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Georg von Neumayer – Reflections about a Predecessor

Kurzfassung

Georg von Neumayer (1826–1909) ist als erster Direktor der Deutschen Seewarte eine der führenden Persönlichkeiten der Meereskunde, maritimen Meteorologie und Polarforschung in Deutschland. Sein Lebenswerk ist eine wichtige Grundlage für die heutigen meereskundlichen Institutionen.

Abstract

Georg von Neumayer (1826–1909), the first director of the German Maritime Observatory, is one of the leading personalities in marine science, maritime meteorology and polar research in Germany. His lifework is a solid basis on which various marine institutions still build today.

Résumé

Georg von Neumayer (1826–1909), premier directeur de l'observatoire maritime, est un des explorateurs les plus renommés dans le domaine de l'océanographie, de la météorologie maritime et de l'exploration des régions polaires en Allemagne. Son œuvre est une base importante pour les institutions océanographiques d'aujourd'hui.

Keywords

Federal Maritime and Hydrographic Agency (Bundesamt für Seeschifffahrt und Hydrographie, BSH), German Maritime Observatory (Deutsche Seewarte), Marine Science, Maritime Meteorology, Polar Research, Maritime Shipping

1. Introduction

What is it about Georg von Neumayer that we still commemorate his birthday after 175 years? What is so fascinating about him? What does he mean to us today?

Let us find an answer to these questions. But please do not expect me to give a detailed presentation of his biography. That has been done by others before – in this same place, and with much love and dedication. Nor do I intend to pay tribute to his scientific achievements. This, too, could be done much more competently by others.

What I am trying to do is to give you my very personal view of a man who – in a certain way – was my predecessor because the Federal Maritime and Hydrographic Agency, whose President I am, is a successor to "Deutsche Seewarte" (German Marine Observatory), which was established by Georg von Neumayer who also directed it for many years. I am fascinated with his personal history and with his life's achievements, which to this day constitute the foundation of our agency's work. My description of some stations of his life does not claim to be complete or correct to the last detail. I have based my remarks mainly on existing biographies, but have not studied the historic primary sources.

And I would like to make another preliminary remark addressed specifically at the participants from abroad: sometimes you will need a little patience because much of my presentation is going to deal with our German history and reality, not every detail of which may be equally interesting from a more distant perspective like yours.

2. From Kirchheimbolanden to Australia

Georg von Neumayer was born on 21 June 1826 – which is almost exactly 175 years ago – in Kirchheimbolanden. 1826 – for me and my generation growing up after the Second World War, who have meanwhile crossed the threshold to the third millennium, that seems incredibly far away. Let us take a look back into the past: in Germany, it was the time of the Restoration following the Congress of Vienna. The name of the town – Kirchheimbolanden, which certainly sounds strange to anyone from Northern Germany – seems to reflect the bourgeois spirit of the Biedermeier era, of which the paintings of Spitzweg give a fine example. With its implications of German "Gemütlichkeit" and self-denial, spatial – and perhaps intellectual – constraints, it contrasts starkly with the notion of cosmopolitanism or wide, open ocean spaces. Nevertheless – or perhaps exactly because of this – it is the native town of a man who would have a profound impact on all of us who feel an affiliation with the maritime sphere.

Neumayer becomes a pupil at the lyceum in Speyer. That already sounds a lot better. Speyer is an old imperial and diocesan city, which played an important role during the Reformation. It was the seat of the "Reichskammergericht" (Imperial Chamber of Justice) for a long period of time. During his formative years at Speyer, the course is set. Neumayer is fostered and supported by one of his teachers, Friedrich Magnus Schwerd, who is a renowned researcher introducing him to astronomy, geodesy, and physics. Thus well prepared, Neumayer goes to Munich, the Bavarian capital, in 1845. He studies at the polytechnical school and university, graduates in engineering sciences in 1849, becomes an assistant at the physical institute of the university, and receives his doctorate in 1850. If ever there had been any provincialism in his life, at Munich it disappeared for good. Times have changed. The industrial revolution – which also was a revolution of the natural sciences – has also gained a foothold in Germany.

