological Survey Antarctic Expedition
1969–1971	15th Soviet Antarctic Expedition, led by Pavel Senko, Vladislav Gerbovich
1970–1972	16th Soviet Antarctic Expedition, led by I. Petrov, Yury Tarbeyev
1971–1973	17th Soviet Antarctic Expedition, led by Yevgeny Korotkevich, V. Averyanov
1972–1974	18th Soviet Antarctic Expedition, led by Pavel Senko
1973–1975	19th Soviet Antarctic Expedition, led by D. Maksutov, V. Ignatov
1974–1976	20th Soviet Antarctic Expedition, led by V. Serdyukov, N. Kornilov
1975–1977	21st Soviet Antarctic Expedition, led by O. Sedov, G. Bardin
1976–1978	22nd Soviet Antarctic Expedition, led by N. Tyabin, Leonid Dubrovin
1977–1979	23rd Soviet Antarctic Expedition, led by V. Serdyukov, O. Sedov
1978–1980	24th Soviet Antarctic Expedition, led by A. Artemyev, O. Sedov
1979	Air New Zealand Flight 901, airplane crash
1979–1980	25th Soviet Antarctic Expedition, led by N. Kornilov, N. Tyabin
1980–1981	Transglobe Expedition, led by Ranulph Fiennes
1980–1982	26th Soviet Antarctic Expedition, led by V. Serdyukov, V. Shamontyev

Table 2. *Continued.*

1981–1983	27th Soviet Antarctic Expedition, led by D. Maksutov, R. Galkin
1982	Falkland Islands War Argentina vs. Britain
1982–1984	28th Soviet Antarctic Expedition, led by N. Kornilov, A. Artemyev
1983–1985	29th Soviet Antarctic Expedition, led by N. Tyabin, L. Bulatov
1984–1987	In the Footsteps of Scott, led by Robert Swan
1984–1985	First Uruguayan Antarctic Expedition, Antarkos I, led by Lt. Col. Omar Porciúncula
1984–1986	30th Soviet Antarctic Expedition, led by D. Maksutov, R. Galkin
1985–1987	31st Soviet Antarctic Expedition, led by N. Tyabin, V. Dubovtsev
1986–1988	32nd Soviet Antarctic Expedition, led by V. Klokov, V. Vovk
1987	Iceberg B-9 calves and carries away Little Americas I–III
1987–1989	33rd Soviet Antarctic Expedition, led by N. A. Kornilov, Yu. A. Khabarov
1987–1988	First Bulgarian Antarctic Expedition, St. Kliment Ohridski Base established
1988–1990	34th Soviet Antarctic Expedition, led by S. M. Pryamikov, L. V. Bulatov
1989–1991	35th Soviet Antarctic Expedition, led by V. M. Piguzov
1991–1992	36th Soviet Antarctic Expedition, led by Lev Savatyugin
1996	Lake Vostok discovered (other geographical features discovered in preceding years)
21st Century	
2004–2005	Tangra 2004/05 created Camp Academia
2004–2005	AGASEA/BBAS joint U.S.-U.K. aerogeophysical survey of the Amundsen Sea Embayment
2005	Ice Challenger Expedition travelled to the South Pole in a six-wheeled vehicle
2005–2006	Spanish Trans-Antarctic Expedition, led by Ramon Larramendi, reached the Southern Pole of Inaccessibility using kite-sleds
2007–2008	Norwegian-U.S. Scientific Traverse of East Antarctica
2008–2009	Impossible 2 Possible (i2P) unsupported South Pole quest by Ray Zahab, Kevin Valley, and Richard Weber
2009	Belgium establishes <i>Princess Elisabeth</i> station

crew, unable to speak French, became convinced that the word for “something” really meant “kill” and attacked anyone who uttered it. Another crew member jumped overboard, declaring that he was going to Belgium.

By the month of May the crew was suffering from muscular spasms, lethargy, and an intense desire to get away from one another. Cook, aware that the men needed sunlight and fresh meat, realized someone needed to take responsibility for the mood of the shipmates, so he took on moral command of the *Belgica* while de Gerlache and Amundsen attempted to break the ship free of the ice. De Gerlache detested the only available source of fresh meat, frozen seal and penguin, which they had killed prior to the onset of winter. His dislike for that food had driven him to forbid even his men from eating it. Dr. Cook described penguin meat thus: “If it’s possible to imagine a piece of beef, odiferous cod fish and a canvas-backed duck roasted together in a pot, with blood and cod-liver oil for sauce, the illustration would be complete.” Deprived of meat, the men caught scurvy, and the Commander and Captain were so prostrated by it that they took to their beds and made their wills. Amundsen took over command and he set the men to

work digging up frozen seal and penguin carcasses. De Gerlache no longer turned up his nose at these; in order to convince the crew it was necessary for medicinal purposes, he unwillingly agreed to “ignore the taste; swallow it down as a duty.” As well as treating the men’s physical ailments, Cook also tended to his wards’ minds and organized elaborate games to occupy them. Huge sums of imaginary money were gambled in card games.

On 23 July 1898, the first glow of light returned, followed by the spirits of the men, and research work resumed. Soundings were taken through the ice, and astronomical observations were taken, while sledge parties explored the drift. Even though the winter was over, they were still firmly embraced by the ice, which measured over 7 feet (2m72) thick.

The return of the sun in August brought hope, but their plight was still desperate. The ice about the ship was now over 2 m thick. Trapped in the icy grip, the *Belgica* continued a gradual drift westward with no indication that they might ever escape. The *Belgica* drifted to the west throughout August and September. In October they cheered to see lakes forming in the ice, but the ice closed in and froze them in again. In November snow settled in around the ship, and several crew members were treated by Dr. Cook for onset of insanity. Christmas passed in gloom. Food and fuel were short, and a second winter trapped would doom them. On New Year’s Eve, 1898, a stretch of open water appeared. In the second week of 1899, a party sledged to the edge of the lake where they measured the depth of the ice. For the next few weeks, working day and night, the explorers chopped and sawed their way through the ice toward the ship. By the end of January they had cut a channel to within 30 m of the ship. Then the wind changed, the ice shifted, and the channel closed in behind them. Despondency set in, food had to be rationed. February would be the last month of the Antarctic summer, and the days would again shorten and the weather would become unbearable. Abandoning the ship was considered, but there was no place to go.

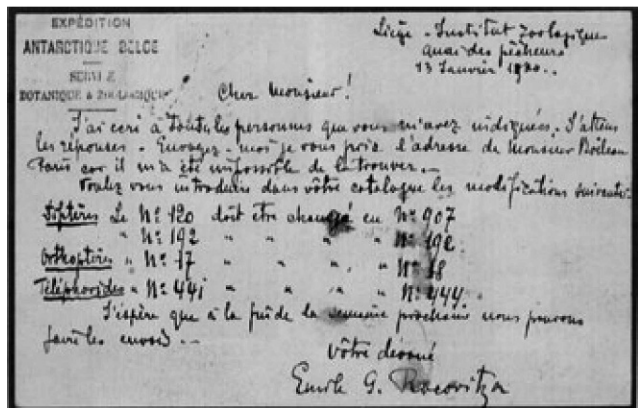
On 15 February, at 2 a.m., de Gerlache was awakened by a sailor who had been on watch. The channel had reopened! The engine was started and, for the first time since 2 March 1898, the *Belgica* was moving under her own power. It took until 14 March to clear the pack through about 12 km of ice, almost 13 months after initial entrapment, and 17 degrees of longitude drift.

