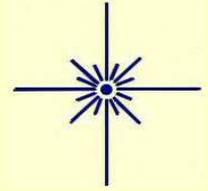




# The Guide Star

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



June 2012

Volume 46, No. 6

## The AAAP in June

### **June 1 - Private Birthday Party at Wagman**

The month begins with a private birthday party at Wagman Observatory for a 10 year-old astronomy enthusiast. This type of event is something new for Wagman and the AAAP but it seems just the sort of birthday celebration that could inspire a lifetime.

Anyone interested in an event of this type should contact Wagman director Tom Reiland

### **June 5 - Venus Transit Event at Wagman**

A Venus Transit Party at Wagman Observatory will start at 6 PM and last until Sunset at 8:45, weather permitting. The prime instruments for public viewing will be 11" Brashear refractor and 3" finder with their solar filters with a possibility of using 5" Refractor on the 21" Manka reflector for viewing via projection onto a slide screen.

Any members who wish to assist with this event will be welcome and greatly appreciated. If weather conditions are questionable, call the observatory. (724-224-2510). Members are asked to be aware of other's lines of sight when setting up their equipment.

### **June 9 - AAAP Picnic and Wagman 25th Anniversary Celebration**



An Anniversary Celebration for members, family, county officials and all those associated with the construction of Wagman Observatory will be at the picnic on June 9 from 4 PM to Midnight or later.

This is the also the AAAP's 83rd Anniversary. We have at least \$125 for the purchase of hot dogs, buns, pop, ice, utensils, plates, cups, etc...

Diane Yorkshire will order a cake from the Oakmont Bakery.

We will need at least two or three grills for cooking the hot dogs.

Members are asked to contribute side dishes, cookies, condiments, etc...

Members who plan to attend should call or email. Also please mention how many family members will be with you. Contact either:

Tom Reiland  
Ph: 412-487-8326  
Email: [TRCassiopeia@aol.com](mailto:TRCassiopeia@aol.com)

or

Bill Yorkshire  
Ph: 412-793-9552  
Email: [wildyork@verizon.net](mailto:wildyork@verizon.net)

We will invite the families of Truman Kohman, George Lindbloom, Nick Wagman and Leo Scanlon as well as county and Frazer Township officials. At 8:30 PM we'll pack up the picnic and head up to Wagman.

The location is Deer Lakes Park, Veterans1 Grove. (see map, p. 2)

The ceremony and cutting of the cake will be held at Wagman Observatory starting at 8:30 PM followed by observing if it's clear. (If rainy, we'll stay in Veteran's Grove for ceremonies.)

A sign will be posted that stating that "*this event is closed to the public and come see us at the public celebration.*"

If there is severe weather, the event will be postponed to June 23. Call Wagman Director Tom Reiland (412-487-8326) for weather postponement information.

### **June 13 - Wagman 25th Anniversary**

The actual date of Wagman's 25th Anniversary is June 13. An informal party will be held that Wednesday evening, around 8 PM at Wagman. Everyone is welcome

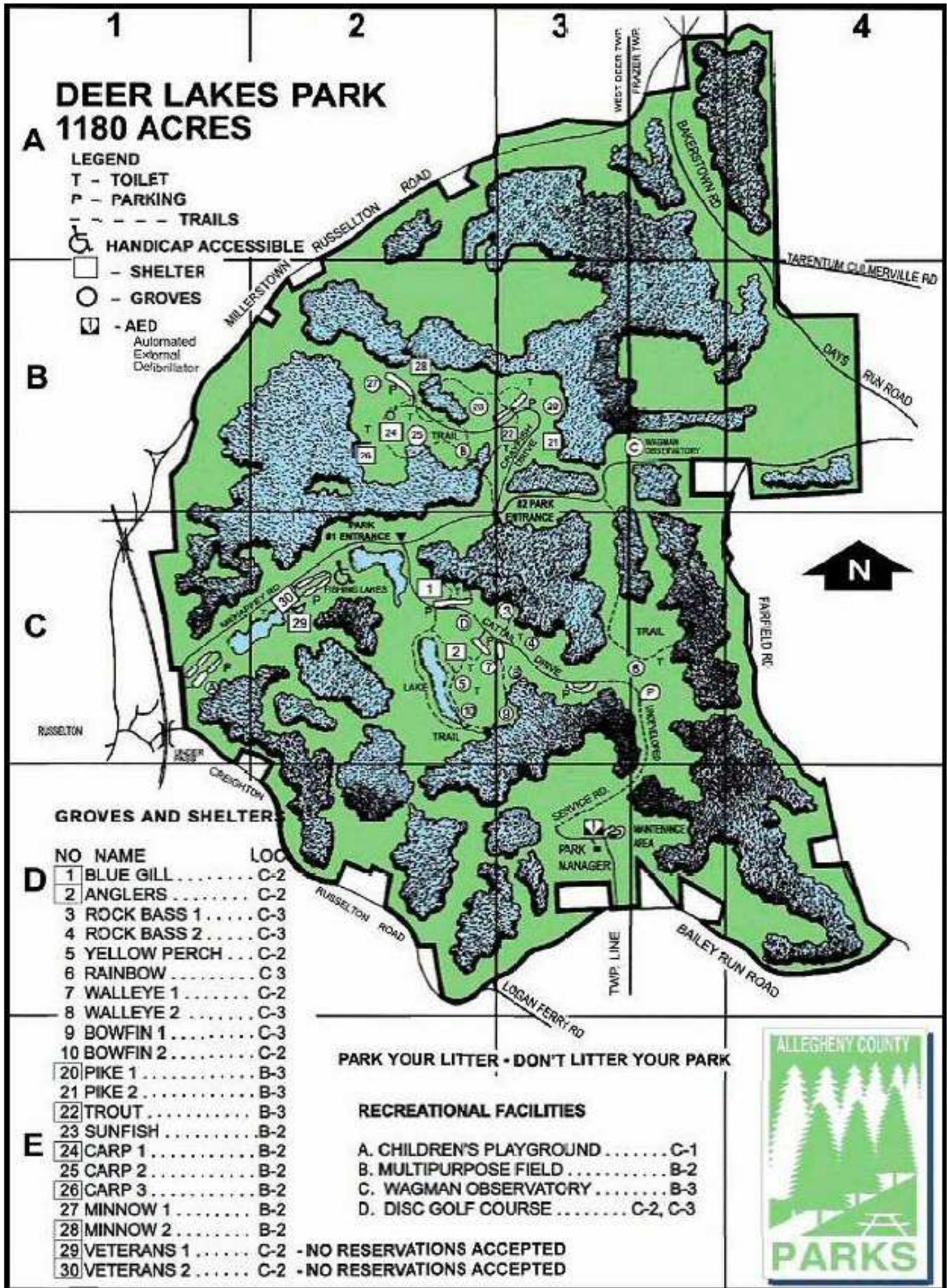
### **June 22 & June 23 - Star Parties at both Mingo and Wagman Observatories**

