

Anniversaries

New ‘Culture’ of Polar Research: 150 Years Ago



A LABORATORY IN THE ICE: CARL WEYPRECHT’S VISION OF *POLARFORSCHUNG*

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In September 1875, the German-Austrian naval officer Carl Weyprecht (1838–81) delivered a programmatic speech at the 48th Assembly of German Naturalists and Physicians in Graz, laying the intellectual foundation for a cooperative study of the polar regions (Fig. 1) (Berger *et al.*, 2008; Mazzoli, 2016). Drawing from his experience as the co-commander of the Austro-Hungarian North Pole Expedition (1872–74), he campaigned for a novel, ‘scientific’ vision of *Polarforschung* (polar research), distinct from geographical explorations. Instead of one-off expeditions seeking new routes or claiming territory in the far north and south, Weyprecht (1875: 38) called for the establishment of land-based, stationary observatories staffed by scientifically trained personnel conducting standardized measurements in coordination with international partners: ‘The geographic pole holds no greater scientific value than any other point located in high latitudes. ... Apart from latitude, observation stations are all the more favourable the more intensely the phenomena under study manifest themselves there.’



Figure 1. Carl Weyprecht, 1871. Author: Adele Perlmutter. Source: Wien Museum, Inv.-Nr. 133023/1 (Public Domain).

As in oceanography or alpine research, the systematic collection of accurately observed, and thus reliable, quantitative mass data from geophysics, meteorology, and hydrography was expected to pave the way for a more integrated understanding of polar environments. Moreover, by treating these regions as testing grounds for global natural processes, researchers sought – through the inductive study of phenomena best observed under their extreme conditions – to address fundamental questions concerning the Earth’s magnetic field, solar activity, and ocean currents. Weyprecht’s vision, propelled by early scientific internationalism, imperial ambitions, and competition among ‘Western’ powers, gave rise to the First International Polar Year (IPY, 1882–83), an unprecedented collaborative effort involving 14 simultaneous expeditions from 11 countries (Barr & Lüdecke, 2010; Launius *et al.*, 2010). Conducted after Weyprecht’s untimely death under the auspices of the International Polar Commission, the IPY marked a lasting shift in the forms, practices, and credibility of knowledge through which scientists conceptualized the High Arctic, transforming it from a mere obstacle into an object of methodical inquiry and appropriation (Wild, 1882).

Among the ventures – designed to gather ‘objective’ measurement data every hour for a year using stationary instruments at predetermined locations in the Arctic and sub-Antarctic – was

the Austro-Hungarian station on Jan Mayen, a remote, 55-kilometre-long uninhabited volcanic island in the Greenland Sea, now under Norwegian sovereignty. Weyprecht's envisioned elite 'culture' of polar research – evident not only in the official directives and scientific outputs but also in the observers' routines, discipline, and ethos – found particularly clear expression in the Jan Mayen expedition, which served as a tribute to his legacy (Chavanne, 1884). Like earlier Habsburg Arctic ventures, it was privately funded by aristocratic sponsors and conceived as a patriotic, empire-wide undertaking, executed as a naval operation (Schimanski & Spring, 2015; Walsh, 2014). Yet it distinguished itself through its laboratory-grade instrumentation and its declared claim to precision that, in Weyprecht's (1876: 38) own words, 'surpassed amateur capabilities'.

Here, the scientific agency of the Imperial and Royal Navy (*kaiserliche und königliche Kriegsmarine*), and in particular that of Bernhard von Wüllerstorff-Urbair (1816–1883), Vice-Admiral and former head of the Vienna Meteorological Society, was pivotal. From the 1860s, he had promoted the transformation of the monarchy's Naval Academy in Rijeka into a research institution specializing in geophysics and oceanography and the establishment of a network of coastal (and later high alpine) observatories (Coen, 2009). These intra-imperial cooperative endeavours, in turn, provided a springboard for Weyprecht's vision of international polar research, with the erected observatories within the monarchy serving as a model for the novel one in the Arctic (Mattes, 2024).