Then, in 1848, a political revolution also breaks out in Germany, which does not yet exist as a State at that time. The revolution is started by the bourgeoisie, which has begun to wake up and to call for political participation, and which aims to bring about a political unification of Germany. In Munich, the revolution leads to the abdication of

Ludwig I Neumayer takes part in student demonstrations but his father exercises his authority and virtually "banishes" him to Tyrol. Influences from this time of political unrest doubtless have left their mark in his thinking and professional development. These influences also include the works of Friedrich List, the economist from Württemberg whose theories which, by the way, were strongly influenced by his stay in America, have paved the way for the German Customs Union and are still relevant today in the context of the European Monetary Union. Perhaps the key to the lifework of the patriot Neumayer can be found in List's statement on the importance of the still non-unified Germany's claim to sea-power:

"Whosoever has no share in the ocean is excluded from all the good things and honours of the world – he is our Lord's stepchild".

Also the young inlander Georg von Neumayer hears the call of the ocean. 22 years old, he tries to enlist in the newly established German navy but is not accepted as being too old. His hopes of becoming a navy officer thus have been crushed. Two years later, this will spare him the fate of the German fleet, the first fleet under the black-red-yellow flag, which was called a pirate flag by the British because it had been denied international recognition. Be that as it may – the colours black-red-yellow will have a special importance in his life, as we will see later. Instead of joining the navy, he goes on board the Hamburg barque "Louise" as an ordinary seaman in 1850. His first voyage takes him to Brazil. In 1851, Neumayer acquires his mate's certificate at the Hamburg School of Navigation after a short study time of just 6 weeks. He then goes to Trieste, where he works as a teacher of mathematics and nautical astronomy at the Austrian School of Navigation, as it was called then. At this point, let me briefly jump into the present. Today, hydrographers from all over the world – especially from developing countries – study at Trieste, with support from Italy. Of course, it is essential for this training institution to receive as much international support as possible. But I am sorry to say that in Germany we are always a bit tight-fisted in this respect. And the idea of creating a Georg-von-Neumayer grant to fund professional training at Trieste probably will remain an unfulfilled dream.

Neumayer does not stay long in Trieste. He feels an irresistible desire to travel. In 1852, he travels to Australia as an ordinary seaman on board the Hamburg ship "Reiherstieg". After their arrival the crew, gripped by gold fever, leaves the ship. Neumayer himself stays on board to sign off properly. But he, too, cannot resist the promise of adventure in the Australian gold fields, among gold diggers from all corners of the world, including many Germans who had deserted their ships or had fled from Germany in the aftermath of the revolution of 1848. It is this episode of his life which brings back memories of our own youth: dreams of becoming an adventurer or discoverer, stories of fortunes made in faraway countries. And I clearly remember my own desire to travel: I even passed the required aptitude test for sailors and obtained a discharge book, but there the story ends.

Neumayer never was a real adventurer or treasure hunter. His scientific interests always prevailed. Maybe it was a typically German character trait of Neumayer to gather a bunch of German gold diggers around him in the middle of the Australian bush, hoist the black-red-yellow flag on top of a tent, officially declare this a school tent and to teach them navigation after a day's hard and mostly fruitless toil in the gold fields. His teaching was highly successful, and the sailors got better paid and higher qualified jobs when signing on again.

Neumayer returns to Germany in 1854. At this point, he knows what his vocational goal will be: to combine his two professions, those of a scientist and sailor, and to apply natural sciences to the benefit of shipping and ocean exploration. Australia is the continent that has put a spell on him – last, but not least, because of its vicinity to the hitherto unexplored Antarctica. His idea is to carry out geophysical investigations in

Australia, which would also serve as a basis for exploring Antarctica. But he needs money to do that. Alexander v. Humboldt, Liebig, and Faraday are advocates of his goals and succeed in convincing king Maximilian II of Bavaria to make available the required funds.

In autumn 1856, Neumayer travels to Melbourne, where he establishes the Flagstaff Observatory for Geophysics, Magnetism and Nautical Science. He carries out routine meteorological, geomagnetic and astronomical measurements, issues sailing directions to ships leaving port, installs tide gauges, and organizes numerous expeditions into the continent's interior where he carries out gravity and geomagnetic measurements as well as land surveys. His work is also influenced by the American Matthew Maury, who has established the institution that will later become the US hydrographic service. Maury's goal is to acquire knowledge of natural conditions in the ocean, and to achieve that goal he enlists the services of vessels which make systematic observations during their voyages, using tested and approved instruments. He collects and evaluates the ship's data and develops sailing instructions on that basis which are made available to shipping.

