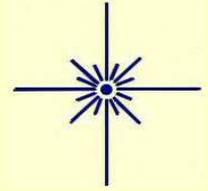




# The Guide Star

Newsletter of the Amateur Astronomers Association of Pittsburgh Inc  
Founded June 9, 1929 by Chester B. Roe and Leo J. Scanlon  
Website: 3ap.org



March 2013

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## AAAP General Business Meeting

Friday, March 8, 2013, 19:30

Allegheny Observatory

Featured Speaker: Dr. James C. LoPresto

Topic: Solar Polar Vortex

Dr. James C. LoPresto received a Ph.D. in astrophysics from the University of Michigan in 1974. He's worked at Kitt Peak, Cal Tech, JPL, the Goddard Space Flight Center, among others. He's had permanent observing status at the National Solar Observatory for the past 20 years and is an honorary member of the National Solar Observatory in Tucson, Arizona Kitt Peak. Until 2011, he was Professor of Physics/Astronomy at Edinboro University. He is currently a faculty member in Mt. Wilson's CUREA program.

The Sun's interior, from its center to about 72% of the way to its surface, rotates like a solid body – all parts taking the same time to complete one rotation. But at its surface, the Sun exhibits differential rotation, varying with latitude. Most observers will recall that at its equator the solar rotation clocks in at about 26 days. But at high latitudes, the rotation slows to about 30 days. [GS Editor]

Dr. LoPresto describes his current research:

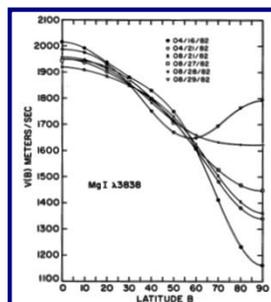
"Differential rotation relative to latitude has been carefully observed on the Sun for many decades. We have expanded on these observations by taking data concentrating on the solar differential rotation very close to the poles. Typically, the differential rotation shows speeds of rotation of about 2000 m/s near the Equator and about 1000 m/s near latitudes of 80 degrees.

The differential rotation has undergone changes over surprisingly short periods of time. In short, the central latitudes have been somewhat constant, whereas the regions near the Equator and the poles have changed substantially in a semi-periodic fashion, which appears to be correlated with the solar magnetic cycle.

Keith Pierce and [I] observed what appeared to be an increased spin in the 1970s and 1980s.

The increases in spin appear to be short lived but occur during times of high magnetic activity. In a few cases, dramatic increases in spin approaching 400 m/s have occurred.

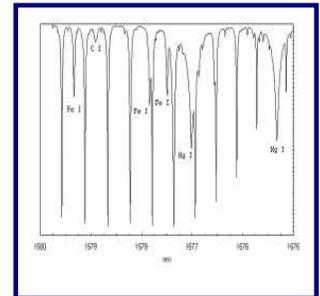
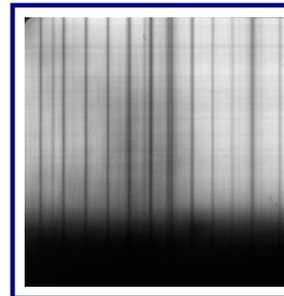
Observations of the latitude dependent "spin" near the poles have been ongoing since 2003 using the McMath-Pierce Solar Telescope facilities at Kitt Peak. As expected, due to this time frame falling around Solar Minimum, little or no substantial spin change has been observed.



**Differential Rate of Solar Rotation**

These observations are continuing, and we expect to observe an increase in the Solar Polar Vortex Spin correlated to increased magnetic activity as we climb into Cycle 24. [the current cycle – GS editor]

These observations are made with the McMath-Pierce Vertical Spectrograph and the NSO Array Camera (NAC), a cryogenic 10242 infrared (InSb) array, which is sensitive in the 1–5  $\mu\text{m}$  region. Our setup produces 2D spectra covering a small wavelength region near 1.58  $\mu\text{m}$ . This wavelength window was selected as it shows both solar and telluric lines. The telluric lines are used as wavelength standards to measure the Doppler shifts of solar lines.



**NAC solar limb spectra, 1575–1580 nm on the left. On the right is a plot of the spectral region with the major solar lines marked. The narrow, evenly spaced lines are due to telluric CO<sub>2</sub>.**

Self-written software is used to measure several horizontal cuts through the 2D spectra. From these, we acquire average profiles of all the absorption lines in the image. Bisectors are calculated for the solar lines, which are asymmetrically red-shifted due to granulation. The bottom of the C-shaped bisectors is arbitrarily chosen to define the wavelengths of the solar absorption lines. Then the symmetric profiles of the telluric lines are employed to define the wavelengths and calculate a Doppler velocity shift for each of the solar lines.

Observations made over the past six years exhibit a rotation speed (spin) of about  $930 \pm 35$  m/s at 85 degrees latitude

From limited past experience, we expect spin rates to increase to values as high as 1300 m/s during the upcoming solar maximum. It will be quite interesting to track the polar rotation speed through the next cycle, especially in light of the extremely deep minimum that we are currently experiencing."



**The NAC at the focal plane of the McMath-Pierce Vertical Spectrograph**

Please note: Parking space is free but limited at Allegheny Observatory. Car pool if possible.

**Space Out! Astronomy Weekend at CSC**

AAAP members are invited to help out with the 2013 edition of CSC "Space Out! Astronomy Weekend" at the Carnegie Science Center, March 23 and 24.

