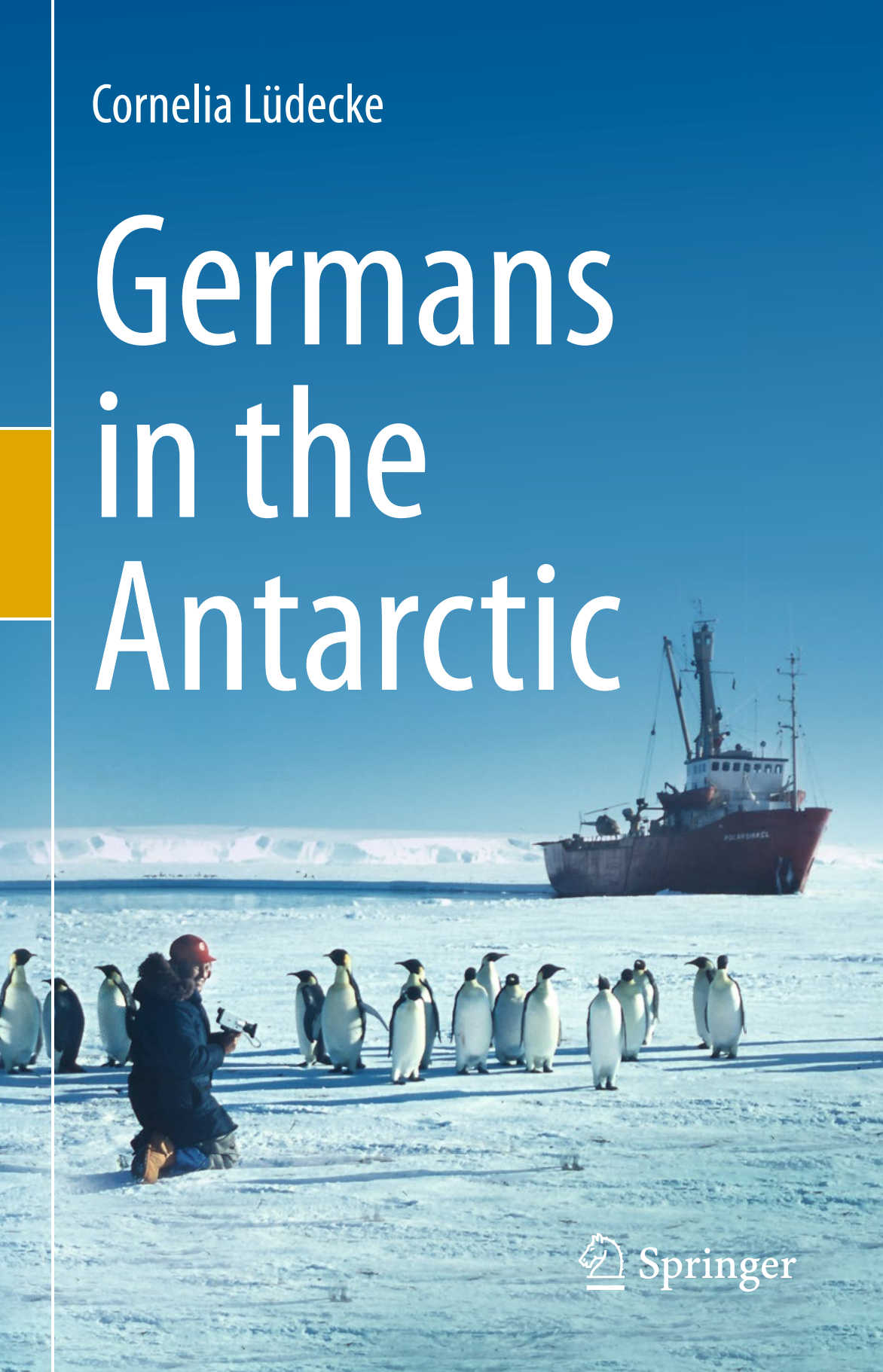
Cornelia Lüdecke

Germans in the Antarctic



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Grottenberg in Kaiser Wilhem II Land, photographed in 1902. (Leibniz-Institut für Länderkunde, Leipzig, Drygalski estate)

Preface

Because of progressive climate change, Antarctica is coming more and more into the focus of public reporting: the ozone hole, calving table icebergs, melting glaciers, and the rising sea level dominate the headlines time and again. The growing tourism in Antarctica increasingly brings people into an actually inaccessible world region, but it also entails problems and hazards associated with shore leave and cruise ship disasters. Antarctica is an object of growing scientific research. To acquire more information for better understanding of the current changes and future climate development, research in the South Polar region at overwintering stations and on research vessels was intensified during the Fourth International Polar Year (2007–2008). However, economic interests in the resources of the continent, which have always played a role in its exploration but may no longer be enforced in accordance with the Protocol on Environmental Protection adopted in 1991, finally call a regulated future in Antarctica into question.

The historiography of German South Polar research began at the same time as the race to the South Pole. As early as 1912, a dissertation discussed Germany's part in solving polar problems, and another doctoral thesis focused on the participation of Germans in exploring the South Polar region during the years from 1901 to 1903.[1] But only after the beginning of Antarctic research in the Federal Republic of Germany in the 1980s did two dissertations focus again on polar history, in which the founding phase of German polar research (1865–1875) and the most significant expeditions from 1900 until World War II were put under study.[2]

[1] Rüdiger, Hermann: Deutschlands Anteil an der Lösung der polaren Probleme, Dissertation, in: Mitteilungen der Geographischen Gesellschaft München VII (1912) 4, pp. 455–564; Gerdes, Rudolf: Anteil der Deutschen an der Erforschung des Südpolargebietes, besonders der Westantarktis, bis zur internationalen Erforschung in den Jahren 1901–1903, Dissertation, Borna, Leipzig 1917.

[2] Krause, Reinhard A.: Die Gründungsphase deutscher Polarforschung, 1865–1875, Dissertation, Berichte zur Polarforschung 114 (1992); Lüdecke, Cornelia: Die deutsche Polarforschung seit der Jahrhundertwende und der Einfluß Erich von Drygalskis, Dissertation, Berichte für Polarforschung 158 (1995).

The History of Polar Research Working Group [Arbeitskreis Geschichte der Polarforschung] at the German Society of Polar Research [Deutsche Gesellschaft für Polarforschung] was established in 1991 to satisfy not only general interest in adventures in icy regions but also a professional curiosity.[3] Also, in 2004, the Scientific Committee on Antarctic Research founded the temporary History of the Institutionalization of Antarctic Research Action Group, which was transformed into an Expert Group in 2011.[4]

Against this background, the desire arose to write a popular history of German Antarctic research up until the present day, looking behind the facts known from travel reports and furnished with as many unpublished pictures as possible. The chapters dealing with the first three German Antarctic expeditions are based on my doctoral thesis at the Ludwig Maximilians University and my article on the "Schwabenland" expedition.[5] During the 35th Open Science Conference of the Scientific Committee on Antarctic Research and the International Arctic Science Committee, which took place in Davos (Switzerland) in June 2018, Ursula Rack (an Austrian polar historian working in New Zealand) convinced me to publish an English translation of my book. At the same conference, successful contact was made with Margaret Deignan from Springer Nature Switzerland AG to start this task. For the English translation, provided in a pleasant cooperation with Bernard Oelkers, I have revised, updated, and marginally extended the original text.