Neumayer stays in Australia until 1864. The observatory, which had been funded and operated privately at first, is taken over by the colony of Victoria two years later. Neumayer is appointed its director. As chairman of the German Society, he looks after his German compatriots, many of them political emigrants of 1848.

3. Hydrographer of the Admiralty

Also this activity as a British colonial officer is only one step in his career. In 1864, he returns to Germany, where he starts scientific work on his observations and, at the same time, pursues his grand goal of establishing a German central institution for marine sciences and maritime meteorology. He is untiring in his effort to achieve that goal. Wherever an opportunity arises, Neumayer presents his concepts, for example at the first German Geographers' Assembly in Frankfurt/Main in 1865. In 1869, he has the opportunity to present his plans for the exploration of Antarctica – always one of his central subjects – at the Innsbruck Assembly of Natural Scientists and, for a certain period of time, seriously considers leading an Austrian expedition into Antarctica.

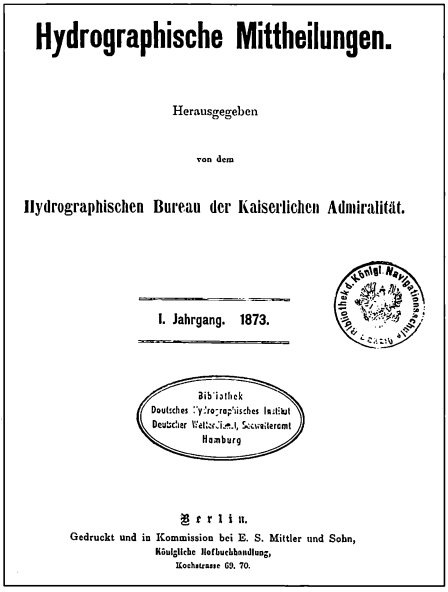
In 1868, Wilhelm von Freeden establishes the "Norddeutsche Seewarte" (North German Marine Observatory) as a private institute in Hamburg, which he finances by his private means. His goal is to develop safe, shorter ocean routes by evaluating the available nautical, oceanographic and meteorological observations of German ship's officers and to improve and test the nautical instruments used at the time. Together with Freeden, Neumayer conceives the project of building an imperial marine observatory. Inspired by the establishment of the German Empire, he presents the idea at the Natural Scientists' Day in Rostock in 1871. It certainly would have been beyond his imagination at the time that the observatory's successor, the Federal Maritime and Hydrographic Agency, would one day – from 1994, to be precise - have one of its two headquarters in Rostock.

Just a short time later, in 1872, at the Berlin Geographic Society, Neumayer gives a lecture on magnetism on iron-hulled ships. He is a renowned scientist at the time. People listen to him, and they heed his advice. They embrace his ideas because they are in line with the general spirit of the times, for example in the political, societal, economic, technical and scientific fields, which are strongly influenced by a striving for more national power and prestige.

Neumayer is appointed hydrographer of the Imperial Admiralty. Now, finally, the time has come for him to realize his goals. In 1873, the journal "Hydrographische Mitteilungen" (Hydrographic Reports) is established, which would soon gain a high reputa-

tion under the new title "Annalen der Hydrographie und Maritimen Meteorologie" (Annals of Hydrography and Maritime Meteorology).

Much later German Hydrographic Institute (DHI) publishes them under the new title "German Hydrographic Journal". Publication of this journal had to be discontinued, however, at the end of last year because of fundamental changes in the field of scientific publishing. It has been replaced by the new journal "Ocean Dynamics", which is issued by Springer-Verlag and expressly continues in the tradition of the former scientific publication series.


Hydrographische Mittheilungen.

Herausgegeben

von dem

Hydrographischen Bureau der Kaiserlichen Admiralität.

I. Jahrgang. 1873.

Berlin.