As we've done for many years, members are encouraged to bring telescopes, table-top displays, audio-visuals, and literature to entertain and engage the visiting public.

This is a family-oriented event, much like a public star party with guests ranging from grade school kids to senior citizens. In fact, if the weather permits, we'll be setting up scopes on the lawn outside the Omnimax Theater to show the Sun.

If the weather is not good, scopes will be set up indoors and aimed at targets of opportunity inside and outside the building. The late Dave Smith was fond of aiming his Dobsonian at folks enjoying dinner in one of the Mount Washington restaurants, or at a picture of Jupiter pasted on a far wall of the CSC lobby.)

Here are the particulars of the event:

- The event runs from 10:00 am to 5:00 pm on March 23 and 24.
- AAAP members can arrive as early as 8:30 am to bring in their displays and equipment.
- When you pull up to the parking lot attendant, tell him you are participating in the astronomy event; you will not be charged for parking.
- If possible, please park in the back lot near the back service entrance.
- The guard at this entrance will let you in and give you access to the service elevator if you have a lot of equipment to haul.
- Please refrain from loading and unloading in the main turn-around entrance at the front of the building.
- The AAAP will be setting up on tables next to the gift shop and extending to the balcony that overlooks the Omnimax lobby.
- Power strips and cords will be provided for laptops and other electronic equipment.
- You can leave your gear overnight, but be advised that the CSC may be holding other events on Saturday night. Thus, don't leave any valuables that could be taken.
- Members are welcome to bring free literature such as back issues of S&T and Astronomy. However, we cannot put out items for sale.

Members wishing to help out at Space Out/Astronomy weekend do not need to sign up or register, just show up on time. If you have any questions, please contact Eric Fischer.

Note: Other local astronomy clubs will be there; let's make sure to set up a diverse and attractive set of displays.

**- Eric Fischer**

**Of Club Interest**

**Help Choose the Official AAAP Logo**

There are a few different variations of club logo being used. Is one of them the "official" logo? Or is it simply a matter of whatever artwork is created last becomes the official logo? Does the original artwork exist so that variations, such as black and white or color, versions can be created for different needs?

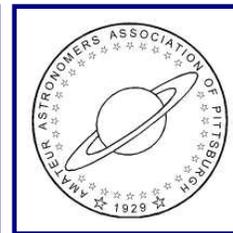
If we are going to choose the official logo, why does it need to be one of the existing logos? Perhaps someone has a new suggestion or simply a suggestion for a face lift. So, let's have some fun and do the following:

1. Submit ideas to me ([President@3ap.org](mailto:President@3ap.org)) before the April 12<sup>th</sup> meeting. Finished or near finished artwork is appreciated, but I will attempt to create the artwork for you if you provide a sketch.
2. Depending on how many designs are received, the membership at the April meeting will limit the choices to a reasonable number.
3. The candidate designs will be published in the May Guide Star on the election ballot. At the same time that we elect the officers for the 2013-2014 season, you will also be electing which logo becomes the official AAAP logo.

Here are the existing designs:



1970's



Late 1990's



Early 2000's

As far as I am concerned, the new logo can be of any design. But you may want to keep in mind that the use of Saturn goes back at least as early as Nov 1930 where it appeared on the club's stationary!

**- John Holtz, AAAP President**

**Laurel Highlands Council of Boy Scouts**

Bill Moutz and Fred Klein will represent the AAAP at the Laurel Highlands Council of Boy Scouts annual "Midway at University of Scouting" on Saturday, March 16 at Ringgold High School in Monongahela.

This is a training session for about 300 area scout leaders. Bill and Fred will present flyers describing the clubs observatories and other assets for scout groups.

**Proposed By-Law Change**

Based on the feedback provided at the January meeting, here are the revised, proposed by-laws related to membership.

We will discuss these at the March meeting. If there are no suggested changes, the membership will vote to approve them at the April meeting.

## Article V: Memberships

Section 1, Membership: Any person with an interest in astronomy or a related science may become a member of the AAAP upon payment of the prescribed dues to the Treasurer and upon approval. Former members who are re-joining shall be approved by a majority of the Executive Committee. New members shall be approved by a majority of the membership present at a regular meeting. If an applicant is not approved, his or her payment will be returned within two (2) weeks.

Section 2, Membership Categories: The Executive Committee shall determine the membership categories available to new applicants and renewing members. The categories shall be described where appropriate.

For reference, here are the current by-laws:

## Article V: Memberships

Section 1, Regular Member: Any person with an interest in astronomy or a related science may become a member of the AAAP upon acceptance of the By-Laws, upon approval by the membership, and upon payment of the prescribed dues to the Treasurer.

Section 2, Junior Member: Those who have not yet attained the age of 18 shall be granted a membership at a reduced rate of dues. The dues for this membership shall be discounted by an amount determined by the Executive Committee.

**- John Holtz, AAAP President**

**Future General Meeting Dates & Times**

April 12, 2013 8:00pm Carnegie Science Center  
May 10, 2013 8:00pm Carnegie Science Center

Please note that the meeting times for April and May are a half-hour later than usual.