We must bear the future in mind to make the right decisions today to ensure that the still mostly untouched continent of Antarctica will not be altered by human impact. To this end, however, looking back into the past is also necessary in order to understand why human beings originally set out on daring expeditions into this inhabitable region and why they later established stations there, which are inhabited all year round.

Initially, whalers and sealers sought to make a fortune on the subantarctic islands since the early nineteenth century and made a lot of money by selling seal pelts, train oil, and the flexible baleens of the whales (whalebone). The scientific exploration of the still completely unknown southern continent started at the turn of the twentieth century, when, during the so-called heroic era, explorers without technical equipment risked their lives to push forward into the continent. But, despite all technological progress, Antarctic exploration is still not a safe adventure today. The contribution made by the German expeditions and research teams in this regard is what this book describes.

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[3] https://www.polarforschung.de/arbeitskreise/ak-geschichte-der-polarforschung/

[4] https://www.scar.org/science/hass/history-group/

[5] Lüdecke: Die deutsche Polarforschung; Lüdecke, Cornelia: In geheimer Mission zur Antarktis. Die dritte Deutsche Antarktisexpedition 1938/39 und der Plan einer territorialen Festsetzung zur Sicherung des Walfangs, in: Deutsches Schiffahrtsarchiv 26 (2003), pp. 75–100.

Acknowledgements

This book was able to be written only with the support of many institutions and archives. Before the reunification of Germany, I had already carried out fundamental research for my dissertation in East and West Germany, where I received much support from the Secret State Archives (in Merseburg and, after reunification, in Berlin), the Central State Archives (later the Federal Archives) in Potsdam, the Federal Archives in Koblenz, and the Archives of the Foreign Office in Bonn (later in Berlin). The Alfred Wegener Institute in Bremerhaven, which is now home to the Archive for German Polar Research, the Federal Institute for Geosciences and Natural Resources in Hanover, the Federal Maritime and Hydrographic Agency in Hamburg, the German Maritime Museum in Bremerhaven, and the Geographical Institute of the Ludwig Maximilians University in Munich also contributed to the book's embellishment with beautiful illustrations.

Above all, however, I benefited from many personal contacts with descendants of expedition members from the time before the Second World War. In particular, I would like to mention Thomas Mörder, Volker Gazert, Gertraude Hartmann, Erich Joester, and Barbara Ronte, whose material I sometimes even had available for decades at home for evaluation. The files, diaries, and other documents handed over by them were a fantastic source, while the photographic collections brought to light many hitherto unpublished pictures. I cannot thank them enough for their trust in my work over many years.

Before the days of Germany's reunification, I found most of the information about Drygalski's South Polar expedition at the Leibniz Institute for Regional Geography in Leipzig, where I was first assisted by the head of the library and archive, Ingrid Hönsch, and later by her successor, Heinz-Peter Brogiato. After the publication of the German edition of this book, I was able to arrange for the bequests of Ernst Herrmann and Alfred Ritscher to be kept by this institute. In Munich, Helmut Hornik, the head of the Filchner Archive at the Bavarian Academy of Sciences, made many unknown photographs accessible to me. I want to thank them very cordially for granting me uncomplicated access to the archives and for their readily given printing permission.

I received photographs of the East German overwintering station and insight into personal experiences from Hartwig Gernandt and Volker Strecke. I got pictures and information about the construction of Georg von Neumayer Station from Klaus-Peter Albrecht and Dietrich Enß. Eberhard Fahrbach documented the dismantling of Filchner Station, and his wife provided me with some photographs after his untimely death.

Georg Kleinschmidt and Hans Oerter told me enthusiastically about their scientific field campaigns and underscored this with their pictures. Also, two overwinterers at Georg von Neumayer Station, Georg Schönhofer and Joachim Schug, as well as one of the station managers Monika Puskeppeleit, shared their pictures and personal experiences with me.

The integration of German polar research into international affairs is documented by photographs from the Americans Paul Bergman and Chuck Kennicutt.

I would like to take this opportunity to cordially thank all of these friends and acquaintances for their support. Without their generosity, I would never have had a look behind the scenes of German Antarctic research after World War II and could never have described and illustrated that time so impressively.

Last, but not least, I thank my editor, Patrick Oelze from the Christoph Links Publishing Company in Berlin, for his very pleasant collaboration in producing the German version of this book.

Finally I received financial support for the English translation from the Goethe Institut, the Neumayer Stiftung, the German Society of Polar Research [Deutsche Gesellschaft für Polarforschung], and the Drygalski Stiftung for which I am very grateful.

Contents

The Race for the Last White Spot on the Map: The First German South Polar Expedition (1901–1903) 1
The Wilhelminian Policy and the Beginning of Antarctic Research 1
The Road to Germany's First South Polar Expedition 3
Preparations for the First German South Polar Expedition 10
International Cooperation and Other Research Plans 20
Orders for the South Polar Expedition 27
The Voyage to the South 32
Overwintering in the Ice 44
Back to Cape Town 68
Homeward Bound 70

Meteorology and Mutiny: The Second German South Polar Expedition (1911–1912) 75
The Political Framework Conditions for German Polar Research on the Eve of World War I 75
The Plan for a Second German South Polar Expedition 78
Training Expedition to Spitsbergen (1910) 83
Preparations for the Main Expedition 86
The Departure to Antarctica 93
In Antarctica 105
The Return and the Scandal 124
The Scientific Results and the Aftermath 128
Excursion: Continuity after World War I—The Foundation of the German Society of Polar Research [Gesellschaft für Polarforschung] 129

The Discovery of Neu-Schwabenland: The Third German South Polar Expedition (1938–1939) 133
The "Fat Gap", Whaling, and German Possession Claims in Antarctica 133
The Plan for a New German Antarctic Expedition 137
Preparations for the *Schwabenland* Expedition 145
The Assignments on the *Schwabenland* Expedition 151
The Execution of the German Antarctic Expedition (1938–1939) 155
The Evaluation, New Plans, and Untenable Myths 184
Excursion: Elements of German Antarctic Expeditions Before World War II 189

Separate and United Paths: German Antarctic Research from the End of World War II Until Today 193
A Private Initiative to Resume Antarctic Research in the Federal Republic of Germany 193
The International Geophysical Year (1957–1958) Without German Participation 195
Antarctic Research in the German Democratic Republic Since 1960 196
Antarctic Research in the Federal Republic of Germany Since 1975 201
The Merging of West and East German Antarctic Research After 1990 216

The Future of German Antarctic Research 235
Further Reading 239

Appendix 241

Picture Credits 263

Abbreviations 267

Chronology of the History of German Antarctic Research 269

About the Author 275

Geographical Index 277

Person Index 281

The Race for the Last White Spot on the Map: The First German South Polar Expedition (1901–1903)

The Wilhelminian Policy and the Beginning of Antarctic Research

In the 1880s, the era of colonial imperialism began for the European powers. Raw materials were to be secured for the motherland, and new sales markets were to be developed for domestic production.[1] For these purposes, they divided the world on the basis of economic considerations. The West Africa Conference (1884–1885) in Berlin, pursuant to its Final Act, was the starting point for partitioning Africa into colonies, and it constituted the German Empire's access to world politics. After an economic crisis lasting from 1882 to 1886, the German Empire took possession of protectorates in Africa, New Guinea, and the South Seas.[2] At that point in time, Germany was developing from an agrarian state into an industrial state and depended on both unfettered access to raw materials and new sales markets.

