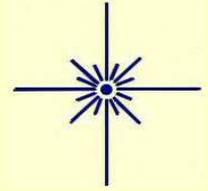




The Guide Star

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



April 2011

Volume 45, No.4

April 15th: AAAP General Meeting Carnegie Science Center

7:30 p.m. *Business Meeting*

*Featured Speaker: Lou Coban, Allegheny
Observatory*

*Topic : Tales from the Keck: Using One of the
World's Largest Telescopes*

What is it like to go on an observing run to a remote mountain top observatory?

With the advent of queue and remote observing it is somewhat of a rarity to do your observations at the observatory.

This talk is about the

process of traveling to and using the Keck II 10 meter telescope. The instrument that we built, how it worked and the peculiar effects of high altitude on your body and your snack foods.

Lou Coban is currently the only full time member of the Allegheny Observatory staff. He has logged over 150 hours observing on the Keck II 10 meter telescope and many more hours on the Allegheny Observatory telescopes.

He specializes in repairing and improving the observatory's telescopes and instrumentation. Recently he led the effort to fully automate the Keeler Reflector and dome, and with the help of some undergraduate students is currently improving the 30 inch Thaw Refractor telescope control systems.

Request for AAAP Volunteers and Attendees

Memorial Day weekend *May 27th, 28th and 29th* will see a three day event at Breakneck Campground near McConnell's Mill State Park. It's the *15th Annual Outdoor Extravaganza* sponsored by the Butler Outdoor Club.

The event will have both daytime and evening activities including biking, hiking, canoeing, kayaking, sailing, horseback riding, nature walks, rafting and various workshops.

On Friday, May 27th at 8 PM the AAAP will host a Beginner Astronomy & Star Gazing Party. Immediately preceding, at 6 PM is a wiener roast and picnic to which AAAP members are invited. Expected attendance is about 100 people. Interested members are invited to volunteer.

Attendance is also welcomed. For information contact AAAP member Bill Moutz at sailboat25@verizon.net or refer to the event page at www.outdoorextravaganza.org



AAAP Officer Nominations

Club Officer elections will take place in May. Anyone wishing to run for office please contact one of the following as soon as possible:

- Bill Yorkshire at obgatekeeper@aol.com or (412) 793-9552,
- Dave Smith at davesmithphoto@verizon.net or (412) 390-0870
- Flacc Stifel at fstifel@verizon.net or (412) 486-8067

Ballots and biographies of the candidates will be printed in the May issue of the Guide Star.

Upcoming Events

April 8th & 9th Star Party, Mingo Creek Park Obs.
April 8th & 9th Star Party at Wagman Obs.

April 16th AAAP at Butler County Symphony 7:30 pm

[Volunteers are still needed. See March Guide Star for Details]

Following items listed courtesy of Kathy DeSantis

April 9. Wireless Association of the South Hills (WASH) has also asked to attempt an EME (Earth-Moon-Earth) Transmission (moon bounce) at the Saturday, Mingo Public Star Party.

April 16. We are lined up with Charlotte Tunney, Glenn Smith, Steve Allinger and possibly Fred Klein at St. Vincent's Winnie Palmer Nature Center, Latrobe, Westmoreland County Earth Day.

April 16 Party for the Planet at the PPG Zoo and Aquarium 11A-3P. This event which gets 6,000 visitors is yet to be staffed by AAAP volunteers and it still needs a chair person.

April 30 Chris Mullen and possibly Fred Klein are lined up to represent AAAP at Mt. Lebanon's Earth Day at Mt. Lebanon Park.

April 30 Shirley Caseman and Kathy DeSantis will also be at Mingo for the Morel Campers Private Star Party.

Floating in the March-April-May time frame there is also interest from Peters Township Parks and Recreation to have our members conduct an astronomy night at Peters Park. Mike Meteney, Bob Kelly and Kathy DeSantis are working to set that up. We need more members to come forward and volunteer to set up telescopes and we need to firm up the date.

June 25. Mingo has been asked by the Wireless Association of the South Hills to site Radio Field Day. Please note: This is also the day reserved for the AAAP Picnic at Deer Lakes Park. These have coincided on previous years.

