BioOne COMPLETE

Alfred Wegener: Science, Exploration, and the Theory of Continental Drift

Author: Howkins, Adrian

Source: Arctic, Antarctic, and Alpine Research, 48(4) : 767-769

Published By: Institute of Arctic and Alpine Research (INSTAAR), University of Colorado

URL: https://doi.org/10.1657/AAAR0048-4-book1

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

Downloaded From: https://bioone.org/journals/Arctic,-Antarctic,-and-Alpine-Research on 28 Mar 2024
Terms of Use: https://bioone.org/terms-of-use

Arctic, Antarctic, and Alpine Research, Vol. 48, No. 4, 2016, pp. 767–770

Book Reviews

ALFRED WEGENER: SCIENCE, EXPLORATION, AND THE THEORY OF CONTINENTAL DRIFT. By Mott T. Greene. Baltimore, Maryland, U.S.A.: Johns Hopkins University Press, 2015. 696 pp., $44.95 (hardcover). ISBN: 978-1-4214-1712-7.

Alfred Wegener was born in Berlin in 1880, and his life in many ways tells the story of the developing earth sciences in the early 20th century. Wegener was an eclectic scientist, with interests ranging from historical astronomy to aerology, the study of lunar craters, and the theory of continental drift for which he became best known. He lived in an age just before specialization became a near requirement for successful scientific careers, and there is something almost quaint about the way he was able to pursue various interests in the different directions they took him. The story of his life went beyond pure science, and his wider experiences shaped the way he saw the world. In his early career as a meteorologist, Wegener made a series of balloon flights, including the longest continuous flight then on record. He was a military reservist, and fought bravely in the First World War. Perhaps most significantly, he was also a famed polar explorer, making four trips to Greenland. It was his fourth Arctic expedition in 1930 that brought his life to an early end at the age of fifty-one.

Somewhat curiously given Wegener's fame for developing the theory of continental drift, this is the first scholarly biography that has been written about him. In telling the story of Wegener's life, Mott T. Greene's 600-page biography seeks to place Wegener into his broader scientific context. In the introduction, Greene explains the advice he was given for writing a scientific biography: "Read everything he wrote. Read everything he read. Read as much as you can of what the people he read, read." Unsurprising for such an approach, the book is characterized by meticulous detail, and there are times when readers may feel a little overwhelmed. But Wegener's fascinating life means that this is anything but a dull story.

Although he was not an orphan, Wegener spent his early childhood in the orphanage that his parents ran in Berlin for the sons of elite Prussian families. There were times when the young Alfred was allowed to play with the other boys in the institution, but other times when he and his siblings were kept apart. Although Greene generally avoids getting into the realms of psychological speculation, this unusual domestic arrangement might be seen as contributing to Wegener's somewhat detached personality (later in life, for example, Wegener was not very good at playing with his own children). Another formative experience in Wegener's youth was the purchase of a family summer home in rural Brandenburg. From the family *hütte* Wegener was able to roam around with his siblings and spend many happy hours exploring nature. These long idyllic summers undoubtedly helped to shape his passion for being outside and studying the environment.

Wegener remained close to his family throughout his life, but by his late teens he was ready for the greater level of independence afforded by attending the University of Berlin. Although he was certainly interested in his studies, initially he was not the best student, finding mathematics a particular struggle. He was an enthusiastic member of one of the student social clubs that were popular at the time, and during a summer term in Heidelberg he was arrested for drunken behavior. Following a summer of hiking in the Alps with his brother Kurt, he decided to take a break from his studies and get his compulsory military service out of the way. Paradoxically, training for the army reserve offered an opportunity to read more widely and learn about the "life philosophy" that was becoming popular in late

DOI: http://dx.doi.org/10.1657/AAAR0048-4-book1

© 2016 REGENTS OF THE UNIVERSITY OF COLORADO – 1523-0430/11 $7.00

Downloaded From: https://bioone.org/journals/Arctic,-Antarctic,-and-Alpine-Research on 28 Mar 2024
Terms of Use: https://bioone.org/terms-of-use

19th century Germany. Greene suggests that the holistic thinking propounded by this developing worldview had a profound influence over Wegener's outlook. When he returned to full-time university study, Wegener settled on astronomy as the academic discipline that best satisfied his diverse interests, and he continued at the University of Berlin to write a doctoral dissertation in astronomy based on the 13th century Alfonsine Tables.