The industrial boom starting in 1895 and the great expansion of overseas trade with China, Japan, Farther India (now known as Southeast Asia), and trade posts in the Pacific region integrated the German Empire into world economics and world politics.[3] Rear Admiral Alfred von Tirpitz, the state secretary of the Imperial Naval Office [Reichsmarineamt] since 1897, accelerated Germany's fleet-building operations in order to secure overseas interests.[4] Above all, the respect of the greatest sea

[1] Messerschmidt, Manfred: Reich und Nation im Bewusstsein der wilhelminischen Gesellschaft, in: Schottelius, Herbert/Deist, Wilhelm (ed.): Marine und Marinepolitik im kaiserlichen Deutschland 1871–1914, Düsseldorf 1981, 2nd edition, pp. 11–33; Westphal, Wilfried: Geschichte der deutschen Kolonien, Munich 1984, pp. 261–265.

[2] Westphal: Deutsche Kolonien, pp. 116–118, 350–351.

[3] See also Witt, Peter-Christian: Reichsfinanzen und Rüstungspolitik 1898–1914, in: Schottelius/Deist (ed.), Marine und Marinepolitik im kaiserlichen Deutschland, p. 148; Beiträge zur Flottennouvelle 1900, Berlin 1900.

[4] Tirpitz, Alfred von: Erinnerungen, Leipzig 1920, pp. 79–87.

C. Lüdecke, *Germans in the Antarctic*,
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power—England—for Germany was supposed to grow as soon as the German Empire empowered itself to enter alliances against England with a strong fleet of its own.[5]

At the turn of the twentieth century, geographers saw that Germany had also great prospects "of gaining an important position in world trade."[6] Against this trade policy background, legislation was passed to enable gradual further development of the German fleet.[7] Initially, staffing issues were of primary importance.[8] Because of the transition from sail to steam in navigation, there was a lack of qualified seamen. The German Imperial Navy could no longer rely on recruiting trained sailors from the merchant navy or the fishing fleets; it had to train its own crews instead. After the First Fleet Act was passed in 1898, several campaign associations were established within a year, pursuing understanding and approval for the fleet policy among the general population by organizing lectures that argued in favor of the fleet question.[9] The foundation of the Marine Science Institute and Museum [Institut und Museum für Meereskunde] at the University of Berlin stood in the same context.[10]

The fleet budget associated with the fleet acts consisted of a fixed sum of money, which did not leave any margin for unforeseen endeavors, although fleet building under Tirpitz took place during an economic upswing.[11] However, a comprehensive taxation policy did not exist yet; instead, there were only direct tax revenues from the single federal states. In the years 1898 and 1899, fiscal budgets could be balanced only by some unexpectedly high additional revenues resulting from the empire's own tax collections, whereas the next two financial years closed with soaring deficits. In 1902 and 1903, a sound state budget had already ceased to exist. The requirements of the army, the navy, and the East Asian expedition, which founded the naval base of Tsingtau (now known as Qingdao (Shandon Province, China)),[12] had increased considerably; thus, around 1900 and in the following years, military expenditure accounted for about 90% of the imperial budget.[13]

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[5] See also Böhm, Ekkehard: Überseehandel und Flottenbau. Hanseatische Kaufmannschaft und deutsche Seerüstung, Düsseldorf 1972, p. 89.

[6] Drygalski, Erich von: Deutschlands geographische Lage zur See, in: Beiträge zur Flottennouvelle 1900, Berlin 1900, p. 93.

[7] Compiled from Böhm: Überseehandel, p. 183; Lange, Annemarie: Das wilhelminische Berlin. Zwischen Jahrhundertwende und Novemberrevolution, Berlin 1988, pp. 855–876; Schnall, Uwe: Staat und Seekartographie im wilhelminischen Deutschland, in: Lindgren, Uta (ed.): Kartographie und Staat. Algorismus 3 (1990), p. 61.

[8] Beiträge: p. 131 ff.

[9] Böhm: Überseehandel, p. 173 ff., 181.

[10] See also Güth, Rolf: Von Revolution zu Revolution. Entwicklungen und Führungsprobleme der Deutschen Marine 1848–1918, Herford 1978. p. 97; Führer durch das Museum für Meereskunde in Berlin, Berlin, 1907, p. 3.

[11] Witt: Reichsfinanzen, pp. 148–151.

[12] Westphal: Deutsche Kolonien, pp. 206–207.

[13] Witt, Peter-Christian: Die Finanzpolitik des Deutschen Reiches von 1903 bis 1913. Eine Studie zur Innenpolitik des Wilhelminischen Deutschland, Lübeck 1970, pp. 380–381; Witt: Reichsfinanzen, p. 146, pp. 151–153.

The empire's debts between 1898 and 1903 grew by nearly 627 billion marks to 2815 billion marks and were the reason for the German Empire's permanent financial crisis, lasting until World War I. After the elections on June 16, 1903, any previously common overdrafts or unbudgeted costs of the imperial departments were to be limited and the finances of the empire lastingly consolidated in order to finance the Reich's fleet-building activities on a long-term basis. These processes were initially very conducive to planning Germany's South Polar expedition; however, they produced the opposite results while their execution was still in progress. In other words, the South Polar expedition started in a time when copious funds could be generated, but it then suffered extremely from massive budget cuts in the years that followed.

The Road to Germany's First South Polar Expedition

On July 24, 1865, the First Convention of the Masters and Friends of Geography [Erste Versammlung Deutscher Meister und Freunde der Erdkunde] took place in Frankfurt and the group committed itself to the subject of polar research. Here, Georg von Neumayer appealed for the dispatch of a German South Polar expedition.[14]

However, priority was given to exploration of the closer, unknown Arctic, a proposition especially advocated by the cartographer August Petermann.[15] In 1868, the first German North Polar expedition explored the seas between the eastern part of Greenland and Spitsbergen. The second expedition (1868–1870) set out on two ships to explore the unknown eastern coast of Greenland as far north as possible. However, the two ships lost sight of each other after only a few weeks. The *Hansa* was crushed in the ice, and the crew members were forced to overwinter on a drifting ice floe before they finally managed to reach the Moravian mission station of Friedrichsthal on the southern tip of Greenland in their rescue boats. However, the second expedition group sailing on the *Germania* discovered Kaiser Franz Joseph Fjord and charted the coastline up to 77°N.

Neumayer's efforts in support of a German Antarctic expedition sparked general interest only when he drew a connection between South Polar research and measurement of the transit of Venus.[16] In 1874, astronomers wanted to observe the transit of Venus in front of the sun in order to determine the distance between the earth

[14] Kretzer, Hans-Jochen: Windrose und Südpol, Leben und Werk des großen Pfälzer Wissenschaftlers Georg von Neumayer, Bad Dürkheim 1984, p. 20; Neumayer, Georg von: Auf zum Südpol! 45 Jahre Wirkens zur Förderung der Erforschung der Südpolarregion 1855–1900, Berlin 1901, pp. 33–51.

[15] Krause, Reinhard A.: Hintergründe der deutschen Polarforschung. Von den Anfängen bis heute, in: Deutsches Schiffahrtsarchiv 16 (1993), pp. 13–30.

[16] Lüdecke, Cornelia: Die Routenfestlegung der ersten deutschen Südpolarexpedition durch Georg von Neumayer und ihre Auswirkung, in: Polarforschung 59 (1989), pp. 103–111.