Citizen Science – 100 Years

A few years ago, the AAVSO was mentioned in an online club discussion and some AAAP members weren't familiar with the organization, what it did or that membership is not required to post observations to the data base which are accepted online.



On the reception of its 20 millionth observation last February, AAVSO director Arne Hendon wrote:

“...The AAVSO currently receives variable star brightness estimates from about 1,000 amateur astronomers per year. No special equipment is needed....Some variable stars are bright enough to be seen with the unaided eye.... Also, the AAVSO has a network of six robotic telescopes which are available to members free of charge....The process [of estimating a star's brightness] can range from less than a minute to many hours per estimate, but typically takes about five minutes....The reality is these observations are invaluable. The database spans many generations and includes data that cannot be reproduced elsewhere. If an astronomer wants to know the history of a particular star, they come to the AAVSO....”

The opportunities for amateur observers to make contributions to astronomical science are few. But the AAVSO has maintained a standing invitation for almost a century. You just register to get an observer ID, download charts - all free - and you're good to go. There's also a free 70 page manual online explaining everything. The following brief history of the AAVSO is by Mike Simonsen

- Guide Star Editor

On October 10, 2011, the American Association of Variable Star Observers will turn 100 years old. To celebrate One Hundred Years of Citizen Science, we have planned grass roots outreach, website features, observing challenges and two meetings to commemorate this historic occasion. So what is the AAVSO, and what is all the fuss about?

The AAVSO is a worldwide, non-profit, scientific and educational organization of amateur and professional astronomers who are interested in stars that change in brightness—variable stars. Since the beginning, the AAVSO has been based on the cooperation between professional and amateur astronomers to collect, archive and analyze variable star data.

Observing variable stars and publishing the observations in astronomical publications had established a toehold in Europe in the 1880's, but it wasn't until Harvard College Observatory Director, Edward C. Pickering, began making appeals to American amateurs in the 1890's that interest began to grow in the United States.



William Tyler Olcott quickly fanned the interest sparked by Pickering into a small fire. Olcott was an amateur astronomer and lawyer who heard Pickering give a talk about variable stars at a meeting of the American Association for the Advancement of Science in 1909. In March 1911, Popular Astronomy published an article by Olcott titled *Variable Star*

Work for the Amateur with Small Telescopes. Olcott echoed Pickering's earlier appeals to amateur astronomers to use their instruments to engage in citizen science by writing: “It is a fact that only by the observation of variable stars can the amateur turn his modest equipment to practical use, and further to any great extent the pursuit of knowledge in its application to the noblest of the sciences.”

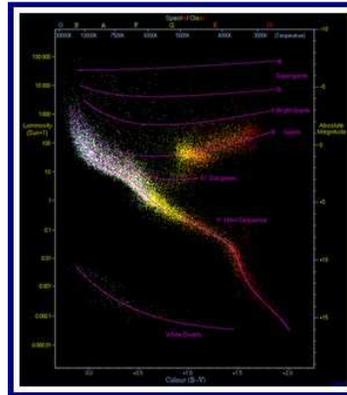
In October of 1911 the AAVSO was organized. It had 13 members. Headquarters was Olcott's house on Church Street in Cambridge, MA. William Tyler Olcott single-handedly performed the duties of all the officers while the organization is in its infancy.

In 1912, Henrietta Swan Leavitt discovered the relationship between Cepheid variables period and their luminosity, allowing astronomers to calibrate distances farther out into space than ever before. Variable stars were about to become very important.

In the early days of the AAVSO, observers concentrated on the known long period variables. The variations of these stars were several magnitudes and the periods from maximum to minimum and back were on the order of hundreds of days. This made them ideally suited to careful visual observers armed with comparison charts with assigned magnitudes of comparison stars.

Training observers, organizing and encouraging them, producing and distributing variable star charts and collecting, recording and publishing the results became the responsibility of the officers of the organization. The Director was actually called the Recorder for the first few decades of the AAVSO's history.

When the AAVSO was incorporated in 1918, there were perhaps a few hundred known long period variable stars. By the time Olcott died in 1936 there were tens of thousands of known variables, far too many for professional astronomers and the observatories of the day to hope to be able to monitor.



