HISTORICAL ASTRONOMY

One of last century's most celebrated small telescopes is set to make a comeback. /// **BY MIKE D. REYNOLDS**

Rebirth of a classic: the Porter Garden Telescope

A backyard telescope is commonplace today. But 80 years ago, having one, especially a Porter Garden Telescope, set a person apart. The man behind this device influenced both amateur telescope-making and the largest professional telescope of his time. Now, a present-day company — Telescopes of Vermont — is ready to unveil a faithful reproduction of this classic instrument.

Big eye on the sky

An Arctic adventurer, architect, and artist, Russell Williams Porter (1871–1949) was a man with diverse interests. Porter's talent as a designer led to his involvement in the world's largest telescope project.

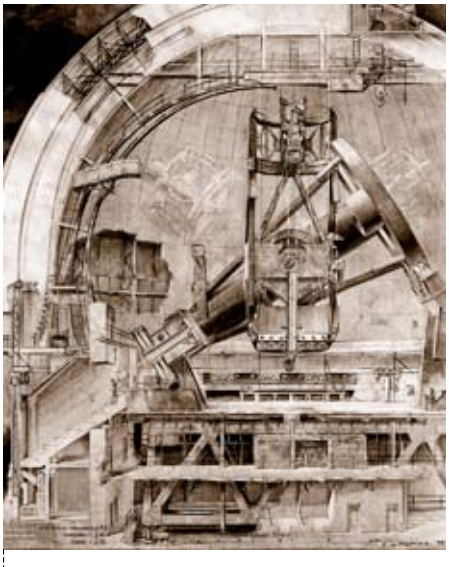
In the 1920s, American astronomer George Ellery Hale (1868–1938) was on a mission: to build the world's largest telescope. In 1928, Hale invited Porter to join the team of astronomers and engineers to design and build the world's largest telescope — the 200-inch reflector on Palomar Mountain in California.

Porter's skills as an artist, mechanical designer, and an architect, were invaluable. This project, the culmination of Porter's life, would last 20 years and see the dedication of Palomar Observatory in 1948.

World War II interrupted the Palomar work, yet everyone was busy. Porter assisted the Department of Defense though his combat-support equipment design work. Porter also organized amateur telescope-makers to make optical components to support the war effort.

Function plus style

Porter's ability to blend art, astronomy, and engineering is perhaps best represented by his Garden Telescope. He wanted to create an instrument that would be as ornamental in a garden as it would be utilitarian for terrestrial and celestial observing.



CALTECH

PORTER SKETCHED the exterior of the proposed 200-inch reflector dome at Palomar Observatory. The person just outside the lower doorway and the two people just below the dome's slit are to scale.

CALTECH

PORTER IMAGINED what the interior of Palomar Observatory would look like 10 years before it opened when he made this sketch in 1938. His mechanical designs helped architects visualize the project.

RUSS SCHLEIPMAN

THE PORTER GARDEN TELESCOPE had to be set up only once. After that, it remained outdoors. This picture, from a booklet Russell Porter produced, shows the telescope in use.

◀ **AN ORIGINAL** Porter Garden Telescope is a rare item. Estimates range between seven and 12 surviving units. This beautiful example sold at auction in March 2007.

SKINNER'S AUCTION HOUSE

RUSS SCHLEIPMAN

▲ **RUSSELL W. PORTER,** shown here with an original Porter Garden Telescope set up in an owner's backyard, produced about 50 units. Porter designed the telescope as a 6-inch f/4 Newtonian reflector.

CALTECH

THE MAN BEHIND THE PORTER GARDEN TELESCOPE

Russell Porter was the youngest of five children, and he grew up in Springfield, Vermont. His father was mechanically talented — he built a boat steam engine and established a toy-manufacturing business.

Porter studied engineering, art, and architecture at Norwich University and architecture at Massachusetts Institute of Technology. A restless adventurer, he signed on for Frederick Cook's 1893 exploration cruise along the coast of Greenland. Porter served as an artist and surveyor. He participated in eight northern adventures within 15 years, including a failed North Pole expedition in 1901.

Porter's interest in optics and telescopes came from his work as a surveyor. Also, a hometown friend, machine-tool pioneer James Hartness (who went on to serve as Governor of Vermont) had an interest in astronomy and telescope-building. His friend's interest served as an inspiration for Porter. Hartness also supplied Porter's first mirror blanks, in 1913. Porter wrote articles for *Popular Astronomy* and *Scientific American* about his telescope designs as well as telescope construction.

In 1915, Porter taught architecture at Massachusetts Institute of Technology. Two years later, he went to work for the National Bureau of Standards to develop manufacturing techniques for optical instruments.

