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Can America Be Bombed?

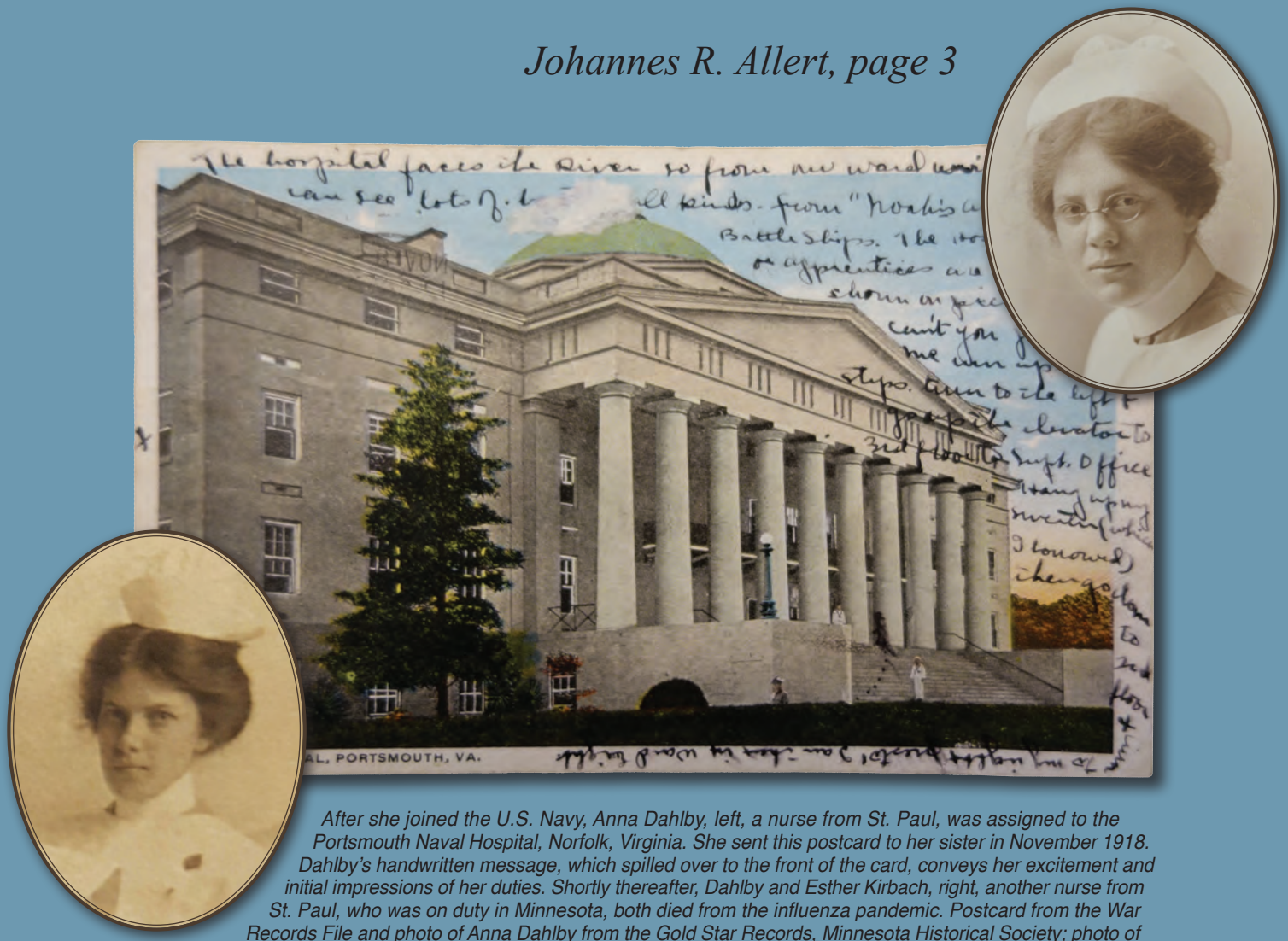
The St. Paul Science Museum's Answer

Brian McMahon

—Page 23

The Ties That Bind:
Mounds-Park Nurses and the Great War

Johannes R. Allert, page 3



After she joined the U.S. Navy, Anna Dahlby, left, a nurse from St. Paul, was assigned to the Portsmouth Naval Hospital, Norfolk, Virginia. She sent this postcard to her sister in November 1918. Dahlby's handwritten message, which spilled over to the front of the card, conveys her excitement and initial impressions of her duties. Shortly thereafter, Dahlby and Esther Kirbach, right, another nurse from St. Paul, who was on duty in Minnesota, both died from the influenza pandemic. Postcard from the War Records File and photo of Anna Dahlby from the Gold Star Records, Minnesota Historical Society; photo of Esther Kirbach from the Mounds-Midway Nursing Museum, St. Paul.