In March 1899 the expedition reached Punta Arenas and de Gerlache sent a lengthy wire to the Royal Belgian Geographical Society and another crisp one to his father, “BELGICA. ADRIEN,” providing the first news in 15 months that things had not gone (entirely⁹) awry. The expedition had achieved two “firsts”: it had wintered in Antarctica, and it had had a clearly scientific character and purpose. Some scientists still consider it one of the most fruitful polar expeditions ever.

The time of farewells had come: Roald Amundsen and two of his fellow countrymen left and sailed home on a Norwegian mail boat. Sailor Tollefsen had lost his sanity during the Antarctic night but eventually recovered. Sailor Knutsen wasn’t so lucky, and he died shortly afterwards. Medals were presented by King Leopold II of the Belgians. The expedition returned to Antwerp on 5 November 1899.

⁹ Considering that several deaths occurred.

A



B

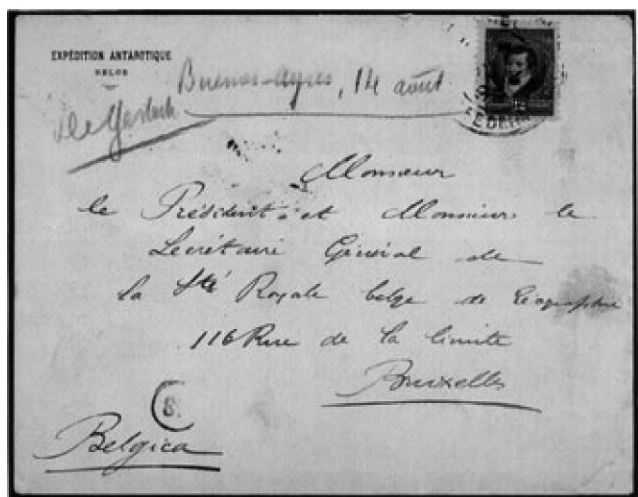


Figure 9. Correspondence from the Antarctic expedition. (a) Letter from Racovița. (b) Very rare cover of a letter from de Gerlache.

The *Epopaea* and Some Results

E. Racovița (Racovița, 1998) contributed to biological oceanography, as aptly recalled by a grandson of the expedition’s director (de Gerlache de Gomery, 1998) and by Alexandru Bologa (Bologa and Marinescu, 2002) of Mamaia-Constanța’s Romanian Institute of Marine Research “Grigore Antipa” at the Fifth International Congress on the History of Oceanography at La Jolla, California (Benson and Rehbock, 1993). The discoveries of the *Belgica* expedition have been touched upon by Declair (1998; see also the Appendix) at the celebration (in Romania) of the centennial of the famous voyage. A symposium was organized in Brussels (Anonymous, 1998) and an exhibit in Ostend. The correspondence of the responsible parties of the Antarctic expedition constitute a valuable milestone in the history of science (Marinescu, 1998) (Figure 9). The de Gerlache family (de Gerlache de Gomery, 1897–1997; de Gerlache de Gomery, 1998) has pursued its oceanographic endeavors to this day, and the present Belgian oceanographic vessel named *Belgica* carries on a fine tradition (Figure 10).



Figure 10. The contemporary *Belgica*, a research vessel.

Belgium established a new Antarctic research station—*Princess Elisabeth*—in 2007, incidentally entirely powered by solar energy (Figure 19).

Adrien de Gerlache de Gomery's travels to the South Pole made room for biological research. During the first trip of the *Belgica* E. Racovitza (Racovița) gathered considerable biogeographical information on Antarctic pelagic and abyssal species (cf. Appendix 1). On different journeys D. Damas and E. Koefoed studied the Greenland Sea plankton. On later trips of the *Belgica*, L. Stappers gathered valuable information on biotic zones. Damas, who became a faculty member at the University of Liège, captured a young *Spirula*, a zoological rarity because of its spiral shell similar to that of the fossil ammonites. His laboratory studies concentrated on floating organisms and adaptations to the environment and life conditions.

The travaux, travels, and achievements of the *Belgica* were highlighted in a conference held in Romania honoring Racovița and the 100th anniversary of the first voyage (1998). The Belgian Postal Administration issued special stamps honoring the 50th anniversary (Figure 11) and the 100th anniversary of the expedition (Figure 12). Proceedings were published in a special issue of *Noesis* (Joja, 1998), while a book dedicated to its commander, Adrien de Gerlache de Gomery, was released at the beginning of the 21st century (Declair and de Besyer, 2001).

THE 20TH CENTURY

Exploration of the Atlantic was again discussed at the Tenth International Geographic Congress, held in Rome in 1913. Here modified plans were agreed upon that were reported to the chairman of the Atlantic Commission, the Prince of Monaco. He was of the opinion, however, that in the coming year work should be concentrated on getting the Mediterranean Commission constituted, so he suggested that activities in the Atlantic be postponed for a year. In the shuffle the Antarctic slid to the lower echelons of the agenda.

The International Council for the Exploration of the Sea (ICES) now took over preparation of detailed plans for the investigation of the Atlantic. These were discussed by an informal meeting of some members of the Atlantic Commission

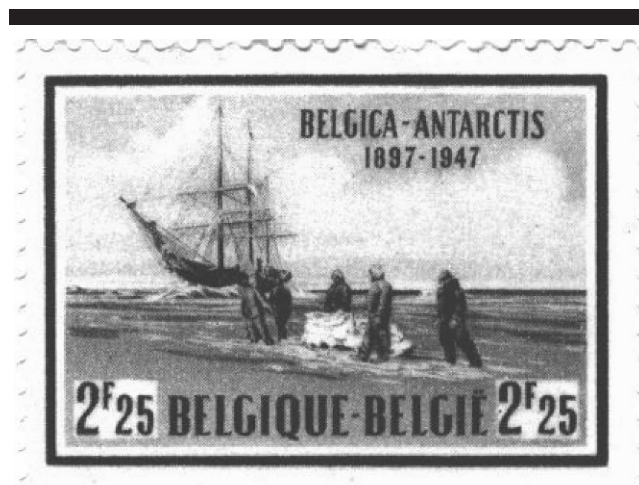


Figure 11. Stamp issued on the 50th anniversary of the *Belgica* expedition.

and other scientists, presided over by the Prince of Monaco, at Kiel in June 1914. The plans should have been realized by means of naval vessels crossing the Atlantic in connection with the opening of the Panama Canal. The outbreak of World War I (1914–1918) blocked implementation of the plans (Smed, 2004, pp. 174–175).

