



The will of an Ice Age sceptic

Christer Nordlund

◀ **BOUND COLLECTION
OF LETTERS** preserved
in the Academy's
collections since 1918.

Since 1918, the collections of the Academy of Sciences have included an eye-catching volume with oak covers. The book is large, almost half a metre tall, and contains a bound collection of letters and cards from various geologists and other natural scientists, among them Charles Darwin. There is writing on the flyleaf: “Letters to C A Lindvall on Scientific subjects, primarily regarding the Ice Age in the Nordic countries”.

Carl August Lindvall was neither a member of the Academy nor a scientist at a seat of learning. His profession was engineering, and he spent his time constructing ships, bridges, pumps, hydraulic machinery and components for steam engines. He was also involved in the expansion of the tram system and was, for a period, a director at a tram company, Stockholms Södra Spårvägs AB – but Lindvall was also involved in scientific issues. Alongside his work, he developed an interest in geology and conducted, especially in the latter part of his life, his own studies in Quaternary geology. In other words, Lindvall was an amateur geologist; it was for this reason that he came to be linked to the Academy of Sciences.

Amateur geologists were not uncommon until around the mid-19th century. At that time, geology was a young science and most people who dedicated themselves to collecting and studying rocks and fossils were amateurs, in the sense that they lacked education in the subject. However, there was rapid professionalisation in this field of knowledge from the middle of the century; positions were established at the universities and higher education commenced. The Geological Survey of Sweden (SGU) was also founded in 1858, tasked with surveying the country's geological resources, and the Geological Society of Stockholm was founded in 1871, which started to publish the scientific journal *Geologiska Föreningens i Stockholm Förhandlingar* [Transactions

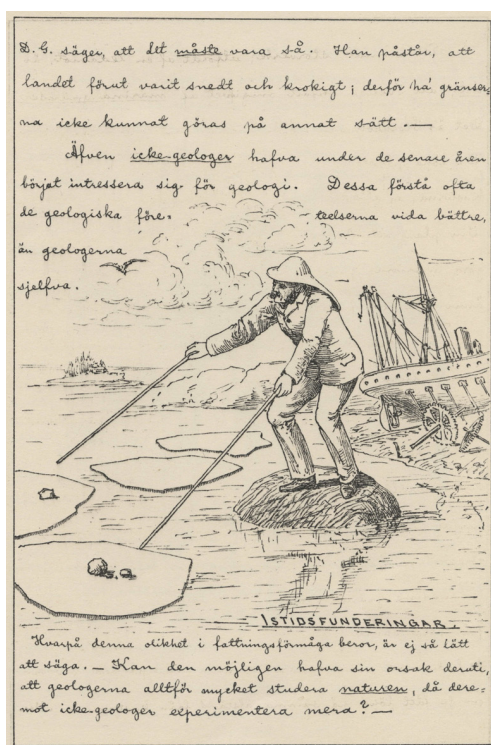
of the Geological Society of Stockholm]. It was not necessary to be a geologist to be elected as a member – Lindvall was a corresponding member – but this did not, in practice, mean that all members had the same opportunities to contribute to knowledge formation.

From the 1870s onward, Lindvall, convinced that he had something to contribute as an amateur, authored a series of essays on general issues in Quaternary geology: eskers, striations, glaciers, shoreline displacement, mammoths. He participated in geological science meetings and succeeded in having two lectures read at the seventh international geology congress, held in Saint Petersburg in 1897. He sent some of his essays to the Geological Society, hoping to have them published in its journal, but they were rejected. Lindvall also tried to have his research accepted by the Academy of Sciences' *Transactions*, but had no luck there either. The director of the Geological Survey of Sweden, who was asked to review and comment of the manuscript on behalf of the Academy, rejected it "very decidedly".

One important reason for Lindvall's setbacks was that he did not share the opinion of professional geologists that the Ice Age was a period in which Scandinavia had been covered by an ice sheet. Instead, the theory Lindvall advocated was that the land had been sunk below a sea of ice, and that floating blocks of ice and rock movements had resulted in Quaternary formations. This theory was reminiscent of older ideas – the theory of the petridelaunian flood or "boulder flood" – that had been advanced in the *Transactions* by mineralogist Nils Gabriel Sefström long before the theory of the Ice Age was formulated. Lindvall's theory therefore appeared to be outdated.

The secretary of the Geological Society of Stockholm, Eugène Svedmark, who managed the publication of its *Transactions*, provided a clear explanation for the refusal of Lindvall's contribution: the theory included information "that absolutely contradicted facts that have recently been completely established" about the Ice Age. Svedmark also added, in a later letter, that Sefström himself, "if he had lived until Torell's and others' Ice Age theory was presented, would have approved and abandoned his old one – which has also now been irrevocably overturned through subsequent observations". The Torell in this quote was Otto Torell, one of the scientists who contributed to establishing the theory of the Ice Age in Sweden. He was also director of the Geological Survey of Sweden for a while.