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RAMSEY COUNTY
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THE MISSION STATEMENT OF THE RAMSEY COUNTY HISTORICAL SOCIETY
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Preserving our past, informing our present, inspiring our future

CONTENTS

Publication of Ramsey County History is supported in part by a gift from Clara M. Claussen and Frieda H. Claussen in memory of Henry H. Cowie Jr. and by a contribution from the late Reuel D. Harmon

A Message from the Editorial Board

In this issue, Johannes Allert shares the stories of nurses trained at the Mounds-Park Nursing School who volunteered to serve in the military during World War I. In addition to helping wounded servicemen, they faced an unexpected challenge: the devastating influenza epidemic of 1918. At the same time, as Don Empson tells us, John Wardell was operating his Highland Spring Company, which furnished water from a natural spring near Randolph and Lexington to homes and businesses throughout the city. During Prohibition, Wardell's associated soft drink business had a spike in popularity! And M.D. Salzburg describes how, at the Minnesota State Fair, a Boy Scout Service Camp gave scouts the opportunity to live in a tent city while assisting visitors during that Event. Don't miss John Guthmann's review of our latest book, *Fort Snelling and the Civil War.* Come out to hear Steve Osman, its author, at our annual Members' Event on September 14! Please see our website at www.rchs.com or call 651-222-0701 for more details or to reserve tickets.

Anne Cowie
Chair, Editorial Board

Can America Be Bombed?
The St. Paul Science Museum's Answer

Brian McMahon

British novelist and historian H.G. Wells depicted an aerial bombardment of New York City by the Germans in his 1908 book *The War in the Air*. Though science fiction, his book prophetically anticipated the aerial warfare about to be unleashed in World War I and the merciless bombardment of London during World War II. Notwithstanding the demonstrated willingness of combatants to embrace all manner of aerial assaults, Americans generally felt secure. Being surrounded by oceans offered psychological—if not real—security from air attack. The development of long-range bombers in the 1930s should have raised some uncertainty about those assumptions, but that threat seemed very distant.

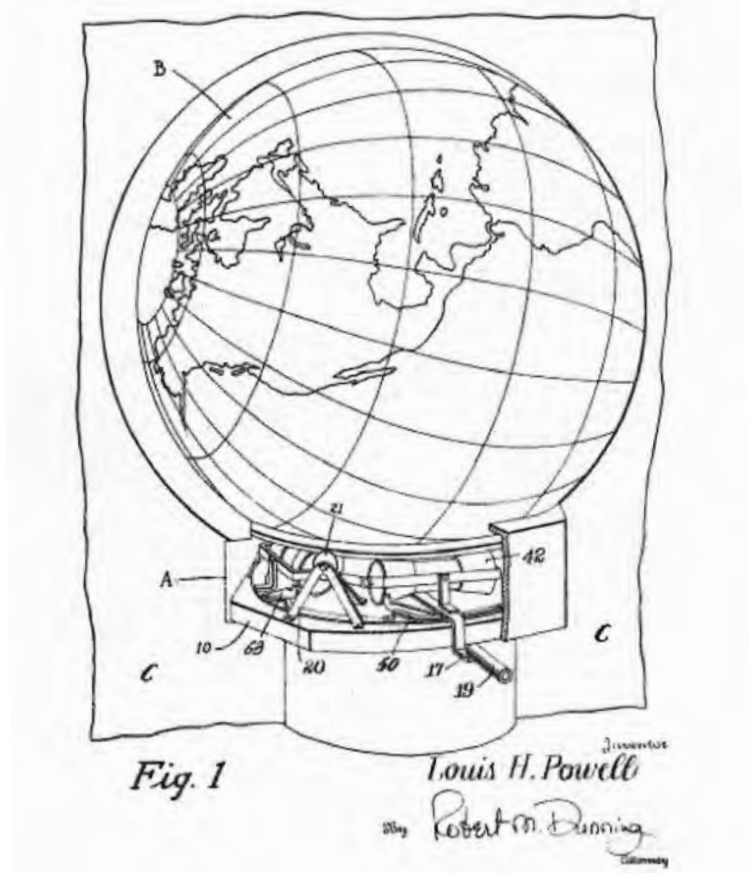
In April 1941, eight months before the aerial bombing of Pearl Harbor, the St. Paul Science Museum (successor to the Saint Paul Institute) unveiled an exhibit provocatively titled, "Can America Be Bombed?"[1] Charles Lesley Ames, the president of the Science Museum, had grown increasingly alarmed by Adolf Hitler's military ambitions and thought the question needed to be raised. Ames was a "lover of maps and other precise data." He attended a display of maps in 1939, organized by the American Geographical Society, and this became the inspiration for the exhibit at the Science Museum intended to educate the public about the impending danger.[2]