The Atlantic Commission never did become a menace to ICES. As a matter of fact it did not meet after the meeting in Monaco in 1910, except for the already mentioned informal meeting at Kiel. So the Atlantic Commission did not survive the First World War, whereas its twin sister, the Mediterranean Commission (Commission Internationale pour l'Exploration Scientifique de la Mer Méditerranée; CIESM) still exists. It met

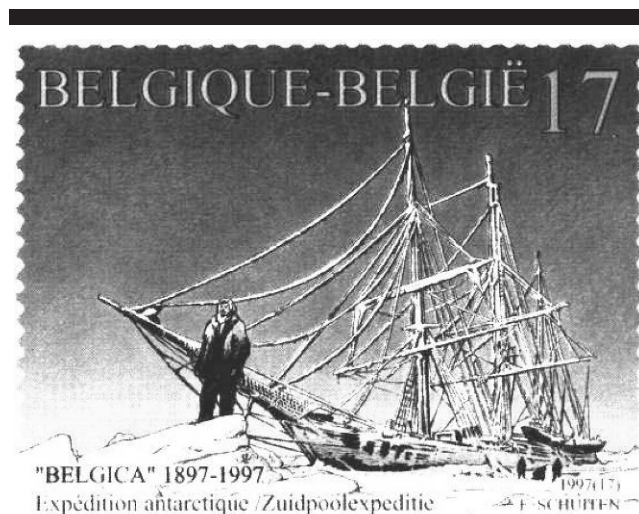


Figure 12. Stamp issued on the occasion of the 100th anniversary of the *Belgica* expedition.

in Rome in 1914 and was formally constituted at a meeting in Madrid in 1919.

After the war, Otto Pettersson, who had become President of ICES, feared that Monaco, as he often nicknamed Prince Albert, would win England's support for a plan to create a coalition of the (wartime) Allies for marine research. To counteract this, he suggested that ICES should cooperate with CIESM, linking up the connection that had been cut in 1914, and reviving the investigations of the Atlantic (Greenaway, 1996).

De Gerlache related his travel in a book published in 1901, awarded, in 1902, the prestigious Prix de l'Académie Française (de Gerlache de Gomery, 1904). On the occasion of the centennial of his trip to Antarctica, he was himself the topic of a book in French that was translated into Dutch (Schelfhout, 1997).

The *Belgica* and de Gerlache made further polar expeditions to Greenland (1905, 1909), to Spitsbergen (Svalbard), and to the Franz-Josef Archipelago (1909). De Gerlache led or participated in several other expeditions (Barents and Kara seas 1907), one even to Iran. At Jean Charcot's (1867–1934) request he joined the 1930 expedition to the Antarctic, but resigned in Buenos Aires. According to some he made this surprising decision because of a very unpleasant atmosphere aboard. According to others he wanted to be with his fiancée. His youngest son, Gaston de Gerlache de Gomery (1919–2006) followed in his father's footsteps, participating in expeditions to and work in a Belgian research station in Antarctica. The grandson of Adrien de Gerlache and son of Gaston produced a documentary about the Antarctic saga of a family (Radio Télévision Belge Francophone). The documentary is discussed in detail in the Brussels daily *Le Soir*.

The *Belgica* was sold in 1902 to Norwegian N.C. Halversen, who later sold her to the Duke of Orleans. She participated during these years in several Arctic region voyages. The *Belgica* was retired from service just before World War I started (1913). The fate of the *Belgica* has not been much advertised. The former Norwegian vessel turned scientific research ship somehow returned to her homeland. That is where she was when World War II began. The British who were in Northern Norway could not blow her up, for lack of munitions, nor sink her, for that matter. The Nazi German invaders, in their frenzy to destroy anything afloat and convinced they had to frighten their opponents, bombed her and sent her to the bottom, at a mere 20 m depth.

There *Belgica* has rested for the last 70 years, in what divers and experts have described as a fairly good condition. But materials, which encrusted with marine life, are wearing out, and pilfering has taken its toll. Thus, a team of Belgian "archaeologists" proposed to lift her, bring her back to Belgium—as the French did when they lifted the sunken *Calypso* to tow her back to France from Singapore—refurbish her, and turn her into a museum, as was done with Belgian sail training-ship *Mercator*, returned to her Ostend mooring after being put back into shape.¹⁰ *Mercator* has attracted thousands of visitors. The undertaking should be crowned with success if carried out within the coming 2–3 years and has gathered

momentum due to the enthusiasm generated by the inauguration in mid-February 2009 of the 100% environmentally sustainable Belgian Antarctic station *Princess Elisabeth* (Figure 18). Further progress is reported concerning the preservation of *Belgica*. The construction of a full-sized replica of the ship has commenced (Loy, 2008). The replica is to be anchored at a quay of the port of Ostend.

Belgian names were given not only to sea passages and islands as a result of the *Belgica's* discoveries, but also to the largest purely terrestrial animal of the continent: *Belgica antarctica*, a species of flightless midge endemic to Antarctica. The insect, merely 2 to 6 mm in length, is the only "true insect" of Antarctica. The fact that it is unable to fly has been attributed by some zoologists as a protection, an adaptation to prevent wind from being blown to areas unsuitable to its survival.

Belgium organized an Antarctic Expedition during the years 1957–1958—its presence celebrated on stamps (Figures 14, 15) and established an Antarctic base—Base Roi Baudouin (Figures 13, 16)—that lasted 10 years (1957–1967); only 40 years later the *Princess Elisabeth* South Pole Station—2007—reestablished the Belgian presence on the icy continent. Some of its scientists participated in research cruises. It would be plethoric to make a list, but, for example, Claude Joiris (VUB) conducted microbiological and ornithological research (some in association with L. Tan and H.-J. Ruger of the Alfred Wegener Institute at Bremerhaven and N. Glansdorff, VUB) during Antarctic and Arctic cruises onboard the German ice-breaker *Polarstern*. Joiris and his coworker L. Holsbeek also studied the effects of various pollutants on sea mammals. Daniel Prieur (University of Brest) and Christian Jeanthon (Institut français de recherche pour l'exploration de la mer [French Research Institute for Exploration of the Sea] [IFREMER]) led the *Amistad Campaign* (1999) on the *Atalante* in the Pacific Ocean in which Nicolas Glansdorff (VUB) and Max Mergeay (Vlaamse Instelling voor Technologisch Onderzoek [Flemish Organization for Technological Research] [VITO], Molecular Nuclear Center) participated. Because of lack of funding the base was shut during 1961–1964.

The name of the *Belgica* entered "legend" as did *Vityaz*, *Hirondelle*, and many others. Prince Albert I, sovereign of the Principality of Monaco, selected her among the ships whose bows adorn, as sculpture, the façade of the famed Musée Océanographique de Monaco (Carpine, 1968). This is certainly why the name is retained. Although there is no *Belgica II*, there is a new *Belgica* in the Belgian Naval Force (there is no longer a Royal Belgian Navy) (Figure 10). It has been given to an oceanographic research ship and service provider that of course belongs to the Belgian State and has been placed under the responsibility of the Belgian Science Policy Administration, managed by the Management Unit of the North Sea Mathematical Models (MUMM), the agency also responsible for planning and organizing scientific campaigns at sea. The Belgian Navy provides the crew and takes care of the operational aspects as well as the moorage in Zeebrugge, *ipso facto* the *Belgica's* home port.

The ship, a floating laboratory, monitors the quality of the marine environment, collecting data on biological, chemical, physical, geological, and hydrodynamic processes, and under-

¹⁰ Kept at quay in Ostend, a North Sea port on the coast of Belgium.

