

PERSPECTIVE

The polar sciences journal: the past and future of a crucial research instrument

Anna M. Gielas

Scott Polar Research Institute, University of Cambridge, Cambridge, UK

Abstract

Journals dedicated to the polar sciences have been outliers. Within both the history of science and the history of media, they stand out in several ways, including their comparatively late establishment of peer-review. It was not until the second half of the 20th century, that polar sciences journals began to carry predominantly peer-reviewed original research rather than synopses of research published elsewhere. This Perspective piece uses the 40th anniversary of *Polar Research* as an opportunity to look at the past of polar sciences periodicals—and invites reflection on their future.

This year's 40th anniversary of *Polar Research* invites us to look at the journal's biography and beyond, at the past of scientific periodicals—especially since journals dedicated to the polar sciences have been historical outliers. Within both the history of science and media, they stand out in several ways. Most strikingly, polar sciences journals are notably young in the long history of learned periodicals. Scientific periodicals have existed since 1665, but journals focusing solely on the polar regions only arrived in the 20th century, despite endeavours of polar explorers and researchers to further polar research throughout the 19th century. As the Europeans went further and further north during the 19th century, the Arctic came further and further south: it dispersed in numerous formats of print artefacts. The north polar region was covered in newspapers and magazines, travel journals and other forms of travel writing, monographs, encyclopaedias and printed ephemera, such as postcards (Fig. 1). Despite this broad cultural merging of the Far North with print, no science journal dedicated solely to polar sciences was established in European countries such as Britain and the German-language nations.

In the 19th century, science periodicals offered a way to define and delimit a scientific field and furnish it with a lasting communication infrastructure. Polar scientific enquiries did not have such a dedicated print outlet, which led to the Arctic being picked up and discussed in science journals in multiple ways. During the decade of the first British expeditions from 1818, the Arctic was

picked up in the *Philosophical Transactions*, the periodical of the Royal Society of London for Improving Natural Knowledge, as well as the *Philosophical Magazine*, the oldest British commercial science journal still in existence today. Whilst both periodicals discussed the north polar region in terms of magnetism, the *Philosophical Transactions* also focused on the Arctic climate, whilst the *Philosophical Magazine* carried descriptive pieces of the expeditions. In the early 1830s, when the Royal Society's *Transactions* also discussed the Arctic in mineralogical and chemical terms, the *Magazine* carried articles on northern flora and fauna. On the one hand, the different contexts in which scientists thought and wrote about the Arctic speak to the broad interest in, and inclusion of, the north polar region into scientific discourses. On the other hand, it suggests that there was no strategic approach on the part of editors towards the Arctic. Put differently, editors did not consider the Arctic a viable focus of a specialized science periodical. This might strike some observers as surprising, considering that specialized learned periodicals with a geographical focus already existed in the 19th century, such as *The Oriental Herald and Colonial Review* conducted by James Silk Buckingham. Buckingham focused predominantly on India and Asian countries, and he combined scholarly with scientific research, including articles on languages and geology. In the second half of the century, there was a German-language periodical zooming in on a similar geographical region, the *Österreichische Monatsschrift für den Orient*. It was, however, not founded

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Correspondence

Anna M. Gielas, Scott Polar Research Institute, University of Cambridge, Lensfield Road, Cambridge, CB2 1ER, UK.
E-mail: amg203@cam.ac.uk

Abbreviations

IPY: International Polar Year
NPI: Norwegian Polar Institute
SPRI: Scott Polar Research Institute



Fig. 1 Early 20th century postcard: “In the middle of the Ocean.” Image courtesy of Dr Marisa Karyl Franz.

by a sole editor but by an institution, namely, the Oriental Museum in Vienna.

Journals dedicated to what we today call scientific branches or disciplines are even older. One example is the first natural philosophical periodicals on chemical research which appeared in the late decades of the 18th century. Their editor, the German Lorenz Crell, devoted almost three decades of his life to his journals. He published altogether nine periodicals, the longest-running and most successful of which was the monthly *Chemische Annalen*. During busier years, such as 1785, the editor published over 2000 pages of chemical facts and findings. Thereby, he extended the infrastructure of chemical communication, persuading his peers that a periodical publication was a trustworthy venue for circulating chemical observations and a helpful instrument of chemical discourse. His success is underpinned by the nearly 20 foreign imitations of his journal (Meinel 1993).