To put this era into historical perspective, astronomers were just beginning to sort out the spectral sequence and its meaning. Most believed that all stars started out their lives as hot and bright and got cooler and faded as they matured. The Hertzsprung-Russell Diagram was thought to represent this stellar evolution model, with stars being born on the hot, luminous upper left of the diagram and evolving to the cooler fainter end at the bottom right of the H-R Diagram.

What fueled the stars and how long they lasted was still beyond our understanding. The real picture of stellar evolution and the composition and structure of the interiors of stars were still decades away. That amateur astronomers could record the baffling pulsations of variable stars and potentially help unlock the secrets to the stars must have seemed as amazing then as it does now.

Little did they know that variable stars would be fundamental in our understanding of the life cycles of stars and the history and fate of the Universe. Annie Jump Cannon was just sorting out the spectral classes by temperature into the familiar OBAFGKM sequence.

In 1915 Harlow Shapley used Cepheids to figure out the size and shape of the Milky Way, and our solar system's place within it. That same year, Leon Campbell became Recorder of the AAVSO. In 1918 Harvard College Observatory offered the AAVSO an office in Building A of the observatory. It was the first of only a handful of addresses the organization would occupy in the first 100 years.

In 1924, Edwin Hubble discovered Cepheid variables in the Andromeda Galaxy. That answered the question of whether the Milky Way was the Universe or merely one among billions of galaxies that populate a Universe much more vast than we imagined. Five years later the amazing announcement that the Universe is expanding was made and not only that, but the galaxies farthest away were receding from us faster than the closer galaxies.



Throughout this time, citizen scientists continued to diligently record and archive the changes of mysterious variable stars, while astronomers examined the cosmos in a whole new light.

Some time in 1942 the AAVSO archived its one-millionth observation. In 1946, after 35 years as the head of the AAVSO, Leon Campbell stepped down as Recorder and Margaret Mayall took over stewardship of the organization. The number and complexity of distributing comparison charts grew exponentially as did the job of collecting and archiving the observations. Then in December 1953, Harvard College Observatory decided variable star science wasn't important enough to devote office space to anymore, and the AAVSO was asked to vacate HCO by January 1, 1953.

Kicked to the curb, forced to fend for itself or die, the AAVSO was once again without a formal address. After months of searching, Margaret Mayall found a 400 square foot office in Cambridge to move the AAVSO into. Margaret worked for the AAVSO for free for most of this time and the AAVSO's 50th anniversary in 1961 came and went with-out a lot of fanfare or celebration.. Just keeping the doors open was an every day challenge.



Technology, computers, the space race and man on the Moon brought about dramatic changes in the world of astronomy in the 60's and 70's. In 1965 AAVSO moved again, into slightly bigger offices where it remained for 12 years, and in 1967 the AAVSO entered the computer age with punch card data entry.



In 1974, Janet Mattei became the Director of the AAVSO. Ten years later, the AAVSO International Database contained 5 million observations, and the data was being used by professional astronomers to examine the dynamics of stellar interiors and stellar evolution. AAVSO observers collected information on more types of variable stars than ever before. Cepheids, RR Lyraes, cataclysmic variables, novae, supernovae, R CrBs and some stars that defied classification.

Finally, in 1986, the AAVSO was able to purchase its own building. The AAVSO opened the doors to its new headquarters in August, just around the corner from the offices of Sky and Telescope magazine in Cambridge. The AAVSO had arrived as a force in astronomical research and Janet Mattei and the 25 Birch Street address became familiar to astronomers around the planet.

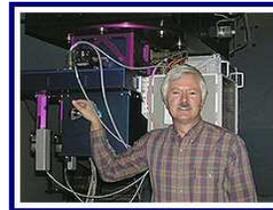
By the 1990's the international aspect of the AAVSO was undeniable. Working in cooperation with other variable star organizations in North and South America, Britain, Europe, Australia, New Zealand and Japan as well as having members and active observers in dozens of countries around the world.

In 1995, the AAVSO became accessible to the world via the Internet when it launched its first website. Our connection to NASA and the space and astronomy community became stronger and the AAVSO released Hands On Astrophysics, an educational program aimed at teaching math and science through variable stars, funded by a grant from NASA.