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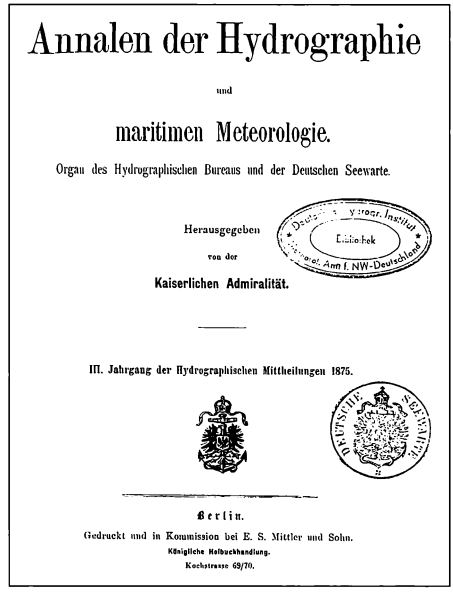
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und

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Organ des Hydrographischen Bureaus und der Deutschen Seewarte.

Herausgegeben

von der

Kaiserlichen Admiralität.

III. Jahrgang der Hydrographischen Mittheilungen 1875.

Berlin.

Gedruckt und in Kommission bei E. S. Mittler und Sohn.
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Fig. 1/2: Founded by Georg von Neumayer – The hydrographic reports and annals

Things now happen in rapid succession. In 1874, the Naval Observatory in Wilhelmshaven is established. In the same year, the research vessel "Gazelle" leaves for a scientific cruise through the world's oceans. And, just a short time later, Neumayer's plans become reality when in January 1875 the "Deutsche Seewarte" (German Marine Observatory) is established under "Reich" law, as an imperial institution under the control of the Imperial Admiralty. The institute which had been founded by Wilhelm von Freeden (North German Marine Observatory) is integrated into the new governmental Marine Observatory as its shipping department. Other departments are created later: the meteorological department and the departments for nautical instruments and chronometer testing. The scope of activities of the German Marine Observatory also include marine physical and marine meteorological observations, the testing of nautical instruments, geomagnetic observations, a collection of hydrographic and nautical publications and charts, as well as publications that are made available to national shipping, for example sailing directions, periodical navigational publications, individual advice, and pilots.

At the same time, also meteorological tasks are assigned to the institute. They include meteorological observations on the coasts and in the interior, the telegraphic communication of observations, warnings of dangerous weather changes, and processing of the complete data material for navigational and scientific purposes.

4. Director of the German Marine Observatory

Although Neumayer has now reached his goals, he hesitates whether he himself should become head of the "Deutsche Seewarte" (German Marine Observatory) or continue to work as hydrographer of the Admiralty. When no suitable director can be found, he goes to Hamburg in 1876 to become the first Director of "Deutsche Seewarte". For more than a quarter of a century, Neumayer will be able to develop this institution according to his concepts.

Within a short time, "Deutsche Seewarte" has reached a prominent position and becomes the birthplace of maritime administration, ocean research, and maritime meteorology in a unified Germany. Neumayer gathers many excellent collaborators around him, among them Dinklage, Koldewey, Krümmel, Schott, and Wladimir Köppen, to mention just a few. Especially Köppen is the prominent figure without whom the history of meteorology, and especially climatology, in Germany would be unthinkable.

A special highlight in the career of Neumayer is 14 September 1881, the day on which Emperor Wilhelm I solemnly inaugurates the newly erected "Deutsche Seewarte" building.

Fig. 3: The 1881 built "Deutsche Seewarte" in Hamburg (destroyed: 1945)

If I tried to enumerate the many different activities of "Deutsche Seewarte" in the era of Neumayer, it would go beyond the scope of this presentation. Let me just summarize a few facts. Following the concepts developed by Maury, the German mariners can be convinced quickly of the importance which their observations have for marine scientific research. Voluntary observations in Germany soon are more numerous and systematic than in other countries. In recognition of the value of this voluntary work, Emperor Wilhelm II donates the "Seewarte-Medal". In a slightly different form, this medal is still awarded today.