In slightly different circumstances, it is easy to imagine Wegener pursuing an even more idiosyncratic career along the lines of his Australian polar explorer contemporary Griffith Taylor (with whom Wegener shared quite a bit in common). In the event, however, Wegener would enjoy what was in many ways a fairly traditional scientific career. Despite completing his doctoral degree in astronomy, Wegener's first job after university was as a technician at the Lindenberg meteorological observatory near Berlin. This opportunity allowed him to work alongside his brother Kurt in a rapidly developing—if still quite nonprestigious—scientific field. Meteorology offered plenty of scope for the practical observations that Wegner had enjoyed so much at university, and he wholeheartedly embraced his new position. Of particular interest to both the Wegener brothers was the opportunity to take observations from hot air balloons. In April 1906, as competitors in an international ballooning competition, Alfred and Kurt attained a new record of fifty-two and a half hours in the air.

Meteorology also offered Alfred Wegener an opportunity to travel to northern Greenland as part of the Danish Mylius Erichsen expedition from 1906 to 1908. As a non-Danish speaker, Wegener often found himself as an outsider on this highly nationalistic expedition, and he seems to have struggled at times with loneliness and homesickness. But he did become good friends with Johan Peter Koch—with whom he would return to the Arctic in 1912–1913—and he did make some valuable observations. As Greene presents it, Wegener's growing fascination with the Arctic constituted one of his few acts of rebellion against the wishes of his family. More profoundly, Wegener's interest in Greenland functioned to help integrate his scientific thinking. The massive ice cap was obviously connected to meteorology, but it also got Wegener thinking about glaciology, geomorphology, and geology. It is interesting to speculate whether he would have made such a lasting contribution to the earth sciences if he had not had the opportunity to travel to Greenland at a formative stage in his career.

Back from the Arctic, Wegener's life rapidly developed into a highly driven and largely successful scientific career. Even his personal life was connected to his scientific interests as he married Else Köppen, the daughter of Wladimir Köppen, one of his most important collaborators. In large parts of the biography it is easy to forget about Wegener's interests in polar exploration. Unlike a number of his polar-scientist contemporaries in the English-speaking world, the polar regions never defined his work. Perhaps more than most scientists at the time, Wegener continued to feel comfortable jumping between disciplines and trying to make connections among them. He published important papers in meteorology and began to make a name for himself as an atmospheric physicist.

Wegener's interest in the theory of continental drift—or the idea of continental displacement as he initially referred to it—began when he was looking at a colleague's copy of Karl Andree's Allgemeine Handatlas in Marburg in early 1911. As Greene makes clear, Wegener was far from the first person to notice a jigsaw-like connection between the continents of Africa and South America, but Andree's atlas allowed him to think about the ocean bathymetry and what would later be recognized as continental plates. His interest in the idea of moving continents also connected back to the geodesic measurements he had taken in Greenland. For the next few years he thought frequently about ways to explain the geological patterns he could see in maps of the world, but it would take a while for this to become more than just a stimulating side interest.