Resistance to Lindvall's texts was further reinforced by his amateur status. At least, this is one possible interpretation that can be drawn from a cartoon preserved from the Geological Society's 25th anniversary celebration in 1896; it shows a man busily steering around ice floes as he fancies. In the background are a ship and some cogs, emphasising that the man in question really is Lindvall. The cartoon's title is "Ice Age Thoughts" and the ironic caption, written by geologist Edvard Erdmann, is:



STATE GEOLOGIST EDVARD ERDMANN'S interpretation of Lindvall's "Ice Age Thoughts" in 1896. The illustration was drawn by Pelle Röding after a draft by Erdmann.

Even *non-geologists* have recently begun to show an interest in geology. They often understand geological phenomena much better than the geologists themselves. It is not so easy to say what this difference in opinion is due to. Could it possibly be caused by the geologists studying *nature* too much, whereas non-geologists, on the other hand, experiment more?

However, Lindvall did not give up easily. In the hope of having his efforts recognised, he translated his works into English and sent them to a selected group of foreign researchers. His target group was, in Lindvall's own words, "thinkers, not geologists" and his idea was to gain a more objective assessment. In several cases, Lindvall received answers in the form of polite greetings and sometime even fine recommendations, which he forwarded to the professional geologists as support for his theses. But Swedish geologists remained unimpressed.

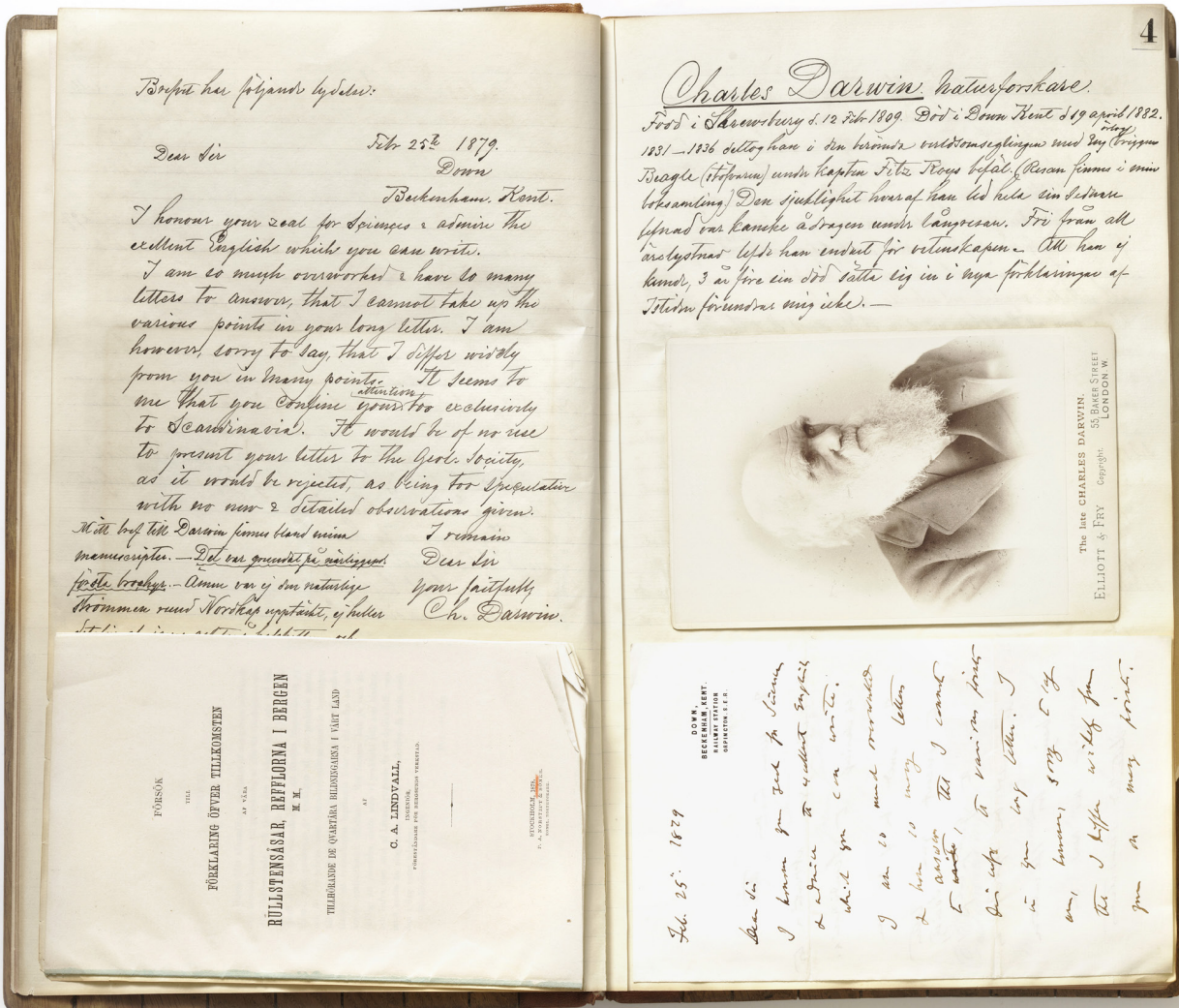
When Lindvall realised that his works were not going to be accepted by the scientific journals, he chose to finance their publication himself. He published *Om glaciärers rörelse* [On the Movement of Glaciers] (1898), *Istiden förklarad* [The Ice Age Explained] (1907) and *Två geologiska hårknutar: Lösta af C. A. Lindvall* [Two Tricky Geological Knots: Solved by C. A. Lindvall] (1909). In addition, he succeeded in having a couple of articles accepted by

publications that were closer to his own profession, such as the *Teknisk Tidsskrift* [Technical Journal]. Nor did this alternative medialisation appear to have had any impact on the situation for geological knowledge.

