Martz/Kohl Observatories

July 2021
Aug. 2021

Martzobservatory.org

176 Robbin Hill Road
Box 14
Frewsburg, NY
14738

Board Meetings
July 28th
Aug. 25th

MOVING FORWARD WITH REMOTE CAPABILITY

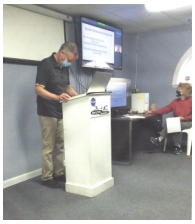
The days of discovery will be extended beyond the observatory's walls with the advent of becoming a remote observatory. What is the significance of this, the uninformed person may ask? The observatory has looked forward for many years to achieve a goal to be able to allow users, even from as far away as New Zealand, to use our telescope directly with a few key strokes from their keyboards. We have made this goal a key point for raising funds to renovate the observatory to its completion, giving the ability to enable school science classes the ability to schedule time during school hours to use our 24-inch telescope and associated equipment at night for astroimaging without the need of expensive transportation and personnel, thus allowing everyone in the class a hands-on experience to gather images directly from a large telescope.

On May 19th, Dan Gray, founder of Sidereal Technology, arrived at the observatory from Oregon with the purpose of installing a system to bring about a long anticipated observatory desire to become a remote facility, once seen only as a goal, to become a cutting edge astronomical amateur observatory using enhanced hardware and software as used by others around the world. Dan has been involved in astronomy, telescope optics and mechanics since the early 80s.

Walter Pickut Opened May's virtual Lecture series with an introduction of Dan Gray and Howard Banich who cocontributed to illustrating the upgrade of MKO's systems along two tracks. One, the installation of new, advanced computer software while fine-tuning the telescopes to their theoretical best performances, and two, finalizing MKO's control systems to allow remote operation and collaboration in research and observational astronomy.

Howard Banich is an avid amateur astronomer. He is a Contributing Editor for Sky & Telescope Magazine and has had articles published in Amateur Astronomy Magazine and Amateur Telescope Making Journal. Both he and Dan explained and demonstrated how using the latest CCD cameras, taking many exposures, and processing with special software, astronomers are able to approach the diffraction limit of their telescope optics and contribute to citizen science.

Dan explained explained how the resolution of an optical system such as a telescope or camera is limited by even the slightest imperfection in lenses and mirrors or by misalignment. While MKO's telescope optics are already exceptionally fine, vast improvement is still possible however good the system, there is a limit to the theoretical resolution of any optical system due to the physics of light and diffraction. Dan Gray shared his knowledge of how astronomers at MKO will be able to approach the diffraction limit of their telescopes using the latest CCD cameras, taking many exposures and processing with special software.



The Marshal Martz Memorial Astronomical Association Report for 6/2001 to 12/2002

In the summer of 2001 a 24 inch telescope was donated to the MMMAA by Richard Carlson. A committee was formed and given the challenge to have the dome operational by the fall of the same year. The committee was able to obtain volunteers to assist on this project and the dome was made operational were now able to rotate the dome and manually open the shutter. Work was also started on refinishing the exterior surface of the dome as it had several water leaks and was in need of scraping sandblasting and painting with a special metal conditioner and paint. All of the scraping and welding has been done on the dome and it is now ready for sandblasting, caulking and painting. Due to weather constraints the sandblasting, caulking and paintiing will have to be done in the first half of 2003 when conditions permit. During the same period it was determined that the electrical service needed to be updated in the observatory. The electrical service was relocated from the pier pit to the wall. New wall receptacles, lighting, and conduit was installed to bring the observatory up to the level needed for a computer controlled observing facility. A new dome and shutter electrically control panel was installed with provisions for computer control. The removal of the defunct 30 inch telescope was accomplished next with work also progressing on the surface refinishing of the dome exterior. Once the 30 inch scope was removed the existing pier had to be removed to enable the new pier pit to be constructed. The new pit was dug the new pier anchors were driver into bedrock the pit and pier walls were constructed from concrete blocks. The remainder of the forms were put in place and reinforced. Concrete was ordered and the pier was poured. The new pier is appx. 8 ft tall , 3 ft wide and 10 ft long. The design work for the fork mount has been ongoing since the start of the project and the attached garage at the observatory will be converted to a machine shop to enable the fabrication of the telescope mount and control systems. A room of the building attached to the observatory is being converted into a control and viewing room to enable club and public viewing of stars. A second room that designated as a meeting room has been revamped to enable better seating arrangements for club and public presentations. We have had several groups to the Observatory for presentations and viewing of the night sky when possible. To take advantage of the domed facility before the 24 inch scope will be installed, a 12 inch scope owned by the club will be installed on the new pier for temporary use by the club an public. This will also allow us to start using the donated CCD camera for club and public viewing and will enable the us to perform preliminary test on simple scope and camera computer control. A great deal of work has been done on cleaning and removal of the non-necessary items that were in the facility when the committee started work on observatory. All of the labor has been volunteers, club members and non members. Much of the material to up grade the facility has been donated by local industries and private individuals. The year 2003 will be a quite a challenge for the Club and volunteers. We have ambitious plans for having the 24 inch scope in operation this coming fall, and if possible to have it under complete computer control. The long term plan is to have the 24 inch scope available to club members and the public using the internet links to control the scope from the users local PC. We wish to have the observatory facilities easily accessible by the Club and the Public, and to stimulate interest and growth in astronomy in the community and surrounding areas.