Fig. 1 Georg von Neumayer, the hydrographer at the Admiralty, photographed in 1872. (Bundesamt für Seeschifffahrt und Hydrographie, Hamburg)

and the sun. As the Venus transit would be best seen in the Southern Hemisphere, Neumayer proposed the Kerguelen Islands in the Indian Ocean as a suitable vantage point, bearing in mind that an exploratory expedition could be easily sent from there to the unchartered region surrounding the South Pole.[17] Appointed to the post of hydrographer at the Admiralty in Berlin in the meantime, Neumayer succeeded in organizing a circumnavigation of the world by the SMS (Seiner Majestät Schiff [His Majesty's Ship]) corvette *Gazelle*, so that the transit of Venus could be observed on the Kerguelen Islands on December 9, 1874 (Fig. 1).[18] Neumayer, who became the director of the German Naval Observatory [Deutsche Seewarte] in Hamburg by 1876, subsequently advocated the route via the Kerguelen Islands as the best possible passage southward because the ocean currents there promised unimpeded progress.[19]

Independent of Neumayer's aspirations, Eduard Dallmann conducted a commercial whaling expedition on the steam bark *Grönland* to the Antarctic Peninsula in the southern summer of 1873–1874, an operation that also resulted in the discovery of Bismarck Strait, Neumayer Channel, and Kaiser Wilhelm Islands.[20]

More than ten years later, the Conferences of German Geographers [Deutsche Geographentage], which were held from 1885 to 1905 under Neumayer's

[17] Neumayer: Südpol, pp. 44–67.

[18] Kretzer: Windrose, p. 22; Lüdecke: Routenfestlegung, pp. 105–106; Headland, Robert Keith: A Chronology of Antarctic Exploration, London 2009, p. 206.

[19] Neumayer: Südpol, pp. 69–138, 347–350, 439–441.

[20] Headland: Chronologie, p. 203; Krause, Reinhard A./Ursula Rack (ed.): Schiffstagebuch der Steam-Bark Groenland geführt auf einer Fangreise in die Antarktis im Jahre 1873/1874 unter der Leitung von Capitain Ed. Dallmann, in: Berichte zur Polar und Meeresforschung 530 (2006).

presidency, provided an adequate forum for Germany's future South Polar research.[21] When the 11th Conference of German Geographers took place in Bremen on April 17–19, 1895, one session dedicated three lectures to research of the South Polar region.[22] Toward the end of the conference, the launch of a scientific South Polar expedition was motioned and unanimously accepted.[23] On the same day, the German Commission for South Polar Research [Deutsche Kommission für Südpolarforschung] was founded, with Neumayer as its president, Erich von Drygalski (subsequently the leader of the expedition), and 23 other members.[24] In their second session, an expedition plan was designed, which was to serve as the basis for discussion at the Sixth International Geographical Congress in London, held from July 26 to August 3, 1895, under the direction of Sir Clements Markham, the president of the Royal Geographical Society in London.[25]

Markham, campaigning for the dispatch of a British expedition to Antarctica, played a role similar to that of Neumayer in Germany.[26] At the congress in London, Neumayer presented his plan in which two ships were to make way southward on the Kerguelen route.[27] At the end, he referred to the advantages of an international collaboration in accordance with the ideal of the International Polar Year 1882–1883, when ten nations had, for a duration of 13 months, established 12 scientific stations for measurement of meteorological and magnetic data around the frozen Arctic Ocean. Finally, Neumayer's suggestions fell on fertile soil and Markham's hopes were also fulfilled. As a matter of course, Britain had to show its colors now, for it could not leave the exploration of the unknown South Polar region to other nations, let alone its political rival, Germany. Consequently, the congress culminated in a resolution that represented a millennium achievement, so to speak:

> The Sixth International Geographical Congress held in London 1895 regards the exploration of the Antarctic regions to be the most significant of problems yet to be solved and recommends, considering the benefits prospectively resulting thereof for all disciplines, that the various scientific societies all over the world should strive in ways they deem most effective to see that this task is accomplished before the close of the nineteenth century.[28]

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[21] Meynen, Emil: Deutscher Geographentag 1881–1963. Gesamtinhaltsverzeichnis der Verhandlungen, Wiesbaden, 1965, p. VIII, 51.

[22] Drygalski, Erich von: Die Südpolarforschung und die Probleme des Eises, in: Verhandlungen des 11. Deutschen Geographen-Tages in Bremen im Jahr 1895, Berlin 1896, pp. 18–30.

[23] Friederichsen, Ludwig: Der sechste Internationale Geographen-Kongreß in London 26. Juli–3. August 1895. Mitteilungen der Geographischen Gesellschaft Hamburg 1895, p. 5.

[24] Drygalski, Erich von: Zum Kontinent des eisigen Südens, Berlin 1904, pp. 2–3; Lüdecke, Cornelia: Die deutsche Polarforschung seit der Jahrhundertwende und der Einfluß Erich von Drygalskis. Dissertation. Berichte zur Polarforschung 158 (1995), p. 133.

[25] Neumayer, Georg: Thätigkeitsbericht der Deutschen Kommission für die Südpolar-Forschung, in: Kollm, Georg (ed.): Verhandlungen des 12. Deutschen Geographen-Tages in Jena im Jahr 1897, Berlin 1897, p. 17; see also Friederichsen: Der sechste Internationale Geographen-Kongreß.

[26] Markham, Clements: Antarctic Obsession. A personal narrative of the origins of the British national Antarctic expedition 1901–1904 (posthumous), edited by Clive Holland, Alburgh 1986.

[27] Neumayer: Südpol, pp. 367–445.

[28] Friederichsen: Der sechste Internationale Geographen-Kongreß, p. 6.

In Germany, opinions collided in the subsequent sessions of the South Polar Commission because Drygalski, for practical reasons, had planned to use only one ship in order to get a chance to conduct the expedition, considering the tight financial situation the empire was in,[29] whereas Neumayer still demanded two ships for safety reasons.[30] On this point, Neumayer's influence on the South Polar Commission was obstructive, as it delayed concrete preparations. Neumayer just could not concede that his plan, cherished for decades, was now to be carried out contrary to his ideas by someone who was nearly 40 years his junior.

In August 1896, news made the headlines that the Norwegian Fridtjof Nansen, who had set sail on the *Fram* to the North Pole in 1893, had returned home safe and sound.[31] As planned, the *Fram* had been frozen in pack ice and drifted northward, but not far enough, for which reason Nansen and Hjalmar Johansen abandoned the ship in order to reach the pole by sledge and kayak. However, since huge ice floes were in permanent motion and failed to drift north, they had to turn around at 86°04′N and spend the winter in Franz Joseph Land, where they were finally rescued by the Briton Frederick Jackson. In the meantime, the *Fram* had come free of the ice again and succeeded in returning to Norway.

The Belgian expedition (1897–1899) led by Adrien de Gerlache de Gomery was, by now, the first to follow the call of the International Geographical Congress and explored the western side of the Antarctic Peninsula where, captured in the ice, it had to overwinter.[32]

As preparations for the German South Polar expedition came to a halt, Drygalski worked increasingly on publishing the results of his Greenland expedition (see his biography below) in order to submit them to the Friedrich Wilhelm University in Berlin as his (postdoctoral) habilitation thesis (Fig. 2).[33] Early in 1898, Drygalski completed the evaluation of his Greenland data. Shortly afterward, he received his lecturer qualification and three days later was appointed as the expedition leader in the last session of the South Polar Commission.[34]

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[29] Drygalski: Zum Kontinent, pp. 3, 12–13.