At Wagman the star parties on June 22-23 will feature our public celebration of the Wagman 25th Anniversary. It will include raffles of books, one telescope each night and a special, private star party for the winning family.

Recommended donation per ticket will be \$1.

Kelly will make astronomically oriented cookies for this weekend.

We will dedicate the Dave Smith Hospitality Room on the night of the his birthday, June 23.



## The Transit: In Brief

On the afternoon of June 5th at 18:09:38 local time, Venus will begin to pass across the disk of our Sun for the second and last time this century.

It will appear on the northeastern portion of the solar disk (upper left).

This is known as *first contact* or *Contact I* and begins a phase of the transit called the *ingress*.

The Sun will be only 27° above the western horizon at that point.

*Second Contact* or *Contact II* or the instant when the trailing edge of Venus clears the limb of the Sun and the planet is fully superimposed on the Sun's disk will occur at 18:27:34.

At time of sunset at 20:46:50, Venus will have progressed along roughly a third of its full transit path which will take 6 hours and 40 minutes in total.

The Sun will set along the WNW horizon, at approximately 300°.

Pittsburgh based observers will not see Contacts III or IV. Those who observed the 2004 transit will remember that Venus was already well across the solar disk and approaching third contact at sunrise. The busy diagram below compares the 2004 and 2012 transits



Historically, this is the eighth predicted Venus transit and only the seventh that will be observed. The transit of 7 December 1631 was correctly predicted by Kepler, but went unseen. Beginning with that transit and lasting until the transit of June 2984, a cycle will hold having these particulars:

**I. Transits occur in pairs whose members occur in the same month 8 years apart.** Kepler's December 7, 1631 transit was followed by a partner, a December 4, 1639 transit, which he failed to predict. His oversight was caught by the young Jeremiah Horrocks.

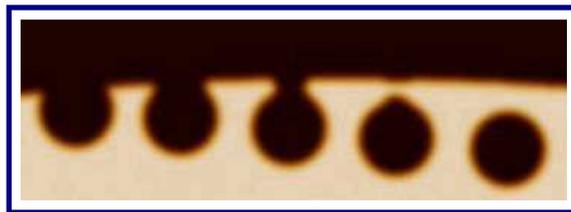
**II. Transit pairs occur in either December or June.** December transits favor viewers in the Southern Hemisphere, June's, the Northern.

**III. Spacing between pairs alternate between 105.5 years or 122.5 years.** December pairs follow June pairs after 105.5 years. June pairs follow December's by 122.5 years.

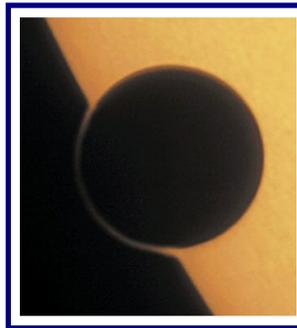
**IV. The earlier and later tracks of the planet across the face of the Sun in a transit pair are separated by 22 seconds of arc.**

### Some Things to Look For & Two Pointers...

Two phenomena that plagued previous transit observers whose task was to accurately time the contacts during Venus transits are the infamous "black drop" effect and the bright ring that is evidence of the planet's atmosphere. Both can be seen in amateur telescopes.