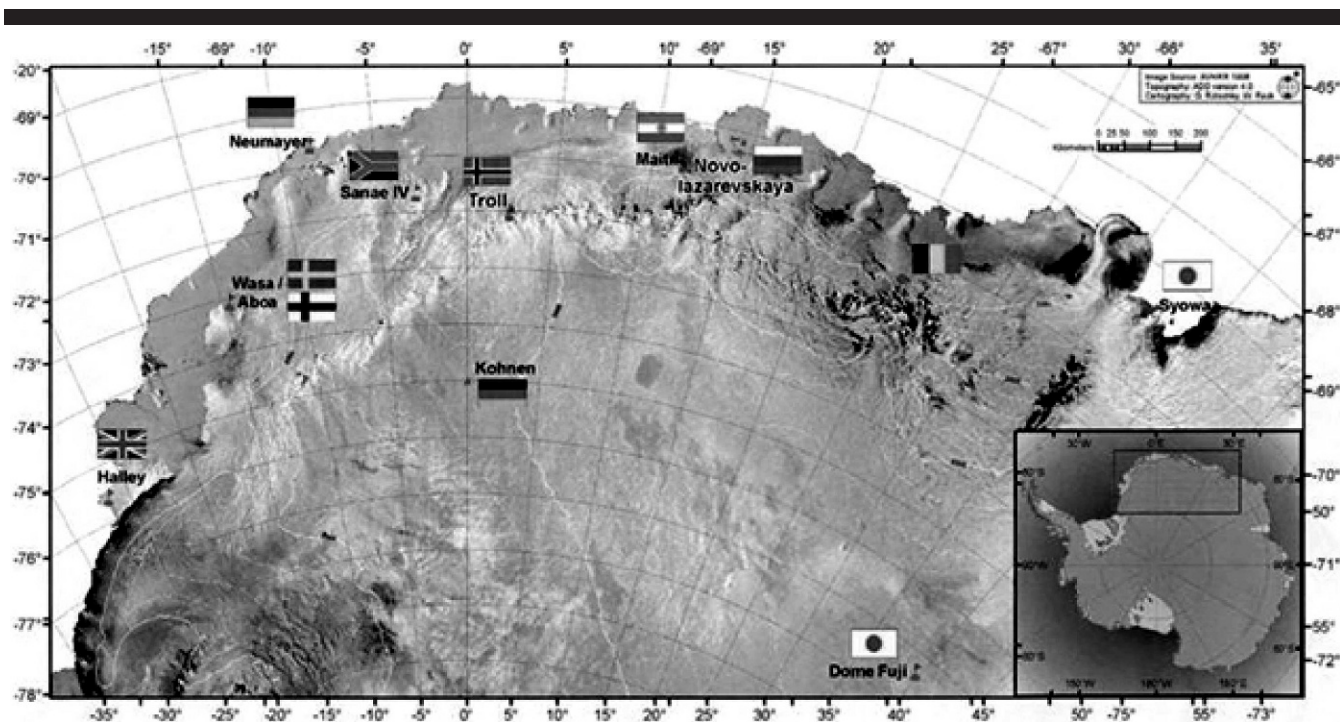


Figure 13. Location of Roi Baudouin Base in Antarctica (at Belgian flag between 25°N and 30°N).

takes scientific expeditions. Activities are carried out in close cooperation with European research programs. She abandons her research role when a shipwreck involving a dangerous load or an oil spill occurs, sailing to the site to examine the impact of the incident. MUMM modelers examine the spread of the marine environment harmful products using mathematical models.

Belgian expeditions, in which Dutch scientists participated later on (1964–1966), encompassed until 1966–1967 two “teams”: one that spent the winter at King Baudouin’s base

and concentrated on geophysical observations, the other that came for the summer, studying geodesy, glaciology, and photogrammetry, with additional research in zoology and oceanography (Figure 14). Twosomes of specialists would take off for several days—even weeks—occasionally with a dog-pulled sleigh. A special four-stamp sheet was issued illustrating the “huskies.” Such teams would roam at distances reaching sometimes 300 km from base (Figure 15). Occasionally a “winter-team man” stayed on for the summer. Speed of work being of the essence, the operations of the base were



Figure 14. Antarctic expedition in 20th century.



Figure 15. Polar dogs of the Belgian expedition.

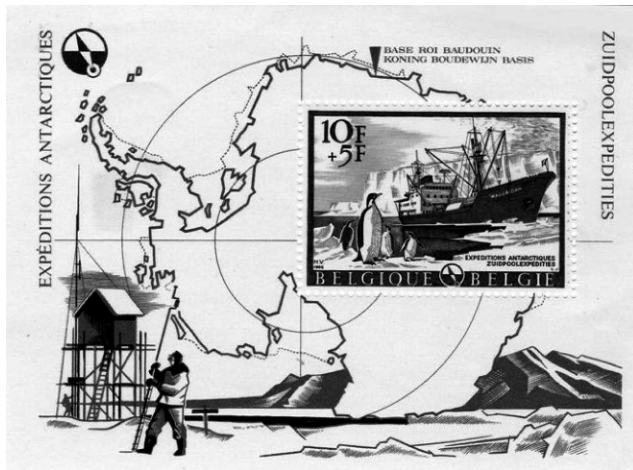


Figure 16. Belgian Antarctic base King Baudouin (Boudewijn, Baldwin).

enhanced by having at disposal a helicopter and two small planes (Figure 16). The Belgian-Dutch expedition was the sixth set up by Belgium since 1957. In 1957 a Belgian group, under the command of Gaston de Gerlache, son of explorer Adrien de Gerlache, found a heretofore undiscovered gulf in Antarctica perfectly suited for disembarkation of ships and built the first King Baudouin base nearby.¹¹ The expedition for construction of the first Belgian base in Antarctica on the occasion of the International Geophysical Year (Année Géophysique Internationale) was launched by Belgian explorer, Gaston de Gerlache. Buttressed by the Belgian royal family, it was awarded by the Belgian Federal government a 54 million Belgian franc budget (€1,370,000; in \$-2009= \$2,028,000). It left Antwerp on 12 November 1957 aboard two Norwegian ships. On 26 December 1957, the expedition reached Queen Maud Land; only 8 weeks later the base had been erected, a feat that other countries accomplished in 7 months on average.

The International Geophysical Year¹²

The International Council of Scientific Unions proposed a comprehensive series of global geophysical activities to span the period July 1957–December 1958. Called International Geophysical Year (IGY), modeled on the International Polar Years of 1882–1883 and 1932–1933, it was intended to provide scientists from 67 countries an opportunity to participate in a series of coordinated observations of various geophysical phenomena.

Technical panels pursued work in aurora and airglow, cosmic rays, geomagnetism, glaciology, gravity, ionospheric physics, longitude and latitude determination, meteorology, oceanography, rocketry, seismology, and solar activity.

¹¹ They named it after (controversial) King Leopold III (1901–1984; ascended to the throne in 1934, actually reigned until 1940, when he became a German “P.O.W.,” abdicated 1951 in favor of his elder son Baudouin. His brother Charles [1903–1983] was regent 1945–1950).

¹² Excerpted and adapted from a text of the U.S. National Academy of Science, a press release, May 2009.

