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Mr. Porter gets Time from the Sun with His Garden Telescope.

OLD BREAD LOAF

— BY —

ELIZABETH SPOOR SHAMPENY

“WEASELS, SNAKES, HEH! HEH!”

BY JESSIE M. DOWLIN

A FLOOD WEDDING

— BY —

BLANCHE DUNHAM HUBBARD

A WEEK at SILVER LAKE

BY IDA J. CLARK

THE mirror or 'lense' is the bright circular object beneath his right hand. This is directed at the sun, when an image is then reflected through the eye-piece showing above his right hand, and on the white card which he holds. The large outer ring encircling the mirror is graduated as a clock face, on which the hours and minutes are read, a zero line coinciding with the time, or graduation. This of course is more accurate than a mere shadow, which always consists of both umbra and pen-umbra shadings.

RUSSELL W. PORTER Artist — *Springfield*
Scientist

BY OSCAR S. MARSHALL

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Russell W. Porter

Some glimpses of the Vermonter who will assist in designing and building the World's Greatest Telescope.

By OSCAR S. MARSHALL

"I do not hesitate to undertake the task."

THESE are Mr. Porter's words with reference to making the 200 inch mirror, which will be the huge objective of the now assured great astrophysical laboratory that the California Institute of Technology will construct, and in connection with which Mr. Porter has been enlisted as one of the principal engineers.

Mr. Porter was addressing a select group of men gathered to do him honor in a farewell banquet and in telling them some of the details of the great undertaking he made the above statement, with no trace of emotion, no show of pride. Only those who know Mr. Porter intimately and who sense the nature of the task of making an eye 200 inches in diameter can grasp the import of that utterance, which may become classic along with certain others that will occur to us.

James Hartness and Russell W. Porter had formed strong personal relationships prior to the World War. During the great conflict Mr. Porter was engaged in the optical branch of the Bureau of Standards at Washington, and left there at the close of the struggle to become associated with Mr. Hartness in optical research and certain engineering problems to be worked out in the Jones & Lamson Machine Company, of which Mr. Hartness is president. When the latter was asked by Mrs. Hartness what he would like most to do, he gave her this

answer: "I should like nothing better than to work with Porter." This is Mr. Hartness' ambition, as he stated before the Bond Astronomical club of Harvard in April, 1927, when with the Springfield Telescope Makers he was a guest of that club.

It would be Mr. Porter with Porter omitted to attempt a portrayal of the man without the above setting.

During the past ten years Mr. Porter has been in those green pastures and beside those quiet flowing streams which afford ideal conditions for self-expression—environmental surroundings which assist rather than retard the work of the true scientist.

The uniqueness of this man Porter has been abroad for some time, and some of it is a little distorted owing to the intellectual faults of the "lenses" which have passed on their poorly defined images. The truth is good enough, and the best lenses are none too good in any case; and in the end he who sees second-hand must be responsible for that which his own mind visualizes.

The road over which Mr. Porter has travelled to arrive at his present difficult task is unique as the man himself. Like his personal indifference to economic attainment is that other indifference of his—indifference to those difficulties which crucify the courage and nerve of too many of us. In harmony with this temperament is the course which he pursued to get his education.

He began life December 13, 1871, rich in ancestral bequests of intellectual goods. For many generations the Porter family, of old New England stock, have preserved and passed on a high quality of mechanical genius, and a cultural atmosphere which the present heirs have beautifully maintained.

Russell Porter is the youngest of five children, and his parents were Swedenborgians in religion, which this Springfield incident will typify. One day his father, by the method of elimination, discovered that it was Russell who had marred some

his chubby frame won for him the nickname of pury or "pussy." From his home town schools he entered Norwich University and the University of Vermont in succession, a year or two at each stopping place, then found his real calling for a time at the Massachusetts Institute of Technology where he graduated and later—1916-17—took a professor's chair in architecture, the subject he had majored in. At M. I. T., student Porter won the national award given by the National Society of Beaux Arts for the best design in architecture.



THE SPRINGFIELD TELESCOPE MAKERS OF 1922.

Mr. Porter is fourth from the left, holding one of his first mirrors which he made at Port Clyde. (Mr. Marshall, writer of accompanying article, at extreme left.)—Editor.

window panes by stone-throwing. Handing the lad a few pebbles and withdrawing a few paces he requested his son to throw the stones at him just as he had at the building. "Golly! That nearly broke my heart!" says Russell.

Frederick W. Porter, the father, little recked that in the youthful glass-worker before him there stood the future genius, the prophet-leader of hundreds of amateur telescope makers and budding astronomers, that this lad before him would by his accomplishment add lustre to the paternal tenderness and discretion which he himself had always practiced.