The black drop, the distortion of the planet as it separates from the solar limb, made it impossible to estimate a precise contact time. It was the bane of early transit observers but not mentioned much in 2004. It is now thought to be caused by atmospheric conditions, poor optics or both.

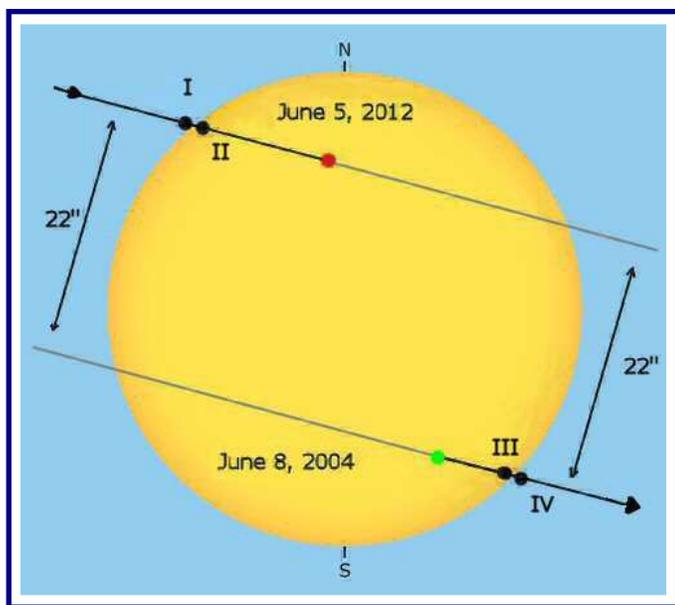


The first to notice the bright ring around the planet as it crossed the solar limb was the Russian astronomer Mikhail Lomonosov. It too made precise timing a problem. He observed it during the transit of 1761 and correctly interpreted its meaning. For this, he is credited as the discoverer of the Venusian atmosphere. I saw the ring in 2004 in a 130mm (5 inch) refractor.

Two pointers that you may over look. While you've taken care to filter your main telescope, don't forget to either filter or cap your finder. It too is an optical device pointed at the Sun and can cause havoc.

Metal coated filters whose rear surface is reflective can bounce a ghost image from the field lens of an SCT or refractor back into the optical path. Tilt the filter just a bit to prevent the situation.

**And Take Care. Use proper eye protection during this event. Never look directly at the Sun with your naked eye.**



*The top track is the path of the coming transit, showing points of Contact I & II at 18:09 and 18:27 respectively. The red disk shows the approximate position of Venus on the solar disk at sunset. The lower track shows the path of the 2004 transit. The green disk shows the position of Venus when the Sun rose on that June morning. In neither case was a full transit visible from our area.*

*Transits, whether by Mercury or Venus, move from east to west. This is opposite the direction we observe in both solar and lunar eclipses.*

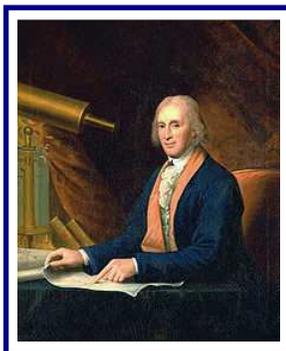
*Note that both transits took place in June and that their tracks are parallel and about 22 arc seconds apart. This holds for all transit pairs.*

## The Transit: a Bit of History

David Rittenhouse of Philadelphia may have been the foremost astronomer in colonial America in the late 18th century.

While largely self-educated, he mastered Newton as a young man and became a member of both the American Philosophical Society and the Royal Society of London.

He was a renowned instrument maker whose clocks can still be seen in historic houses in Philadelphia and whose two orreries remain at Princeton and the University of Pennsylvania. He is said to have constructed the first observatory on our shores.



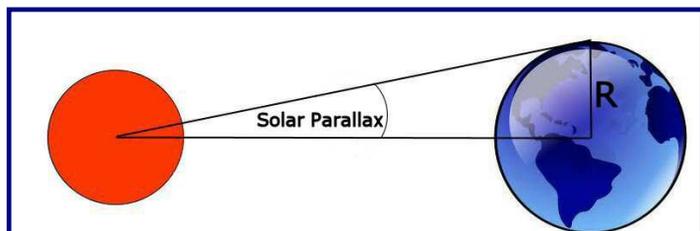
On June 3rd 1769, at his farm in Norristown, after a year of preparation and testing, Rittenhouse positioned himself behind the eyepiece of a micrometer-equipped Gregorian reflector. Nearby stood an accurate clock and two friends who were to observe with him.

But at the moment of first contact, the unimaginable happened. In the words of a biographer, at one of the most critical points of the observation, Rittenhouse experienced "a crisis of tension...brought to an almost intolerable intensity in the terrifying appearance of Venus on the Sun." In short, he fainted.

The emotion which overcame Rittenhouse wasn't rooted in his anticipation of merely viewing an astronomical event, however rare. Rather, it stemmed from the important results that he and others hoped to derive from the observation.

Rittenhouse was part of a world-wide effort - akin to an 18th century Moon shot - to answer one of the seminal problems of astronomical science, a matter that concerns it even today, the determination of cosmic distances.