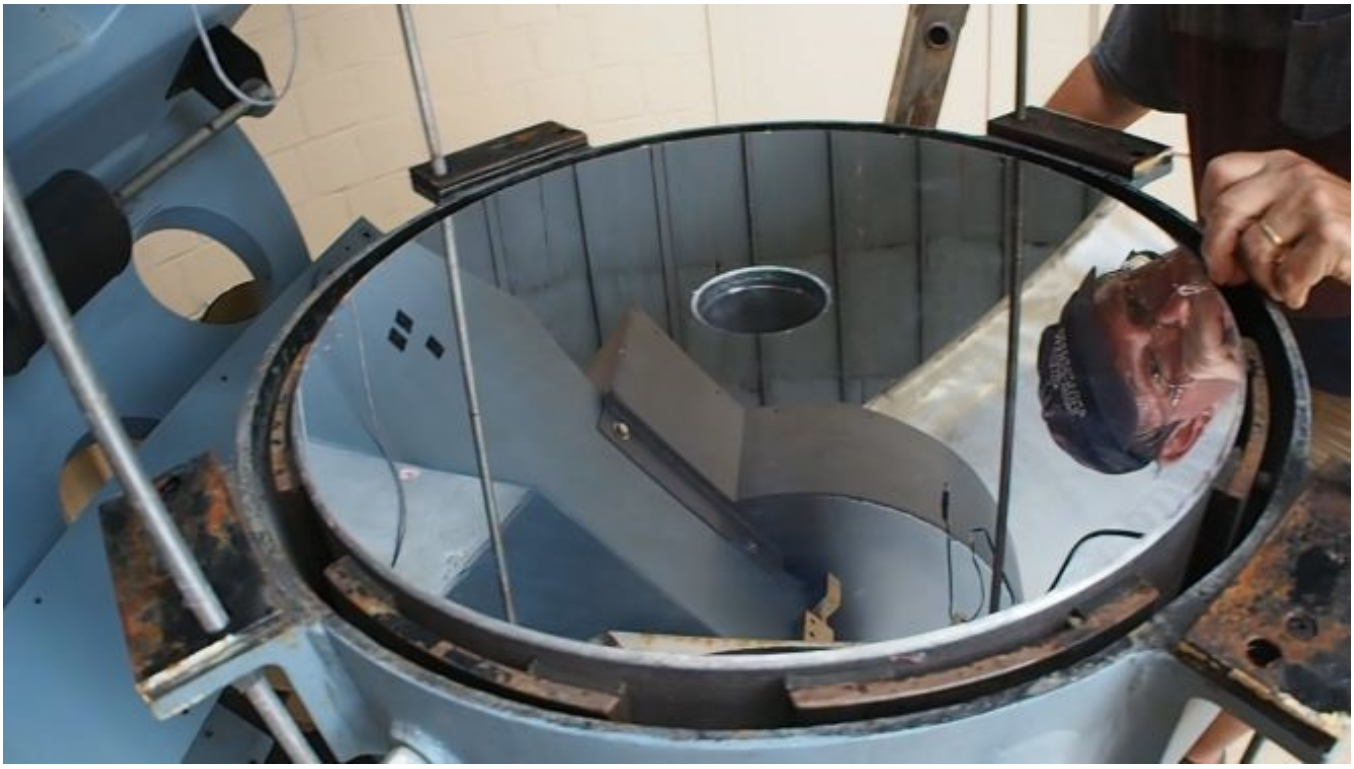
FEATURE OF THE MONTH

DISCOVERING OUR TELESCOPES

These monthly features will illustrate the differences between the many telescopes at our disposal and will familiarize our readers with the various optical design considerations of each particular telescope. Before getting into specifics of the observatory's largest optical telescope, let's take a look at how it came into existence. This takes us back to before WWII, to the year 1939 when Jamestown, New York, had a “new” observatory established on Marlow Road that just five years earlier had became known as the Astronomers Guild, which incorporated a member built 10 inch reflector.

The 24-inch adventure began when the Guild was donated a 200 pound piece of glass that had been poured at Bausch and Lomb which compelled the members to imagine building a very large telescope. The thought was put on hold for several reasons, mainly the outbreak of World War Two, but continued to be a consideration until prospects improved in 1954 when the Astronomers Guild reemerged as an active organization with a renewed sense of achieving the possibility of the long dormant dream to grind and polish the 24 inch piece of glass that had been in storage for 15 long years. Perhaps it was until a perfect assemblage of the right people who became members rising to the occasion of grinding and polishing the 24-inch, that the dream could come to life. Although now not the same piece of glass, but one made of the latest low expansion Corning formulas described as C3 Pyrex would be the project centerpiece. The goal was to construct a reflecting telescope similar in appearance to the Shane 120 inch telescope, https://www.youtube.com/watch?v=rUqlhkKRQbI the most recent large telescope constructed during that period. The design was used as a guide to construct the 24-inch telescope tube intended for the new Guild Observatory which suffered an unprecedented amount of bereavements and departures of Astronomers Guild Observatory members. The tube and mirror were later donated to the Martz Observatory to replace the original outdated Martz telescope.