**From the Club Observatories****Another Wagman Winterfest Success !**

I had to see it with my own eyes to believe it -- despite the forecasts of gloom and the snow that was falling at 3:30 p.m. when I arrived, it happened:

As if by magic, the clouds disappeared around sunset and we enjoyed another successful Wagman Winterfest!! At least 30 visitors stopped by; some were waiting before 4 p.m. for our 20th annual winter star party. I know we'll be getting several new members out of this.

Early on, we could not open up, but things started to change at sunset. We eventually enjoyed sights such as Mercury, Jupiter, the moon, the Orion Nebula, Sirius, Regulus, M35, several galaxies and a bright Iridium flare, maybe a minus 6!

And oh, it was cold! In fact, that's what really chased us out eventually. My car thermometer read 19 degrees.

Mark your calendar for the next Wagman Winterfest: March 8, 2014! Thanks to everyone who helped! Clear and dark skies,

**- Pete (who had this dumb idea two decades ago and we're still doing it!) Zapadka**

This year's Winterfest received 30 visitors. They were hosted by

Pete Zapadka	Bill Yorkshire
Les Johnson	Terry and JoAnne Trees
Frank Pastin	Eric Fischer
Mary DeVaughn	Phil Breidenbach
Bill Hayeslip	Tom Reiland

**Observatory Telescope Training**

One of the advantages of club membership is use of the telescopes housed in the AAAP's observatories. Members wishing to use the instruments must complete a training procedure.

Both Mingo and Wagman have requirements addressing members who qualify for the training. These can be found in the following announcements:

**Mingo**

MCPO will offer training on the 10 inch refractor telescope in the Spring and on the 24 inch reflector during the summer. As at Wagman Observatory, this will be announced on the list server and in the Guide Star.

One must be a member of the AAAP for one year before training is offered on the 10 inch. After training a member must work two star parties under supervision and pass a brief operations test before being permitted to operate the telescope alone.

After one year's experience on the 10 inch, one can then be trained on the 24 inch. The member must work seven star parties under supervision and pass a test before being permitted to operate the telescope alone.

Bill Roemer, Director  
Mingo Creek Park Observatory

**Wagman**

1. Members should have prior knowledge of operating telescopes.
2. Should assist with at least 4 star parties before training.
3. Should have a director or Wagman Obs Committee member on the first night or two that they use the Manka Scope after attending the training session.
4. Once they prove that they can successfully operate the Manka on their own, then they can train on the Brashear.
5. Their first time or two on the Brashear should be the same as with the Manka.

We will set a training date in the Spring. Watch for our announcement on the list server and in the Guide Star.

Tom Reiland, Director  
Nicholas E. Wagman Observatory

**2013 Star Party Dates**

Mingo	Wagman	Closest Phase
Apr 19-20	Apr 19-20	First Qtr Apr 18
May 17-18	May 17-18	First Qtr May 18
Jun 14-15	Jun 14-15	First Qtr Jun 16
Jul 12-13	Jul 12-13	First Qtr Jul 15
Aug 9-10	Aug 9-10	First Qtr Aug 14
Sep 7 (DS)		New Sep 5
	Sep 14	First Qtr Sep 12
	Sep 21 (MR)	Full Sep 19
Sep 28 (DS)		Last Qtr Sep 27
Oct 12	Oct 12	First Qtr Oct 11
Oct 26 (DS)	Oct 26 (DS)	Last Qtr Oct 26
Nov TBD (BUSF)		

WWF - Wagman Winterfest      DS – Dark Sky  
BUSF – Bundle-up Starfest      MR - Moon Rise

**For Observers**

**Comet C/2011 L4 Panstarrs**

Highly anticipated, this comet enters our twilight skies on March 5, when it will be just on the western horizon as the Sun sets at 18:16. As mentioned in last month’s newsletter, the initial optimism concerning this comet’s brilliance was dampened by its rate of brightening which slowed in December and maintained that slow pace in January.

Because of its close approach to the Sun – from the 3rd until the 17th it’s within the orbit of Mercury – L4 Panstarrs was thought to have the potential of becoming a ‘great comet’.

As of this writing, mid-February, Japanese comet astronomer Seiichi Yoshida estimates that the comet may only brighten to 3rd magnitude at best. But a shred of optimism does attend the fact that L4 Panstarrs looks to be a body fresh from the Oort cloud which hasn’t visited the inner Solar System before. Hence, its make-up is unknown and its behavior and appearance as it gets closer to the Sun is finally unpredictable.



***This NASA graphic shows the western horizon for early March. The comet will be closest to the Sun on March 10. It was closest to Earth on March 5th and 6th.***

It’s possible that only the comet’s bright coma will be visible to the naked eye. Views of the comet tail may require binoculars or a small scope. Specifics about the comet appeared in last month’s newsletter.

**- Guide Star Editor**

**Tom Reiland: Messier Marathon**

It’s coming up on the best time to try a Messier Marathon this year.

You should have observed all 110 objects before you attempt it. March 11 will be New Moon and the prime night in 2012, but you have about two to three nights before and after New Moon for your best shot to get 105 out of 109 in Western Pa. We cannot see all 110 in one night from our location.

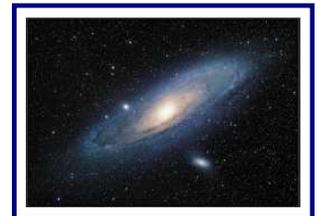
I suggest doing some practice runs before you go for an all-night marathon, especially for the early evening objects that will set soon after twilight ends. The skies will have to cooperate and this time of the year the chances of that are slim to none.