For over two centuries, this problem would center on finding the distance to the Sun, also called the Astronomical Unit (AU) and it took the form of a specific task. Astronomers had to find the solar parallax. And they chose Venus transits as the way to do it.



**The Solar Parallax is defined as the angular width of the Earth's equatorial radius when seen from the center of the Sun when the Earth is at a distance of one Astronomical Unit.**

**If this angle is known and the radius of the Earth is also known, then the distance to the Sun is derived via a relatively simple calculation.**

## The Role of Transits

That both Mercury and Venus, being inferior planets, might be seen crossing the face of our Sun was mentioned even by Ptolemy in the 2nd century, but he made nothing like a definite prediction.

That had to wait until planetary astronomy was practically invented by Johannes Kepler in the early 17th century. Kepler found that both Mercury and Venus would transit the Sun in late 1631. He also found that Venus transits took place according to a cycle of roughly 120 years.

His predicted Mercury transit, the first transit ever seen, was caught by three observers but, as Kepler warned, the Venus transit was inaccessible to almost all of Europe and went unobserved.

Enter a young Englishman, Jeremiah Horrocks, whose death at the tender age of 21 may be the greatest instance of unfulfilled potential in the history of astronomy.

A gifted mathematician and enthusiastic astronomer, Horrocks was able to find meaningful errors in the astronomical tables of his day. His revisions to Kepler's theory of lunar motion would later be used by none other than Isaac Newton.

In October 1639, Horrocks reviewed the orbital mechanics of Venus and saw that Kepler in predicting the 1631 transit had missed one that Horrocks found was due on the afternoon of Sunday, December 4th 1639. This was a scant two months away!

Knowing that over a century would pass before another Venus transit, Horrocks alerted friends and actually began watching on Saturday, a full day before his predicted date.

On Sunday morning he began to observe at sunrise, projecting the solar image onto a sheet of graduated paper. He kept watch almost continuously until 1PM when he was called away "by business of the highest order...(which he)... could not with propriety neglect".

Coming home at 3:15 that afternoon, he found that Venus had already begun to move across the solar disk. It's thought that clerical duties at the nearby church had punctuated his observations.

Nevertheless, Jeremiah Horrocks was the first to observe a Venus transit and he used the occasion to refine the orbital elements of the planet, get a more accurate measure of its apparent diameter and deduce a value for the solar distance that was better than any previously calculated.



**Commemorative Window in the Horrocks Chapel, St. Michael's Church in Hoole, Lancashire, England.**

**This is the church where Horrocks may have held a minor clerical position as a curate or reader.**

**The Latin inscription translates "A most agreeable spectacle, the object of my sanguine wishes".**

**These are the words that Horrocks used to describe the first transit of Venus ever seen.**

With Edmund Halley, Venus transits took on a tremendous importance. He proposed a method whereby the times of second and third contacts, gathered from stations as far apart as possible could be used to determine the solar parallax. The requirements were a telescope, an accurate clock, a precise knowledge of the observer's latitude and that the transit be viewable in its entirety.

But meeting this last requirement could prove intractable. Apart from geography - ideal viewing locations could be too difficult to reach - there were political considerations - favorable sites might be controlled by hostile governments.

A modification of Halley's Method by Joseph Delisle eased the problem. Delisle's Method required that only the time of ingress and time of egress need be recorded at individual stations. In other words, it was not necessary to be in a location that allowed you to view the entire transit. The trade-off with Delisle's Method was that longitude, in addition to latitude, had to be accurately known and this was no easy task, as anyone acquainted with the history of Greenwich Observatory or the story of John Harrison can attest.

The transits of 1761, 1769, 1874 and 1882 saw efforts by teams of scientists from many countries - England, France, Germany, Russia, the Netherlands, even Mexico - who journeyed around the globe to reach the ideal points from which to record transit timings.

Specialized instruments like heliometers and heliostats and a device called a photographic revolver, a forerunner of the movie camera, were used during these four events. Observers even trained for the transits and the term "personal equation" was used to describe an observer's biases during the act of observing.

But with each transit, astronomers became increasingly aware of the inherent difficulties involved in determining an exact time for the critical contact points. The familiar limb darkening of Sun, the black drop effect, the Venusian atmosphere, each of these made a precise contact estimate difficult. On the expedition undertaken by Captain Cook, his transit timings disagreed with those of the ship's astronomer by as much as 42 seconds.

Photographic plates, an advance promising to eliminate human fallibility, lacked clarity when under magnification. The desired precision was illusive and two centuries of effort had failed to impose a digital frame on an analog process, as it were.

Which brings us back to David Rittenhouse and his loss of consciousness. Again his biographer, "David Rittenhouse was unprepared for the yawning uncertainty of the exact moment at which he must declare that Venus had first touched the Sun. There was no single identifiable point of time at which he could pronounce the two in contact." His was a reaction to the disappointment that would dog transit observers for another century.

Eventually, even as 19th century astronomers continued to pursue Venus, others had better success in determining the elusive value of the solar parallax by using Mars or even Eros.

Their scientific importance hugely diminished, it's now possible to enjoy transits of Venus simply as a rare and "most agreeable spectacle".

