

Where the Porter Turret Telescope's Winding Stairs to the Stars Went

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The landmark Porter Turret Telescope stands atop a rocky outcrop just north of Stellafane's Pink Clubhouse. It consists of a smooth white concrete cylinder supporting a hemispherical dome tilted to match the plane of the celestial equator. This ingenious polar-aligned battleship-turret bearing allows the entire structure to turn and precisely track the sky. The observatory's unique mechanical design places the telescope's mirrors on the exterior of the dome. From there, they direct the light of the chosen object to the focal point inside the rotating dome. Without leaving the eyepiece, an observer can dial in other targets in relative comfort, shielded from Vermont's sometimes frigid air. The observatory includes a modest rectangular room attached to the south side of the cylinder. The entrance door is set in the west wall of this room and is reached from the outside by a single small step. The entire structure is as spare and functional as possible, unadorned except for the inscription "1930" that records its year of construction.

Russell W. Porter explained the workings of his reflecting turret telescope design in the May 1921 issue of *Popular Astronomy* (Vol. XXXIX, No. 5). A sketchbook of his ideas for inventions between 1921 and 1926 — known as the "Germ Book" and later reproduced by the Springfield Telescope Makers — includes a 1923 sketch showing technical details of the tower-like support for the telescope optics. This was drawn around the time the STM became the world's first telescope-making club.

A Porter watercolor painted in 1920, used to illustrate the *Popular Astronomy* article, depicts an unusual but beautiful observatory. At first glance, it looks like a vision from ancient Greece, perhaps echoing the Tower of the Winds in Athens. Closer inspection reveals early 20th-century American figures strolling through an idyllic park setting. An armillary sphere stands on the right, while the bronze base of a Garden Telescope (another Porter creation from the same era) peeks in from the left. The main feature is a cylindrical tower rising from a hillock to an upper plateau, topped with a shell-like dome carrying the Porter Turret Telescope. An inviting Beaux-Arts "wishbone stair" begins with a straight rise at the base and then splits into curving arcs that wrap around opposite sides of the tower, leading to the upper level. The observatory is decorated with

classically styled engravings related to the heavens: bas-relief zodiac symbols and figures, the names and symbols of the planets, and the names of prominent astronomers.

In 1928, Porter was invited by George Ellery Hale to join the California Institute of Technology and apply his creativity to the monumental challenges of building the world's largest telescope – the 200-inch Hale Telescope on Palomar Mountain, completed in 1948. During his more than two decades on that project (he continued working until his death in 1949), Porter returned to Springfield each summer during Caltech's academic breaks and remained active with the Springfield Telescope Makers.

In 1930, he and the STM planned to build the Turret Telescope on Breezy Hill. Budget realities led to the lean, economical, and unadorned structure we know today rather than the fanciful Greek temple of the watercolor. Although the modest budget could not accommodate Porter's more decorative features, his original elaborate design soon found influence elsewhere.

While STM members were hauling the battleship turret bearing into position atop the new observatory, George Ellery Hale, Walter S. Adams (director of Mount Wilson Observatory), and Robert A. Millikan (Nobel laureate and president of Caltech) were being consulted in Pasadena by the Griffith J. Griffith Trust. The trust sought their expertise to fulfill the donor's will and construct Griffith Observatory in the more than 3,000-acre park Griffith had given to Los Angeles in 1896. By 1930 the trust fund had grown to nearly \$700,000. In the midst of the Great Depression, the time for construction had arrived. Additional features were incorporated, including a Zeiss planetarium and a Hale spectrohelioscope – devices invented after Griffith's death in 1919. Millikan led the Scientific Advisory Committee and enlisted Caltech physicist Edward H. Kurth to work directly with the trust and architects. Kurth was responsible for planning the exhibits and integrating them into a building designed for public astronomical observation. It is likely that one of Porter's colleagues on the 200-inch project suggested he speak with Kurth. According to Porter's daughter, Caroline Porter-Kier (who shared this with me in 1994), Kurth became a frequent visitor to the family home on Mentor Avenue, just down the street from Caltech. There, the two men brainstormed, and Porter produced drawings to help everyone visualize the complex project.

