

# A Hundred Views of Antarctica

A wide-angle photograph of an Antarctic landscape. The foreground shows a dark blue sea with numerous icebergs of various sizes. In the middle ground, a large, rugged mountain range is covered in snow and ice, with some dark rock faces visible. The sky is a clear, bright blue with several scattered, white, fluffy clouds. The overall scene is serene and majestic.

Miloš Barták et al.



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# Introduction

Antarctica is Earth's sixth continent. It is situated in the southern hemisphere from roughly the 63rd parallel to the South Pole. It is often called the white continent due to its permanent ice cover and has been a subject of interest for experts and the general public since the first great expeditions by explorers like Amundsen and Scott. Most people's knowledge of Antarctica is made up of an often colourful patchwork of classroom learning and impressions conveyed by popular-science books and geographic films. In recent times, this has been supplemented by information available on the internet. Although in this age of electronic media and the global information network 'everything is on the Web', there are still many interesting things that are not common knowledge, and for the average person with an interest in Antarctica some information is difficult to access. That is why we, as a group of authors with extensive experience of research into Antarctica, have put together a popular-science book for the curious reader entitled *A Hundred Views of Antarctica*. We hope that as well as being engaging and entertaining, it will also be a source of useful technical information. In addition to interesting facts about the continent, we have also incorporated a short history of the 'Czech presence' in Antarctic, particularly information about the construction and operation of the *J. G. Mendel* Czech Antarctic station on James Ross Island. The book has been conceived as a hundred topics, often in the form of questions and answers covering various aspects of science and knowledge about Antarctica. However, those hundred entries are by no means exhaustive, because research in this area is truly multifaceted and diverse and Antarctica itself so inspiring that we were forced to select just a small fraction of what ought to be in the book but wouldn't fit in. The individual entries are accompanied by pictures with the same numbering, but we have also added a little 'something extra' in the form of illustrative photographs. Some of them are directly related to the text, while others have been included because they complement the numbered photographs and document the sheer variety of the Antarctic continent. The illustrative photographs are not numbered.

In terms of structure, the book is divided into several parts. The first part deals with the Antarctic continent and the history of exploration. The next part focuses on geology, with particular attention being paid to glaciers. This is followed by a section devoted to climatological issues focusing on the impact of global warming in Antarctica. The biological

← The fissured surface of a glacier on Half Moon Island, part of the South Shetland Islands, Antarctica. Photo: A. Meneghini (Reuters).



Sunrise over Vega Island. In the foreground, sea ice at the border between Herbert Sound and the Prince Gustav Channel. The low cloud cover in the foreground is the result of the condensation of moisture in the air during the short night (approximately 4 hours in the summer) near the coastline of James Ross Island. Photo: P. Váci.

sciences are represented by the two following parts: Animals That Live in the Antarctic and A World of Extremophilic Plants and Microorganisms. The final section of the book, entitled Czech Antarctic Expeditions, is dedicated to the Czech Antarctic Research Programme and interesting facts about the J. G. Mendel station and James Ross Island, where it is located.

*Miloš Barták, on behalf of the team of authors*

# The Continent of Antarctica

1. The exploration of Antarctica
2. The first whaling stations: Grytviken in the South Georgia archipelago
3. The race to the South Pole (the difference between success and failure being a matter of five weeks)
4. Do you know where the South Magnetic Pole is located?
5. How Czechs discovered Antarctica: from Václav Vojtěch to Jiří (George) Dufek
6. Drifting continents, or How Antarctica split off from Gondwana
7. Antarctic 'records'
8. Are there active volcanoes in Antarctica?
9. A remarkable subglacial lake: Lake Vostok
10. The history and present day of Antarctic stations
11. There are no states in Antarctica, only 'territorial claims'
12. Tourism in Antarctica. How many people visit the white continent annually?



