



# Focal Point



December, 2014

## The Year 2014

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To keep the tradition alive, it is time to summarize what happened in the Milwaukee Astronomical Society during this year. Fortunately, there is a lot to put on the list.

In March the FOX6 channel gave a live broadcast from the Hill as a run-up of the new Cosmos series hosted by Neil deGrass Tyson, providing us with an excellent opportunity to promote the Club.

In January the position of the Assistant Observatory Director was filled in by appointing Jill Roberts. During the annual Business Meeting in May Dennis Roscoe was elected to the Board of Directors. In July Dennis replaced Russell Chabot in the position of Treasurer.

The Z-scope re-building project had to be abandoned despite Scott Jamieson's persistent efforts. Luckily, the Club's investments into the new CCD camera and filter wheel were not in vain. Gene Hanson generously donated to the Club his 14" Celestron telescope on an Astrophysics GTO900 goto mount. The scope will be controlled from the Z dome, and it will serve as a main imaging device with narrowband capability. It might also accommodate DSLR cameras.

In August the Board decided to purchase an 8" Celestron Edge HD scope on an AVX goto mount. This easy to use but high quality telescope is intended primarily for visual observation. Scott Jamieson modified the Ray Zit observatory to accommodate both Celestrons.

Extending the Club's imaging capability we also bought (through generous donation from Gene Hanson) two planetary imaging cameras, a color one, and a monochrome one with filter wheel.

The MAS website due to Gene's tireless activity has been rejuvenated. Visitors can easily navigate and find information. A separate section was created for MAS members with in-depth content. Also, the membership renewal and new member application processes were switched to full online mode. This might have contributed to the fact that almost everybody renewed their membership. Enhanced accessibility resulted in a never before seen increase in new membership applications. The Club welcomed 24 new members.

We continued our Open House program, and hosted six Public Nights from April through September. Paul Borchardt coordinated three observatory tours (Boy Scouts, UW Waukesha students, New Berlin Library) during the spring and summer months.

Many of the MAS members participated in two annual observing events: the Wisconsin Observers Weekend in May, and the Yerkes Star Party in August.

We held our annual Summer Picnic in July, and a Christmas Party in early December.

As always, the Focal Point Newsletter will keep the Membership posted on the MAS events and programs in 2015.

We wish you and your families Merry Christmas and a Happy New Year.

## Observatory Report

The observatory was winterized and apparently just in time. Please be sure to keep the bathroom and darkroom doors closed. During this process we noticed that the space heater in the darkroom was not functioning and Scott Jamieson fixed this.

It was determined that the B-Dome slit motor cannot be easily fixed, but it could be rebuilt so we trying that first.

We have had good progress on the G-Scope and I wrote up the details in the November Focal Point. Since that article was written, we filled in the trench (just in time!) and everything has been tested, including the video. We have at least one remaining issue with a driver in TheSkyX, as TheSky 6 is working.

As was decided at the October board meeting, we will no longer administer the subscriptions for Sky & Telescope and Astronomy magazines. This required the update of the online application and renewal online forms along with the update of the PDF forms for the same.

Respectfully Submitted,  
Gene Hanson, Observatory Director

## Membership Report

Since last meeting 8 new Membership Applications arrived from Scott Berg, Kris Wageman, Anita Holloway, Peter Muller, Steve Paulch, Nicholas Engelhardt, Leonardo Fernandino and Michael Haley. One more MAS member renewed his membership.

Current Membership number is at 74.

Respectfully Submitted,  
Tamas Kriska, Committee Chair

## Meeting Minutes

**Held** on November 21<sup>st</sup> at the MAS Observatory, New Berlin. The meeting was called to order at 8:04 PM by President, Scott Jamieson.

**Minutes** of the October Meeting were read and approved.

**New Business** - The furnace was not working so the business discussions were cut short.

**The Program** Scott Jamieson talked about his experiences with drift scan imaging. Tamas Kriska gave a presentation about planetary imaging using a DSLR camera in video mode.

The meeting was adjourned at 9:05 PM.