Berton Willard's 1976 biography of Russell W. Porter mentioned Porter's advisory role at Griffith Observatory. When I read it in 1992, I was puzzled: after 14 years as a Griffith employee, I had never encountered any reference to Porter's contributions in the observatory's records. Any doubt was dramatically erased in 1993 during a chance meeting at the Observatory with Pasadena

architect Larry Chalk. He showed me 50 pencil drawings from his firm's archives (Austin, Chalk, Fry, and Barlow, successor to the original architectural consortium). I immediately recognized them as Porter's distinctive work. A subsequent visit to the Caltech Archives confirmed that Porter had been paid by the architects for these studies, which explored feasibility arrangements of the building's required elements: two 30-foot telescope domes, an 80-foot planetarium, lecture hall, Foucault pendulum, exhibit spaces, offices, restrooms, and machine shops.

Some of Porter's earliest studies from spring 1931 tackled the challenge of providing public access to the viewing roof and telescope entrances. Internal stairs consumed too much valuable exhibit space. One drawing, labeled "outside stairs," took advantage of Griffith Observatory's modest 1,134-foot elevation, 34° north latitude, and mild, snow-free climate. It featured external stairs wrapped around a cylindrical tower reminiscent of the Turret Telescope. Porter soon realized this approach appeared overly massive in the context of the full building. A simple but elegant variation — shown in the upper right of the study — solved the problem. He split the original wishbone stair in half and placed one half each around the two telescope domes at opposite ends of the building.

The result became a compelling, playful, and symmetrical feature intrinsic to the observatory's design. The architectural consortium (John C. Austin and Frederick M. Ashley), the Griffith Trust, and the City of Los Angeles approved this split-wishbone stair concept. It appeared in all of the subsequent floor plans developed by Kurth and Porter. By the end of spring 1931, one of these plans was selected as the basis for final design.

In a letter to Hale dated July 28, 1931, from Stellafane, Porter relayed news from Kurth: "...the architects of the Griffith Planetarium have adopted my plans quite intact." So the next time you see Griffith Observatory — in person, on television, or in a movie — remember that it is a West Coast architectural sibling to the cherished icons of Breezy Hill, connected through the shared dreams of Russell W. Porter.