And to close, here's a sanguine wish for clear skies for all of us.

- Guide Star Editor

### **"Ask not what you can do for your club...."**

Ask what your club can do for you." Those of you familiar with politics will recognize my paraphrase of John Kennedy's inaugural address. And yes, I purposely have it backwards. We (the officers) are normally asking members to help with this project or that star party. With five new elected officers and five new observatory directors, the time is ripe to think of new ideas for the club. Please let me know what ideas you have about how the club can help you, what things are not working for you, or any other similar ideas. It doesn't matter if you have been in the club for 50 years or 1 month, your ideas can make a difference.

John Holtz, President (elect)  
412-243-1545  
[John.Holtz@autodesk.com](mailto:John.Holtz@autodesk.com)

### **Openings on the Executive Committee**

The Executive Committee (EC) is the body of officers and regular members (like you) that make the decisions for the AAAP. It is essentially the "board of directors" (or "bored of directors" if you have attended any of their meetings :-). With the new president comes a new EC. If you would like to be considered for a position on the EC, please contact the president elect, John Holtz. The EC meets between 3 and 12 times a year, depending on the level of activity.

### **A Note of Thanks & Your Astro Images**

Many thanks to Bill Yorkshire and his daughter Devon for setting up the new 40 inch display panel in the Wagman reception room (now called the "David L. Smith Hospitality Room") and creating a hi-tech slide program of astro-images from AAAP members.

Guests waiting in line for the Brashear and Manka telescopes at the April 27th star party were treated to a nice variety of solar system, deep-sky and atmospheric images.

The original images were compiled for laptop programs running at the Heinz Hall/Pittsburgh Symphony Orchestra "Planets" even back in 2010. Each image was captioned with a title with the member's name and home town. Devon Yorkshire then added the spectacular special effects and background music.

Among the AAAP members in the current program are Mark Arelt, Nathan Brandt, Eric Fischer, John Holtz, Ed Honkus, Fred Klein, Dan McKeel, John Pane, Lori Seitz, Bill Snyder and Frank Wielgus.

More such programs are planned for the Wagman display, and similar slide shows may be run at Mingo Observatory. If you would like to have some of your astro-images included in future displays, contact Eric Fischer by e-mail at [caddy1963@verizon.net](mailto:caddy1963@verizon.net), or by phone at 412-487-7011.

- Eric Fischer

## Mark Arelt at the Club's Greene County Observing Site



I went to the club's Greene County observing site last night fully expecting a gas rig to be there but was pleasantly surprised to find things normal. The gas well "crop circle" as well as the "Durban Well" stake which I wrote about a few weeks ago are still there but I decided to go ahead and set up. It was a fine, clear night, though not as good as last night looked to have been.

I watched the Sun set and detected a hint of green (through a 300mm telephoto lens) along the eastward limb as it set. Never having observed an actual green flash—though not for lack of trying—I'm not sure exactly what I saw but it was not a nearly instantaneous event as the Sun just disappears below the horizon as I understand the green flash to be. I took a series of pictures but it doesn't show up too well.

As I went back to setting up my telescope Dave Durban, the owner of the property, paid a visit to the hilltop in his pickup. He asked how things were going. I said "Fine. What's this stake about?" He explained there is indeed going to be a gas well drilled on the hilltop. In fact, he was surprised that work hadn't already begun.

So here's the "good news", the "eh news" and the "bad news":

- Drilling could begin any time. Beulah Ridge road has been widened and graded near the site. So they're getting ready to move in the heavy equipment soon. "Bad news."
- Actual drilling will only take a week or so. "Good news".
- They will level off a portion of the hilltop around the site and move the removed overburden off to one side of the hill. Probably to the Northeast (those of you familiar with the site, that's toward the driveway that goes down from the "goal post" gate). "Eh news".
- After drilling, a well head will be left with a small, fenced in concrete pad around it. "Eh news".
- The ground around the drilling pad and the area where the overburden is dumped will be graded and leveled. Mr. Durban said he's not sure how much of the hill top will be effected by this, or what the final contours will look like. He did say the hill top may end up being a few feet closer to sea level, though. "Bad news."
- Alfalfa will be re-seeded and must be allowed to get started. This could take some months. "Bad news."
- Mr. Durban did say that he has requested the well head NOT be lit in any fashion (he really is thinking of us. He said gas companies usually honor such requests from property owners. He's actually a bit sorry for the inconvenience but it's a free paycheck he can ill afford to pass up. I admitted I'd probably do the same thing were I in his position). "Good news."
- As I suspected, the site is probably going to be off limits for at least the rest of the summer. "Bad news."
- Club members will be welcome to continue using the site in the future after the site recovery takes hold. "Good news".



I'm not sure who will decide when the site is recovered enough to continue using but I would ask that club members who frequent the site use common sense and discretion as we begin to return there.

Mr. Durban has been VERY accommodating to us for at least the past 20 years. He has paid several visits to the hilltop when I and other club members were there in the past. He takes an interest in what we do and he's looking out for our interests in the future. Let's not pay him back with a hill top full of tire ruts and muddy runoff.



