MHAS-Observer

Newsletter of the McMath-Hulbert Astronomical Society, Lake Angelus, Michigan

President's Message:

Hello, everyone. I would like to introduce myself. My name is Marty Kunz and I am the society president for 2020. Other officers and directors are listed on our home page.

As we start out this year with potential difficulties due to the pandemic, I see this as an opportunity to bring our club forward in organizational ways rather than with on-site activities. You may have noticed updates to our social media presence and an improved web page. Both are continuing to be further enhanced. This newsletter is the first of what we intend will be at minimum a quarterly and eventually a monthly publication for our membership.

Several new committees have been formed to help prioritize how we function, including a Goals and Objectives Committee that has developed a new mission statement:

"The McMath-Hulbert Astronomical Society is dedicated to the preservation, maintenance and development of the historic McMath-Hulbert Observatory in Lake Angelus, Michigan, to provide a setting for astronomical, scientific and educational activities that will benefit the larger community".

Thus, we function in two major capacities. The first and foremost is as an astronomical society and the second is to preserve the observatory.

As the observatory is currently privately owned, our ability to choose how we operate the facility is limited. The owner is very generous with allowing us to use the facility without direct cost to the organization and we enjoy our time keeping the place maintained. We hope to raise funds (top priority) to purchase the facility and be fully in control of all aspects of its operation.

As an astronomical society we will continue to bring our interest and enjoyment to the public regarding our favorite hobby. Many programs exist to which amateur astronomers can contribute that could benefit professional astronomers. We are making it one of our goals to do so.

We are a 501(c)(3) nonprofit organization. We need your support in any fashion, whether monetary (I know this may be difficult right now), on site volunteer work (impossible right now), and especially behind the scenes. If you can let people know about our efforts, we would greatly appreciate it. Join our organization for only $25.00 a year if you can and be part of the effort to bring this very unique piece of Michigan and world history back to life.

Marty Kunz

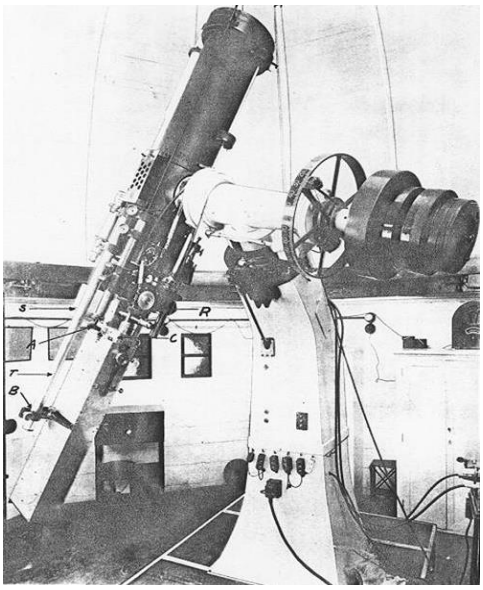
History of the McMath-Hulbert Observatory

The McMath-Hulbert Observatory (MHO) is a historic solar observatory located in Lake Angelus Michigan just west of the Great Lakes Crossing Mall at 895 North Lake Angelus Road.
Check our website out on the internet: http://www.mcmathhulbert.org

The major facilities were developed over a period of years between 1930-1955. It was started by a group of local industrialists and notables as a private amateur observatory and then was further developed in collaboration with the University of Michigan. The founders deeded MHO to the U of M in 1931 and the University operated MHO until 1979 by which time it had become obsolete as a state-of-the-art research facility. In 1980 Stan Ovshinksy of Energy Conversion Devices purchased the facility for use as a corporate retreat/thinktank until 1991 when it was again sold to its current private owner (Jim Kinsler – Kinsler Fuel Injection Corporation).