You can also practice in the evenings when the Moon isn’t visible and the same goes for the morning observing sessions.

M74 and M77 will be visible during this year’s prime New Moon period in March as will M33 and M79.

M31, M32 and M110 can be observed in both the evening and morning skies at this time. M30 will not be visible until sometime in April. You may have trouble with M2, M15, M72 and M73 in the morning as dawn approaches.

***The Andromeda Galaxy, M31 and its satellite galaxies M32 and M110 are visible in both the morning and evening skies.***



You will need a location with dark skies and unobstructed horizons. Wagman Observatory is okay, except for the southern horizon. The club’s Greene County spot is a good location. That’s where I did my first complete Marathon sans M30.

Here is the list of the most difficult evening and morning M objects:

**Evening sky M objects:** M74, M77, M33, M31, M32, M110, M76, M79 and M34.

**Morning sky M objects:** M55, M75, M15, M2, M72, M73 and M30 (wait until April) in morning sky.

The Messier Marathon is a test designed to challenge one's observing skill and the observer's ability to locate these objects *without electronic assistance*.

Some of you only use Gotos, so give it a try with your scopes and I would like to hear how many you can find and identify that way.

Good luck. Remember that you need to train for this event just like a regular Marathon. It will take ten hours to complete a full Marathon. 109 is the best possible in March (nights of 11 to 13) this year and April offers a chance for 106.

Good Luck!

PS Former AAAP member Tom Hoffelder and I were two of the independent inventors of the M Marathon circa 1975-76 and I was the first to attempt an all-night session in 1976, but clouds wiped out the first hour and a half. Ed Flynn and I were the first two to bag 109 in one night from our latitude on the night of March 15-16, 1980.

### Rod Mollise: Messier Marathon Madness



Rod Mollise is one of the best known and most entertaining spokesmen for today's amateur astronomy. An engineer who resides in Alabama, his combination of observing experience, common sense, humor and regional inflection is a winning one.

He's the author of two books in the Patrick Moore series, both on his beloved "cats" or catadioptric scopes.

The following piece first appeared in his blog in 2008. It's reprinted here with his permission.

As I'm sure most of y'all know, e'en the newbies among you, it's Marathon time. No, Unk ain't gonna put on a pair of skimpy shorts and run umpteen miles (you can tell that merely by looking at his figure). I'm talking Messier Marathon.

Over the next month, it's possible to view all—or almost all—the Messiers over the course of one evenin'. Running this "Marathon" as an individual (OK) or as a group (more fun) has gone big-time with the amateur rank and file over the last decade or so.

Originally, I was skeptical about the whole gull-derned idée (Unk intones in his best ADVANCED AMATEUR voice): *"Jumping from one Messier object to the next is no way to observe, young man. Each of these objects deserves extended, thoughtful observation and study."*

Well they do, but you can do that the other 11 months of the year. After I did my first Marathon, I never again spouted such hogwash. Marathoning is FUN, and that is (supposed to be) what amateur astronomy is all about...ain't it?

As for the mechanics, you must choose, brothers and sisters... you must choose...your night or nights. We are coming up on the time, mid-March, when, depending on your latitude, all objects are theoretically possible.

If you've got a dark site with excellent horizons and the prospects of good weather, go for it. Try for 'em all. Otherwise? You need to decide whether to sacrifice the front end or the back end. What I mean is, do ya give up M74 or do ya give up M30?



*Choose:*  
*Pisces M74*  
*or*  
*Capricornus*  
*M30*



If you start "early," that is like right now, you have a much better shot at that devil of a face-on galaxy, M74. It is already insanely low in the west by the time the Sun sets, and is a considerable challenge for observers with less than perfect skies and horizons.

Unfortunately, if you do start now, you'll likely miss the Capricornus globular, M30, in the morning. If you want to go for 'em all, wait until mid-March or later. M30 is slowly creeping into view in the morning, but will not be doable for those of y'all above 35 degrees north latitude degrees until April comes in.

Unfortunately, waitin' that long will then make M74 impossible or nearly so for many folks.

Does all this sound complicated? How do you know when to start the sprint? What will be available on any given March – April Marathon window evenin'?

There are plenty of websites and even a book or two to help you "train" for and run the Marathon, but the best resource I know of, and one I recommend highly, is Larry McNish's Messier Marathon Planner.

<http://members.shaw.ca/rilmcnish/darksky/messierplanner.htm>

This is an online application that takes your location and date and assembles a list showing the doable Messiers arranged in the most efficient search order. There are numerous options, plenty of pictures, and hints and helps in addition to the basic list data. I really cannot recommend it too highly. Mr. McNish, you done good. A shot of Rebel Yell is due you.

So when will I do my Marathon? Done done mine. Last night. Oh, I might give her another shot or two between now and early April, but the vagaries of spring weather down here in the 'Swamp meant I decided to carpe noctum (or sumpin).

I knew I wouldn't get M30, but that M74 should be "easy." I also knew that, as usual, I'd cheat.