*Greene County site looking East South East*

I went on to observe Venus' fine crescent. Thought I could detect a hint of ashen light but seeing was not good. Mars, being higher in the sky, was better. Definitely gibbous. Could just catch a hint of darker surface markings and a polar cap. Saturn is definitely going to be the summer show-stopper. I thought I could detect actual banding in the atmosphere. Maybe not, though. Saw the Cassini division, too.

Observed and photographed M104, and M13. Observed M64 and M100. Poked around the galaxies in Leo, too. Didn't get any names.

Did some wide field shots of Scorpius late in the session. That's when I noticed wispy cirrus in the images, though not evident visually. Tore down and left around 4:00 am.

May 19, 2012. Mark Arelt reporting from Greene County (probably for the last time in a while).

Clear Skies.

Sun

Mon

Tue

Wed

Thu

Fri

Sat

<p>All times given are local.</p> <p>Legend: SR = Sunrise, SS = Sunset, MR = Moonrise, MS = Moonset, PI = Approximate Percentage Visible Lunar Surface Illuminated Local Midnight</p> <p>Details for AAAP Events can be found at:  <a href="https://nightsky.jpl.nasa.gov/event-list.cfm?Club_ID=675&amp;EventEra=Future">https://nightsky.jpl.nasa.gov/event-list.cfm?Club_ID=675&amp;EventEra=Future</a></p>		<p><i>"...If the stars should appear one night in a thousand years, how would men believe and adore; and preserve for many generations the remembrance of the city of God which had been shown! But every night come out these envoys of beauty, and light the universe with their admonishing smile....The stars awaken reverence, because though always present, they are inaccessible..."</i></p> <p>- Emerson, Chapter I, Nature</p>			1	2
3	4  07:12	5 Venus Transit 1st Contact 18:09 2nd Contact 18:27 Wagman Obs.	6	7	8	9 Wagman Observatory Picnic and 25th Anniversary Celebration
SR:05:51 SS:20:46 MR:20:09 MS:04:58 PI:97%	SR:05:50 SS:20:46 MR:21:14 MS:05:55 PI:100%	SR:05:50 SS:20:47 MR:22:10 MS:07:00 PI:100%	SR:05:50 SS:20:47 MR:22:57 MS:08:09 PI:97%	SR:05:50 SS:20:48 MR:23:37 MS:09:19 PI:91%	SR:05:49 SS:20:49 MR:**** MS:10:28 PI:83%	SR:05:49 SS:20:49 MR:00:11 MS:11:34 PI:74%
10	11  06:42	12	13 Earliest Sunrise of the Year Informal Wagman 25th Celebration	14	15	16
SR:05:49 SS:20:50 MR:00:41 MS:12:37 PI:65%	SR:05:49 SS:20:50 MR:01:08 MS:13:37 PI:55%	SR:05:49 SS:20:51 MR:01:35 MS:14:37 PI:45%	SR:05:49 SS:20:51 MR:02:03 MS:15:35 PI:35%	SR:05:49 SS:20:51 MR:02:32 MS:16:33 PI:26%	SR:05:49 SS:20:52 MR:03:03 MS:17:30 PI:18%	SR:05:49 SS:20:52 MR:03:38 MS:18:26 PI:12%
17	18	19  11:03	20 Summer Solstice 19:08 Local Time	21	22 23 Public Star Parties at both Mingo Creek Park Observatory & Wagman Observatory	
SR:05:49 SS:20:53 MR:04:18 MS:19:20 PI:6%	SR:05:49 SS:20:53 MR:05:03 MS:20:10 PI:2%	SR:05:49 SS:20:53 MR:05:53 MS:20:56 PI:0%	SR:05:50 SS:20:53 MR:06:48 MS:21:38 PI:0%	SR:05:50 SS:20:54 MR:07:47 MS:22:15 PI:2%	SR:05:50 SS:20:54 MR:08:48 MS:22:49 PI:6%	SR:05:50 SS:20:54 MR:09:51 MS:23:20 PI:11%
24	25	26  23:31	27 Latest Sunset of the Year	28	29	30
SR:05:51 SS:20:54 MR:10:55 MS:23:50 PI:19%	SR:05:51 SS:20:54 MR:12:00 MS:**** PI:27%	SR:05:51 SS:20:54 MR:13:06 MS:00:20 PI:38%	SR:05:52 SS:20:54 MR:14:15 MS:00:51 PI:48%	SR:05:52 SS:20:54 MR:15:25 MS:01:24 PI:60%	SR:05:53 SS:20:54 MR:16:37 MS:02:02 PI:71%	SR:05:53 SS:20:54 MR:17:48 MS:02:47 PI:81%

Some Solar System Highlights

*Selenographic Colongitude* is 45.91° at 0h UT on the first day of the month. Add 12.2° each day.

The following planetary entries include Local Rise and Set Times, Magnitudes and Disk diameters in Arc Seconds on the 1st, 10th, 20th and 30th days of the month.