[30] Neumayer: Südpol, pp. 349, 441.

[31] Nansen, Fridtjof: In Nacht und Eis. Die norwegische Polarexpedition 1893–1896. Reprint, Wiesbaden, 2011.

[32] Headland: Chronology, p. 229.

[33] Neumayer: Südpol, pp. 461–483; Drygalski, Erich von: (1948), Unpublizierte Autobiographie, private possession, Mörder, Feldkirchen-Westerham, pp. 32–34; Drygalski, Erich von: Aus dem nachgelassenen Lebensrückblick, in: Mitteilungen der Geographischen Gesellschaft in München 75 (1990), pp. 119–141, 72.

[34] Neumayer, Georg von: Zweiter Thätigkeitsbericht der Deutschen Kommission für die Südpolar-Forschung, in: Kollm, Georg (ed.): Verhandlungen des 13. Deutschen Geographen-Tages zu Breslau am 28., 29. und 30. Mai 1901, Berlin 1901, pp. 4–5. His long-postponed appointment was surely due to the circumstance that such a significant prestige project was not to be handed to a young "PhD" who was just 33 years old; instead, it should at least go to a person who had been scientifically acknowledged by completion of a habilitation thesis.

Fig. 2 Erich von Drygalski's dog sledge journey to survey operations in Greenland in 1893. (Leibniz-Institut für Länderkunde, Leipzig, Drygalski estate)

Erich von Drygalski

Erich von Drygalski was born in Königsberg (now known as Kaliningrad (Russia)) on February 9, 1865, as the middle son of five sons of the director of the renowned Kneiphof Gymnasium.[35]

In the winter semester of 1882–1883, he began studying physics, mathematics, and geography at the University of Königsberg. Other places of study were Bonn and Leipzig. Drygalski first encountered glaciers when he walked across the Alps for two months during the summer semester of 1884. Toward the end of his education, he went to Berlin in the winter semester of 1886–1887 to study with the renowned explorer Ferdinand Freiherr von Richthofen, and he earned his doctorate with a study in which he described the deformation of the globe by the weight of its ice cover during the glacials.[36]

(continued)

[35] Drygalski: Autobiographie, pp. 119–141.

[36] Drygalski, Erich von: Die Geoid-Deformation der Kontinente zur Eiszeit und ihr Zusammenhang mit den Wärmeschwankungen in der Erdrinde, Dissertation, in: Zeitschrift der Gesellschaft für Erdkunde zu Berlin 22 (1887), pp. 168–280.

However, he still required the essential basics to mathematically describe the physical conditions of the ice's movement during the glacial period. For this reason, Drygalski wanted to explore the movement of glaciers in nature first and then create a model derived from the measured data.[37] In the summer of 1891, he went on an exploratory trip to western Greenland, financed by the Berlin Geographical Society. The main expedition soon followed during 1892–1893.[38] The biologist Ernst Vanhöffen (a friend from his schooldays in Königsberg) and the meteorologist Hermann Stade accompanied him. A family of Greenlanders settled next to their overwintering station and, together with other locals, helped them with their excursions and surveys. Thus, they not only learned how to use dog sledges but also became acquainted with kayaking and other things necessary to survive in snow and ice.

On the basis of the two data volumes from this expedition, Drygalski submitted his habilitation thesis in Berlin 1898 and received his *venia legendi* ["authorization to read"] in geography and geophysics.[39] Only three days later, he was appointed as the leader of the South Polar expedition that had been planned long before. In the same year, the organization and management of the Physical–Geographical Department of the Marine Science Institute and Museum, recently founded by Richthofen, was also conferred on him (Fig. 3).[40]

From 1901 to 1903, Drygalski led the first German South Polar Expedition, which discovered Kaiser Wilhelm II Land in the Indian Ocean, close to the Antarctic Circle. By 1931, he had published 20 volumes and two atlases based on the results of the expedition.[41] When Drygalski's mentor, Richthofen, died suddenly in 1905, he took over his representation at both the university and

(continued)

[37] Drygalski, Erich von: Über Bewegungen der Kontinente zur Eiszeit und ihren Zusammenhang mit den Wärmeschwankungen in der Erdrinde, in: Verhandlungen des 8. Deutschen Geographentages zu Berlin, Berlin (1889), pp. 162–180; Drygalski: Autobiographie, p. 52.

[38] Drygalski, Erich von: Grönland-Expedition der Gesellschaft für Erdkunde zu Berlin 1891 bis 1893, Vol. 1, Berlin 1897, pp. X–XI, 13–19; Lüdecke, Cornelia, Vor 100 Jahren: Grönlandexpedition der Gesellschaft für Erdkunde zu Berlin (1891, 1892–1893) unter der Leitung Erich von Drygalskis, in: Polarforschung 60 (1990), pp. 219–229; Lüdecke, Cornelia (ed.): Verborgene Eiswelten. Erich von Drygalskis Bericht über seine Grönlandexpeditionen 1891, 1892–1893, Munich, 2015.

[39] Drygalski: Autobiographie, p. 72.

[40] Ibidem, p. 79; Lüdecke, Cornelia: Erich von Drygalski und der Aufbau des Instituts und Museums für Meereskunde, in: Historisch-Meereskundliches Jahrbuch 4 (1997), pp. 19–36.

[41] Fels, Edwin: Erich Dagobert v. Drygalski, Neue Deutsche Biographie, Berlin (1959), pp. 143–144; see also Lüdecke, Cornelia/Heinz-Peter Brogiato/Ingrid Hönsch: Universitas Antarctica. 100 Jahre deutsche Südpolarexpedition 1901–1903 unter der Leitung Erich von Drygalskis, Leipzig 2001. The Drygalski estate, especially the material related to the South Polar Expedition, is archived at the Leibniz-Institut für Länderkunde in Leipzig.

Fig. 3 Erich von Drygalski, photographed in about 1901. (Gazert, Volker (Private possession))

the Marine Science Institute.[42] Finally, in 1906, he was offered the new chair in geography at the Ludwig Maximilians University in Munich.[43] Alongside this, he was the director of the Geographical Society of Munich from 1907 until his retirement in 1935.[44] In 1907, he married his cousin Clara Wallach, with whom he had four daughters.[45]

On account of his comprehensive polar experiences, Drygalski took part in the German Arctic Zeppelin Expedition in the summer of 1910, a study trip to explore the technical conditions for future zeppelin flights in the Arctic.[46]

After World War II, he directed the abandoned Geographical Institute of the University in Munich from the summer semester of 1947 until the winter semester of 1947–1948 and resumed giving lectures.[47]

On January 10, 1949, Erich Drygalski died in Munich and was buried in the cemetery at Partenkirchen.

[42] Drygalski: Autobiographie, p. 79, 108, 110; Lüdecke: Erich von Drygalski und der Aufbau.

[43] Fels: Drygalski, p. 143.

[44] Louis, Herbert: Die Geographische Gesellschaft München, Rückblick im hundertsten Jahre ihres Bestehens, in: Mitteilungen der Geographischen Gesellschaft in München 54 (1969), pp. 10–12.

[45] Fels: Drygalski, p. 143.