Lindvall considered himself unfairly treated and, to document both the criticism and the positive responses he received, he had his correspondence bound in the oak-covered book. In total there are more than 150 letters and cards. Some of the letters are supplemented with more or less detailed descriptions of the letters' authors and their ideas and, sometimes, also with portraits of the relevant people. In some cases, there are descriptions and portraits but no letter. One example is the famous geologist Charles Lyell, about whom Lindvall writes: "From this great man I have no letter, he was dead before I had full clarity regarding the Ice Age". In addition, there are rejection letters, newspaper clippings about geology or construction-related issues, and ordinary greetings linked to his professional activities. The latter had nothing to do with geology, but were probably added to reinforce the image of Lindvall as generally being a person of substance. Lindvall also made it known that the book's covers were selected with care; they were, he claimed, "made from trunks of oak sunk in the water by Birger Jarl when Yttre Norre Port was built on Helgeandsholmen, probably around the year of 1260". Lindvall had removed them from the ground himself, during the excavations for the construction of the new Riksdag building.

In his correspondence with Lindvall, the Geological Society's secretary had explained that "I believe that any denunciation of the 'Ice Age' in a coming era is completely impossible", but this was an opinion that the sceptical Lindvall could not accept. Quite the opposite, he believed that he would eventually be proven right. In an introductory text to his oak book, dated 16 June 1898, Lindvall writes about the purpose of his collected letters, which also explains why it ended up at the Academy of Sciences: "After my death, this book should be left to the Library of the Royal Academy of Sciences, so that in the future, if – as I truly believe – my interpretation of the Ice Age is regarded as 'entirely natural', one is able to see the resistance it long met." And then it says: "It is well that science should be exceedingly conservative, that no new opinion should be admitted into its creed, imperilling the stability of one already accepted, until it has had to fight for its own existence, against all kinds of criticism, and have survived every blow." These words are not Lindvall's own; they are taken from the book *The Mammoth and the Flood: An attempt to confront the theory of uniformity with the facts of recent geology* (1887), written by the British Conservative politician Henry Hoyle Howorth who, like Lindvall, was both an amateur geologist and an Ice Age sceptic.

The origin of the bound letter collection and its location in the Academy of Sciences' collection testify to Lindvall's high opinion of his own competence, as well as his unwavering faith in science as a truth-seeking project,



PAGES from Carl August Lindvall's bound collection of letters.

with the Academy as institutional guarantor. Why this odd book was accepted by the Academy, despite the criticism and despite Lindvall being neither a member nor a professional scientist, is more difficult to say. Was the book considered as having value because some of the letters in it were signed by famous scientists? Were the imposing covers what roused the Academy's interest? Did Lindvall have prompters within the Academy who shared his scepticism or who took his side for personal reasons? Was it his status as a renowned engineer that meant he got his way?

In any event, Lindvall's book being kept for posterity means that the Academy has preserved both his memory and his hopes of one day achieving

redress. As yet, Lindvall has had no restitution and his collection of letters is probably of little value to contemporary geoscientific research. However, from the perspective of the history of knowledge, this book is a puzzle piece that provides insights into the ideology that developed in association with the professionalisation of geology in the second half of the 19th century. The book also provides perspectives on the contemporary climate debate within the scientific community, in which a minority are sceptical about the view of climate change that is shared by the majority, while all those involved cite scientific arguments for their cause.

★

The volume “Bref till C A Lindvall i Vetenskapliga ämnen, hufvudsakligen angående Istiden i Norden” (1918) is in the archive of the Academy of Sciences. It includes the above-quoted letters from Eugène Svedmark to Carl August Lindvall, dated 10 January 1895, 21 November 1896 and 16 November 1896. Biographical information about Lindvall is taken from Rune Kjellander, “Lindvall, Carl August”, in *Svenskt biografiskt lexikon*, Vol. 23 (Stockholm, 1980–1981). Geology’s development in Sweden in the 19th century is depicted in Tore Frängsmyr, *Upptäckten av istiden: Studier i den moderna geologins framväxt* (Uppsala, 1976). Lindvall’s geology-related publications and controversies with professional geologists are described in Anders Damberg, “Nedisningsförnekaren Lindvall”, *SGU information*, no. 1, 1987, and in Christer Nordlund, *Det upphöjda landet: Vetenskapen, landhöjningsfrågan och kartläggningen av Sveriges förflutna, 1860–1930* (Umeå, 2001). Edvard Erdmann’s comic text “Geologiska brottstycken: Tillfällighetsskämt af En Elak” (1896) is in the Gerard De Geer collection, the Academy of Sciences.