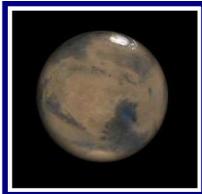
*Mercury* reappears low in the NW evening twilight by the second week of June. It remains there all month, passing S of Castor and Pollux from the 18th to the 21st, with the crescent Moon in attendance. Mercury reaches its greatest E elongation of 25.7° on the 30th

Rise time / Set time	1st	06:10	21:20	10th	06:49	22:09	20th	07:32	22:31	30th	08:00	22:24
Magnitude / Arc Sec	1st	-1.7	5.17	10th	-0.8	5.65	20th	-0.1	6.61	30th	0.5	7.95



*Venus* transits the Sun on June 5th. Venus will reappear in the ENE dawn twilight sky during the last half of the month joining Jupiter in the Hyades. On the morning of the 17th, Venus, Jupiter and the crescent Moon will form an attractive grouping close to the horizon, shortly before sunrise.

Rise time / Set time	1st	06:14	21:17	10th	05:28	20:07	20th	04:41	19:00	30th	04:04	18:14
Magnitude / Arc Sec	1st	-3.9	57.05	10th	-3.9	57.23	20th	-4.3	52.36	30th	-4.4	45.28



*Mars* traveling with direct or eastern motion, moves from Leo into Virgo on the 20th, growing both dimmer and smaller. The planet is best viewed in the early evening, being well to the west of the meridian at sunset.

Rise time / Set time	1st	13:17	02:11	10th	13:01	01:44	20th	12:45	01:14	30th	00:46	02:15
Magnitude / Arc Sec	1st	0.5	7.87	10th	0.6	7.43	20th	0.8	7.00	30th	0.8	6.63



*Jupiter* in Taurus, reappears low in the dawn twilight early in the month. As mentioned, on the morning of the 17th, Jupiter, Venus and the crescent Moon will form an attractive grouping close to the horizon, shortly before sunrise.

Rise time / Set time	1st	05:09	19:30	10th	04:41	19:05	20th	04:09	18:36	30th	03:37	18:08
Magnitude / Arc Sec	1st	-2.0	32.90	10th	-2.0	33.10	20th	-2.0	33.43	30th	-2.0	33.87



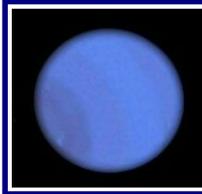
*Saturn* in Virgo, is well placed in the western late-evening sky, located almost on the meridian at sunset at mid-month. Retrograde motion begins on the 26th when the planet is 4.8° north of Spica. We continue to view the northern side of the ring system inclined in relation to our line of sight by about 13°

Rise time / Set time	1st	16:26	03:49	10th	15:49	03:13	20th	15:09	02:33	30th	14:30	01:53
Magnitude / Arc Sec	1st	0.5	18.33	10th	0.6	18.09	20th	0.6	17.81	30th	0.7	17.51



*Uranus*, in Cetus, is in the eastern morning sky.

Rise time / Set time	1st	02:57	15:18	10th	02:22	14:44	20th	01:44	14:06	30th	01:05	13:27
Magnitude / Arc Sec	1st	5.9	3.42	10th	5.9	3.44	20th	5.8	3.47	30th	5.8	3.50



*Neptune*, in Aquarius, rises around midnight. Retrograde motion begins on the 5th.

Rise time / Set time	1st	01:35	12:23	10th	00:59	11:48	20th	00:20	11:08	30th	23:36	10:29
Magnitude / Arc Sec	1st	7.9	2.25	10th	7.9	2.26	20th	7.9	2.27	30th	7.9	2.28

### Suggested Deep Sky Objects for June

This table is part of a series of monthly Deep Sky targets compiled by Bob Kepple, co-author of *Night Sky Observer's Guide*. The complete set of tables, one per month, may be found at the AAAP web site : <http://www.3ap.org/> under the S.I.G. link (Special Interest Group) for Deep Sky Observing.

Bob mentions that, "...objects in the ... lists may be observed for about two months before and after the month they are listed... If you have a small telescope see how many objects you can find in the lists for larger scopes and, of course, individuals with larger instruments will have no trouble observing objects listed for smaller instruments...." [PA = Position Angle of second component in relation to primary, with 0° representing North, 90° representing East, etc.]