Respectfully Submitted,  
Agnes Keszler, Secretary

## Treasurer's Report

\$3,942.79	<b>Starting Balance as of 10/13/2014</b>
	<b><u>Expenditures</u></b>
\$86.47	WE Energies
\$89.25	Equipment
\$7.12	Paypal Fees
\$100.00	Dr. Sagedhian Stipend
\$366.00	Magazine Subscriptions
\$466.75	Foremost Insurance
-\$1,115.59	TOTAL Expenditures
	<b><u>Revenue</u></b>
\$0.00	Cash Donation
\$406.00	Membership Dues
\$0.00	Paypal Account
\$406.00	TOTAL Revenue
<b>\$3,233.20</b>	<b>Ending Balance as of 11/19/2014</b>

Respectfully Submitted,  
Dennis Roscoe, Treasurer



# Christmas Party 2014



Some photos from our annual Holiday Party on Saturday, December 6<sup>th</sup>. The attendance was record breaking with 29 members/family. Everybody enjoyed the great food and each other's fellowship.



Photos courtesy of  
Dennis Roscoe

## Old MAS Newsletters Posted

I have long wanted to locate all of our club's newsletters so that they could be scanned for archival purposes at a minimum and then if server space was sufficient to place them on our website. And even better, if the result was searchable. I got that opportunity when I located a collection of them going back to 1968 stored at our observatory.

We already had the Focal Point newsletters posted going back to 2002 and currently when Tamas Kriska (our current editor) finishes an edition, besides emailing it to the membership, he publishes it to our website at the following URL:

[www.milwaukeeastro.org/aboutMAS/focalPoint.asp](http://www.milwaukeeastro.org/aboutMAS/focalPoint.asp)

My plan was to start with the hardcopies on hand starting in 2001 and then go back year by year. But noticing that Rudy Poklar (who lives in AZ but is still a member) was the editor from 1997-2001, I contacted him and amazingly, he still had almost all the issues on his computer in Microsoft Publisher! So I was able to directly convert those into PDF files which results in very small files plus they're automatically searchable, a big plus when posted to the website. You might notice at the bottom of that webpage we have a place to enter search parameters.

For the other issues, I had no choice but to scan them to PDF's. Sounds simple, but it takes quite a while to scan the individual pages, the resulting files were quite large, and since they're essentially images, they would not be searchable. I eventually found some great software that would do the OCR (Optical Character Recognition) to add the searchable text and compress the files.

The Focal Point goes back to September of 1983. Before that the newsletter was called the Double Dome, but the completion of the Z Dome necessitated the name change. And before February of 1971, it was called "The Double Dome." Finally, you should notice how the graphic on the Focal Point changed over time as new observatories were added. One thing the old graphic does show which is probably lost to newer members is why we settled on the name Focal Point. As you can see, it's a telescopic reference and the MAS is at the "focal point."

But I'm still looking for even older issues. If you're aware of where I might locate copies of them, please contact me. Our old newsletters are a treasure of the club's history.

Finally, I'd be remiss if I didn't universally compliment all the editors of our club's newsletters for the great job they've done through the years. And I can think of no better way to say thanks than getting them republished on our website.

Gene Hanson



## In the Astronomical News

### Mercury: Snow Globe Dynamo?

We already knew Mercury was bizarre.

During its day facing the sun, its surface temperature tops 800°F, but during the night, the temperature plunges to -270°F. Frozen water may exist at its poles. And its day is twice as long as its year. Now add more weirdness measured by NASA's recent MESSENGER spacecraft: Mercury's magnetic field in its northern hemisphere is triple its strength in the southern hemisphere.

Numerical models run by postdoctoral researcher Hao Cao, working in the lab of Christopher T. Russell at UC Los Angeles, offer an explanation: inside Mercury's molten iron core it is "snowing," and the resultant convection is so powerful it causes the planet's magnetic dynamo to break symmetry and concentrate in one hemisphere.

With a diameter only 40 percent greater than the Moon's, Mercury is the smallest planet in the solar system. But its gravitational field is more than double the Moon's. Why? Mercury has an absolutely gigantic iron core about the size of the entire Moon. Only the planet's outermost 15 percent is a silicate mantle.

Most of that iron is molten. Just the innermost core is solid: its size is unknown. The molten iron is mixed with lighter elements, of which silicon and sulfur are most abundant. In 2008, other scientists showed that when iron is mixed with a lighter element under intense pressures likely reached partway inside Mercury's molten core, there is a zone where solid iron will spontaneously precipitate in fine flakes like iron filings, drifting down like snow toward the solid core. At the same time, buoyant lighter elements will also separate from the iron as a liquid and will float upwards as fine droplets toward the mantle. Their convective action stirs this gigantic molten iron core, bending

and stretching magnetic field lines, driving an energetic planetary dynamo.