To familiarize our readers with the 24-inch optical system, we must credit David Broadhead, a former Guild member who had many years of professional optical experience having worked for the government, Franklin Arsenal, the John's Hopkins University and was involved in spectroscopy work that overwhelmingly led him to become chairman of the optical committee when he joined the Astronomers Guild of Jamestown upon his retirement. Under his guidance, the Dall Kirkham Cassegrain optical design was selected because it is easier to polish. This task took 2373 hours of grinding and polishing to produce a surface within 1.2 millionths of an inch in zonal measurements. The telescope system is named a Folded Cassegrain which allows for an open framed tube of roughly ½ the length, if this system were not use.



SITE OF THE MONTH

Possible planet discovered in another galaxy
https://phys.org/news/2020-09-candidate-extragalactic-planet.html

THE GREAT AMERICAN TOTAL SOLAR ECLIPSE
APRIL 8TH 2024

Advance preparations were launched in April 2021 for the advent of this momentous occasion expected to create unprecedented attention as this event of this once-in-a-lifetime event's path passes over the Martz/Kohl Observatory. This will become a grand opportunity for the observatory to demonstrate itself as a destination of discovery to many who may not have been aware of it, and to those who have become regular visitors to it, that Chautauqua County is the home of such a remarkable public facility entirely managed by dedicated volunteer amateur astronomers whose mission it is to inform, educate and inspire the general public and support teaching in the sciences of astronomy and physics.

With much deliberation, the anticipation of being in the path of a total solar eclipse occurring in our area has brought about a growing realization of the need to be prepared well in advance of the logistics that are expected during such an event. Total solar eclipses are known to attract large attendances, especially to astronomical facilities. It is the Martz-Kohl Observatory's intention to be prepared to safely accommodate what could result in an influx of many more than a thousand visitors. With this in mind, there will be a need for several resources beyond the observatory's ability to manage. To name a few, there will be parking, police, rescue, possible shuttle service and awareness to local businesses.