RUSSELL W. PORTER (1871–1949) was an adventurer, scientist, surveyor, architect, writer, and artist. He worked on the 200-inch Palomar reflecting telescope as an artist, optical and mechanical designer, and architect.

In 1919, Hartness recruited Porter to work at his machine company as an optical and mechanical engineer. Porter incorporated optics into the machining process.

In August 1920, Porter, with the support of Hartness and another friend, started a club to teach telescope-making. Participants learned how to grind and polish a telescope mirror, as well as eyepiece and mount requirements. Often, salvaged parts were used in the construction of the telescopes. Within a year, participants had built 16 telescopes, and Porter was teaching the new owners how to use them.

From this initial group, the Springfield Telescope Makers formed December 7, 1923. Part of the club's goal was to build an observatory. Porter had inherited some property in an area known as Breezy Hill. Hartness, who was elected governor in 1920, contributed personal funds for an observatory and a clubhouse. Porter came up with the phrase Stellar Fane, which means "a shrine to the stars." He later simplified this to "Stellafane." Since the 1920s, except during World War II, telescope enthusiasts have continued to meet at summer conventions there. — *M. D. R.*

RUSS SCHLEIPMAN

TELESCOPES OF VERMONT'S first prototype demonstrates the new Porter Garden Telescope is a virtual clone of the original.

Porter envisioned the Garden Telescope as a permanent fixture like a sundial, ready for viewing at a moment's notice. A permanent design eliminates setting up and, after observing, dismantling the telescope.

At first glance, the Porter Garden Telescope is so different from other telescopes, it might not be recognized for what it is. The optical-tube assembly has no tube. Porter designed the unit as a 6-inch (152.4 millimeters) f/4 Newtonian reflecting telescope. The eyepieces — 0.983-inch diameter — had focal lengths of 50mm, 25mm, and 12.5mm, giving the observer magnifications of approximately 12x, 24x, and 49x.

The telescope's form is breathtaking. A bowl of bronze lotus leaves supports the mirror. From the side of the lotus bowl, a slender bronze leaf curves upward to support the secondary prism and the eyepiece. Owners describe the design as art nouveau.

Porter bought the prisms and eyepieces from the firm of American telescope-maker John Brashear (1840–1920). Because Porter designed his telescopes to be permanently installed, beautiful protective covers for the optics were standard.

Porter manufactured approximately 50 Garden Telescopes. Records do not indicate how many survive intact. A few museums and science centers have Porter Garden Telescopes on display. A small number also are accounted for in private collections.

Mike D. Reynolds *is a contributing editor of* Astronomy *and Associate Dean of Mathematics & Natural Science at Florida Community College.*

Garden Telescope redux

For years, people talked about a possible rebirth of the Porter Garden Telescope. When examining an original, it becomes obvious it would take special talent and dedication to pull off a reproduction.

A skillfully manufactured replica of the original Garden Telescope is a new project of Telescopes of Vermont, led by Fred Schleipman and his son Russ. The Schleipmans' work on this project has the endorsement of the Springfield Telescope Makers (see "The man behind the Porter Garden Telescope," page 82).

Fred is a skilled machinist. He crafts precision instruments and devices for the most demanding clients. So it is appropriate that he led the way in reproducing the Porter Garden Telescope.

Russ is the pied piper for Telescopes of Vermont. He has attracted attention from not only the astronomy arena, but also from architects and high-end landscapers as they look for unusual and spectacular pieces for their designs.

Designing and constructing the reproductions has been difficult and expensive. The Schleipmans could not locate any blueprints or plans for the original Garden Telescope. So, they considered the optics and the quality Porter would have demanded for the mirrors and the eyepieces.

In addition, working with bronze is not simple because bronze shrinks as it cools. The price of a Schleipman Porter Garden Telescope equals, as it did in Porter's day, the cost of a new car. The original, according to some records cost around $500. Buyers understand this is finely crafted art they are purchasing as well as a piece of history.

The Schleipmans' work on the Porter Garden Telescope has been extraordinary. Just as Russell Porter did nearly a century ago, Schleipman and his team have created a masterpiece. Porter would be pleased that people still admire the beauty of his Garden Telescope and will once again observe our spectacular universe through it.