While the history of polar research has often been explored through the lens of foundational figures, institutions, or expeditions, this paper shifts focus to a previously unexamined source: the diary of 29-year-old Hungarian aristocrat József Pálffy (1882), who joined the venture as a representative of his uncle, Hans Wilczek (1837–1922), the doyen of the Habsburg Arctic endeavours. Made available to me by Pálffy's descendants, this document chronicles his two-month voyage aboard the navy steamer *SMS Pola*, culminating in a multiweek stay on Jan Mayen. A close reading of this diary offers new insights into the entanglements of imperial science, observational practice, and the lived experience of fieldwork in extreme environments.

From Weyprecht's Vision to Arctic Practice

The temporary research station erected on Jan Mayen was among the more logistically complex undertakings of the IPY. Built with prefabricated materials – described as resembling 'upturned ships' – and transported from the Adriatic aboard the *Pola*, it housed magnetic, astronomical, and meteorological observatories, all arranged to minimize interferences between instruments (Fig. 2) (Wohlgemuth 1882: 22). Observations were carried out by a carefully selected crew of naval officers and trained sailors, although none – except for the hired Norwegian ice master – had prior Arctic experience, including the expedition leader and Weyprecht's friend, Emil von Wohlgemuth (1843–1896). The operation's emphasis on discipline, international coordination, and data precision embodied Weyprecht's conviction that polar research should be embedded within international scientific frameworks, rather than pursued as an isolated or heroic endeavour.

While the primary aim of the Jan Mayen station was the collection of 'objective' data, the realities of day-to-day operations proved more complex. Bitter cold, prolonged darkness, optical distortions, and physical exhaustion posed significant challenges both to the instruments and to the observers themselves. To maintain accuracy, tasks were routinely assigned to multiple observers, and daily routines even included eye exercises to reduce strain during auroral watches. Despite these precautions, environmental extremes – and the observers' embodied responses to it – repeatedly disrupted the ideal of detached measurement. As Pálffy's diary

reveals, the pursuit objectivity was never free from subjective experience; scientific observation unfolded alongside cultural perceptions, biases, and emotions.



Figure 2. Station building, 1882–83. From left to right: astronomical observatory, anemometer house, two magnetic observatories, thermometer house, connecting corridor with main entrance, residential building. Author: Richard Basso. Source: Anonymous (1884, 5). Woldan Collection, Austrian Academy of Sciences, Inv. Nr. AW-IV: PO/Ark 71 (Public Domain).

The Diary as Intermediary between Private and Public Spheres

Pálffy's 97-page diary, covering the period from May to August 1882, offers more than a personal travelogue (Fig. 3) (Mattes, 2025). It serves as a valuable intermediary between private reflection and public representation. Structured around the stages of the journey – from Vienna to Bergen, Tromsø, and finally to Jan Mayen – it documents logistical challenges, social interactions, and environmental impressions. Pálffy, educated at the Vienna Technical College (*Technische Hochschule*) and connected to the expedition's sponsor through familial ties, moved fluidly between roles: observer, assistant, aristocratic guest, and amateur scientist.

The diary brings to light a series of tensions: between hierarchical naval structures and informal collaboration; between exploration as a mode of self-fashioning and observation as scientific duty; and between the embodied experience of place and the abstraction demanded by measurements. Pálffy took part in astronomical observations, watch duties, hunting expeditions, and sounding operations. His efforts to navigate the ship's social hierarchy and adapt to the station's routines reflect broader processes of science professionalisation.

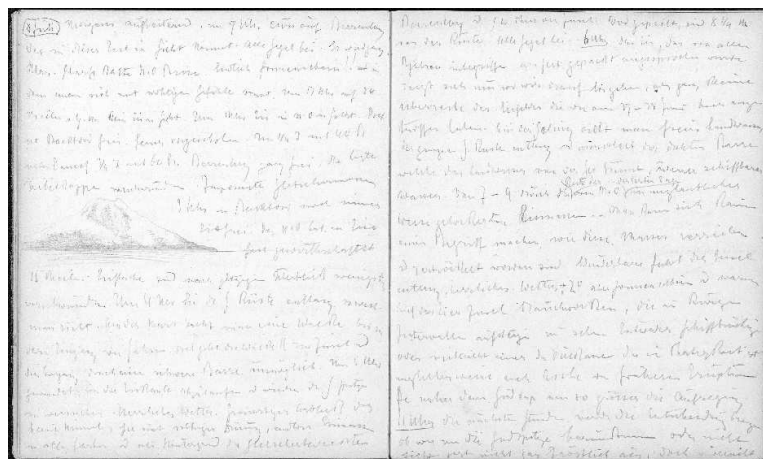


Figure 3. Extract from the diary of József Pálffy (1882, 43–44). Private collection of Dr. Martin Pálffy (Vienna). Woldan Collection, Austrian Academy of Sciences (Public Domain).

