The Observer

September 2010 (#26)

Schedule of public programs on last page!

From Israel to Kentuckiana: Galileo's Telescope at South Harrison

There is a new telescope at South Harrison Observatory! It is not big. It is not powerful. In fact it is very small. But it is very special. It is a replica of one of Galileo's telescopes – one that Galileo built himself in late 1609 or early 1610 that magnifies 21 times.

South Harrison's new telescope – being modeled by Galileo himself!

This telescope comes to South Harrison courtesy of Yaakov Zik of the University of Haifa in Israel. Zik is a scholar who studies the history of astronomy. As part of his research he had an optics

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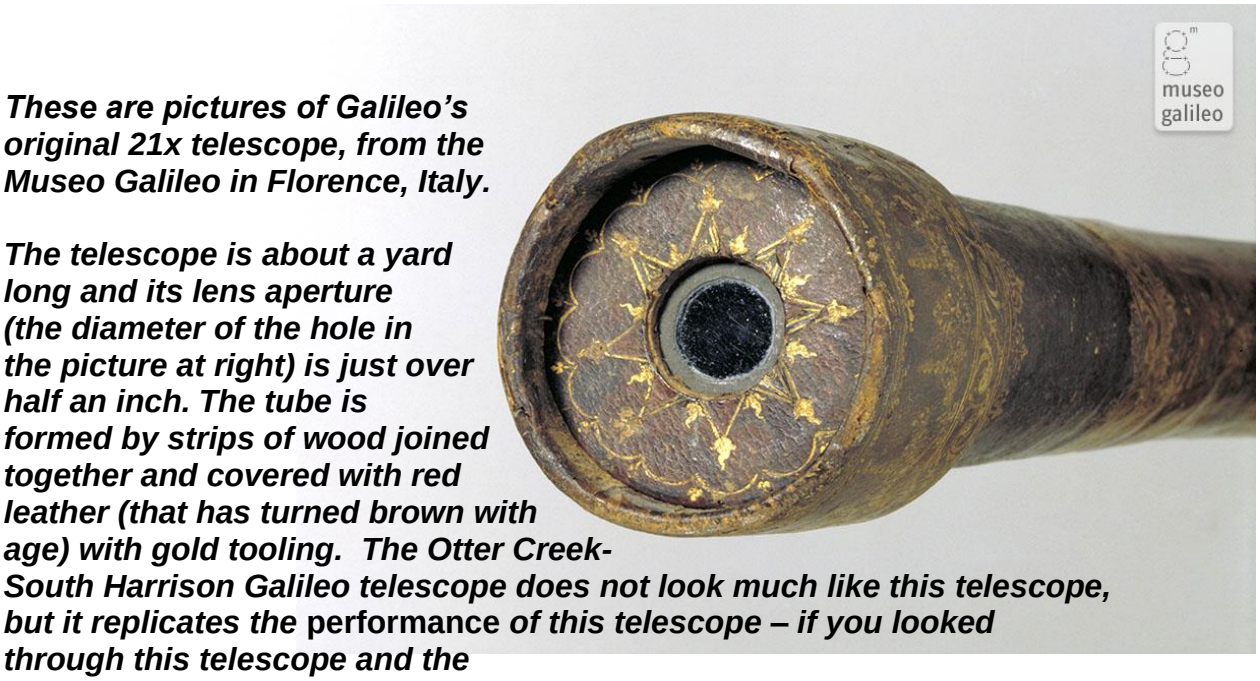
company (Elbit Systems Electro-Optics Ltd., or 'Elop', in Israel) make lenses that are very close reproductions of the lenses in Galileo's telescopes.

How did these lenses come from Israel to Kentuckiana? Zik and Otter Creek-South Harrison staff member Chris Graney met at a history of astronomy conference at the University of Notre Dame in the summer of 2009. They struck up a friendship that promptly degenerated into lots of arguing over what Galileo could and could not see with his telescope, backed up by bets involving beer! In the course of all this Graney sent Zik a Galileo doll that he found at the Frazier International History Museum in downtown Louisville (Graney got one for himself, too – seen in the picture on the previous page). Zik thought this was a real hoot, and in turn sent Graney a set of lenses to build this telescope.