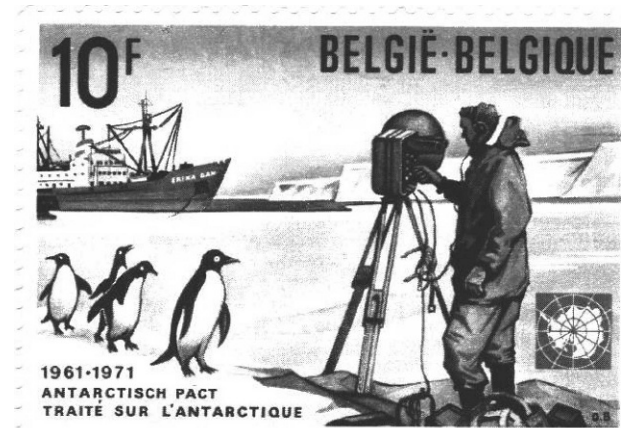


Figure 17. Honoring the Antarctic Treaty.

Special attention was given to the Antarctic, with research on ice depths, improved meteorological prediction, and advances in the theoretical analysis of glaciers. Timing of the IGY was highly opportune, since research technologies and tools had advanced greatly since the 1930s.

The Antarctic Treaty (Figure 17)

The Antarctic Treaty is at the heart of the Antarctic Treaty System, a whole complex of arrangements made for the purpose of regulating relations among states in the Antarctic. The original 12 nations¹³ active in the Antarctic during the International Geophysical Year of 1957–58 signed it in Washington on 1 December 1959 and it entered into force on 23 June 1961. The consultative parties comprise the original parties and an additional four states¹⁴ that acceded to the treaty, demonstrating their interest in Antarctica by carrying out substantial scientific activity there.

The primary purpose of the Antarctic Treaty is to ensure that “the interests of all mankind that Antarctica shall continue forever to be used exclusively for peaceful purposes and shall not become the scene or object of international discord.” To this end it prohibits military activity, except in support of science, nuclear explosions, and the disposal of nuclear waste; promotes scientific research and the exchange of data; and holds all territorial claims in abeyance. The treaty applies to the area south of 60°S latitude, including all ice shelves and islands.

Considering the wild scramble and flag postings taking place in the Arctic, where global warming is uncovering huge mineral resources, the treaty is an historical piece of international commitment (Table 3).

The treaty is augmented by recommendations adopted at consultative meetings, by the Protocol on Environmental

¹³ The United States, the former Soviet Union, Great Britain, Australia, New Zealand, France, Belgium, Chili, the Republic of South Africa, Argentina, Japan, and Norway.

¹⁴ Czechoslovakia (now split into Slovakia and the Czech Republic), Denmark, the Netherlands, and Poland.

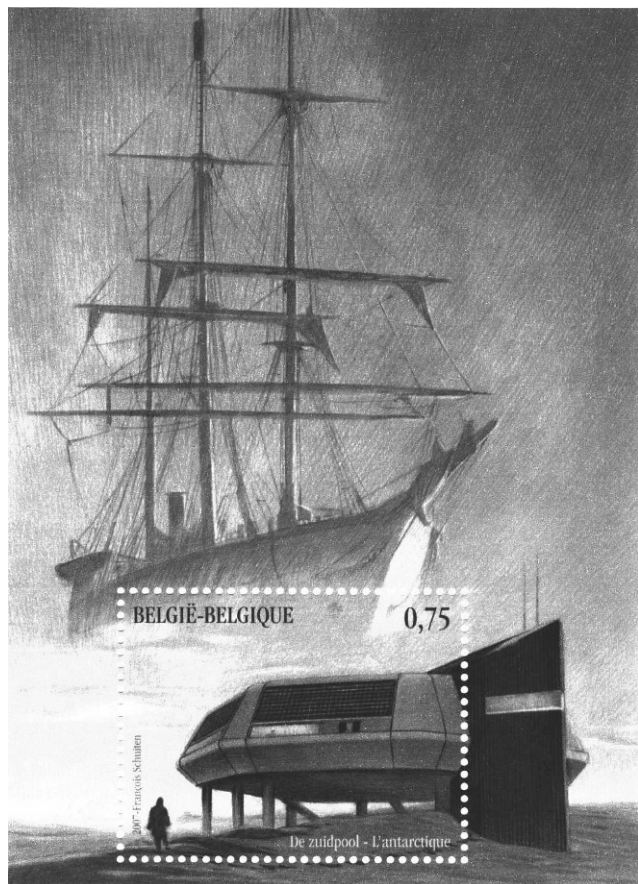


Figure 18. *Princess Elisabeth* Antarctic station (2009). Stamp/Souvenir sheet and picture.

BEST OF PRESS CARTOON BELG



Figure 19. A press cartoon poking fun at—and warning about—climate change and glacial melting. Source: International exhibit of press cartoons held in Summer of 2009 in Coxyde, Belgium. Translation: A. Souvenir of the South Pole, I presume? B. This IS the South Pole.

Table 3. *Agreements (from Wikipedia Encyclopedia).*

1959 Antarctic Treaty System
1964 Agreed Measures for the Conservation of Antarctic Fauna and Flora
1978 Convention for the Conservation of Antarctic Seals
1982 Convention for the Conservation of Antarctic Marine Living Resources
1988 Convention on the Regulation of Antarctic Mineral Resource Activities
1998 Protocol on Environmental Protection to the Antarctic Treaty

Protection to the Antarctic Treaty (Madrid, 1991), and by two separate conventions, one on the Conservation of Antarctic Seals (London, 1972), and the other one the Conservation of Antarctic Marine Living Resources (Canberra, 1980). The Convention on the Regulation of Antarctic Mineral Resource Activities (Wellington, 1988), negotiated between 1982 and 1988, will not enter into force, showing once again that where economic gains are potential, things proceed less smoothly. Candidly put, harmony is not necessarily the rule. A few years ago, two Belgian scientists—Alain Hubert and Dixie Dansercoer—crossed in 99 days the 3924-km-long continent on foot, reaching at the end of their journey the American station. The objects of their journey were endurance, sampling, and observations; it was sponsored by the Hubert International Polar Foundation (IPF), of which Hugo Decler and climatologist André Berger (Université Catholique de Louvain, Belgium) had been cofounders.

Credit must be given to Dwight Eisenhower for his initiative: the treaty is the first one ever to have a large territory (13.5 million km²) declared nonmilitary and to ban any nuclear activity (even for peaceful purposes) and the deposit of nuclear wastes).

The signatories decided to celebrate the treaty’s 10th anniversary by issuing a common stamp (Figure 17). The Antarctic Treaty Summit, the purpose of which is to assess the legacy lessons of the Antarctic Treaty on its 50th anniversary in the city where it was signed, will take place from 30 November to 3 December 2009 at the Smithsonian Institution in Washington, DC.

THE 21ST CENTURY

Early in November 2008 the Russian freighter *Ivan Paninin* made one of her rare port calls in Antwerp, Belgium. She loaded the elements of the Belgian Antarctic Station *Princess Elisabeth* and headed straight south to the pole. Belgium’s long tradition of Antarctic study, perhaps best illustrated by the de Gerlache end-of-19th century *Belgica* expedition, is thus being pursued.

In November and December 2008, a team of glaciologists led by ULB and comprised of scientists from the University of Aberystwyth and the University of Washington teamed up to study the mass loss/gain of the Antarctic ice sheet in light of recent climate change.