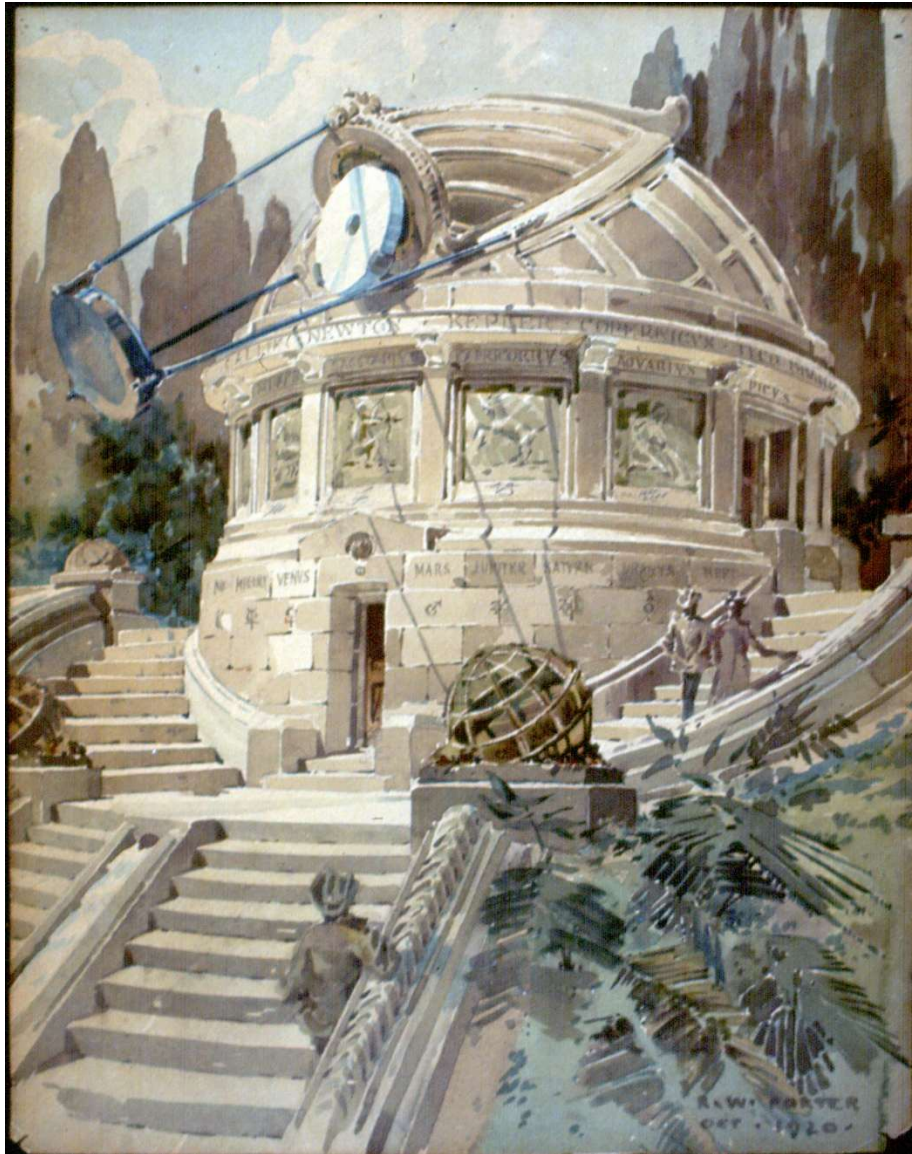


Figure 1: Russell Porter's vision of the turret reflecting telescope painted in October, 1920. While there are some minor technical differences in the mechanical structure of the external reflecting telescope in the concept from the actual form, Porter put a lot of emphasis of on the ornate architectural decoration of the observatory, including an armillary sphere at right, possibly part of a Garden Telescope at left, the graceful "wishbone" stairway, inscribed zodiac sign names and bas relief figures, astronomers names, and planet names and symbols, all of which later appeared in the Austin and Ashley architectural concepts for Griffith Observatory between 1931 and 1933, before an abstract Greek "meander" exterior decoration was settled on in 1934. (Photo by Berton Willard, STM).