The Galileo telescope at South Harrison, mounted piggy-back on a larger modern refractor. This lets visitors to the observatory make an easy "side-by-side" comparison of what Galileo's telescope showed him to what modern telescopes reveal to us. The Galileo telescope magnifies 21x.

This summer Graney built a telescope with the Elop lenses. To make the telescope, Graney removed the lenses from a damaged modern refractor that was once used for Otter Creek-South Harrison observatory's discontinued "telescope loaning" program. He replaced the modern lenses with the Elop lenses, adding a length of PVC tubing to the end to provide the extra length and width needed to house the Elop eyepiece lens.

Thus at first glance the Galileo telescope looks like a small refractor such as a youth might find under the Christmas tree. But because these lenses were custom-built for research purposes, in terms of performance it is as



These are pictures of Galileo's original 21x telescope, from the Museo Galileo in Florence, Italy.

The telescope is about a yard long and its lens aperture (the diameter of the hole in the picture at right) is just over half an inch. The tube is formed by strips of wood joined together and covered with red leather (that has turned brown with age) with gold tooling. The Otter Creek-South Harrison Galileo telescope does not look much like this telescope, but it replicates the* performance *of this telescope – if you looked through this telescope and the Otter Creek-South Harrsion telescope, you would see nearly the same view.

http://catalogue.museogalileo.it/object/GalileosTelescope_n01.html

close to Galileo's telescope as you can get without stealing the original from the Museo Galileo in Florence Italy. According to Zik, there are only five such telescopes in the world. The lenses are made of modern glass, but their optical properties (in terms of their geometry and in terms of the refractive and dispersive values of their glass) are almost identical to Galileo's original lenses.

So what do you see when you look through Galileo's telescope? Well, it works surprisingly well, really. The most dramatic difference between it and a modern telescope is its tiny field of view, as shown below. Nonetheless, the Galileo telescope will show details on both a distant tree and on the Moon. Come out to the observatory and see for yourself!

At left is a photograph of a tree taken through a modern refractor – the white telescope in the picture on the previous page. At right is a photograph of the same tree taken through the Galileo telescope.
Look at how tiny the field of view is!

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2010 Fall and 2011 Winter

South Harrison Park Observatory Events

*** ALL PROGRAMS ARE FREE! ***

Daytime Programs:

Aug 14th	11 am to 1 pm
Sept 11th	11 am to 1 pm
Oct 2nd	11 am to 1 pm
NASA EVENT	
Living With A Star – Our Sun	
Nov 6th	11 am to 1 pm
Dec 4th	11 am to 1 pm
Jan 8th	11 am to 1 pm
Feb 5th	11 am to 1 pm
Mar 5th	11 am to 1 pm

Nighttime Programs:

Aug 28th	9:00 pm to 11:00 pm
Sept 18th	8:30 pm to 10:30 pm
NASA EVENT	
International Observe the Moon Night (InOMN)	
Oct 16th	7:30 pm to 9:30 pm
Nov 20th	6:30 pm to 9:00 pm
Dec 18th	6:30 pm to 8:30 pm
Jan 22th	6:30 pm to 8:30 pm
Feb 19th	7:00 pm to 9:00 pm
Mar 19th	8:30 pm to 10:30 pm

All programs at South Harrison Park are open rain or shine.
Daytime programs allow you to safely view the Sun using solar filters.
Nighttime programs allow you to view the Moon, Stars, Planets, and more.

The facility is handicapped accessible and we feature a video display system for cloudy days and/or nights.

Contacts: Park Astronomer – Henry Sipes Home 270-828-6191
Cell 270-668-2103
Harrison County Park Office – 812-738-8236

Websites: http://www.harrisoncoparks.com/Observatory.html
http://www.jefferson.kctcs.edu/observatory/