Building an Exhibit

An exhibit about active military operations then underway in Europe posed several challenges. Battlefields were in constant flux and the flow of accurate information uncertain, given the fog of war. The display would have to be flexible enough to be updated on a regular basis. Raising funds for the venture would be problematic as the philanthropic community was preoccupied with war relief efforts. Finally, a display of maps was not by its nature inherently exciting and would need some special design attention. Louis H. Powell, the director of the Science Museum, was undaunted and went to work, sharing Ames's belief that the highly volatile and dangerous events engulfing the world had to be explained to the public.

To secure funding Dr. Powell partnered with the state defense coordinator, Minnesota Governor Harold Stassen, and received an allocation from the Legislative Emergence Council. The subject matter of the exhibit was related to military preparedness and clearly very timely. Powell found skilled workers through the Federal Artist Project, one of the New Deal programs created in 1935 as part of the Works Progress Administration. A number of talented visual artists and artisans, including

Visitors to the Science Museum in 1942 study an exhibit demonstrating a potential bombing route from Alaska, at the top right, to Tokyo on a globe specially constructed by artisans from the Federal and Minnesota Art Project for the St. Paul Science Museum. Photo courtesy of the Minnesota Historical Society and the Science Museum of Minnesota.



The first of several drawings included in the 1945 patent application of Lewis H. Powell of the St. Paul Science Museum for his globe mount, which he developed for the Museum's exhibit on aerial bombing. Photo courtesy of the U.S. Patent Office.

Alexander Oja and Ruth Bierman, were assigned to the Science Museum to help design and build the exhibit.[3]

Powell also needed a large work space to fabricate the airplane models and oversized graphics he knew would be needed to add interest to the display. At the time the Science Museum was located in the former John L. Merriam mansion, just north of the Minnesota Capitol, which had limited work space. The problem was solved by a board member, George W. Benz, who provided two floors of a building he owned in downtown St. Paul. With the logistics arranged, the exhibit team went to work. The result of their effort was not a traditional static exhibit but rather a series of dynamic and mobile displays that incorporated the rapidly changing events of the ongoing war. An article in the *Pioneer Press* captured the sense of urgency: "The Institute got into swing and the first of the many maps was started. As rapidly as possible and in such a speedy way as to keep one jump ahead of the every-widening pool of Hitler influence. . . ."[4]

An introductory display was presented in 1940 outlining the various types of maps and their uses. This was followed by the landmark exhibit entitled "Can America Be Bombed?" which opened in early 1941. Thirty staff members spent about four months working on the exhibit and they developed new graphic and display techniques to convey geographical concepts in a more informative and exciting way. Spherical globes supplemented flat maps as an article in *Popular Mechanics* explained, "The main objective of the maps has been to abandon the old flat-plane methods, with their attendant distortions, and to substitute globes, global segments of large size, and the concave spherical maps."[5] Museum staff made considerable improvements to the design of the traditional globe by creating segments of concave and convex spheres that fit into each other. One of their innovations was the "Atlas of Spherical Maps," which was designed as a desk unit with each leaf measuring 22 by 26 inches.

The globes were large, some over five feet in diameter, which were built in different scales. Most were constructed in two pieces for easy transport and to allow them to fit through doorways. The artisans made the spheres by hand, first building master globes to form basin molds. The large globes, segments, and spherical maps were then molded in the basin, using "papier-mâché built up of small squares of brown paper dipped in dextrin-tempered plaster mix." A thin layer of the mix was brushed on the mold before laying on the paper to assure a smooth outer surface. It appears

Segments of convex and concave spheres were used in the Science Museum's exhibit to better show the various possible bombing routes and distances. Photo courtesy of the Science Museum of Minnesota.

from photographs that the globes were approximately two inches thick. Artists then hand painted the latitude and longitude grid on the globe with the aid of some specially designed templates and curved protractors. Finally, the mapping elements would be hand painted depicting the various subjects being conveyed.[6] The finished globes not only presented important spatial information in an understandable way, they also were attractive and visual exciting.