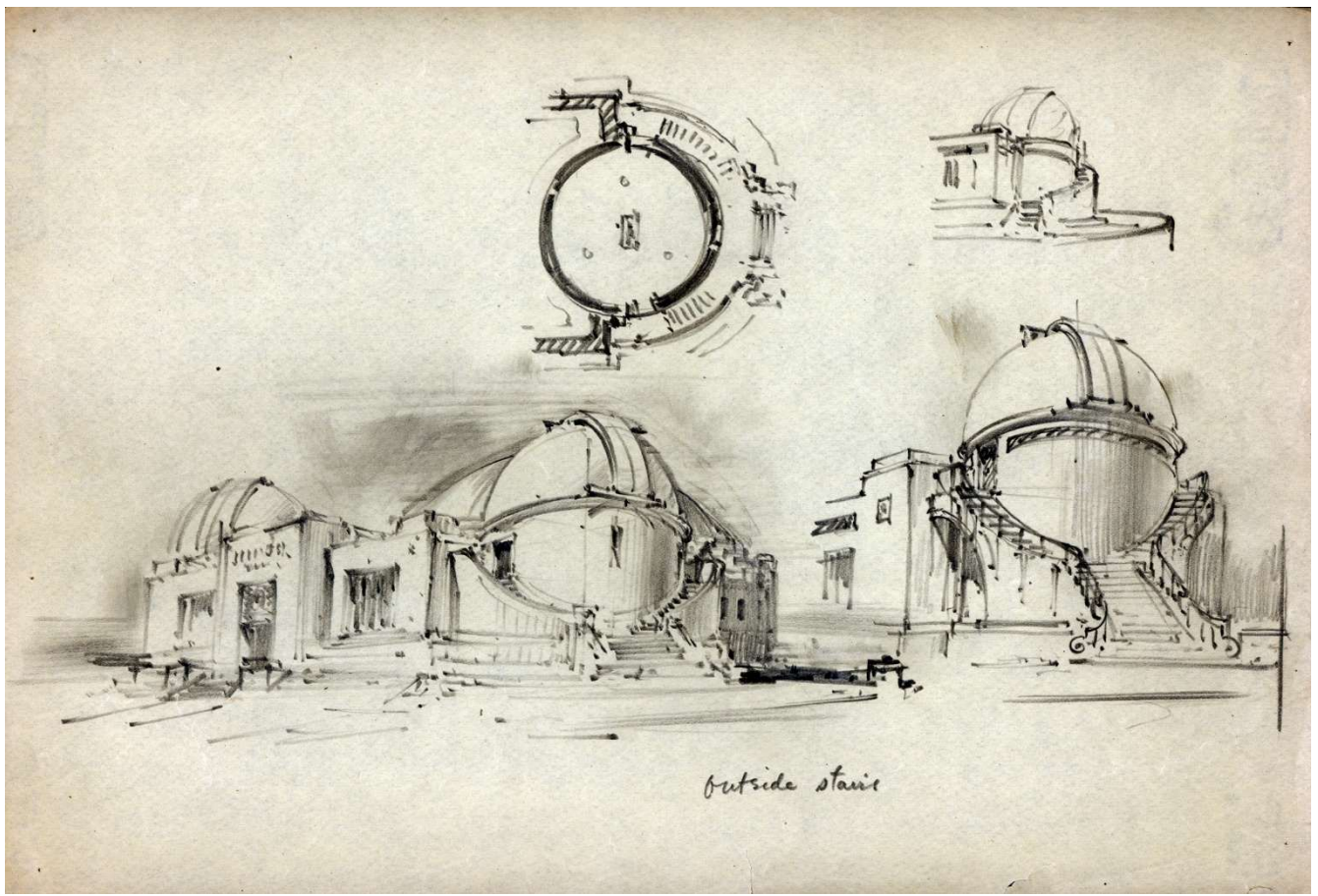


Figure 2: The Griffith Observatory study “outside stairs” by Russell W. Porter in April, 1931. This shows how Porter tried different orientations of the double wishbone exterior stairs that he had first imagined for the Turret telescope in 1920. Note the “half wishbone” variation in the upper right-hand corner is what was ultimately chosen and exists today. (Image Anthony Cook and Orrery Press).