In January and February 2009, microbiologists from the Université de Liège (ULg) and the Universiteit Gent (UGent) explored the diversity of microorganisms in the Sør Rondane area with scientists from the Museum of Paris and the British

Antarctic Survey. Also during January 2009, the Belgian Royal Meteorological Institute started collecting data around the station with an international team of scientists including a Russian and a German.

During this same period, geoscientists from the Japanese National Institute of Polar Research initiated their own geological research around Utsteinen.

The *Princess Elisabeth* project was in the making for 5 years and included contributions from countless dedicated individuals and corporations (Figure 18). The new station is located some 175 km from the former and now dismantled Roi Baudouin base (Figures 13 and 16); the originality of the project, which was conceived, designed, and financed by the IPF through sponsorship, opens up new possibilities for the international community, and raises new standards for polar research. Beyond the financial sponsors and technical partners involved in constructing the station, further support was provided on the scientific level by the Inbev-Baillet Latour Fund.¹⁵

Using specialized building design and materials, a passive heating system, an energy control system, energy efficient appliances, and sound insulation techniques, engineers from the IPF and its technical partners have managed to take a pioneering step forward in the domain of sustainable development. Thus the power needed by the base is provided by wind and solar energy. Wastes are not only being reduced to a minimum; much of them are being recycled. None will be burned *in situ*, and emptied fuel drums are returned to Cape Town, where they can be recycled. The problem of water is also being tackled “ecologically”; fresh drinking, meal preparation, and shower water is obtained by melting snow, while all other uses are prohibited. Gray waters, *viz.*, those having already been used and subsequently purified, will fill all other needs. Such purification is carried out to the extent that they could be drunk; however, there is an admitted psychological “block” against their use for nutrition and cleaning, particularly of course those connected with human waste.¹⁶

The station is also unique in that it is a joint public-private venture, carried out by the IPF and the Belgian Federal Science Policy Office (Belspo). Aside from its scientific mission, the *Princess Elisabeth* station will be the main theme for an educational program coordinated by the IPF. “Class Zero Emission” was launched in January 2009 in classrooms across Belgium. The initiative offers workshops about climate change through the station’s “zero emission” objectives and polar science programs. The upkeep of the base requires €1 million (\$1.44 million) a year, and the estimated cost of the base itself ran about €2.5 million (\$4.13 million).

A June 2009 U.S. Geological Report points to a faster than foreboded melting of Antarctica’s glaciers with one ice shelf totally gone and another losing a surface equivalent to three times the size of the U.S. state of Rhode Island (8500 km²). The situation is matched by that in the Arctic [*Geophysical*



Figure 20. Location map of her wreck and picture of the *Belgica* as provided by Norwegian local authorities. Translations: Here lies the wreck of the “*Belgica*.” Position. . . . She was sunk in 1940 under the German bomb attack.

Research Newsletters, 3 April 2009]. The Larsen ice shelf—see above—is under observation at present; its northern part and the Wordie ice shelf have disappeared. The study is a joint U.S.-U.K.-German undertaking [cf. <http://pubs.usgs.gov/imap/2600B>]. Antarctica accounts for at least 90% of the earth’s glaciers volume and melting entrains huge consequences including sea-level rise. Cartoonists have not failed to emphasize the situation (Figure 19).

A “metro” station of the Brussels, Belgium, underground public transport has been baptized *Belgica* and is adorned by a huge fresco of Antarctica and ship. In keeping in step with the pollution zero of the *Princess Elisabeth* polar station, the station itself is entirely pollution free; solar power provides electricity to light the fresco, saving 29,200 kWh/year and reducing CO₂ emission by 7.3 mt. Furthermore, by using solar power to light platforms, offices, emergency lights, escalators, *etc.*, a total reduction in CO₂ emissions of 23.8 mt/year is attained.

Epilogue

The *Belgica* was sold in 1902 to Norwegian N.C. Halversen, who later sold her to the duke of Orleans. She participated during these years in several Arctic region voyages. The *Belgica* was retired from service just before World War I started (1913).

A team of Belgian “archaeologists” proposed to lift her and bring her back to Belgium and put back into shape.¹⁷ The undertaking should be crowned with success if carried out within the coming two-three years, and has gathered momentum due to the enthusiasm generated by the inauguration in mid February 2009 of the 100% environment friendly Belgian

¹⁵ Inbev is the Belgian-led International Beverage Consortium.

¹⁶ The city of Oslo, Norway—according to unidentified press releases of 31 March 2009 (cf. weekly issue of *Passe Partout*, p. 4 col. 2)—intends to recuperate for energy use the sizeable quantity of methane to be found in processed sewerage that includes human waste.

¹⁷ Kept at quay in Ostend, a North Sea port on the coast of Belgium.

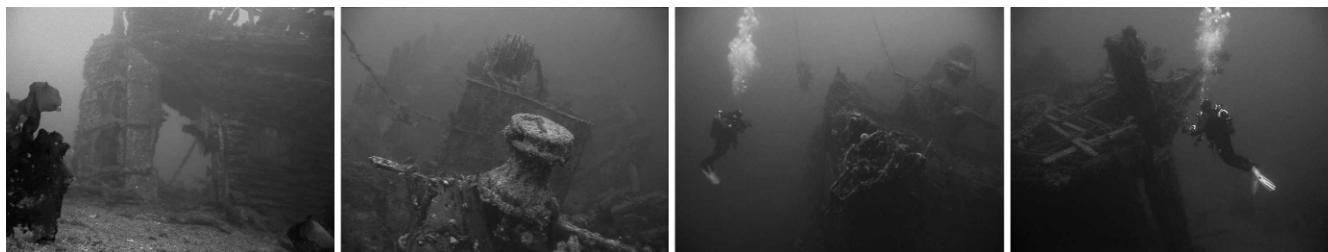


Figure 21. Photographs taken underwater by a team of Belgian divers that came to investigate position and condition of the wreck.

Antarctic station *Princess Elisabeth*. Further progress is reported concerning the preservation of *Belgica*, currently a wreck in Norwegian waters. The construction of a full sized replica of the ship has been commenced.¹⁸ According to the museum-library maintained by the VLIZ, the *Belgica* replica is being assembled in a basin contiguous to the port of Ostend.

The wreck rests in a small inlet at Brurvik, near the peninsula of Gangsasen, some two kilometers from Harstad, at barely 200 m offshore. The Norwegian authorities advertised the spot with maps and a picture of the ship (Figure 20). A Belgian team of divers on a reconnaissance plunge took some underwater photographs which have been part of temporary and permanent exhibits (Figure 21).

Acknowledgments

The Belgian postage stamps illustrations have been reproduced through the courtesy of the Belgian Postal Administration. We acknowledge this authorization with thanks. Other stamps have been reproduced with the help of private collectors, the American Polar Philatelists Society. Public domain photographs have been included. The Wikipedia Encyclopedia provided additional illustrations, while the cartoon is one of the exhibits of the Best of Press Cartoon exhibition held in Coxyde (Koksijde). Other information was gleaned from documents of *Belgica Heden*, of VLIZ, available (in Dutch/Flemish) on Google, that organized temporary and permanent exhibits in its museum and library facility near Ostend, Belgium, that show the underwater photographs of the ship's wreck (Figure 21). Credit is due the Zoom School for the map of Figure 2.