The museum staff also built model airplanes and other three dimensional objects, including wire models which showed the relationship between conic projections and a globe built to the same scale.

The distance a fully loaded bomber could travel between Europe and North America is shown on this globe segment which is tilted on its axis to give a perspective from the North Pole. Photo courtesy of the Science Museum of Minnesota.

The exhibit makers also addressed one additional problem in displaying the finished globes, but this required something so original and noteworthy it earned a patent for its inventor. Normally globes are supported and rotated on a fixed axis extending through the North and South Poles. Museum director Powell wanted the globe to be visible from a variety of vantage points, so he invented a mount for "supporting a large sphere for movement about a plurality of axes." With his device, the sphere rested on a hoop, or ring, which could be manipulated by rollers and moved to the desired viewing positon.[7] The construction and display techniques of the landmark exhibit attracted considerable attention from cartographers, academics, and museum staff around the country, not to mention military officials.

A second installment of the exhibit was unveiled at the Science Museum in July 1941 focused on naval warfare. The third and final exhibit opened at the Minnesota State Fair in August 1942, giving a graphic picture of current military events in the Pacific and Indian Oceans. To meet their ambitious educational goals, the Science Museum launched an extraordinary outreach and promotional campaign. The exhibit circulated, either in its entirety or in sections, to various locations throughout the Twin Cities including Union Depot, the lobby of the First National Bank Building in St. Paul, the Minneapolis Institute of the Arts, and the Weisman Art Gallery at the University of Minnesota. One newspaper account reported it was greeted with considerable "oohs and ahs."[8] Copies of the display were made and sent to a number of other locations around the country including museums in Pittsburgh; Toledo, Ohio; Albany, New York; and the Capitol rotunda in Washington, D.C. Some museums paid for the expense of replication.[9]

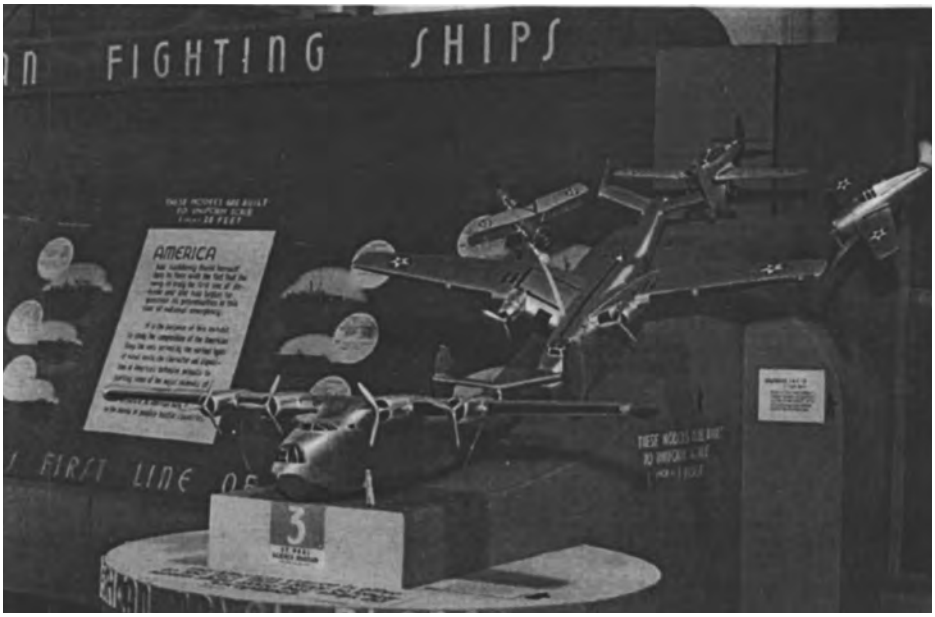
The exhibit reached the conclusion that there was a possibility of German bombers "attacking Minnesota via a back door through the Canadian wilderness," but more ominously, it noted that "danger can come to this continent by way of flights from Asia." Louis Powell later

wrote, "In those far-off days of 1940 and 1941 when America was being rudely forced into an awareness of its proximity to Europe and Asia, a new unit for measuring distance was born—the distance to which a bomber could fly with a paying load of bombs and, with reasonable certainty, return to its base."[10] The exhibit not only raised awareness, but more importantly, it provided the necessary tools and information needed to draw a conclusion about the threat.