Wegener's single-minded pursuit of his academic career was derailed by the outbreak of the First World War in 1914. Like so many other Germans, his military service had theoretically prepared him for rapid mobilization in defense of the fatherland. But nothing could have prepared him for the horrors of the western front. Wegener was injured in the neck early in the conflict, advancing into enemy fire. While convalescing in 1915, he began to

Downloaded From: https://bioone.org/journals/Arctic,-Antarctic,-and-Alpine-Research on 28 Mar 2024
Terms of Use: https://bioone.org/terms-of-use

put down some of his ideas about continental displacement in a book titled The Origins of Continents and Oceans. Both the personal and political circumstances of the writing of this first edition are quite remarkable, and yet Greene does not quite do justice to the impact of the war both on Wegener personally and on the society in which he lived. This period in Wegener's life is recounted in much the same way as all the others, leaving a sense of missed opportunity in the biography: even if the war didn't affect him that much, then this in itself would be worth more commentary.

After recovering from his neck wound, Wegener returned to active service, but he was now put in charge of meteorological work, and had little direct contact with the front line. Following the end of the war, Wegener returned wholeheartedly to his studies. He was especially keen to defend his idea of continental displacement against the many criticisms it received, and The Origins of Continents and Oceans went through several revised editions. Greene's biography excels at presenting the scientific debates surrounding this idea, which revolved partly around the lack of a convincing mechanism for making the continents move. Geology, however, never become Wegener's sole interest, and he remained very much a synthesizer and a generalist. It says much about Wegener's ambitions and personality as a scientist that his mid-career goal was to become a professor of "Cosmic Physics."

Wegener's interest in the Arctic never went away. In the late 1920s, now as a professor at the University of Graz in Austria, he received an opportunity to lead his own expedition to Greenland on behalf of the German government. Despite being aware of the risks of traveling to high latitudes with a weak heart, he took part in a preparatory expedition in 1929. The following year he returned for his fourth and final expedition to the Arctic, with the aim of measuring the depth of Greenland Ice Sheet. After some logistical difficulties, Wegener succumbed to freezing temperatures and difficult conditions during a resupply expedition late in the season. His body was recovered the following year, and reburied where it was found. His sudden death cut short a research agenda that was still tremendously active, and he would undoubtedly have accomplished even more with additional years of professional life. On the other hand, his early death saved him from having to live through the worst horrors of National Socialism, although there is little in the biography that gives a sense of whether he saw this coming, or what his reaction to the rise of Adolf Hitler might have been.

In the Epilogue, Greene considers Wegener's scientific legacy. In developing and promoting a theory of continental drift, Wegener made a significant contribution to bringing about a revolution in the science of geology. In his scientific methodology and approach to theorizing, Greene notes a strong resemblance to Charles Darwin. But, as Greene also makes clear, Wegener was not a pioneer on the scale of Darwin, and few people, if any, would describe themselves as a "Wegenerian" as they might a "Darwinian." In terms of posterity, his diverse interests possibly counted against him, since he had no single professional group to champion his cause. If anything, however, Greene perhaps understates Wegener's reputation. It might have been interesting, for example, to say something about the decision that was made in 1980, to name West Germany's newly created polar research institute in Bremerhaven the "Alfred Wegener Institute."

At times the biography is a little overwritten, and Greene has a tendency for digressions and generalizations that add to the already significant length of the book. It is not altogether necessary, for example, for Greene to give us his own thoughts on the nature of academic life, or to make explicit the connection between Wegener's work on unstable air pockets and what "we've all" experienced when flying through turbulence. These sorts of observations are generally best left to individual readers to make for themselves. Greene's discussion of the historiography of the continental drift debate is extremely informative, but might have been better included in the discussion of Wegener's scientific reputation in the Epilogue, rather than in the main text where it breaks the flow of the narrative. Overall, however, this book is a major achievement and it is likely to be the definitive biography of Alfred Wegener for a long time to come.

Adrian Howkins
Associate Professor, Department of History
Colorado State University
Fort Collins, Colorado 80523, U.S.A.

Downloaded From: https://bioone.org/journals/Arctic,-Antarctic,-and-Alpine-Research on 28 Mar 2024
Terms of Use: https://bioone.org/terms-of-use