The event will need to see preparations for both good and bad weather to accommodate visitors. Presently, plans are being shared with the Chamber of Commerce. Workshops are being attended for networking information from lessons learned from the last total solar eclipse that occurred in 2017 which took place in the midsection of our country. Early on, a two day workshop hosted by the American Astronomical Society was attended by member Laurie Livingston to bring back to our committees a plan to develop into a polished event to take place at the observatory. Laurie informed us she has contacts with JCC that will be useful as the day of the eclipse approaches.

SPEAKER ENGAGEMENTS

July 21	Deloris Hill, Coordinator of Target Near Earth Asteroids (Target NEOs) Crowd- Sourced Citizen-Science in Astronomy and Dr. Patrick Miller, Director of International Astronomical Search Collaboration (IASC)
August 18	Dan Krysak, “The Man Behind the Lens” His key role in the Mars Curiosity Rover cameras and the Juno Program at Jupiter
September	Dr. Darren Williams Topic to be determined
October	Dr. Katie Mack “The End of Everything (Astophysicaly how the universe will end” (Not yet confirmed)
2022	Patricia Moore NASA – Artemis Program – The Next Moon Landing

PRESIDENTS NOTE

The observatory is now open to members and guests. For events, you must register on our web site to attend and be fully vaccinated. Children under 16 are welcome to come under parents supervision if they have not been vaccinated. For open house or tours, you must register and do not have to be vaccinated but must wear a mask.

FOCUSING

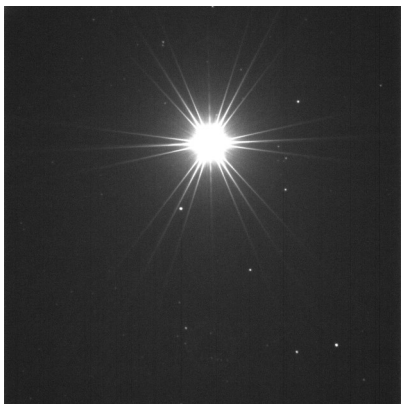
THE 24-INCH DALL-KIRKHAM TELESCOPE

John Anderson, an ardent Martz/Kohl astroimager, reported on April 23, 2021, that he and Brian Ceci tried out our new Tri-Bahtinov mask cut out using the plasma cutter where Brian works.

Views shown below are of the mask, the image of Betelgeuse with the mask and an image of Betelgeuse without the mask are shown below. Note: if center spike is centered between the other two spikes, the image is in focus.

The Bahtinov mask is a device used to focus astronomical telescopes. The distintive pattern was invented by an amateur astrophotographer, Pavel Bahtinov, in 2005. The grids on the mask are positioned to produce angled diffraction spikes at the focal plane of the telescope. Without getting into specifics, the purpose of the mask is to achieve optimal focus of the instrument. A bright star selected in this case was Betelgeuse to produce the highly contrasted spikes during the adjustment process. Once the focus has been achieved, the focusing mask is removed.

This is another example of researching into producing superb images when exacting focus is desired.



QUOTES FROM GREAT MEN

I have looked further into space than any human being did before me." - Sir William Herschel

"At the last dim horizon, we search among ghostly errors of observations for landmarks that are scarcely more substantial. The search will continue. The urge is older than history. It is not satisfied and it will not be oppressed." - Edwin Hubble

"I was interested in telescopes and the way they worked because I had an intense desire to see what things looked like, so I learned how to use telescopes and find things in the sky." - Clyde Tombaugh

"For my confirmation, I didn't get a watch and my first pair of long pants, like most Lutheran boys. I got a telescope. My mother thought it would make the best gift." - Wernher von Braun

CONTINOUS IMPROVEMENT

The observatory took advantage of the COVID-19 interruption to bring up to code our handicapped restroom. Following the changes made, complete with grab bars, the two restrooms were painted by members Laurie Livingston and Phil Stafford to be in keeping with uniformity.