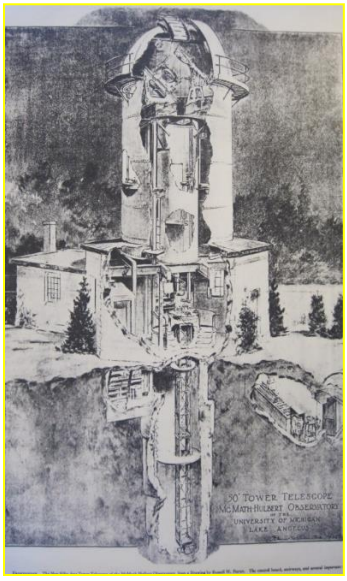
MHO circa 1950

In the mid 1920's father and son Detroit industrialists Francis and Robert McMath experimented with a number of small refractors and mounts at their private observatory on Deer Lake, in Clarkston, Michigan a few miles from the future MHO. Robert McMath was obsessed with photography and astronomy and he coupled these interests to produce some time lapse movies of the moon using his own 16mm camera, hand held to the eyepiece of a 4-inch Bausch & Lomb refractor on a personally designed and constructed equatorial mount. These 1928 movies caught the attention of Ralph Curtiss, the director of the Astronomy Department at the University of Michigan (and a personal friend of Judge Henry Hulbert). Curtiss encouraged the McMaths and Judge Hulbert to develop an instrument specifically designed to take celestial time lapse movies. Also, at Dr. Curtiss's recommendation in 1929 the McMaths and Judge Hulbert were named "Honorary Curators of Astronomical Observation" by the U of M Regents.
In 1932, at the suggestion of Francis McMath, Robert McMath and U of M astronomer Heber Curtis (no relation to Ralph Curtiss) sought to capture time lapse movies of Solar phenomena by marrying a 35mm movie camera to a spectroheliograph to create a device named by Heber Curtis, as the Spectroheliokinematograph which was attached to the 10.5 inch Cassegrain in the original dome (or Tower 1).



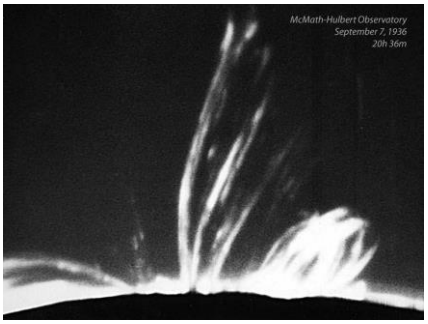
Spectroheliokinematograph attached to 10.5" Telescope for Making Movies of Solar Phenomena

With the completion of the first tower (Tower 1), the group next embarked on the design and construction of the 50-foot Solar Tower, or Tower 2. Completed in 1935, this tower contains a single large instrument called a scanning spectroheliograph. The tower stands 50 feet above the ground and the optical path goes 30 feet underground to accommodate the up to 40-foot focal length of the primary objective mirror.



Tower Spectroheliograph (Tower 2)

The scanning spectroheliograph uses mechanical scanning of the white light solar image to create a picture of the Sun using a narrowband filtering technique that filters the blinding bright white light beaming from the Sun into a very narrow slice of red-orange light. This narrow sliver of spectrum is called the hydrogen alpha line and corresponds to the light emitted (and absorbed) by the hydrogen in the Sun's atmosphere. Hydrogen by the way comprises 75% of the Sun's mass. The picture below was made by this instrument. Prominences of incandescent gas are clearly seen in the shot below.



Building on the success of the first two towers, the final major additions to the observatory were the third tower and administration building completed in 1940.

Tower 3 and Administration Building

Tower 3 was dedicated to solar spectroscopy. Instead of making solar images, studies of the spectrum of the Sun were generated. These studies helped astronomers to determine the abundances of elements in the Sun and to understand better the nature of solar activity.

Other research activities included space weather studies and even participation in a project on the X-ray solar satellite OSO-3 in 1967-69. U of M operated the observatory until 1979 when it was sold into private ownership. In the early 1960s the group developed the next-generation solar telescope, the McMath-Pierce Solar Telescope at Kitt Peak Observatory in Arizona. Robert McMath and MHO astronomer Keith Pierce designed this instrument which came online in 1962. The lessons learned in Lake Angelus heavily influenced the design of this instrument. The location on a mountaintop in Arizona is obviously a much better location for solar astronomy than Lake Angelus, spelling the beginning of the end for MHO.