It wasn't long before astronomers using space telescopes were asking AAVSO observers to monitor cataclysmic variables and other objects from the ground simultaneously while they observed them from space in other wavelengths. Some of our basic understanding of the geometry and structure of accretion disks and the stars in compact binaries came from studies of SS Cygni made by AAVSO observers in conjunction with space satellites. Often times, the satellites would be directed to point at specific targets of opportunity based on reports of stellar activity from AAVSO observers.

In 2002, the AAVSO International Database reached 10.5 million observations.

In March of 2004, Janet Mattei, the heart, soul and face of the AAVSO passed away unexpectedly. It took a year to select a successor, but finally in 2005, Arne Henden became the first Director appointed in the 21st century.



Oddly enough, the AAVSO was facing some of the same challenges it had faced before. The success of the organization had resulted in our outgrowing the Birch Street offices, and when Sky and Telescope announced they were moving and their buildings were for sale, the AAVSO made an offer to purchase and in 2007 moved into the former Sky and Telescope offices.

The AAVSO International Database now contains over 20 million observations and is growing exponentially. Our observers use large sophisticated telescopes, visually and with CCDs to collect more and better observations each year. Some of our observers are able to measure the minute change in light output from a planet crossing in front of a distant star, something William Tyler Olcott could never have imagined.

It is impossible to know where the next one hundred years will lead us, but if you want to be a citizen scientist studying the stars come join us at www.aavso.org.

I'll leave you with this warning about the addictive nature of variable star observing, experienced by one hundred years of variable star observers:

"I feel it my duty to warn any others who may show signs of star susceptibility that they approach the observing of variable stars with the utmost caution. It is easy to become an addict and, as usual, the longer the indulgence is continued the more difficult it becomes to make a clean break and go back to a normal life." (Leslie Peltier, variable star observer, comet discoverer and author of [Starlight Nights](#))

The [AAVSO International Database](http://www.aavso.org) is openly available to the public through their web site www.aavso.org

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: https://nightsky.jpl.nasa.gov/event-list.cfm?Club_ID=675&EventEra=Future</p>						1	2
3	4	5	6	7	8	9	
 <p>SR:07:01 SS:19:46 MR:06:38 MS:20:11 PI:1%</p>	<p>SR:06:59 SS:19:47 MR:07:05 MS:21:11 PI:0%</p>	<p>SR:06:57 SS:19:48 MR:07:35 MS:22:10 PI:2%</p>	<p>SR:06:56 SS:19:49 MR:08:09 MS:23:10 PI:5%</p>	<p>Four day old Moon grouped with both the Hyades and Pleiades</p> <p>SR:06:54 SS:19:50 MR:08:49 MS:----- PI:10%</p>	<p>Star Parties Mingo Park & Wagman Observatories Sunset</p> <p>SR:06:53 SS:19:51 MR:09:35 MS:00:07 PI:17%</p>	<p>Star Parties Mingo Park & Wagman Observatories Sunset</p> <p>SR:06:51 SS:19:52 MR:10:29 MS:01:01 PI:25%</p>	
10	11	12	13	14	15	16	
<p>Occultation of Mekbuda or zeta Geminorum approx. 21:05</p> <p>SR:06:50 SS:19:53 MR:11:29 MS:01:50 PI:34%</p>	 <p>SR:06:48 SS:19:54 MR:12:35 MS:02:33 PI:45%</p>	<p>SR:06:46 SS:19:55 MR:13:44 MS:03:12 PI:56%</p>	<p>SR:06:45 SS:19:56 MR:14:55 MS:03:47 PI:66%</p>	<p>SR:06:43 SS:19:57 MR:16:09 MS:04:19 PI:77%</p>	<p>AAAP General Meeting Carnegie Science Center 7:30PM</p> <p>SR:06:42 SS:19:59 MR:17:23 MS:04:50 PI:86%</p>	<p>Butler County Symphony Orchestra "Space" 7:30 PM</p> <p>SR:06:40 SS:20:00 MR:18:40 MS:05:22 PI:93%</p>	
17	18	19	20	21	22	23	
 <p>SR:06:39 SS:20:01 MR:19:57 MS:05:55 PI:98%</p>	<p>SR:06:37 SS:20:02 MR:21:14 MS:06:33 PI:100%</p>	<p>Eta Aquarid Meteor Shower Begins</p> <p>SR:06:36 SS:20:03 MR:22:27 MS:07:16 PI:99%</p>	<p>SR:06:34 SS:20:04 MR:23:35 08 MS::05 PI:95%</p>	<p>SR:06:33 SS:20:05 MR:----- MS:09:02 PI:89%</p>	<p>Lyrid Meteor Shower Peak</p> <p>SR:06:31 SS:20:06 MR:00:32 MS:10:03 PI:80%</p>	<p>SR:06:30 SS:20:07 MR:01:21 MS:11:06 PI:71%</p>	
24	25	26	27	28	29	30	
 <p>SR:06:29 SS:20:08 MR:02:01 MS:12:10 PI:61%</p>	<p>SR:06:27 SS:20:09 MR:02:35 MS:13:12 PI:51%</p>	<p>SR:06:26 SS:20:10 MR:03:04 MS:14:12 PI:41%</p>	<p>SR:06:25 SS:20:11 MR:03:30 MS:15:11 PI:32%</p>	<p>SR:06:23 SS:20:12 MR:03:54 MS:16:08 PI:24%</p>	<p>SR:06:22 SS:20:13 MR:04:18 MS:17:06 PI:16%</p>	<p>SR:06:21 SS:20:14 MR:04:42 MS:18:04 PI:10%</p>	