Planetary dynamos are thought to be helical (spiral) flows of a magnetized fluid along columns parallel to the planet's axis of rotation; molten iron in the case of the rocky inner planets. Inside Earth, in any single column both the northward and southward flows on both sides of the equator are spiraling in the same direction. In a neighboring column, the flows all spiral in the opposite direction. That flow configuration is called an "even" mode.

If convective stirring is much stronger than Earth's, fluid mechanics predicts that a planet's molten iron core can also host an "odd" mode where the section of each column south of the equator spins in the opposite direction from the section north of the equator—that is, they reverse vorticity at the equator.

But the numerical simulations reveal that with really, really strong convective stirring—as would happen if a planet's entire molten core is pervaded with convective iron snow—something dramatic happens: the odd and even modes overlap, spontaneously breaking symmetry and enhancing helicity in one hemisphere at the expense of the other.

The model also predicts a size for Mercury's inner core: small. In the simulations, a Mercury-like asymmetric magnetic field developed only when the solid inner core was less than half the radius of the molten outer core-mantle boundary.

—Trudy E. Bell, M.A.



The University of California High-Performance AstroComputing Center (UC-HIPACC), based at the University of California, Santa Cruz, is a consortium of nine University of California campuses and three Department of Energy laboratories (Lawrence Berkeley Laboratory, Lawrence Livermore Laboratory, and Los Alamos National Laboratory). UC-HIPACC fosters collaborations among researchers at the various sites by sponsoring an annual advanced International Summer School on AstroComputing (ISSAC), offering travel and other grants, co-sponsoring conferences, and drawing attention to the world-class resources for computational astronomy within the University of California system. More information appears at <http://hipacc.ucsc.edu>.

## Adopt a Telescope Program - Signup Sheet

	<b>Adoptee</b>	<b>Scope</b>	<b>Location</b>
<b>1</b>	Sue Timlin	18" F/4.5 Obsession	Wiesen Observatory
<b>2</b>	Neil Simmons	12.5" F/7.4 Buckstaff	B Dome
<b>3</b>	Russell Chabot	12.5" F/9 Halbach	A Dome (Armfield)
<b>4</b>	Dan Yanko	18" F/4.5 Obsession (Kyle Baron)	Albrecht Observatory
<b>5</b>	Tamas Kriska	25" F/3.4 Zemlock	Z Dome
<b>6</b>	Henry Gerner	12" LX 200	Tangney Observatory
<b>7</b>	Vacant	8"/14" Celestrons	Ray Zit Observatory
<b>8</b>	Vacant	10" LX 200	Jim Toeller Observatory

### At Your Service

#### Officers / Staff

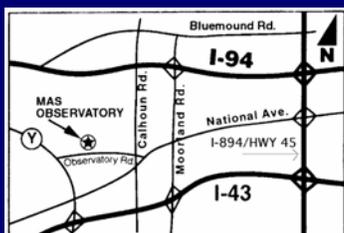
President	Scott Jamieson	262-592-3049
Vice President	Brian Ganiere	414-961-8745
Treasurer	Dennis Roscoe	608-206-0909
Secretary	Agnes Keszler	414-581-7031
Observatory Director	Gene Hanson	262-354-0138
Asst. Observatory Director	Jill Roberts	414-587-9422
Newsletter Editor	Tamas Kriska	414-581-3623
Webmaster	Robert Burgess	920-559-7472

#### Board of Directors

Robert Burgess	920-559-7472
Russell Chabot	414-881-3822
John Hammetter	414-519-1958
Gene Hanson	262-354-0138
Lee Keith	414-425-2331
Agnes Keszler	414-581-7031
Tamas Kriska	414-581-3623
Dennis Roscoe	608-206-0909
Michael Smiley	262-825-3981
Sue Timlin	414-460-4886
Dan Yanko	262-255-3482

#### December/January Keyholders

12/27	Dan Yanko	262-255-3482
1/3	Russell Chabot	414-881-3822
1/10	Brian Ganiere	414-961-8745
1/17	Paul Borchardt	262-781-0169
1/24	Gene Hanson	262-354-0138
1/31	Scott Jamieson	262-592-3049



#### MAS Observatory

18850 Observatory Rd  
New Berlin, WI

[www.milwaukeeastro.org](http://www.milwaukeeastro.org)