Although shipboard observations meanwhile have lost much of their former significance, the purpose of the medal is still the same: to honour those making voluntary contributions which benefit the safety of shipping and the marine environment. In the past, these observations were indispensable for the scientific work that was carried out at "Deutsche Seewarte". The work focused on particular applications, or – as we would say today – it was customer oriented. Its purpose was to ensure the safety of shipping, to reduce travel times and thus to improve the efficiency of shipping. At the same time, this work constitutes a sound basis for a wider range of marine scientific activities, as we need them today for quite different uses of the oceans, for marine environmental protection, and for climate monitoring.

In the field of instrument technology, an official procedure is introduced for testing compasses, sextants, and chronometers – there had been no such procedure until then. Measurements of magnetism are gaining in importance because the shipyards are building more and more iron-hulled ships. Neumayer himself participates in the design of several magnetic instruments. The importance of the testing procedure for nautical instruments has not diminished in the course of time – on the contrary, it is even more important today, although magnetism is now less important than, for example, satellite communication, information technology, radar, transponders, and integrated navigation and track pilot systems. I admit that I feel a little proud telling you that we are no longer lagging behind in anything but that the testing laboratory of the Federal Maritime and Hydrographic Agency is among the leading laboratories of this type in the world.

In the field of meteorology, the synoptic weather service is introduced in Germany. Weather reports are issued on a daily basis. A telegraphic weather news service and the storm warning service for the German coasts are organized. These services, too, still exist today. Nowadays you will hardly find a newspaper that has no daily weather chart – the same applies to television channels.

Some time later, the Ice Service and the Storm Surge Warning Service are established – which today still are very important marine scientific services provided by the Federal Maritime and Hydrographic Agency.

Polar research continues to play a pivotal role in Neumayer's career. Under his chairmanship, the International Polar Commission is established in Hamburg in 1879. It decides to organize the first International Polar Year in 1882/83. Neumayer succeeds in getting Antarctica put on the agenda.

Also in the following years, Neumayer again and again stresses the importance of south polar research, often appealing to patriotic feelings. But he has also gained an international reputation and, in 1895, is invited to the International Geographical Congress in London, which is a token of high appreciation and also underlines the British interest in Antarctic research. Neumayer lives to see his visions become reality in 1901: on board the newly built research vessel "Gauss", a national expedition team led by Erich von Drygalski leaves for Antarctica. But Neumayer also witnesses how, after the return of the "Gauss" at the end of 1903, south polar research ends abruptly because, from a political standpoint, no spectacular results have been achieved.

I cannot expand on the scientific achievements of Neumayer today but I would nevertheless like to mention his standard-setting publication "Anleitung zu wissenschaftlichen Beobachtungen auf Reisen" (instructions for scientific observations while travelling), which was published in several editions.

5. New Requirements and Challenges in the 20th Century

In 1903, at the age of 77, Neumayer resigns from his post as director of Deutsche Seewarte. He feels nostalgic for his home in Palatinate where he was born. He leaves Hamburg, honoured by a banquet given by the city mayor, but he will never be quite absent from the city of Hamburg: the street "Neumayerstraße" was named after him, a frieze on the city hall building shows his relief, and an oil painting showing his portrait found its place in the Hamburg city hall. In Neustadt an der Haardt, the unmarried Neumayer lives with his sister and continues his scientific work. He once more receives special honours on his 80th birthday, which prove the high popularity which he enjoys also in his home state. But then his health gradually deteriorates, and after his sister's death he grows very lonely.

His death on 25 May 1909 marks the end of "a long, quite extraordinary and successful life", as Wladimir Köppen said in an obituary. During his long scientific career, Neumayer received more than 100 decorations, honorary memberships and other awards; he was appointed Professor, Admiralty Councillor, Privy Councillor, Excellency, to mention just a few, and was conferred personal nobility by the Bavarian state.

Neumayer's lifework is a solid basis on which we still build today. The tasks and organization of Deutsche Seewarte undergo quite a number of changes in the course of time in order to meet new requirements and challenges. In 1934, the institution is split up into the two main departments "Nautical Sciences and Hydrography" and "Weather Service", which is the predecessor of an independent weather service in Germany.