Last year I cheated by using a Stellacam II and a Nexstar 11GPS to suck up multitudinous Ms. This year I cheated again, if not in so egregious a fashion. I did the run barefoot—visually, that is—but I did use those wondrous Sky Commander DSCs on my 12.5-inch Dob

Actually, there's really no such thing as cheating when it comes to the Messier Marathon. There are no rules to follow or forms to fill out. While some clubs and organizations do offer certificates, this is largely an informal grass roots activity, not some over-organized mess of bullfeathers. Thank god. Do it the way you want to do it and however makes you happy; that is, after all, the essence of amateur astronomy and what makes it the greatest hobby in the world (if you consider it just a hobby, that is).

There is one exception: if you are going to use the Marathon to do your Astronomical League Messier Certificate (a worthy goal IMNSHO). In that case, you should leave the go-tos and DSCs at home and follow the AL rules scrupulously.

How did it go?

To cut to the chase, I got 66 objects. Why not more? Simple: it was C-O-L-D, and Uncle is an astro-wimp in that regard. How cold WAS IT? It wasn't really that cold temperature-wise, but it was damp. By 11pm, there was ice on the observing table, ice on the eyepiece case, ice on the Dob's shroud, and ice on your Old Uncle Rod. If there had been objects available, I woulda kept going past midnight, but, as those of y'all who've run the course before know, there's that great, big GAP following the exhilarating sprint through the Virgo galaxy fields.

When Virgo - Coma is done, there's an hour or two to set around waiting for the summer objects to begin arriving. In that hour or two, my mind began to dwell upon the temperature of my feet, how nice and warm the car would be once it was on the road with the heater cranked up, and how the Yell would feel goin' down back home at Chaos Manor South.

A few notes and observations:

**M74:** This one oughta be easy this early in the window; especially with a 12.5-inch dob, right? W-R-O-N-G. I started looking as nautical twilight came on. Looking? Struggling is more like it. This object is pretty impressive in the f/5 12.5-inch from a truly dark site. Down low on the horizon, though, it was just barely visible—finally—at 200x. Folks talk about how hard M30 is, but I believe M74 (discovered by Pierre Mechain, and not Charles Messier, incidentally) has been the stumbling block in many more Marathons than pore li'l M30. M74 has the lowest surface brightness of any Messier, and it's no wonder that it has earned the nickname, "The Phantom Galaxy."

**The Rest of the West:** M77 was bright and obvious. M31 was trivially easy. So was M32. Even big and dimmish M110 was laughably simple in the dob (though a couple of 8-inchers on the field had trouble with it). M33 was not hard—in the 12.5 or in my buds' C8s. Most unpleasant surprise? M52. After dealing with the galaxies, I lollygagged for a while, sipping some java out of my thermos and patting myself on the back with both hands about my success with M74 before I punched up "easy" M52. Sure, this open cluster in Cassiopeia is splashy-bright.

But I didn't realize how low it had got. It was almost at the dob's altitude limit. Might not be a bad idea to throw a pair of binoculars in the car to use on the biguns (like M45) or to use on the ones you've let get away from the big scope.

**Sky Commanders:** The accuracy of these Digital Setting Circles was simply amazing. I found myself often using a 7mm Uwan(220x) as my finding eyepiece. Now, the fact that my truss tube 12.5 was precisely handcrafted by master ATM Pat Rochford didn't hurt accuracy wise, but, still, the Sky Commanders continue to impress, especially considering my unpleasant experiences over the years with Brand Ecch DSCs

One nice thing for some folks this time of year is that the Sky Commanders will accept an external 12vdc input in lieu of the internal 9 volt battery. In addition to providing plenty of power, that also activates an internal heater that keeps the SC's LCD display speedy and readable. Last night? I brought along an external battery and cable, but cold as it was (30F) the Sky Commanders went till midnight no prob. The display was a wee bit sluggish by then, and contrast was not as good as it normally is, but it was still readable. Only problem? Unk got cold enough and his hands shook enough that it was hard to "zero out" the SCs on objects.

**The Coma - Virgo forest and trees:** The DSCs made it possible for me to thread my way through the masses of Coma - Virgo galaxies without too much confustication. The fact that the area was to the east and well into the Mobile, Alabama light dome actually helped, since it left only the most prominent sprites visible. Seeing as how I've been through the area a time or two over the last 40+ years, I was able to navigate without much problem. If you're relatively new to the area, detailed finder charts can be a big help in deciding "which is what."

**Dew:** Don't do like I did. The Dob is equipped with a secondary heater powered by a 9 volt batt'ry. Naturally, me being me, I decided that the little battery would be good for "one more run," despite having been used the last umpteen times. As you'd expect it went stone cold dead and the secondary dewed right up (where the heck is M91?!). Fortunately, I had brought along a 12vdc dew zapper gun (aka "window defroster"), and one zap was good for at least half an hour.

**The GAP:** The spring-summer gap is what kills. Even when it's not cold, the prospect of waiting for the summer sky to rise can be depressing. Be prepared: bring along a lawn chair - lounge to doze on, a pair of binoculars to scan with, or an additional observing list to run with the main scope.

All in all, I was a purty happy camper at the end of the festivities. I was not the first observer to flee the ice-encrusted field, the Dob had worked admirably well (I do need to brush up on my Newtonian collimating skills...I spent some time chasing the dadgum donut). And I did 66 objects, not missing a one between Pisces and Virgo. Before throwing in the towel, I even (barely) spied M13 and M5, so I reckon I can tell my mates (Barney Fife voice), "Yep, saw some summer objects, yep...not everybody's up that."