National Publicity for the Exhibit

"Can America Be Bombed?" was publicized in a number of national magazines and newspapers and recognized for its timeliness, and later for its prescience. In late December 1941, *Time* magazine hailed the Science Museum as "the war-smartest museum in the U.S."[11] Ironically, the exhibit was featured on the cover of *Museum News,* the journal of the American Association of Museums, just six days before Pearl Harbor.[12] As a result of its groundbreaking work, the Science Museum received a contract from the U.S. Navy in early 1943 to furnish 50 blackboard surfaced globes, 39.6 inches in diameter and mounted on tripods, for use as naval training aids. To accommodate this contract work and other related commercial activities, the Science Museum formed a separate corporate entity, the Saint Paul Science Foundation.

The widely acclaimed exhibit was noteworthy and successful on many levels. A journalist observed, "What is most interesting about the whole affair is that here is an organization that traditionally is supposed to look only backward into time, yet is violating all the copybook maxims and is not only looking forward but is boldly participating."[13] Louis Powell was especially gratified that the exhibit "made museum history by surmounting the traditional barriers that separate art and science museums and appeared in leading museums of both kinds."[14]



This display in the Science Museum's exhibit shows five scale models of U.S. Navy aircraft for visual interest. The model positioned at the front is a PBY Coronado built by the Consolidated Aircraft Company beginning in the late 1930s. The Coronado was used primarily for antisubmarine patrols, bombing raids, long-distance ocean transport, and for rescuing downed air crews at sea. Photo courtesy of the Science Museum of Minnesota.

"Can America Be Bombed?" continues to be lauded by cartographers and historians for introducing a new mapping technology which helped expand our geographic and spatial consciousness. One writer observed, "The exhibit illustrated, particularly, the move from a flat-map conception of the world to a more flexible, active engagement with world space emerging at the time."[15] Another said it "showed how the world 'shrunk' between 1840 when a Clipper sailing ship required 150 days to circumnavigate the world, and 1940 when the same voyage could be made in just 8 days aboard a Pan Am Clipper."[16] Although the oceans still separated the United States from Europe and Asia, the Science Museum's exhibit clearly demonstrated that America's physical isolation from potential air attack was about to end.

Brian McMahon is a trained architect who has written extensively about the built environment, urban history, and transportation. His most recent book, The Ford Century in Minnesota, *was published in 2016 by the University of Minnesota Press.*

Endnotes

1. The Science Museum of Minnesota has gone through a number of name changes since its founding in 1907 when it was known as the St. Paul Institute of Arts and Sciences.
2. "St. Paul Science Museum's Globes and Maps Helping to Make Nation Conscious," *St. Paul Pioneer Press,* March 22, 1942; Louis H. Powell, "New Uses for Globes and Spherical Maps," *Geographical Review,* 35:1 (January 1945): 49–58.
3. Inez Roach, *A History of the Science Museum of Minnesota,* 1907–1975 (St. Paul: Science Museum of Minnesota, 1981), 20–24.
4. "St. Paul Science Museum's Globes and Maps Helping to Make Nation Conscious."
5. *Popular Mechanics,* 85:2 (February 1946): 50–53, 156.
6. Ibid.
7. U.S. Patent 2,483,932 for Globe Mount issued October 4, 1949 to L. H. Powell, who assigned it to the St. Paul Institute.
8. "St. Paul Science Museum's Globes and Maps Helping to Make Nation Conscious."
9. Roach, 20–24; Powell, 49–58.
10. Powell, 49–58.
11. "Globes on Parade," *Time,* 38:25 (December 22, 1941).
12. Sarah Lynn Davis, "What Happened to Baltimore's Peale Museum? An Examination into Urban History Museums" (master's thesis, University of Maryland, Baltimore County, 2008), 18, 19.
13. "St. Paul Science Museum's Globes and Maps Helping to Make Nation Conscious," *St. Paul Pioneer Press,* March 22, 1942.
14. Powell, 49–58.
15. Timothy Barney, *Mapping the Cold War: Cartography and the Framing of America's International Power* (Chapel Hill, N.C: University of North Carolina Press, 2014), 25, 26, 45.
16. Jennifer Van Vleck, *Empire of the Air: Aviation and the American Ascendency* (Cambridge, Mass.: Harvard University Press, 2013), 115, 116.

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This is a 1910 bottle that once contained a soft drink sold by the Highland Spring Water Company in its early years. The bottle is particularly significant because its paper label is so well preserved. The backside of the bottle, visible through the glass, reads: CONTENTS OF THIS BOTTLE MANUFACTURED BY HIGHLAND SPRING WATER. Within a decade, the company discontinued its soft drink business. Bottle courtesy of Mark Youngblood. For more on the origins of the Highland Spring Water Company, see Donald Empson's article on page 18.