There was no editor working so eagerly on the Arctic regions. Nonetheless, the north polar region was established as a regular topic in science journals in the first half of the 19th century. In the *Philosophical Magazine*, for example, the Arctic was discussed in the context of geographic, botanical, magnetic, meteorological, climatological, palaeontological and ethnological articles. But, the Far North also stimulated practical applications of scientific knowledge and was linked to methods of steel production and refrigeration (Leslie 1818; Stodart & Faraday 1820). Additionally, in the *Philosophical Magazine* as in other journals, specific phenomena were repeatedly discussed in relation to the Arctic, which ultimately defined the Far North in terms of these peculiarities. Throughout the whole of the 19th century, the leading of these phenomena in the *Philosophical Magazine* was the aurora borealis.

In journal-based discourses like in the *Philosophical Magazine*, the Arctic was constantly engaged, practiced, semiotized and reproduced, which contributed to the development of stereotypical concepts of the Far North. For example, in an article about his journey through Tibet for the *Geographical Journal* of the Royal Geographical Society, George Littledale described the weather in the Himalayas as Arctic (Littledale 1896). He was writing in the second half of the 1890s, when a century of numerous British and foreign expeditions to the north polar regions was nearing the end, and the Arctic was an everyday term to which specific features, including low temperatures, were attributed. The geographical Arctic had become a sociocultural concept, neatly at hand to visualize one’s experiences, like Littledale’s observations in the Himalayas. In his case, the Arctic was an acceptable comparison, at the expense of actual and accurate temperature readings.

The Association for the German North Polar Voyage (Verein für die Deutsche Nordpolarfahrt) in the town of Bremen, which had organized the second German Arctic expedition in 1869, edited a short-lived periodical for its members. But, beyond such ephemeral editorial endeavours, a scientific journal on the Arctic remained elusive in the 19th century. Not even the first IPY in 1882–83 gave rise to a polar research periodical. The IPY had been proposed by the Austro-Hungarian naval officer Karl Weyprecht and organized by Georg Neumayer, director of the German Maritime Observatory. It took seven years to organize it, bringing together imperial friends and foes. Austro-Hungary, Denmark, Finland, France, Germany, the Netherlands, Norway, Russia, Sweden, Britain and the US participated, with altogether 12 stations in the Arctic and two in the sub-Antarctic as well as 40 meteorological observatories around the world. The full publication of the synchronous observations took years, in the case of the meteorological observation even a quarter century (Walsh et al. 2018). The existence of a polar journal might have made it easier to share and discuss the IPY findings. But, even existing and well-respected periodicals did not devote notable amount of space to the IPY. For example, the British *Nature* (founded in 1869) and the American *Science* (founded in 1880) announced the IPY and included pieces on it, but they did not carry a holistic discussion of IPY results.

This changed in the early decades of the 20th century. At a time when scientists and explorers no longer only focused on the Arctic but increasingly also on the Antarctic, the early phase of polar sciences journals was under way. In 1926, *Meddelelser*, a precursor to today’s *Polar Research*, was founded by Norway’s Svalbard and Arctic Ocean Survey, the forerunner to the NPI. Five years

later, the directorate of the SPRI, under Frank Debenham, commenced *Polar Record*. The editorial aim back then was not the one we are familiar with today: it was less about scientists sharing their new findings and data and more about collecting polar news and information in one place and making them available to a larger scientific audience in a sort of digest. This function was not typical in the early 20th century scientific periodicals. Instead, it was prevalent amongst the earliest and early natural philosophical periodicals in the 17th and 18th centuries. In January 1665, the French writer Denis de Sallo founded what would later be considered the very first scientific journal, namely, the *Journal des Sçavans* (Fig. 2):

[A]n obsessive compiler of extracts from books [...], his aim was less to provide a venue for the generation

of new knowledge than to provide a solution to there being too much of it. He promised to give his readers a digest of “all that is new in the Republic of Letters,” and he filled each number with book reviews, extracts, translations, and bibliographical lists. There was also space for some other kinds of content: obituaries of scholars, reports of new discoveries and inventions. (Csiszar 2018: 25)

More than a century after de Sallo, Crell approached his editorial work similarly. He viewed and presented himself as a collector of chemical news and aimed to make them known collectively (Crell 1778). Roughly 150 years later, the editors at SPRI stated in their Introduction to the new journal: “In the first place an attempt will be made merely to record the chief polar events of the preceeding [sic] six months [...] The main body of *The Polar Record*, therefore, is a résumé of polar news extracted from the best available sources” (Committee of Management 1931).