The end of the Second World War also marks the end of "Deutsche Seewarte". But as early as summer 1945, the British occupation forces establish the German Maritime Institute by merging the Hydrographic Service of the German Navy, the Marine Observatory Wilhelmshaven, and Deutsche Seewarte. On 12 December 1945, based on a decision of the Allied Control Council, the "Deutsches Hydrographisches Institut" (German Hydrographic Institute) is established.

The meteorological tasks are transferred to the Meteorological Office for Northwest Germany, which later becomes the Seewetteramt (Marine Weather Service) and today is the department "Maritime Shipping" of the German Weather Service. In the German Democratic Republic, a different development starts in the 50s, when the "Seehydrographischer Dienst" (Hydrographic Service), the "Seefahrtsamt" (Board of Navigation and Maritime Affairs), and the "Institut für Meereskunde" (Institute for Marine Research) are founded.

In order to create a central maritime federal authority, the "Deutsches Hydrographisches Institut" (German Hydrographic Institute) in Hamburg is merged with the "Bundesamt für Schiffsvermessung" (Federal Board of Tonnage Measurement) in 1990 and renamed "Bundesamt für Seeschifffahrt und Hydrographie" (Federal Maritime and Hydrographic Agency). Only a few months later, its scope of activities becomes even larger due to additional tasks in the new East German Federal States after the re-unification of Germany. Besides the direct successors to "Deutsche Seewarte", a large number of scientific institutions dealing with marine and polar research have meanwhile been created, whose work continues in the tradition of Neumayer and is based on his basic research. Besides many other institutions, that applies particularly to the Alfred Wegener Institute for Polar and Marine Research, which created a special memorial for him by naming the Neumayer Station in Antarctica after him.

6. Neumayer – A Predecessor

What does Neumayer mean to us today, beyond our fascination with his personality? There have been many fundamental changes since then.

The unique "Deutsche Seewarte" has been split up into a large number of institutions – nowadays we would call it a "network". Although the focus of the Federal Maritime and Hydrographic Agency's work today is on fulfilling public tasks, it still occupies a special position as an interface between maritime administration and the marine sciences and thus is an important link between these two areas.

Much of what was begun by Neumayer still lives on at the BSH. Operational oceanography, which had been one of Neumayer's aims – and which today also includes monitoring of the marine environment – has been gaining in importance in the course of time. For, its applications are not limited to shipping, where it is of vital importance, but we generally need a much better knowledge of the oceans in order to be able to use them optimally and, at the same time, to protect them.

All this will eventually require a global ocean observing system, also under the aspect of climate.

We have to acknowledge that in a pluralistic society like ours, with so many different and equally important interests, it will be extraordinarily difficult to give marine sciences the priority which they deserve. That can be seen at the global level, for example in the case of GOOS (Global Ocean Observing System), with its rather unimpressive progress, but particularly in countries with a pronounced continental orientation, like Germany. In this country, people are living with their backs turned on the ocean, to quote the words of Admiral Tirpitz who probably has known Neumayer personally.

If we had someone like Georg von Neumayer today, he might be able – with the weight of his personality – to improve the status of work that is done for the benefit of shipping and the marine environment, and to give it higher priority. But I have to admit that this is so much more difficult today than in Neumayer's time, when navigation and the claim to naval prestige were crucial to the development of the newly founded German Reich.

Neumayer has also shown us the importance of international co-operation. It is impossible to meet present-day challenges on a national level. What is needed is close co-operation with others.

Now, more than ever, international concepts and agreements as well as work sharing are needed. That applies not only to the highly developed countries but also to the developing nations. Particular, in our globalized world we must be prepared to help those countries which are not yet able to contribute to the joint effort that is required. Training, education, and mutual assistance should be given much higher priority than they have today.

Our life and survival depend on a comprehensive understanding of this globe, three quarters of which are covered by water and polar ice. Of course, we know so much more today than our ancestors did 100 years ago.

But, nevertheless, our knowledge in many fields still is in its infancy. Neumayer's goal was to improve our knowledge of the oceans, and this goal is as up-to-date now as it was then. In times of change like today, in which positions have to be reconsidered over and over again, Neumayer can be an example to us offering guidance and orientation.

It is still worthwhile today looking at the life of this great man of marine and nautical sciences. And therefore, his 175th birthday still is an important date for us today.

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