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¹⁸ *Polar Record* (2008), 44:280–281 Cambridge University Press; see also *Belgica Heden* (in Dutch/Flemish), or an English version *Belgica Today*, available on Google.

APPENDIX 1

Emil Racovița and the *Belgica* Antarctic Expedition**A.S. Bologna**

(National Institute for Marine Research & Development “Grigore Antipa”)

Emil Racovița (1868–1947), who due to his varied and prolific activity would rank among the most remarkable Romanian biologists, was recommended by his teachers Lacaze-Duthiers and Edouard Van Beneden, in 1897, to join the Belgian Antarctic cruise on board *Belgica*, to work as a biologist alongside the other 16 cruise members.

During the cruise E. Racovița undertook observation and research activities in the fields of meteorology, geology, oceanography, magnetism, and flora and fauna.

From the Antarctic E. Racovița returned with about 400 botanical and 900 zoological samples, which have been distributed to numerous specialists for detailed studies. The description and observations concerning the faunal samples have been published in 60 volumes. Racovița’s own observations on the biology of Antarctic plants and animals have been underscored during several conferences of geographic societies in Belgium, France, and Romania and published in proceedings and scientific periodicals.

His most detailed observations have concerned penguins, seals, and whales. One of his most valuable contributions on whales, for example, “*Cétacés: Résultats du voyage du S.J. Belgica en 1897–1898–1898*,” has been published in Anvers (Antwerp) (1903). After such contributions, the German marine biologists Heck and Hilzheimer considered Racovița the most recent and the most precise observer of whale life.

In recognition of the outstanding merits of Racovița, including his participation in the Belgian Antarctic cruise, Posta Romana (Romanian Post Office) has issued the following honorary stamps:

- “10 years since the death of Emil Racovița,” two stamps (55 Bani, 1.20 Lei) in 1958
- “Centenary of Emil Racovița’s birth,” one stamp (55 B) in 1968
- “Big discoverers,” eight stamps: W. and O. Wright (1 L), J.Y. Cousteau (1.50 L), A.E. Putnam (2 L), C. Lindbergh (3 L), E. Hillary (4 L), E. Racovița (4 L), R.E. Byrd (5 L), and N.A. Armstrong (6 L) in 1985
- “Romanian researchers in polar zones,” six stamps: Land of Fire, I. Popper (50 B); Spitzbergen, B.G. Assan (1 L); Antarctic, E. Racovița (2 L); Greenland, C. Dumbrava (3 L); participation in 17th Soviet expedition in Antarctica (4 L); and 1977 Sinoe and 1979–1980 Tarnava expeditions for krill fishing (5 L) in 1986

APPENDIX 2

Contributions of the Polish Members of the *Belgica* Team**Agata Krystosykh-Gromadzinska**

(West Pomeranian University of Technology, Fac. of Marit. Techn., Szczecin, Poland)

Henryk Arctowski (1871–1958), a Polish-Belgian-American geophysicist, geologist, geographer, oceanographer, meteorologist and explorer, studied at the University of Liège; he pursued further studies in Paris, Zurich, and Lemberg (now Lwow in Poland). His Antarctic adventure began in 1895 when he established contacts with baron Adrien de Gerlache de Gomery—lieutenant of the Belgian Royal Navy—who impelled the Brussels Geographic Association to finance the combined discovery-scientific expedition to Antarctica. He was appointed deputy scientific director of the *Belgica* Antarctic Expedition.

During the expedition Henryk Arctowski conducted research in the areas of glaciology, oceanography, geology and meteorology. In addition to observations of sea-ice formation and types of icebergs, Arctowski obtained a full year’s cycle of meteorological observations. He prepared a bathymetric map from soundings he made during the ship’s drift. On completion of the expedition, Arctowski took employment at the “Observatoire Royal de Belgique” in Uccle, near Brussels, where he worked on materials collected during the *Belgica* cruise and published the results in “*Résultats de voyage de la ‘Belgica.’*” As a geologist he went on to conform his own so-called ‘Antarktand’ hypothesis involving the analogy between the formation of the South Andes (particularly Tierra del Fuego) and the Antarctic continent’s Graham Peninsula. He also found based upon his observations in the Beagle Channel, that the snow boundary had risen by 800 m since the last glacial maximum. On the basis of annual meteorological observations of that region, collected for the first time in history, he determined that Antarctica was colder than previously thought. He furthermore observed the analogies between optical atmospheric phenomena (e.g., aurora) on the southern and the northern hemispheres.

After his return to Belgium, he was in charge of the meteorological station of the Uccle observatory from 1903 to 1909. His wife kept a distinguished salon in Brussels, frequented by the top of the scientific community. In 1909, Arctowski and his wife moved to New York where he started working in the library as a head of the natural sciences section. He did not, however, abandon his scientific work, and owing to many publications on global climate changes, he found his way to the milieu of eminent researchers dealing with this issue. In the summer of 1919, he participated in an expedition to Spitsbergen and the Lofoten Islands on the vessel, *lle-de-France*, as chief scientist.

During the Versailles peace conference, where Polish independence was recognized, Arctowski acted as an expert presenting “The Report on Poland” (containing 14 chapters, 2,500 pages altogether, numerous maps and charts). In 1920, Ignacy Paderewski, a celebrated pianist, then president of the newborn Republic of Poland, offered him, in his cabinet, the position of Minister of Education in the government of the Republic. Arctowski chose a scientific career taking the chair of Geophysics and Meteorology at Lviv [Lwow] University (and honored him with a doctorate *honoris causa*). In August 1939, Arctowski, as chairman of the Commission on climate changes, participated in the International Union of Geodesy and Geophysics Congress held in Washington. The outbreak of the First World War (1914–1918) compelled him to remain

abroad. In 1940, Henryk Arctowski applied for and was granted American citizenship and started working at the Smithsonian Institution in Washington. His achievements in the area of polar research cover over 400 published scientific works.

In recognition of his work and his contribution to science, Arctowski's name has been given to the Polish research station in the Southern Shetlands Archipelago and to a number of geographical features. These are, in Antarctica, Arctowski Peninsula, Arctowski Nunataks, and Arctowski Peak and, in Spitsbergen, Arctowskifjellet (Mt. Arctowski) and Arctowskibreen (Arctowski glacier).

In 1969 an Arctowski Medal was established by the U.S. National Academy of Sciences, awarded for studies in solar physics and solar-terrestrial relationships. In addition, a further sum is provided to an institution of the recipient's choice, established through the Henryk Arctowski Fund by the bequest of Mrs. Jane Arctowski. A Polish stamp honoring him was issued in 1986 (see illustration in main paper). In 1987 another postage stamp was issued celebrating the 10th anniversary of the Henryk Arctowski Antarctic Station, King George Island. Additionally the National Bank of Poland honored Arctowski by issuing a coin bearing his effigy in 2007.

The second Polish member of the *Belgica* adventure started aboard as a sailor. Antoni Boleslaw Dobrowolski (1872–1954) participated eventually as an assistant meteorologist. He kept everyday observations of clouds, describing their thickness, height, coherence and structure. He described the halo phenomenon around the sun's disc, and observed cirrus clouds. Dobrowolski described a total of around 100 cloud positions. He included results of these observations in

“*Memoria o chmurach*” (Memorial about clouds). He also thoroughly defined the snowfall thereby enriching the definitions with hundreds of specific drawings of snow crystals.