Russell's chums esteemed him as lazy and

An urge for investigation seemed to pre-empt within him. Porter and another young man made an all-water trip around part of Boston in a row-boat, taking advantage of tide conditions to get them over certain building lots within the city proper, ending their salt-water fresh-water expedition on the river Charles. The professional life of an architect became irksome, boresome, impossible; the Arctic called to Porter and he was to be spared, per his own feelings, which he obeyed. He organized several student excursions on successive summers into Labrador and Greenland; these practice expeditions growing into his real Arctic work as scientist and artist for Peary, Cook,

*Heard this
man lecture
on Hearns
& saw his
slides*

and last under Commander Fiala on the Ziegler North Polar expedition. On this last, Porter was actually assistant in command, but would not exercise this office except in the most extreme requirements.

From these expeditions Mr. Porter brought back a wealth of Arctic scenery portrayed in water colors mostly, which few if any other artists have ever essayed in that place of perpetual snow and ice, where to dip his brush in water he had to make use of alcohol lamps to reduce his water from ice or snow. It was also on the Ziegler expedition, which embarked in 1903 and returned after a second winter's stay in the frozen North, in 1905, that Mr. Porter underwent the hardships of starvation camp living. The relief ship failed to make its way through to their base at the southern end of Franz Josef Land in the summer of 1904, which imposed the unprepared-for severities of another Arctic night of six months.

Mr. Porter had been within the Arctic circle ten different times when he embraced the calmer mode of life at Port Clyde on the Maine coast in 1907. It was there that he married Alice Belle Marshall, who has proven a far better lure for home and its comforts than the North could promise.

From being a surveyor, scientist, artist, and more important than all else on some of these expeditions, a ministering angel to many of his comrades who felt the encroachments of insanity, which overpowers the strongest, as they appear under normal conditions—Mr. Porter turned himself loose with that new desire which first possessed him while following with the theodolite the trail of the stars during the Arctic night vigils, to the art of lense making, and mirrors for reflecting telescopes. Between times he built cottages for summer vacationists at Port Clyde. This he knew how to do with his eyes shut.

Not a thing did he know about the art of making mirrors, not an implement did he possess with which to make one—except his two hands, and his head. In a short time he had an indoor observatory, as well as a conventional type of out-door observatory. His mirror making reached the stage where he made a 16 inch optical flat, and a 16 inch parabalized mirror of 70 foot focal length. Without the use of other lense, this 16 inch mirror gives a direct image of the sun as large as a dinner plate. This

comparison is used simply to visualize the idea.

Again, only those who know something of the problems involved in making a mirror for a reflecting telescope can appreciate what Porter's accomplishments mean, particularly under the conditions which he labored. It will help us a little however to know that the French Astronomical Society tendered him a membership in its organization, citing for this his work in photographing the peculiar shadows produced by the speculum (mirror) when under testing operations.

The American Astrophysical Journal, Popular Astronomy,* and the Scientific American published numerous articles by Mr. Porter while he was at Port Clyde, the most significant of which to us now is his design of an equatorial mount for huge telescopes—significant because it is this particular form of mount which has been adopted for the great 200 inch reflector. The scientific journals in their recent accounts of the 200 inch telescope ascribe to Mr. Porter credit for the adopted type of mount. This type of mount has within recent years been popularized in his Porter Garden Telescope built and sold by Jones & Lamson Machine Company, an instrument which is covered by letters patent, including both reflector and refractor types of instrument.

Arriving in Springfield in 1919 Mr. Porter took up the work of optical research engineer with Mr. Hartness at Jones & Lamson Machine Company, of which Mr. Hartness is president. As a result of this some valuable contributions have been made to the art of tool building which greatly facilitate the accurate production on any quantity basis of screws and threaded parts, upon which the air-plane and the automobile and hundreds of precision instruments and tools depend.

But this might be said to be the drab side of the ten years Mr. Porter has spent in his original home town since 1919, if considered alone.

That peculiar thing which scientists call "radioactivity" is a predominant quality of Mr. Porter, and in addition to giving off of himself continually he seems to gain rather than to lose thereby, the greatest proof of the soul's immortality we have.

The 200 inch reflecting telescope, if fate

*1908, p. 147, reprinted in Scientific American Supplement, Aug., 1918.

does not cut him off before his work is completed, may stand as Porter's consummate achievement for humanity. But beside this one great eye, which will be controlled by the best master minds of astronomy, there will be a thousand smaller eyes scattered all over the world, owners of "The Poor Man's Telescope," which Porter has made possible for these men in the back

ested in this primitive scientific movement among the green hills of Vermont and it began an intensive cultivation of the work there started. Albert G. Ingalls, associate editor of that journal, was the moving spirit in this effort, and secured from Mr. Porter a series of articles descriptive and illustrative of "the poor man's telescope." A universal clamor for more information about



THE FIRST CONVENTION. 1926, HELD UNDER AUSPICES OF THE SPRINGFIELD TELESCOPE MAKERS AT STELLAFANE, THE CLUB HOME.