It was in the second half of the 19th century that scientific periodicals began to increasingly carry what we today would call original contributions and “[b]y the early twentieth century, most scientific journals were supposed to be made up largely of papers that were original contributions to knowledge: their central claims were not to be speculative opinions nor synthetic reviews of others’ work” (Csiszar 2018: 4). Thus, *Polar Record* can be viewed as an outlier amongst its contemporaries.

It was comparably late, namely, in the second half of the 20th century, that polar sciences journals began to carry predominantly peer-reviewed original research. In the 1980s, for example, the Committee on Polar Research at the Polish Academy of Sciences began to publish *Polish Polar Research*. The Polish were carrying out polar studies since the 1950s, primarily at their Hornsund and Henryk Arctowski research stations. But in the 1980s and 1990s, the Polish scientific activity in Svalbard expanded considerably, as did the geophysical and geological activities along the west coast of the Antarctic Peninsula, from 1979 until 1991 (Birkenmajer 2008). “The fast increasing Polish scientific activity in the Arctic and the Antarctic,” the editors of *Polish Polar Research* explained, “called for creation of a special English-language bi-polar journal in order to publish and disseminate the results of scientific research both amongst the Polish readers and at an international forum” (Birkenmajer 2008: 4).

Two years after the founding of *Polish Polar Research*—and a century after the first IPY—the NPI, under the directorship of Tore Gjelsvik, decided to publish *Polar Research* with the same emphasis on original articles and a clear peer-review policy: “Manuscripts received will be considered by the Editorial Board, after consultation [sic]

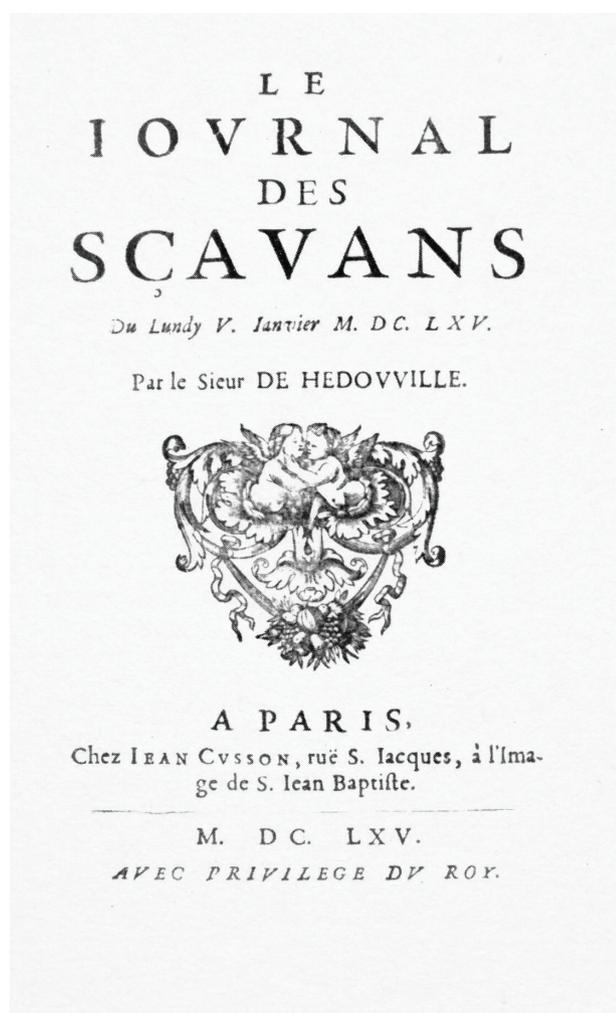


Fig. 2 Cover of *Le Journal des Sçavans*, vol. 1, 1665. Note: Denis de Sallo used the pseudonym d'Hédouville. (Image from Wikimedia Commons, the free media repository.)