You never know. If the weather holds over the next couple of weeks, I may even stay up long enough to really do the summer sky (despite that consarned DST). If I do, you can bet I'll crow about it here.

Sun

Mon

Tue

Wed

Thu

Fri

Sat

<p><i>Who, when that good Dutch spectacle-maker set Two lenses in a tube, to read the time Upon the distant clock-tower of his church, Could dream of this, our hundred-inch, that shows The snow upon the polar caps of Mars Whitening and darkening As the seasons change?</i></p>				<p><i>Or who could dream when Galileo watched His moons of Jupiter, that from their eclipses And from that change in their appointed times, Now late, now early, as the watching earth Farther or nearer on its orbit rolled, The immeasurable speed of light at last Should be reduced to measure?</i></p>		<p><b>1</b></p> <p>Moon less than one-half degree south of Spica from 00:00 to 02:00</p> <p>SR:06:53 SS:18:12 MR:22:44 MS:08:38 PI:89%</p>	<p><b>2</b></p> <p>Moon less than 5° south of Saturn this morning.</p> <p>SR:06:52 SS:18:13 MR:23:52 MS:09:18 PI:81%</p>
<p><b>3</b></p> <p>SR:06:50 SS:18:14 MR:***** MS:10:03 PI:71%</p>	<p><b>4</b></p>  <p>16:53</p> <p>SR:06:48 SS:18:15 MR:00:57 MS:10:54 PI:60%</p>	<p><b>5</b></p> <p>SR:06:47 SS:18:16 MR:01:58 MS:11:52 PI:49%</p>	<p><b>6</b></p> <p>SR:06:45 SS:18:17 MR:02:54 MS:12:56 PI:38%</p>	<p><b>7</b></p> <p>SR:06:44 SS:18:18 MR:03:43 MS:14:03 PI:27%</p>	<p><b>8</b></p> <p>AAAP General Business Meeting Allegheny Observatory</p> <p>SR:06:42 SS:18:19 MR:04:26 MS:15:12 PI:18%</p>	<p><b>9</b></p> <p>SR:06:41 SS:18:20 MR:05:04 MS:16:20 PI:10%</p>	
<p><b>10</b></p> <p>Daylight Saving Time Begins</p> <p>SR:07:39 SS:19:21 MR:06:39 MS:18:28 PI:4%</p>	<p><b>11</b></p>  <p>15:51</p> <p>SR:07:37 SS:19:23 MR:07:11 MS:19:34 PI:1%</p>	<p><b>12</b></p> <p>SR:07:36 SS:19:24 MR:07:42 MS:20:38 PI:0%</p>	<p><b>13</b></p> <p>SR:07:34 SS:19:25 MR:08:13 MS:21:41 PI:2%</p>	<p><b>14</b></p> <p>SR:07:33 SS:19:26 MR:08:46 MS:22:42 PI:5%</p>	<p><b>15</b></p> <p>SR:07:31 SS:19:27 MR:09:20 MS:23:41 PI:11%</p>	<p><b>16</b></p> <p>SR:07:29 SS:19:28 MR:09:57 MS:***** PI:17%</p>	
<p><b>17</b></p> <p>SR:07:28 SS:19:29 MR:10:39 MS:00:37 PI:25%</p>	<p><b>18</b></p> <p>SR:07:26 SS:19:30 MR:11:24 MS:01:29 PI:34%</p>	<p><b>19</b></p>  <p>13:27</p> <p>SR:07:24 SS:19:31 MR:12:13 MS:02:18 PI:43%</p>	<p><b>20</b></p> <p>Vernal Equinox 07:02</p> <p>SR:07:23 SS:19:32 MR:13:05 MS:03:03 PI:53%</p>	<p><b>21</b></p> <p>SR:07:21 SS:19:33 MR:14:01 MS:03:43 PI:62%</p>	<p><b>22</b></p> <p>SR:07:19 SS:19:34 MR:15:00 MS:04:20 PI:71%</p>	<p><b>23</b></p> <p>Carnegie Science Center Astronomy Weekend</p> <p>SR:07:18 SS:19:35 MR:16:00 MS:04:54 PI:80%</p>	
<p><b>24</b></p> <p>CSC Astronomy Weekend</p> <p>SR:07:16 SS:19:36 MR:17:02 MS:05:26 PI:87%</p>	<p><b>25</b></p> <p>SR:07:15 SS:19:37 MR:18:07 MS:05:57 PI:93%</p>	<p><b>26</b></p> <p>SR:07:13 SS:19:38 MR:19:13 MS:06:29 PI:97%</p>	<p><b>27</b></p>  <p>05:27</p> <p>SR:07:11 SS:19:39 MR:20:21 MS:07:01 PI:100%</p>	<p><b>28</b></p> <p>SR:07:10 SS:19:40 MR:21:30 MS:07:36 PI:99%</p>	<p><b>29</b></p> <p>SR:07:08 SS:19:41 MR:22:40 MS:08:16 PI:97%</p>	<p><b>30</b></p> <p>SR:07:06 SS:19:42 MR:23:48 MS:09:00 PI:91%</p>	
<p><b>31</b></p> <p>Mercury Greatest W Elongation</p> <p>SR:07:05 SS:19:44 MR:***** MS:09:51 PI:84%</p>							

Times are local. SR = Sunrise, SS = Sunset, MR = Moonrise, MS = Moonset, PI = Approx. Percentage Visible Lunar Surface Illuminated Local Midnight

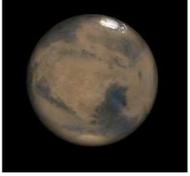
**Some Solar System Highlights**

Lunar entries are listed by named phase and include maximum libration dates. Note: Values are lunar east and lunar west. Planetary entries include Local Rise and Set Times, Magnitudes and Disk diameters in Arc Seconds on the 1st, 10th, 20th and 31st days of the month.