Russell W. Porter at extreme right; next to him, in back, is C. H. Clark of St. Johnsbury; second to right of Clark, with straw-hat, is John C. Lee of Wellesley, noted inventor and most modest man in the group; next to Lee stands J. M. Pierce, and next to Pierce is W. E. Cloyd, chief engineer of the Battleship Texas. The Poet-laureate of the Springfield Telescope Makers is E. H. Redfield, our chef in the group. Third from the left end of the group, with "blazing spectacles" is Albert G. Ingalls, associate editor of the Scientific American. The Springfield Equatorial mount is Mr. Porter's contribution mentioned in the text.

seats of astronomy to have by making them themselves. This awakening is of hardly less significance for humanity than that other awakening which followed the spread of the printed word. Because, it is universally conceded that astronomy is the greatest liberator of the human mind, without any exception.

This new awakening had its beginnings in The Springfield Telescope Makers which Mr. Porter founded in 1922. Shortly afterward the Scientific American became inter-

this new hope for the average man resulted in the publication by the Scientific American of a text book for amateurs, titled "Amateur Telescope Making." Under the auspices of the Springfield Telescope Makers visiting amateurs from surrounding states as far away as Arkansas, Maryland, Maine, and from Canada, during the past three years have attended annual conventions held at Stellafane, home of the Springfield Telescope Makers. The best thing about all this is the avidity with which these vis-

iting amateurs seek for and carry away every shred of information they can pack into their heads, plus their automobiles! Incidental to the radioactivity referred to is "The Springfield Equatorial Telescope," another of Mr. Porter's designs, which many amateurs have constructed for themselves. To satisfy the hundreds of calls from amateurs for materials with which to make their instruments an amateur's clearing establishment had to be arranged for, and this has been undertaken by John M. Pierce, one of the Springfield Telescope Makers. The universal extent of interest aroused is verified by actual requests for materials through Mr. Pierce coming not from most of the states of the union, but from many of the Americas, Canada, even far off India. "From Greenland's icy mountains, from India's coral strand," the new birth progresses.

Had it been compatible with his temperament Russell Porter could have won either fortune or fame, or both together, as an artist. Instead, he uses this gift, native and cultivated in a most exasperating degree to those who watch him at work with pencil, pastel or water color, as the major outlet for his emotions. Not however forgetting his inalienable stogie, which is ever alight when he works or thinks the hardest—or the easiest; this alone testifies to that constitutional vigor of his which even the six months siege of an Arctic starvation camp could not wrest from him. But how comes it that a scientist—with all that stern adherence to truth, dry facts and drier statistics demands to wear that "plume"—how does it happen that we find an artist inside of a scientist? Nevertheless, the esthetic is strongly entrenched within the man Porter; and sober second thought compels the conviction that it is this very enrichment of art within him by which he breathes the breath of life into science and makes it become a living flame inside of those who get within range of his influence.

Not often does it occur that the chief actor in a drama is totally unaware of the part he is to play up to the time that the curtain is raised and the assembled audience waits his first move in its presence. Readers of history or of legend may recall tales, real or fanciful; but modern times do not abound in happenings of the kind.

Russell Porter had enjoyed the peaceful life of Springfield for ten years and the brilliant exploits of the Arctic were receding into the background with but little if any

regret, particularly since his present activities were so engaging. The manipulation of the various machine tools in the works where he was optical research engineer were just as alluring as some other things he had done. A spectrometer was nearly completed by his own hands, in November, a piece of workmanship which the most "hardened" tool maker could well be proud of having made. This instrument does not have the proportions of the Depredelle monument which Porter detailed under the French Architect-Engineer's direction while the two men were at Massachusetts Institute of Technology: the monument surpasses in proportions anything yet undertaken by man—and has never been constructed for lack of—many things, but not for fault of design. The spectrometer can be held in the hands.

On one of those enticing autumnal days which New England alone can produce, Porter yielded to that ancient instinct which is promoted by the smell of frying fat over a camp fire, and with his wife and daughter and a few articles of food quickly packed in the car they drove to a hill where they ate their noon-day meal. The brief communion with nature at an end Mr. Porter returned to the spectrometer to find: instructions to report to his associate, who was in his den.

The "den" is a subterranean accessory of Mr. Hartness' indoor observatory with which many Vermonters are acquainted and Mr. Porter frequently repaired to this place to confer over any problems which concerned mechanical or scientific progress. This time when Porter arrived he found that "curtain" raised and the performance well under way: Dr. Anderson, with one of the Mt. Wilson staff, was there before him from the California Institute of Technology with a proposal that he had presented to Mr. Hartness: Could he secure Mr. Porter's services as one of the engineers in the work of designing and building the 200 inch reflecting telescope which the California Institute of Technology had in charge?

The most fitting conclusion to this brief summary of Russell W. Porter perhaps would be to refer the reader to the introductory words which have been quoted. So let the curtain drop, while those of us who have reaped most from him through intimate association reflect upon those words spoken under a well-known circumstance:

"Did not our hearts burn within us while he taught us by the way!"