[46] Miethe, Adolf/Hugo Hergesell (ed.): Mit Zeppelin nach Spitzbergen, Berlin (1911); Meinardus, Wilhelm: Erich von Drygalski †, in: Petermanns Geographische Mitteilungen 93 (1949), p. 179.

[47] Personen und Vorlesungsverzeichnis für das Sommersemester 1947, Universität München, 1947, p. 54; Personen und Vorlesungsverzeichnis für das Wintersemester 1947/48, Universität München, 1947, p. 70.

Preparations for the First German South Polar Expedition

After Georg von Neumayer had successively retreated from further organization of the expedition and entrusted those responsibilities to Drygalski, the latter was able to put his own ideas into effect. In his preliminary "Plan of a German Expedition to the South Polar Region," dated February 22, 1898, Drygalski outlined the assignments of the expedition. Among them were oceanographic measurements; collection of plankton; magnetic and meteorological measurements both on board and on land; geological, zoological, and botanical collections; astronomical and geodetic measurements; geographic explorations on land and sea; and drift ice and land ice studies.[48] The magnetic and meteorological measurements were to chronicle the daily variation of the earth's magnetic field and its instabilities, as well as the climate of the little-known high southern latitudes.[49] Based on the new science of bacteriology (which had recently been founded and established by Robert Koch), bacteriological studies were also planned to take place in the course of the expedition and to be carried out by Hans Gazert, the scientifically interested physician for the expedition.[50]

For his expedition, Drygalski chose a form that is still valid today:

- Shipboard measurements on the outward-bound voyage in summer
- Station measurements during overwintering in Antarctica
- Exploration trips into the surroundings of the station in spring and summer
- Shipboard measurements on the way back in the southern autumn[51]

Drygalski's starting point for the geographic exploration of the unknown South Polar region was a fixed station from which he wanted to launch dog sledge expeditions. In his first expedition plan, he had envisaged using sledges to approach "the earth's pole, [and] in the next southern autumn follow the discovered coastline toward the magnetic pole."[52] In the subsequent versions of his plans, he still continued to mention the option of searching for the geographic and magnetic poles, although he strictly declined any one-sided striving for the pole, as his goal was of a purely scientific nature.

Early in April 1898, Drygalski negotiated for hours at the German Imperial Naval Office with the Chief of the Nautical Department, Graf Friedrich von Baudissin, and the secretary of state, Rear Admiral Tirpitz, about the nautical

[48] Drygalski, Erich von: Plan einer Deutschen Expedition in das Südpolargebiet, in: 17. Jahresbericht der Geographischen Gesellschaft München (1898), pp. 39–40.

[49] Bidlingmaier, Friedrich: Die erdmagnetisch-meteorologischen Arbeiten und Ausrüstungsgegenstände der deutschen Südpolar-Expedition und die Vorschläge für die internationale Kooperation während der Zeit der Südpolar-Forschung 1901–1903, in: Petermanns Geographische Mitteilungen 47 (1901), p. 153.

[50] Gazert, Hans: Bakteriologische Aufgaben der deutschen Südpolar-Expedition, in: Petermanns Geographische Mitteilungen 47 (1901), p. 153.

[51] See also Drygalski: Plan.

[52] Drygalski: Plan, p. 38.

issues involved in the expedition. A day later, he published a short draft describing the expedition ship.[53] Drygalski held the opinion that the expedition was a matter for the Department of the Navy and, as such, should be financed from the naval budget, and not from that of the Ministry of the Interior. "With it, one would be dealing only with a lower regulatory authority not as competently informed."[54]

Apart from the navy, which still had to be convinced to render its financial support, the Geophysical Commission of the Cartel Academies and Learned Societies of Gottingen [Geophysikalische Kommission der kartellierten Akademien und gelehrten Gesellschaften zu Göttingen]—which had formed from the Academies of Berlin, Munich, and Vienna and the Scientific Societies of Leipzig and Gottingen in order to support greater research projects—most warmly acknowledged Drygalski's expedition plan and particularly recommended its collaboration in geophysical questions that "promise making progress by way of corresponding observations made in remote places, especially in the Arctic and Antarctica."[55]

On July 20, 1898, the German Commission for South Polar Research, bypassing official channels, addressed an Immediate Submission directly to the kaiser in order to gain approval for 400,000 marks and 274,000 marks for 1899 and 1900, respectively, from the imperial budget for shipbuilding and for the Imperial Navy to take over leadership.[56] Time was running out, because an expedition (1898–1900) led by the Norwegian Carsten Borchgrevink had just embarked in order to overwinter for the first time on Antarctic soil, near Cape Adare in Victoria Land.

The Consultative Commission for the South Polar Expedition [Kommission für die Beratung einer Südpolarexpedition], instituted in accordance with the Immediate Submission, was convened early in November 1898. It was composed of Baudissin as its president, other representatives of the Imperial Naval Office and the Prussian Ministry of Ecclesiastical and Educational Affairs [Ministerium für geistliche und Unterrichtsangelegenheiten] (i.e., the Ministry of Cultural and Educational Affairs, represented by Friedrich Schmitt-Ott), and the expedition leader, and was supposed to discuss the building of the ship with regard to the measurement assignments, the duration of the expedition, and the costs.[57] Other representatives of the Ministry of

[53] Drygalski: April 5, 1898, Brief an Hans Meyer, private possession Wolfgang Kerler, Söcking; Oberhummer, Eugen: Die Deutsche Südpolarexpedition. Bericht über die vorbereitenden Schritte und die Versammlung in München am 13. Mai 1898, in: 17. Jahresbericht der Geographischen Gesellschaft in München 1898, pp. 40–42.

[54] Drygalski: April 5, 1899.

[55] Oberhummer: Bericht, p. 47; Baschin, Otto: Die Südpolar-Expedition, in: Zeitschrift der Gesellschaft für Erdkunde zu Berlin 36 (1901), p. 172.

[56] Kollm, Georg: Verhandlungen des 13. Deutschen Geographentages zu Breslau am 28., 29. und 30. Mai 1901, Berlin 1901, pp. 13–23.

[57] Kommission für die Beratung einer Südpolarexpedition: September 5, 1898, Sitzungsprotokoll, Leibniz-Institut für Länderkunde, Leipzig, Box 61, Inventory Number 4753, Serial Number 1.

the Interior and the German Hydrographic Office were invited to attend later sessions.[58]

In the meantime, Tirpitz furnished an opinion in which he confirmed the scientific and practical significance of the expedition. Should the government take over management of the expedition, and hence responsibility for its success and safety, he recommended using two ships "as it can be ruled out from the start that a potential failure could result from a lack of resources."[59] Further statements he made, however, related realistically to using only one ship, as in this case "the enterprise would be characterized as a private one and as such be supported by the empire." The essential tasks could be carried out by one ship alone. However, he believed that the submitted cost estimate was too low, and he increased the required sum of 874,000 marks to 1 million marks for using one ship, to be distributed over a period of four accounting years. The greatest share was assigned to the ship and the equipment "which would fall into the possession of the empire and represent a value beyond the purposes of the expedition, may it be that they were either sold or used for similar other purposes." As far as the Immediate Submission was concerned, the minister and state secretary of the Imperial Ministry of the Interior—as well as Vice Chancellor Graf Arthur von Posadowsky-Wehner (Fig. 4), who was the state secretary of the Imperial Treasury Office [Reichsschatzamt] from 1893 to 1897[60]—stated in an expert report commissioned by the Imperial Treasury that "there would be no second scientific task that incited greater interest than an advancement to the poles of the earth. A success of Germany in South Polar research, which has stagnated during the last 60 years, would add to the glory of German entrepreneurship and German science and meaningfully herald the new century with a peaceful exploit of German science."[61]

As to the question of the ship, Posadowsky finally received an assurance from Neumayer, in a confidential meeting that took place in early January 1899, that an expedition with only one ship could provide sufficient scientific results (Fig. 5).[62]

Besides the negotiations with the ministries, attempts were made to gain approval for the expedition on other levels as well. At a joint evening event of the

[58] Kommission für die Beratung einer Südpolarexpedition: November 19, 1898, Sitzungsprotokoll, Leibniz-Institut für Länderkunde, Leipzig, Box 61, Inventory Number 4753, Serial Number 1.