	<b>Date/Time</b>	<b>Phase</b>	<b>Arc</b>	<p><b>The Moon's</b> Selenographic Colongitude is 133.27° at 0h UT and 135.77° at 0h local on the first day of the month. Add 12.2° each day.</p> <p><u>Max Libration dates:</u>                  East limb on 12th (+5.1°)      West limb on 25th (-5.6°)                  North limb on 23rd (+6.7°)      South limb on 9th (-6.6°)</p>
	04 16:53	Last	1907	
	11 15:51	New	1900	
	19 15:27	First	1780	
	27 05:27	Full	1922	

	<b>Date</b>	<b>Rise</b>	<b>Set</b>	<b>Mag</b>	<b>Arc</b>	<p><b>Mercury</b> at inferior conjunction on the 4th. It reappears in the dawn sky by mid-month. Greatest western elongation occurs on the 31st.</p>
	01	06:51:51	18:41:43	3.5	10.18	
	10	06:59:36	18:22:37	2.9	10.71	
	20	06:25:12	17:28:53	0.9	9.29	
	31	06:08:53	17:19:49	0.3	7.64	

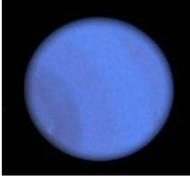
	<b>Date</b>	<b>Rise</b>	<b>Set</b>	<b>Mag</b>	<b>Arc</b>	<p><b>Venus</b> approaching conjunction is not visible.</p>
	01	06:44:32	17:34:01	-3.9	9.80	
	10	07:36:40	18:55:29	-3.9	9.74	
	20	07:26:18	19:18:56	-3.9	9.70	
	31	07:14:06	19:44:31	-3.9	9.68	

	<b>Date</b>	<b>Rise</b>	<b>Set</b>	<b>Mag</b>	<b>Arc</b>	<p><b>Mars</b> approaching conjunction with the Sun, is not visible.</p>
	01	07:23:39	19:01:35	1.2	3.98	
	10	08:04:09	20:01:34	1.2	3.95	
	20	07:42:19	20:01:16	1.2	3.92	
	31	07:18:19	20:00:38	1.2	3.89	

	<b>Date</b>	<b>Rise</b>	<b>Set</b>	<b>Mag</b>	<b>Arc</b>	<p><b>Jupiter</b>, System II longitude is 190° this month. Located just north of the Hyades, it is well placed for observation before midnight.</p>
	01	10:45:44	01:27:44	-2.3	39.08	
	10	11:13:38	01:57:07	-2.2	38.00	
	20	10:38:54	01:24:14	-2.2	36.89	
	31	10:01:40	00:49:14	-2.1	35.80	

	<b>Date</b>	<b>Rise</b>	<b>Set</b>	<b>Mag</b>	<b>Arc</b>	<p><b>Saturn</b> in Libra, rises near midnight. It begins to retrograde on the 19th. The ring system, which we will continue to view from the north until 2025, will be inclined to our line of sight by about 18° until October when it will begin to open to an eventual 22° by year's end.</p>
	01	23:00:19	09:39:21	0.4	17.82	
	10	22:23:39	10:03:28	0.4	18.06	
	20	22:42:12	09:23:10	0.3	18.30	
	31	21:55:52	08:38:24	0.3	18.52	

	<b>Date</b>	<b>Rise</b>	<b>Set</b>	<b>Mag</b>	<b>Arc</b>	<p><b>Uranus</b>, heading toward conjunction with the Sun on the 29th, disappears into evening twilight early in the month.</p>
	01	07:58:21	20:17:02	5.9	3.35	
	10	08:24:04	20:44:05	5.9	3.34	
	20	07:46:03	20:07:35	5.9	3.33	
	31	07:04:15	19:27:28	5.9	3.33	

	<b>Date</b>	<b>Rise</b>	<b>Set</b>	<b>Mag</b>	<b>Arc</b>	<p><b>Neptune</b> is not visible. It will reappear in the morning sky in mid-April.</p>
	01	08:25:40	19:11:42	8.0	2.17	
	10	07:51:07	18:38:00	8.0	2.16	
	20	07:12:45	18:00:36	8.0	2.16	
	28	06:42:04	17:30:40	8.0	2.16	

**Jupiter Activity: Satellites & the Great Red Spot**



Following are times for Jovian satellite transits and occultations and Great Red Spot meridian crossings for the current month that are visible in our area.

They are organized by observing sessions beginning with the first event of interest on a given evening and continuing to Jupiter's setting or the Sun rising.

The codes following the entries indicate what is currently happening, for example, T indicates a satellite transit, S indicates a shadow transit, ST indicates both a satellite and a shadow are transiting, STT indicates one shadow and two satellites are in transit. All times are local.