Jan Mayen as Field Site and Symbolic Frontier

Geographically, Jan Mayen was described both as a field site and a symbolic frontier. Its harsh terrain – marked by volcanic ridges, drifting ice, and sparse vegetation – challenged the ideals of polar grandeur. Pálffy's diary depicts the island not only through scientific observation but also with metaphors drawn from Alpine landscapes and Transylvanian winters. This aesthetic framing reveals the tension between familiar geographic references and the exotized Arctic imaginaries that shaped many nineteenth-century narratives.

The act of landfall itself was staged with ceremonial pomp, involving the planting of a flag and toasts to the Habsburg monarchy. Though not intended as a territorial claim, this performative act resonated with imperial rituals of land seizure. Similarly, the station's mapping activities, led by officer Adolf von Bóbrik, involved the naming of geographic features after Habsburg aristocrats and scientists. These cartographic gestures, later adopted by Norwegian authorities, inscribed political meaning onto the physical landscape without requiring direct annexation.

Although Austria-Hungary lacked overseas colonies, its engagement in polar research offered a symbolic means to partake in imperial ambitions on a global scale. By participating in international scientific collaborations, pushing the boundaries of its naval capabilities beyond the Adriatic, and demonstrating its scientific-technological advancement, the monarchy positioned itself among Europe's major powers. In this light, the Jan Mayen expedition becomes more than exploration – it embodies a form of epistemic colonialism, asserting scientific and cultural authority over distant regions without territorial claims.

The Material Culture of Observation

Beyond symbolic acts, the expedition embodied a broader material culture of polar research. The station's inventory included over 1,800 items, ranging from barometers and magnetometers to photographic equipment and mountain gear. Photography, used not only for documentation but also for scientific purposes, notably topographical recording, was of particular importance. Richard Basso's Arctic images – produced with the assistance of Pálffy – contributed to a visual archive of the island that proved essential for the cartographic work later undertaken by the Imperial-Royal Military-Geographical Institute (*kaiserlich-königliches Militär-geographisches Institut*) in Vienna (Fig. 4).



Figure 4. 'Southern part of Jan Mayen seen from Danielsen Mountain.' Author: Richard Basso. Source: Anonymous (1884: 30). Woldan Collection, Austrian Academy of Sciences, Inv. Nr. AW-IV: PO/Ark 71 (Public Domain).

Instrumental culture intersected with bodily discipline. The officers' rigorous schedules and the constraints of the observation protocol illustrate the extent to which scientific objectivity depended on corporeal endurance and spatial organisation. The Jan Mayen station, in this regard, functioned as an outpost laboratory embedded in Habsburg imperial infrastructure.

Legacies and Limitations

The Jan Mayen expedition exemplifies the potential and constraints of early international geoscientific collaboration. While it produced extensive data and a scientifically acclaimed map, its results – like those of other IPY ventures – were published in isolation, and its broader international potential remained unrealised (Wohlgemuth, 1886). Pálffy's diary, by contrast, captures the multifaceted character of Arctic fieldwork, where data collection, self-positioning, and cultural perceptions were deeply intertwined.

As a hybrid figure between science, aristocracy, and amateurism, Pálffy exemplifies the intermediary roles played by 'non-professionals' in creating of a more elite 'culture' of polar research. His diary does not challenge Weyprecht's ideals, but rather illustrates the complexity of their implementation. It reveals the Arctic not as a disenchanted space of geoscientific data, but as a multi-layered environment shaped by imperial agendas, social imaginaries, and technical improvisations.

One hundred and fifty years after Weyprecht's address, the Jan Mayen expedition is a testament to the material, epistemic and cultural negotiations required to turn a vision into a reality. Its station-based methodology, focus on international collaboration and adoption of military structures foreshadowed subsequent developments in polar science. However, the most revealing traces may not lie in its instruments, but in the writings of those who experienced it first-hand. By engaging with documents such as Pálffy's diary, readers can more accurately account for the lived experience of observation, the ambiguities of objectivity and the social fabric of scientific life in extreme environments.

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