McMath-Pierce Solar Telescope, Kitt Peak Arizona

Today MHO is in private ownership and the McMath-Hulbert Astronomical Society occupies the facility with the mission of preserving and promoting the observatory for future generations.

Elections of BOD Officers:

On March 15th, at the Board of Directors Meeting, the following Directors were elected as Officers for 2020 for 1-year terms:

Marty Kunz: President
Jim Shedlowsky: Vice President
Treasurer: Tom Hagen
Secretary: Ken Redcap

Tom Hagen
MHAS Secretary

Solar Cycle 25 Starting???

This year we are starting Solar Cycle 25 which is the 25th solar cycle since 1755, when methodical recording of solar sunspot activity began. The solar cycle is based on the number of visible sunspots. These numbers vary up and down on an 11-year cycle. At the minimum part of the cycle it's possible that no sunspots are visible (where we are in the cycle now). For a fairly long period recently there have been no sunspots visible, since the sun is at the end of the previous cycle. In April of this year, two sunspots have appeared in the northern hemisphere of the sun and the magnetic polarities of the spots confirm that they do indeed belong to Cycle 25. Sunspot activity should continuously increase over time and the solar maximum is expected in the next 5 to 7 years.

Intro to Radio Astronomy

MHAS members Ken Redcap and Tom Hagen are active as amateur radio astronomers and are involved with several radio astronomy projects at MHO. This article is a brief introduction to the hobby of amateur radio astronomy.

At the lowest frequencies, radio frequency (RF) energy in the audio frequency range (wavelengths of *hundreds of miles*) can be detected with a natural radio receiver comprising a whip antenna and a high input impedance audio amplifier.

Moving into the higher frequencies, ionospheric solar disturbance monitoring may be done with a computer sound card and a simple pre-amplifier in the 15-48 kHz range. Radiated disturbances from the planet Jupiter can be heard on shortwave receivers around 20 MHz.

Other bands centered on 38, 408, and 611 MHz and other frequencies are available too. One of the most important bands is the 21 cm neutral hydrogen HI emission line at 1.42 GHz. Many amateurs use repurposed C-band satellite dishes to make observations and even complete RF contour maps of the sky at this wavelength.

Finally, a surplus Ku band TV satellite dish (Dish Net or Direct TV dish) can be made into an “Itty Bitty Telescope” (IBT) to demonstrate the principles of thermal emission from bodies at room temperature, such as trees, cars, humans, and so on at the operating frequency of around 12 GHz.

And last if not least, join the Society of Amateur Radio Astronomers and you get the opportunity to use a 40 foot diameter dish at Green Bank, WV, to do observations on 21 cm!

For further information, readers are directed to Tom’s complete article on Radio Astronomy on the IEEE SEM On-Line Community at: http://sem.oc.ieee.org/articles/folder-6/ieee2013_radio_astronomy_article

For those interested in the McMath-Hulbert observatory historical site and its operations, we direct you to the web site at: http://www.mcmathhulbert.org/

On Facebook at: https://www.facebook.com/MHObservatory

To investigate further, we encourage those interested to check out the Society of Amateur Radio Astronomers at:

http://radio-astronomy.org/

MHAS Mission – G&Os

Society Focus:

At the direction of the Board of Directors, a small group of Society Officers and Directors formed a committee to meet and solidify the overall Mission, Goals and some initial Objectives of the Society. These will be delivered to the Board on the May 3 meeting. The Board will review the report and will determine what further actions are needed.

Those Mission, Goals and objectives are presented for the membership here:

MHAS Mission

The McMath-Hulbert Astronomical Society is dedicated to the preservation, maintenance and development of the historic McMath-Hulbert Observatory in Lake Angelus, Michigan, to provide a setting for astronomical, scientific and educational activities that will benefit the larger community.

MHAS Goals

●Preserve and maintain the historic McMath-Hulbert Observatory.

●Interpret and communicate the significant historical accomplishments of MHO.

●Develop a community resource for STEM education and awareness.

MHAS Objectives

●Investigate the acquisition of MHO by the MHAS.