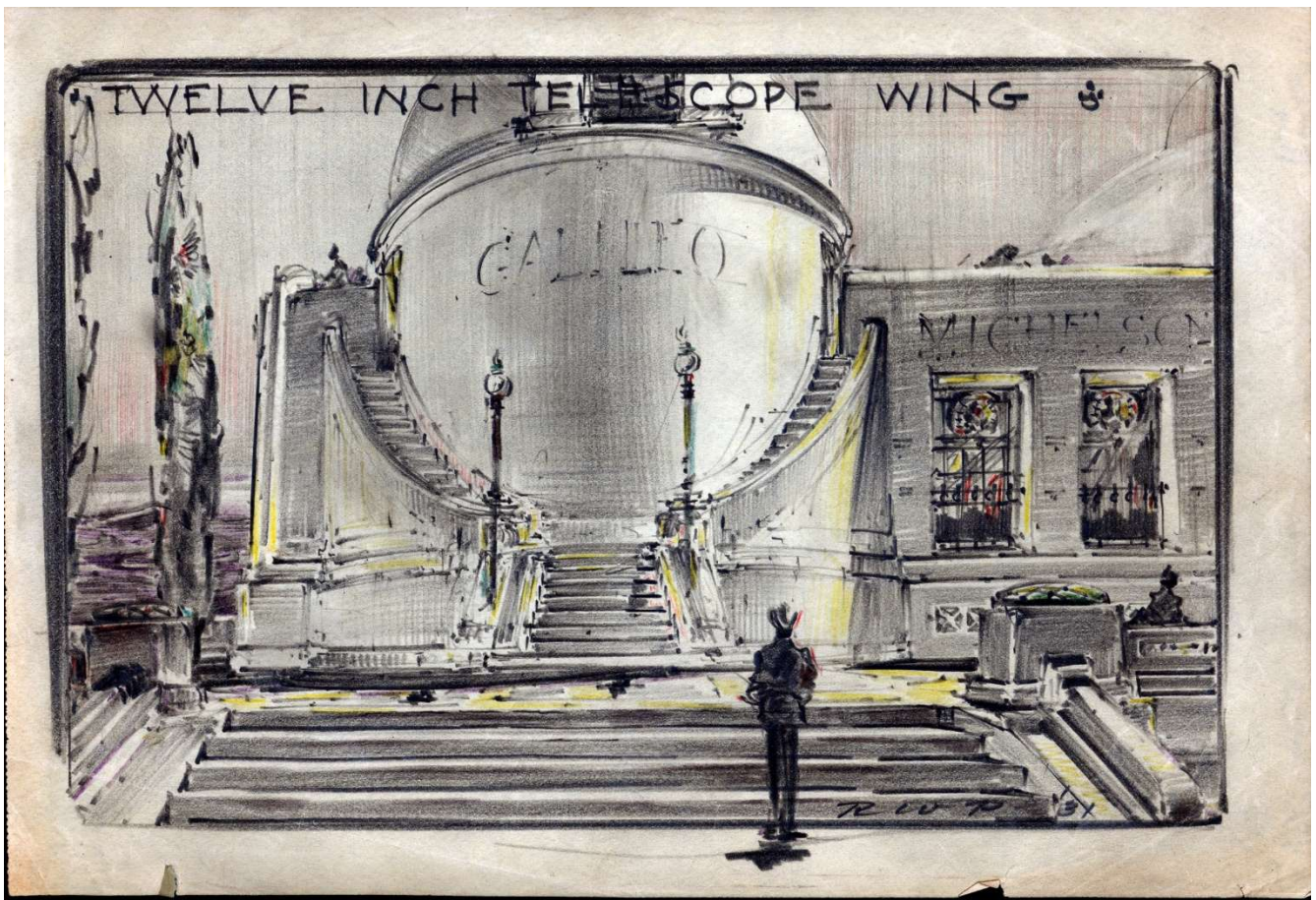


Figure 3: Porter's slightly crowded April, 1931 result from grafting the Porter Turret Telescope double-wishbone stair onto the telescope wing (east side) of Griffith Observatory. Many fine building details, including the dimensions of the windows of the Hall of Science and even the passive air ducts under the building were adopted in the final construction. (Anthony Cook and Orrery Press).



Figures 4 & 5: The Porter Turret Telescope as it appeared at Stellafane several months before the 1994 convention. The optics of the telescope were not installed during this photo session. (Diem K. Pham courtesy Anthony Cook).



Figures 6 & 7: The west side exterior stairs during the construction of Griffith Observatory in August, 1934 (Austin-Chalk Collection, Griffith Observatory).