Objects for Binoculars							
RA	Dec	Number	Mag(s)	Size/Sep.	PA	Const.	Type of Object
16 <sup>h</sup> 41.7 <sup>m</sup>	+36° 28'	M13	5.7v	16.6'		Her	Globular Cluster
16 <sup>h</sup> 54.0 <sup>m</sup>	-41° 48'	6231	14'	2.6v		Sco	Star Cl. In "False Comet"
17 <sup>h</sup> 21 <sup>m</sup>	-27° 23'	LDN 1773		300'x60'		Sco	Dark Neb. "Pipe Nebula"
17 <sup>h</sup> 40.1 <sup>m</sup>	-32° 13'	M6	4.2v	33'		Sco	Star Cl. "Butterfly Cluster"
17 <sup>h</sup> 46.3 <sup>m</sup>	+05° 43'	IC4665	4.2v	40'		Oph	Star Cluster
17 <sup>h</sup> 59.9 <sup>m</sup>	-34° 49'	M7	3.3v	80'		Sco	Star Cluster
Objects for Small Telescopes (2-6 inch)							
RA	Dec	Number	Mag(s)	Size/Sep.	PA	Const.	Type of Object
16 <sup>h</sup> 23.6 <sup>m</sup>	-26° 32'	M4	5.8v	26.3'		Sco	Globular Cluster
16 <sup>h</sup> 47.2 <sup>m</sup>	-01° 57'	M12	6.8v	14.5'		Oph	Globular Cluster
16 <sup>h</sup> 57.1 <sup>m</sup>	-04° 06'	M10	6.6v	15.1'		Oph	Globular Cluster
17 <sup>h</sup> 14.6 <sup>m</sup>	+14° 23'	64-Alpha	3.5", 5.4"	4.9"	107°	Her	Double Star
17 <sup>h</sup> 15.0 <sup>m</sup>	+24° 50'	65-Delta	3.1", 8.2"	8.9"	236°	Her	Double Star
17 <sup>h</sup> 17.1 <sup>m</sup>	+43° 08'	M92	6.4v	11.2'		Her	Globular Cluster
Objects for Medium Telescopes (8-14 inch)							
RA	Dec	Number	Mag(s)	Size/Sep.	PA	Const.	Type of Object
15 <sup>h</sup> 15.9 <sup>m</sup>	+56° 19'	NGC 5907	10.3v	11.5'x1.7'		Dra	Galaxy
16 <sup>h</sup> 17.0 <sup>m</sup>	-22° 59'	M80	7.3v	8.9'		Sco	Globular Cluster
17 <sup>h</sup> 13.7 <sup>m</sup>	-37° 06'	NGC 6302	9.6v	50"		Sco	"Bug Nebula"
17 <sup>h</sup> 22.3 <sup>m</sup>	-38° 29'	NGC 6337	12.3v	48"		Sco	Planetary Nebula
17 <sup>h</sup> 37.6 <sup>m</sup>	-03° 15'	M14	7.6v	11.7'		Oph	Globular Cluste
17 <sup>h</sup> 58.6 <sup>m</sup>	+66° 38'	NGC 6543	8.1v	"18/350"		Dra	Plan. Neb. "Cat's Eye"
Objects for Larger Telescopes (16-inch & larger) Challenge Objects							
RA	Dec	Number	Mag(s)	Size/Sep.	PA	Const.	Type of Object
16 <sup>h</sup> 04.4 <sup>m</sup>	+40° 41'	NGC 6058	12.9v	>23"		Her	Planetary Nebula
16 <sup>h</sup> 32.5 <sup>m</sup>	-13° 03'	M107	8.1v	10'		Oph	Globular Cluster
16 <sup>h</sup> 47.0 <sup>m</sup>	+47° 32'	NGC 6229	9.4v	4.5'		Her	Globular Cluster
17 <sup>h</sup> 29.3 <sup>m</sup>	-23° 46'	NGC 6369	11.4v	30"		Oph	Plan. Neb. "Little Ghost"
18 <sup>h</sup> 18.8 <sup>m</sup>	-13° 47'	M16/IC4703		35'x28'		SerCd	Eagle Neb. & Star Cluster
18 <sup>h</sup> 59.3 <sup>m</sup>	+48° 28'	NGC 6742	13.4v	30"		Dra	Planetary Nebula

2012 Star Party DatesWagman Obs.

Jun 22 – 23  
 Jul 27 – 28  
 Aug 24 – 25  
 Sep 8 \* – 22  
 Oct 6 \* – 20

Mingo Obs.

Jun 22 – 23  
 Jul 6 – 7, 20 – 21  
 Aug 10 – 11  
 Sep 8 – 22  
 Oct 6 – 20

\* Moonrise

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

AAAP Member Dues: \$ 24.00

Student Membership  
 (K-12 & full time  
 college student): \$16.00

Family Membership \$ 40.00

## Basic Procedure for Paying Dues:

1. Make check payable to "AAAP Inc."
2. Send check to: Michael Meteney, Treasurer  
 1070 Sugar Run Road  
 Venetia, PA 15367-1514

Membership Renewal Form can be found at:

[http://www.3ap.org/AAAP\\_Mem\\_RenForm\\_2012.pdf](http://www.3ap.org/AAAP_Mem_RenForm_2012.pdf)

AAAP Welcomes our New Members

**G. Stephen Carlson**  
**Bill Conway**  
**Dan Foley & Family**  
**Scott Larkin**  
**Donna Ledwin & Family**  
**Kevin J. Smith**  
**James E. Watt**

Club Positions Filled

The new club-wide position of Observatory Technician will be filled by Flacc Stifel.

The new club-wide position of Optical Technician will be filled by Wade Barbin.

Rowen Poole was officially voted in as Wagman Associate Director.

AAAP Officer Elections

After an informative and enjoyable presentation by Dr Thomas Oberst of Westminster College, May's general business meeting concluded with the announcement of the election results for club officers for the period 2012-2013.

A note of thanks to outgoing officers for their efforts over the past year and best wishes to the new club leadership in making the AAAP an enjoyable place to both pursue and promote amateur astronomy.

Amateur Astronomers Association of Pittsburgh, Inc.2012-2013 Executive Officers

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