## 1. The exploration of Antarctica

The ancient Greeks had hypothesized about the existence of a continent in the area around the South Pole, because they believed that there had to be a rotational balance on Earth between the countries of the northern hemisphere known at that time and the hitherto unexplored southern hemisphere. They named this hypothetical country *Anti-Arctos* (i.e. lying opposite the Arctic). Over the following millennia, it became a mythical undiscovered continent which was marked on maps as *Terra Australis Nondum Cognita*, i.e. 'the unknown southern land'. The exploration of Antarctica began in the late 18th century during expeditions by both anonymous whalers and famous seafarers, and it can be divided into three main periods. The first one (1770–1830) encompasses the voyage of Captain James Cook, who didn't sight Antarctica but did reach a latitude of 71°10' South and indicated that there might be land, albeit still inaccessible at that time, located to the south. During the same period, Captain F. F. Bellingshausen sailed around Antarctica. In the second period (1831–1894) a very significant expedition was led by Captain James Clark Ross. He discovered the Ross Ice Shelf, Ross Island and the region called Victoria Land. In the third period, known as the 'Heroic Age' (1895–1915), famous expeditions took place, including a Belgian one (led by A. de Gerlache aboard the *Belgica*) and a British one (led by the Norwegian polar explorer C. Borchgrevink). Later, in the early 20th century, R. F. Scott, J. B. Charcot, E. Shackleton and R. Amundsen followed in their footsteps with expeditions of their own.

View of Red Island, located in the middle of the Prince Gustav Channel. During the Antarctic summer, the channel is usually unfrozen, covered only with ice floes, floating remnants of sea ice. Photo: M. Barták.



## 2. The first whaling stations: Grytviken in the South Georgia archipelago

It is very difficult for a landlubber to imagine what being a whaler in the polar regions entailed. As well as profit, the exploration of Antarctica also played an important role in whaling expeditions. In 1902 the Norwegian captain C. A. Larsen discovered the site of an old base on the coast of South Georgia (a sub-Antarctic archipelago), and in 1904 he established his own whaling station, named Grytviken, there. For the next 60 years, intensive whale fishing was carried out in sub-Antarctic and Antarctic waters from this place. In Grytviken whale blubber was acquired on an industrial scale, with the other parts of the whale carcasses usually being left unprocessed. That is why in many places in Antarctica today we can still find 'whale graveyards' full of skeletons scattered along the coast. Intensive fishing resulted in the decimation of whale populations. Together with growing international efforts to protect whales, this led to the cessation of whaling activities in Grytviken. It is now home to a small settlement with a museum. It was also in Grytviken that one of the discoverers of Antarctica, Ernest Shackleton, died in January 1922.

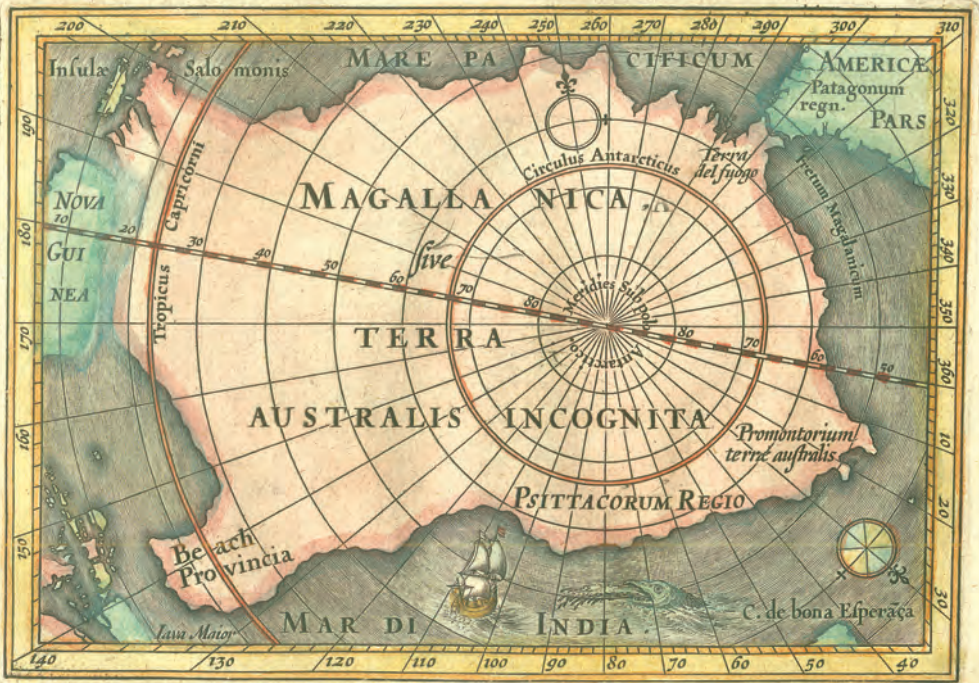
## 3. The race to the South Pole (the difference between success and failure being a matter of five weeks)