[59] Tirpitz: October 4, 1898, Tirpitz, Gutachten zum Immediatgesuch, GStA Merseburg, Rep. 92, Althoff estate Abt. B, No. 24, Vol. 2, Bl. 19–22. The following quotations also originate from this expert report.

[60] http://de.wikipedia.org/wiki/Arthur_von_PosadowskyWehner

[61] Posadowsky-Wehner: November 2, 1898, Brief an Thielmann, GStA Merseburg, Rep. 92, Althoff estate, Abt. B, No. 24, Vol. 3, Bl. 113–114, 125–126.

[62] Reichsministerium des Innern, March 10, 1899, Aktennotiz, BArch Potsdam, 15.01 RMdI, No. 16133, Bl. 4–6.

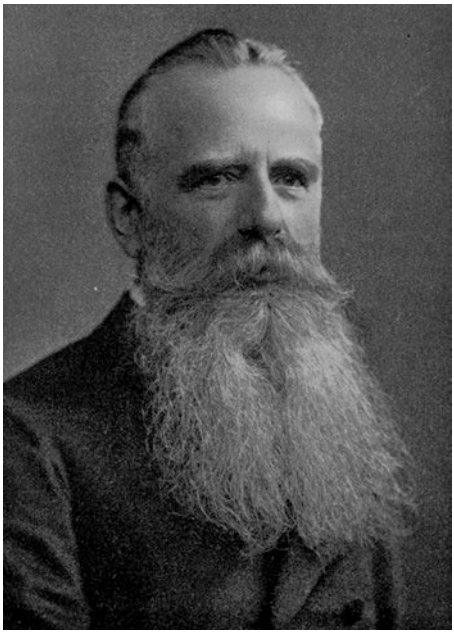

Fig. 4 Graf Arthur von Posadowsky-Wehner, the vice chancellor, minister, and secretary of state at the Imperial Ministry of the Interior. (Drygalski, Erich von: Zum Kontinent des eisigen Südens, Berlin 1904, p. 81)

Geographical Society of Berlin and the German Colonial Society (Section Berlin-Charlottenburg), which took place in Kroll's Theater on January 16, 1899, an audience of about 1300 assembled to listen to lectures focused on the objectives of the South Polar expedition. Among those who attended were the president of the Reichstag, representatives of the foreign office, envoys of foreign powers, high officers, and civil servants of the state.[63] As early as one week later, one deputy of the Reichstag advocated an additional budget for the expedition, as the latter would be "an important political assignment of the empire and a honorary obligation which we take upon ourselves if we are not to miss out on the forthcoming collaboration of civilized nations to explore the last part of our globe."[64] To this, Posadowsky answered that the navy would help by supplying the expedition with equipment, that it should set out with one ship in 1901, and that the budget of

[63] Verhandlungen: Gemeinschaftliche Sitzung der Gesellschaft für Erdkunde zu Berlin und der Abteilung Berlin-Charlottenburg der Deutschen Kolonialgesellschaft am 16. Januar 1899, in: Verhandlungen der Gesellschaft für Erdkunde zu Berlin 26 (1899), pp. 58–87; see also Oberhummer, Eugen: Die Deutsche Südpolarexpedition. Zweiter Bericht der Geographischen Gesellschaft in München, in: 18. Jahresbericht der Geographischen Gesellschaft in München 1900, p. 100.

[64] Oberhummer: Zweiter Bericht, pp. 102–105. The quotation is on p. 104.

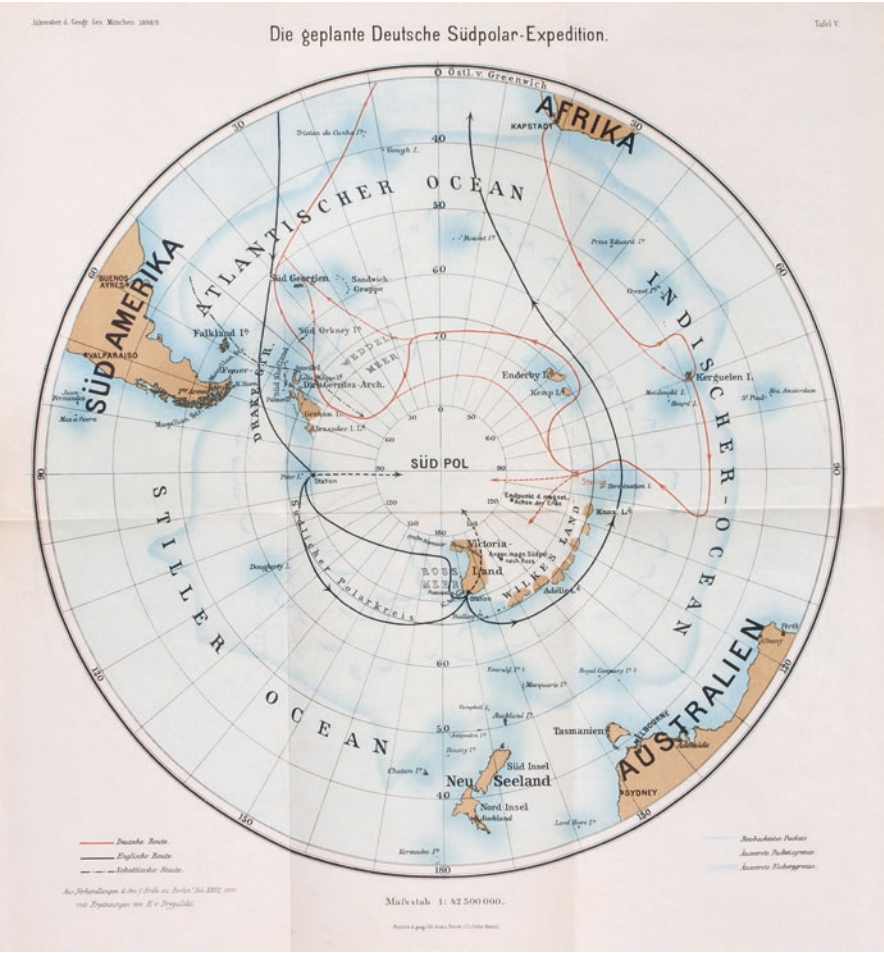

Fig. 5 The planned German South Polar expedition. The route of the German South Polar expedition to the magnetic South Pole and the geographic South Pole, along with a side trip to the Weddell Sea on the way back, as proposed by Neumayer in 1899. (Oberhummer, Eugen: Die Deutsche Südpolarexpedition. 18. Jahresbericht der Geographischen Gesellschaft in München 1900, table V)

1.1 million marks was to be spread over a period of five years. He also deemed it reasonable that the expedition should take place at the same time as the planned English expedition and a planned—albeit never accomplished—American expedition.