●Bring the facility and its grounds up to modern building codes for use and safety

MHAS Objectives—Continued

●Endow the MHAS with sufficient capital to provide for its continued maintenance and growth for the foreseeable future.
●Expand the facility and grounds to support an expanding STEM activity
●Conserve, interpret and communicate unique and significant historical accomplishments of MHO

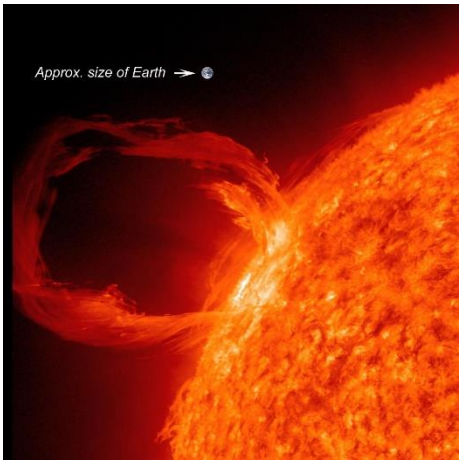
It is now the task of the Society leadership to guide and coach all officers and members to focus their activities on achieving those goals and objectives.

MHAS Observer Newsletter—Future Plans

This issue of the MHAS Observer is the first of what we intend to be at least a quarterly publication to communicate to our membership.

We've started a lot of activities and we want to tell you all about them. Be on the lookout for opportunities to help MHAS out on our ongoing mission to promote, preserve and expand Mcmath Hubert.

Please let us know what you like or dislike about this newsletter and we'll strive to improve it as we go along. And please contribute articles and notes for the newsletter!



Solar Prominence with Earth Shown for Scale (Courtesy NASA)

Robert Raynolds McMath, 1891-1962 (Courtesy NOAO/AURA/NSF)

6" SECASI Solar Telescope in Tower 1

MHAS Contact Information:

MHAS Website

http://www.mcmathhulbert.org/solar/

MHAS Facebook Page

Click on the button below to get to the MHAS Facebook Page.

Address:

McMath-Hulbert Astronomical Society
895 N. Lake Angelus Rd.
Lake Angelus MI 48326

Email: info@mcmathhulbert.org

Phone: 248-494-8256 (Google Voice, leave message if nobody picks up)

MHAS Officers

President
Marty Kunz

Vice-President
Jim Shedlowsky

Secretary
Ken Redcap

Treasurer
Tom Hagen

Appointed Positions

Dir-Membership
Ken Redcap

Dir-Communications & Website
Tom Hagen

Dir-Educational Activities
Tom Hagen

Dir-Finance
TBD

Dir-MHO Preservation
TBD

Dir-Buildings Security
TBD

Dir-Social Activities
Marty Kunz

Scheduled Meetings

All MHAS members are welcome to join us at Open Houses and Board of Directors Meetings. We are open to the public at the Open House Meetings.

MHAS Open House Meetings:
We schedule MHO Open House Days on the first Saturday of the month. The May 2, 2020 open house will not occur unless the pandemic isolation requirements have changed by then.

MHAS Board Monthly Meetings / Teleconferences:
1st Sunday of Each Month @ 1 PM
The next board meeting is scheduled for May 3, 2020 and will be via teleconference unless the isolation requirements have changed by then. MHAS paid members are invited to participate in this meeting.

MHAS Standing Committee Meetings:
These are internal meetings and are announced on Groups.io Calendar

Join MHAS!!

Membership in MHAS is $25/year. Join with us on our mission to preserve and promote the McMath-Hulbert Solar Observatory. Just drop us a line at info@mcmathhulbert.org and we'll get you signed up! Or use the application form on the next page, print it out, and return it to us via email or USPS.

McMath-Hulbert Astronomical Society

Membership Form

Name_____

Address_____

Email_____

Phone_____

Date_____

Dues_____Donation_____

Annual membership is $25. Checks should made out to “MHAS” or “McMath-Hulbert Astronomical Society”. You can also pay using PayPal on our website.

Bring to meeting or mail to:
MHAS
McMath-Hulbert Solar Observatory
895 N. Lake Angelus Rd.
Lake Angelus, Mi. 48326