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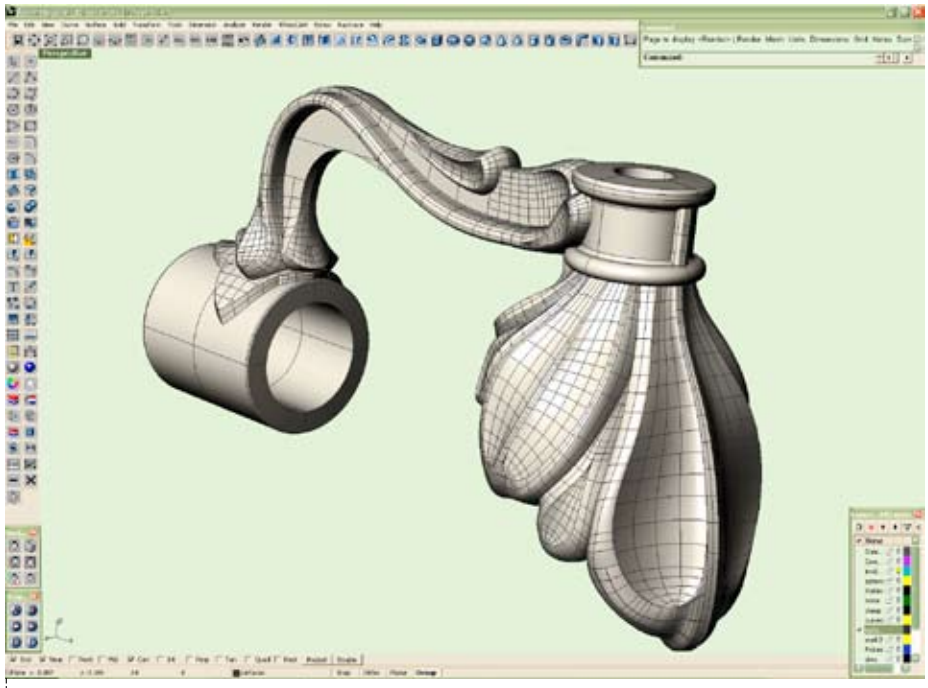

RUSS SCHLEIPMAN

THE PATTERN MAKER at Telescopes of Vermont had to reproduce each part of the Porter Garden Telescope using design software.

RUSS SCHLEIPMAN

A CLOSER LOOK at the bronze work of the Porter Garden Telescope reproduction by Telescopes of Vermont shows the lotus bowl and the split-ring base. The hourly markings allow the telescope to function as a sundial.

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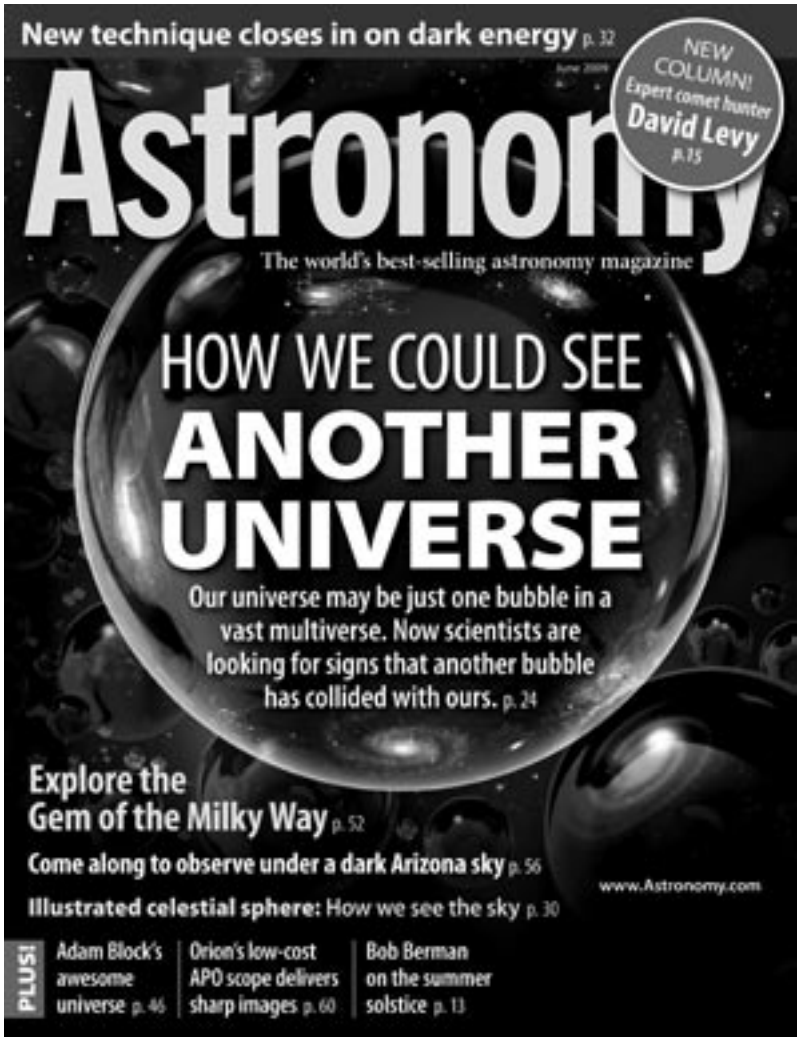

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