In its February session in 1899, the Budget Commission of the Reichstag took a unanimous resolution in which the government was requested to provide the required funds for the South Polar expedition.[65] Schmitt-Ott himself was able to

[65] Oberhummer: Zweiter Bericht, pp. 105–106.

draw 300,000 marks for equipment from the imperial budget.[66] By mid-March, the Imperial Treasury Office had raised no concerns about a state-financed South Polar expedition.[67] In April 1899, the kaiser finally gave his consent to include the costs of the South Polar expedition in the imperial budget.[68] Thus began the official support from the relevant authorities of the state.

The first official step, which indicated the actual securement of the endeavor to the public, was the appointment of a scientific council by the Ministry of the Interior. The "relationship between scientific control and nautical leadership" was discussed in the first council session, as was "the quality and number of scientific participants [and] the involvement of naval officers in solving research problems."[69] In a later session, it was stated that a branch station on the Kerguelen Islands in the southern Pacific Ocean was desired in order to obtain a station that was not influenced by Antarctica, for comparing meteorological and magnetic data measured in the south.[70] In the further course of the preparations, Tirpitz declared he was in favor of a captain coming from the merchant navy, as now it would no longer be an expedition of the navy and he would need all navy captains for the fleet.[71]

In late June 1899, the Consultative Commission for the South Polar Expedition was renamed the Commission for the German South Polar Expedition [Kommission für die deutsche Südpolarexpdition] and was still headed by the Imperial Naval Office. Because he had other obligations to meet, Baudissin handed over his presidency to Captain Ernst von Frantzius, whose primary responsibility was to take care of building the polar research vessel *Gauss*.[72] As a result of the conjoint preliminary work, the Reichstag received a "Memorandum Concerning the Equipment of a South Polar Expedition"—including a brief plan, map, and cost estimate—early in March 1900.[73]

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[66] Schmidt-Ott, Friedrich: Erlebtes und Erstrebtes 1860–1950, Wiesbaden 1952. pp. 49–50.

[67] Thielmann: March 15 1899, Brief an das Reichsministerium des Innern, BArch Potsdam, 15.01 RMdI, No. 16133, Bl. 8.

[68] Oberhummer: Zweiter Bericht, pp. 116–118.

[69] Ibidem, p. 118.

[70] Wissenschaftlicher Beirat: November 24, 1899, Verhandlungen im Reichsministerium des Innern, Leibniz-Institut für Länderkunde, Leipzig, Box 61, No. 4754, Serial Number 2.

[71] Tirpitz: June 17, 1899, Brief an das Reichsministerium des Innern, BArch Potsdam, 15.01 RMdI, No. 16117, Bl. 117.

[72] Kommission für die deutsche Südpolarexpedition: June 27, 1899, Sitzungsprotokoll, Leibniz-Institut für Länderkunde, Leipzig, Box 61, Inventory Number 4753, Serial Number 1.

[73] Oberhummer: Zweiter Bericht, p. 130.

The *Gauss*

A special research vessel was built for the first South Polar expedition. It was made entirely of wood, with a hull made of highly durable timber and designed in a particular shape to withstand the pressure of sea ice (Fig. 6).[74] This not only made the vessel suitable for magnetic measurements, which at that time were impossible using iron-hulled ships, but also prevented the vessel from being crushed when it froze in, in which case it would be lifted upward, like Nansen's legendary *Fram*.

Fig. 6 The round hull of the *Gauss*, photographed in 1900. (Leibniz-Institut für Länderkunde, Leipzig, Drygalski estate)

(continued)

[74] Drygalski: Zum Kontinent, pp. 57–81.

Expedition ships before World War I, such as the *Fram* or the *Gauss*, were considered to be male, for which reason they were each referred to as "he" or "him."

The estimated total cost of about 1.2 million marks was to be distributed over five accounting years (Table 1).[75]

Table 1 Budgetary distribution for the first German South Polar expedition

Year	Budget (marks)
1899	200.000
1900	350.000
1901	510.000
1902	96.000
1903	54.000
Total	1.210.000

Technical Details of the Ship[76]

Three-masted topsail schooner with an auxiliary engine, built in 1901 at the Howaldt Shipbuilding Yard in Kiel (Figs. 7 and 8)
Length between perpendiculars: 46 meters
Breadth measured on the outer surface: 11.27 meters
Depth of hold: 6.3 meters
Engine: triple expansion engine (combined steam engine made of three units in serial order) with 325 horsepower
Speed loaded with 728 tons: 7 knots (approximately 13 kilometers per hour)
Real speed under steam: on average, 4–5 knots (approximately 7–9 kilometers per hour)

Special Equipment on the Ship

Wooden design, free of iron in the vicinity of the magnetic measurement instruments
Small winch for loads of up to 3.5 tons
Large fish winch for loads of up to 7.5 tons
Sixbee sounding machine [a machine for determining water depths]
Lucas sounding machine
Kite winder
Cable winch
Drinking water distillation apparatus

(continued)

[75] Oberhummer: Zweiter Bericht, p. 123.

[76] Drygalski: Zum Kontinent, pp. 57–81, 343–344; Kretschmer, Marine Oberbaurat: Die Südpolarexpedition, Berlin 1900. p. 12; Drygalski: October 9, 1900, Bestellung, Leibniz-Institut für Länderkunde, Leipzig, Box 64, Inventory Number 4767, Serial Number 1.

Fig. 7 The *Gauss*—the first German polar research vessel—photographed in 1901. (Oberhummer, Eugen: Die Deutsche Südpolarexpedition. 18. Jahresbericht der Geographischen Gesellschaft in München 1900. Table II)

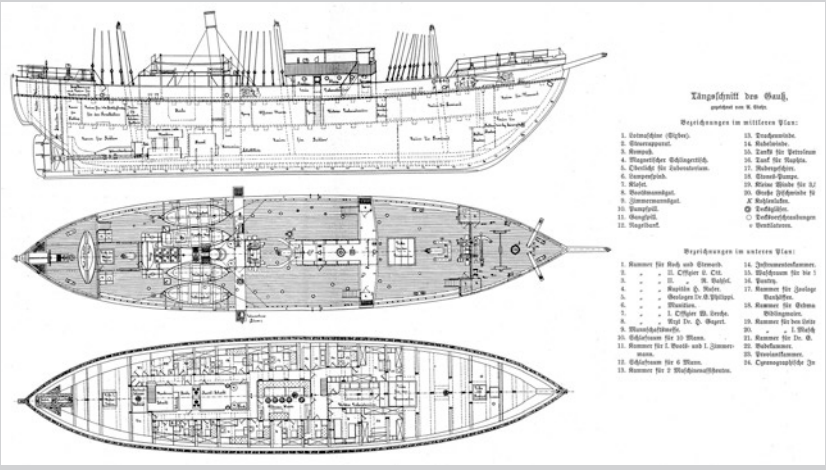

Fig. 8 A longitudinal section (*top*), the upper deck (*center*), and the living and working quarters (*bottom*) of the *Gauss*. (Drygalski, Erich von: Zum Kontinent des eisigen Südens, Berlin 1904, pp. 64–65)

(continued)