Dobrowolski described his impressions concerning the thirteen-month wintering on Antarctica in his book (Polar expeditions). Between 1905 and 1907 Dobrowolski was a member of the International Polar Bureau in Brussels. He eventually returned to his native Poland and engaged in a career as school teacher.

During the First World War (1914–1918) he worked in neutral Sweden, continuing his studies on snow flake and ice crystal structure as well as on the dynamics of glacier movement (described in his book “*Historia naturalna lodu*” [The Natural History of Ice] published in 1923). In 1924, he started his career in the National Meteorological Institute and soon became its director. In 1929, he established the Association of Geophysicists and, in 1934, the Seismological Observatory. During the Second World War (1940–1945) he remained in Poland. Between 1945 and 1954 he worked at the pedagogy department of the University of Warsaw, and, in 1952, he became a member of the Polish Academy of Sciences.

In the 1950s, the government of the communist People's Republic of Poland began limiting his scientific activity and suspended his postgraduate scholarship.

If no stamp was issued in his honor, the National Bank of Poland honored him, in 2007, by issuing a memorial coin.

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□ RÉSUMÉ □

La Belgique s'est intéressée depuis plus d'un siècle aux recherches en Antarctique. Le nom d'Adrien de Gerlache est indélébilement lié à celui de son navire, le *Belgica*, premier vaisseau à hiverner encastré dans les glaces polaires. L'ancien baleinier norvégien avait un équipage et un complément scientifique multinational. Si l'expédition ramena une ample moisson d'informations, elle rapporta aussi un récit de souffrances et de peurs. Les administrations postales belge—et sur une échelle plus modeste—de Roumanie et de Pologne ont illustré l'expédition, ses anniversaires, mais aussi les travaux plus récents en Antarctique. Le *Belgica* fut coulé par les forces d'invasion allemandes lors de la deuxième guerre mondiale. On s'efforce de la remettre à flot dans le but d'en faire un musée, comme se fut fait p.ex. pour le *Fram*.

□ SAMENVATTING □

België heeft belangstelling getoond voor Antarctica voor meer dan een eeuw. De naam van Adrien de Gerlache is onuitwisbaar verbonden aan die van zijn schip, de *Belgica*, het eerste vaartuig dat ooit een winter doorbracht in antarctische waters. De voormalige noorse walvisjager had een internationale bemanning en wetenschappelijke team aan boord. De expeditie bracht een rijke oogst van data terug maar ook een verhaal van hard lijden en schrikwekkende periodes. Het belgisch bestuur der posterijen—en op een kleinere schaal die van Roemenië en Polen—hebben de ontdekkingsreis geïllustreerd, maar ook het navolgwerk.

De *Belgica* werd aanvang Tweede Wereldoorlog door de Duitse invalsmacht gekelderd. Thans spant men zich in het schip weer op vlot te brengen of het als museum in the richten, zoals werd gedaan b.v. voor de *Fram*.

□ ZUSAMMENFASSUNG □

Belgien hat sich seit über einem Jahrhundert mit großem Interesse und Engagement für die Erkundung der Antarktis eingesetzt. Adrien de Gerlaches Name ist untrennbar mit dem Namen des Schiffs *Belgica* verbunden, dem ersten Schiff, das jemals im Packeis des südlichen Kontinents überwinterte. Dieses frühere norwegische Robben- und Walfangschiff hatte eine multinationale Mannschaft, die sich aus Wissenschaftlern und erfahrenen Seeleuten zusammensetzte. Ihre Ausbeute bestand zum Einen aus einer Flut neu gewonnener Informationen, zum Anderen aber auch aus Berichten von Entbehrungen und Ängsten.

Belgiens Postverwaltung, und in kleinerem Maße diejenigen Rumäniens und Polens, veranschaulichten die Leistung der Expedition und deren Jahrestage, aber auch die weiteren Forschungsanstrengungen Belgiens in der Antarktis. Gleichzeitig wurden die weiteren Forschungen belgischer Wissenschaftler in der Antarktis dargestellt. Die *Belgica* wurde während des 2. Weltkriegs durch die deutschen Invasionstruppen versenkt. Zurzeit werden Anstrengungen unternommen, das Schiff wieder zu heben, um es in ein Museum umzuwandeln, wie es einst mit der *Fram* geschah. *ASB*

□ REZUMAT □

Belgia a fost interesată de si implicată in studii antarctice de peste un secol. Numele lui Adrien de Gerlache este legat strans de cel al navei sale, Belgica, prima care a petrecut o iarna blocată in gheata continentului sudic. Fosta baleniara norvegiana a avut un echipaj multinational de savanti si marinari. S-a intors cu o cantitate considerabila de informatii, dar a constituit si o marturie de dificultati si temeri. Administratia postala din Belgia – si intr-o masura mai modesta cele din Romania si Polonia – a ilustrat expeditia, aniversariile sale, dar si cercetarile ulterioare efectuate de catre belgieni in Antarctica. Belgica a fost scufundata de fortele de ocupatie germane in cursul celui de al Doilea Razboi Mondial. Se intreprind eforturi de a ranflua nava si de o transforma intr-un muzeu, precum de ex. Fram. *ASB*

□ RESUME □

Przez ponad wiek Belgia była żywo zainteresowana i zaangażowana w badania dotyczące Antarktyki. Imię Adrien de Getlache zostało zapamiętane jako nierozdzielnie związane ze statkiem *Belgica* – pierwszą jednostką, która przetrwała zimę uwięziona w lodach południowego kontynentu. Pierwszy norweski łowca fok i wielorybnik zebrał międzynarodową załogę składającą się z naukowców i marynarzy. Wyprawa zaowocowała wieloma cennymi odkryciami, zbiorami cennych informacji i naukowymi osiągnięciami, ale była również opisywana jako ciężka próba, przez którą przeszli ludzie znoszący trud, niewygodę i walczący ze strachem. Poczta belgijska, rumuńska oraz polska wydały materiały ilustrujące wyprawę, jej rocznice oraz późniejsze badania Antarktyki prowadzone przez Belgów. Belgia została zatopiona w wyniku ataku Niemców podczas II wojny światowej. Zostały podjęte próby wydobycia jej i przeniesienia do muzeum, podobnie jak to zrobiono ze statkiem *Fram*. AK-G

□ РЕЗЮМЕ □

Бельгия была заинтересована и вовлечена в антарктических изучениях уже более ста лет. Имя Андриена де Герлаш тесно связано с именем своего судна «Бельгика», первое судно которое правело зиму, блокированное во льдах южного материка. Бывшее норвежское китобойное судно располагало многонациональном экипажем составленным из ученых и моряков. Они вернулись с большим количеством информации, но этот факт составил и доказательство огромных трудностей и боязней. Бельгийская портовая администрация и в более скромном виде Румыния и Польша, проиллюстрировали экспедицию, её годовщины, но и последующие исследования, произведённые бельгийцами в Антарктике. «Бельгика» была затоплена оккупационными немецкими силами во время Второй Мировой войны. Предприниматься и прилагаться усилия снять судно с мели и превратить его в музей как это произошло с «Фрам». ДК