March	
1 18:45 Gan: Transit Ends	10 01:00 Io : Transit Begins T
1 19:15 GRS: Crosses Central Meridian	10 20:09 Eur: Disappears into Occultation
1 21:47 Gan: Shadow Transit Begins S	10 22:17 Io : Disappears into Occultation
1 22:02 Eur: Transit Begins ST	10 22:38 Eur: Reappears from Occultation
2 00:08 Gan: Shadow Transit Ends T	10 22:42 GRS: Crosses Central Meridian
2 00:29 Eur: Transit Ends	10 22:49 Eur: Disappears into Eclipse
2 00:39 Eur: Shadow Transit Begins S	11 01:18 Eur: Reappears from Eclipse
2 00:51 Io : Disappears into Occultation S	11 01:45 Io : Reappears from Eclipse
2 22:03 Io : Transit Begins T	11 19:29 Io : Transit Begins T
2 23:23 Io : Shadow Transit Begins ST	11 20:47 Io : Shadow Transit Begins ST
3 00:15 Io : Transit Ends S	11 21:41 Io : Transit Ends S
3 01:02 GRS: Crosses Central Meridian	11 23:00 Io : Shadow Transit Ends
3 18:57 Eur: Reappears from Occultation	12 19:59 Eur: Shadow Transit Ends
3 19:11 Eur: Disappears into Eclipse	12 20:14 Io : Reappears from Eclipse
3 19:20 Io : Disappears into Occultation	13 00:21 GRS: Crosses Central Meridian
3 20:54 GRS: Crosses Central Meridian	13 20:13 GRS: Crosses Central Meridian
3 21:39 Eur: Reappears from Eclipse	15 21:52 GRS: Crosses Central Meridian
3 22:50 Io : Reappears from Eclipse	17 22:52 Eur: Disappears into Occultation
4 18:44 Io : Transit Ends S	17 23:31 GRS: Crosses Central Meridian
4 20:04 Io : Shadow Transit Ends	18 00:14 Io : Disappears into Occultation
5 22:33 GRS: Crosses Central Meridian	18 01:21 Eur: Reappears from Occultation
6 18:24 GRS: Crosses Central Meridian	18 19:23 GRS: Crosses Central Meridian
8 00:12 GRS: Crosses Central Meridian	18 21:27 Io : Transit Begins T
8 20:03 GRS: Crosses Central Meridian	18 22:43 Io : Shadow Transit Begins ST
8 20:30 Gan: Transit Begins T	18 23:39 Io : Transit Ends S
8 22:51 Gan: Transit Ends	19 00:56 Io : Shadow Transit Ends
9 00:40 Eur: Transit Begins T	19 20:07 Eur: Transit Ends
	19 20:08 Eur: Shadow Transit Begins S
	19 20:39 Gan: Disappears into Eclipse S
	19 22:09 Io : Reappears from Eclipse S
	19 22:35 Eur: Shadow Transit Ends
	19 23:03 Gan: Reappears from Eclipse
	20 01:10 GRS: Crosses Central Meridian
	20 19:25 Io : Shadow Transit Ends
	20 21:02 GRS: Crosses Central Meridian
	22 22:41 GRS: Crosses Central Meridian
	25 00:20 GRS: Crosses Central Meridian
	25 20:12 GRS: Crosses Central Meridian
	25 23:26 Io : Transit Begins T
	26 00:39 Io : Shadow Transit Begins ST
	26 19:48 Gan: Disappears into Occultation
	26 20:21 Eur: Transit Begins T
	26 20:41 Io : Disappears into Occultation T
	26 22:12 Gan: Reappears from Occultation T
	26 22:43 Eur: Shadow Transit Begins ST
	26 22:48 Eur: Transit Ends S
	27 00:05 Io : Reappears from Eclipse S
	27 00:40 Gan: Disappears into Eclipse S
	27 20:08 Io : Transit Ends S
	27 21:21 Io : Shadow Transit Ends
	27 21:51 GRS: Crosses Central Meridian
	28 19:54 Eur: Reappears from Eclipse
	29 23:30 GRS: Crosses Central Meridian

**AAAP Welcomes New Members**

MICHEL ASPIOTES  
 ROBERT HANHAM  
 NANCY HRUSKA  
 CARL PASCARELLA Sr.

**Membership Information**

AAAP Member Dues:	\$ 30.00
Student Membership (K-12 & full time college student):	\$ 20.00
Family Membership	\$ 45.00

Basic Procedure for Paying Dues:

1. Make check payable to "AAAP Inc."
2. Send check to: Nate Brandt, Treasurer  
2520 Campmeeting Rd.  
Sewickley, PA 15143-9104

Membership Renewal Form can be found at:

[http://www.3ap.org/AAAP\\_Mem\\_RenForm\\_2013.pdf](http://www.3ap.org/AAAP_Mem_RenForm_2013.pdf)

New Membership Form can be found at:

[http://www.3ap.org/AAAP\\_New\\_MemForm\\_2013.pdf](http://www.3ap.org/AAAP_New_MemForm_2013.pdf)

**Guide Star Submissions:**

All AAAP members are encouraged to submit items to the club newsletter. Articles, images, observations, notices, ads, book, software and equipment reviews, all are welcome.

The Guide Star is posted online at month's end to both the club web site and the file section of the Yahoo Group AAAPgh.

Please submit items as early as possible for inclusion in the coming issue. Forward submissions or questions to:

[gseditor@3ap.org](mailto:gseditor@3ap.org)

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