with at least one referee outside the Institute” (Gjelsvik 1982). To rely on expertise outside one’s own institution was not an obvious and straightforward editorial decision as it might seem today. Even though editors of scientific periodicals have relied on some form of expert reviews since at least 1702—back then, the successor of de Sallo at the *Journal des Sçavans* began to work with a group of regular referees (Newman 2019)—institutions were more careful when it came to outside opinions and expertise. Amongst the first scientific institutions to introduce peer-review was the Royal Society in the 1830s. But, it was only 13 years before the advent of *Polar Research* and the NPI’s decision to work with non-institutional referees that the Royal Society’s official editorial guidelines for the first time “included explicit provision for dealing with referees who were not fellows” (Moxham & Fyfe 2018: 885–888). For roughly 130 years, the Royal Society generally did not accept peer-reviewers from outside the institution. Even as it garnered criticism in the early 1920s and “an early trade union for scientists would claim that Society referees were ‘anonymous and irresponsible’” (Moxham & Fyfe 2018: 883), the Royal Society did not change its editorial policies.

Today, we witness a wave of newcomers amongst polar sciences journals. Notably in the last 20 years, not merely scientific institutions such as the Japanese National Institute of Polar Research have issued new periodicals (*Polar Science* founded in 2007), but there is also a trend of commercial polar publications such as *The Polar Journal* (founded in 2011) and *Arctic Science* (founded in 2015). This new wave is related to both the IPY 2007–08 and, especially, current developments in the polar regions. However, despite the newest periodicals being introduced as international fora for polar scientists, some carry national overtones, such as *Arctic Science*:

Although one quarter of the Arctic is within Canada and more than 1750 Canadian researchers participated in the most recent IPY and many continue to conduct research as part of ArcticNet, the availability of North American Arctic science journals is very limited, with only two subscription-based journals being available. Given the transpiring changes in the North and the need for linking of research with policy decisions, there is an immediate opportunity for an interdisciplinary and international Canadian-based science journal for research on Arctic and adjacent northern regions that will provide a forum for researchers to share their findings on these rapidly changing and critical regions of the world. (Dancik 2014: i)

This country-based rationale is rather unusual amongst today’s science journal editors. Since the 1990s, science periodicals have increasingly globalized (Gazni & Ghaseminik 2016; Gui et al. 2019).

We have come a long way, considering that the Royal Society’s *Philosophical Transactions*, the oldest science periodical still in existence, started out as a compilation of letters from its founder’s acquaintances (McDougall-Waters et al. 2015). Looking at the history of the science journal means to grasp it as an (arguably imperfect) product of more than three and a half centuries of uneven periods of editorial developments.

History helps to understand science journals as cultural artefacts and thus as malleable, sometimes guided by coincidence, sometimes by necessity and sometimes by ideals. Today, scientists tend to view academic journals as a career instrument: the more articles they publish, the further up the academic ladder they potentially climb. Often overlooked is the role of scientific periodicals in bringing together distant geographical and conceptual spheres, bridging scientific gaps, forging connections and coordinating groups, observations and research timelines. These journals align research processes and foster synchronization, efficiency and, ultimately, knowledge and understanding, which can have significant practical applications. Scientific journals can thus render an important service to society.

To think of *Polar Research* and other polar sciences journals as having biographies and socio-cultural lives can help to challenge the perception of seemingly writ-in-stone forms and contents of science periodicals—and invites us to ask: can we make them more useful and valuable instruments for Arctic, Antarctic and polar research? And how to socially assemble them to best benefit polar sciences? What kind of editors and editorial teams can make them more helpful and serviceable? Can we improve the scientific periodical to better suit the needs of polar scientists and scholars? Higher word limits, smaller word limits? Different kinds of original papers? New ways of prioritizing them? What reforms to peer-review are needed in the context of polar sciences journals? Are there ways to connect research practices with publishing practices in a scientifically and socially more meaningful and beneficial way? It is up to not only editors to answer these questions, but, as science journals are the central instrument we share, also us.

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