One of the 'big stories' associated with the exploration of Antarctica is the rivalry between the British expedition (led by R. F. Scott) and the Norwegian expedition (led by Roald Amundsen) in their attempts to conquer the South Pole between 1911–1912. A great effort was made to reach the Pole first, and both expeditions proceeded from various points along the coast into the interior of Antarctica (Ross Island, Cape Evans, and Whales Bay, Ross Sea). Amundsen and several members of his crew were the first to set foot on the Pole on 14 December 1911. Scott reached the South Pole less than five weeks later (15 January 1912) and was extremely disappointed to find he was 'in second place'. What's more, on the journey back to the coast, Scott's expedition was overtaken by very poor weather and all five members of the group froze to death just 11 miles (approximately 20 km) from a supply point, a camp known as One Ton Depot. Amundsen continued to work as a polar researcher after returning to Norway and died on 18 June 1926 during a rescue operation to the North Pole for the Nobile expedition. His death is linked to another 'big story' from the exploration of the polar regions: the wreck of the airship *Italia* and the survival of its stranded crew in the 'Red Tent'. There is also a 'Czech story' here, thanks to F. Běhounek, a specialist in cosmic rays, who was rescued by the crew of the icebreaker *Krasin* after spending several weeks marooned on an ice floe.

1. Bertius' map of the southern polar hemisphere, published in 1616. The map represents the ideas held about the southern continent (Magallanica sive Terra Australis Incognita) at that time and incorporates both the actual coastline, which had already been identified by seafarers, and unfounded ideas and legends about the southern continent. Coloured copper engraving.

2. The whaling settlement of Grytviken played a significant role in the exploration of Antarctica. The simple harbour and the buildings whalers used to process the whales they had caught have been preserved to this day. It currently serves as a destination for tourist trips thanks to the well-known South Georgia Museum, which is located in the settlement, and the grave of Ernest Shackleton. Situated near the settlement is the *King Edward Point* research station, which is operated by the British Antarctic Survey. Photo: J. Coleman (see also Online Resources).

S2 DESCRIPTIO TERRÆ SVBAUSTRALIS.



The Continent of Antarctica



3a. Period photographs of two men whose lives were intimately bound up with the exploration of Antarctica and the famous 'race to the South Pole'. Top left: Roald Amundsen; top right: Robert Falcon Scott. Bottom: photograph of a dog sled team used during the first expeditions to Antarctica. Source: see Online Resources.





3b. There are currently two different designations for the point that defines the South Pole. The first is the Ceremonial South Pole, which is represented by a silver ball mounted on a red-and-white-striped wooden stick sunk into the snow near the *Amundsen–Scott* station. This point is surrounded by flagpoles with the flags of the 12 countries which were founding members of the Antarctic Treaty in 1959. Most visitors to the South Pole, be they scientists or tourists, have their photo taken by this ball, which acts as a convex mirror thanks to its polished surface. The actual (Geographical) South Pole is much less ostentatious, marked by a metal stake with a round top (see photo). The location of this stake changes every year due to the shifting position of the Geographical South Pole. To be more precise, each year a new stake is made and placed at the current location of the South Pole. Pictured here is the stake installed in 2021. Photo: P. Horký.