Some Celestial Highlights for April

Mercury at inferior conjunction on the 9th reappears in the dawn sky the last half of the month, rising at 06:12 on the 15th. It will rise at 5:31 on the 30th and be separated from the Sun by 24° (the largest separation in April) but the planet will be only 8° off the eastern horizon. Far from ideal.

Venus is in the morning sky all month. On the 1st, Venus will rise at 05:47. The Sun, 34° distant, will rise at 07:04. On the 30th, Venus will rise at 05:19. The Sun, 27° distant, will rise at 06:21.

Mars reappears in the dawn sky late in the month rising at 06:12 on the 15th and 05:39 on the 30th.

Jupiter is in conjunction with the Sun on the 6th and reappears in the dawn sky late in the month rising at 06:32 on the 15th.

Saturn is visible most of the night, coming to opposition on the 4th. At that time the northern side of its ring system will be tilted toward Earth at an angle of 8.7° with a span of 44 seconds of arc. Images captured in late March show that the northern hemisphere disturbance or storm continues, maintaining a "head" trailing a tail that stretches appreciably across the globe.

Uranus reappears in the dawn sky late in the month, rising at 06:45 on the 1st and 04:54 on the 30th. On the 9th it moves to the north side of the celestial equator for the first time since 1969.

Neptune is in the early morning sky, rising at 05:29 on the 1st and at 03:37 on the 30th.

For those using programs to predict **GRS** transits, **Jupiter's System II longitude** is 157°.

Selenographic Colongitude is 227.19° at 0h UT at beginning of the month. Add 12.2° each day.

(All times below are local)

- 7th **Moon** nicely grouped with **Pleiades** and **Hyades**
- 10th 21:05 Approx. time of the disappearance of 4th magnitude **Mekbuda** or **zeta Geminorum** behind the dark limb of our 7-day old Moon. Also occulted almost simultaneously will be 7.6 magnitude SAO 79030 a bit more than a minute to the north of zeta Geminorum. Zeta Gem will reappear at approx. 22:14
- 16th **Lyrid** meteor shower begins. Duration Apr 16 – 25 Peak due Apr.22 with possible ZHR (zenith hourly rate) of 18. This year, partly hampered by our Moon.
- 19th **Eta Aquarid** meteor shower begins. Duration from Apr 19 - May 28. Peak due May 6th with a very optimistic ZHR (zenith hourly rate) of 60-70 for southern observers. Our expected rates are much less.

A Welcome to Our New Members

Brian Doss & Family
John K. Duggan III
Bill Fortune & Family
Willis Gilkey & Family
Betty Onik
Patrick Rieger & Family
Debbie Zafar & Family



Guide Star Submissions

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

Only submissions received before the 15th of the prior month are assured inclusion in the coming issue. The Guide Star is posted online and sent to print on the 20th of the prior month.

Send submissions or questions to: gseeditor@3ap.org

2011 Public Star Party Dates

<u>Date</u>	<u>Location</u>
April 8, 9	Wagman Obs. & Mingo Creek Park Obs.
May 6, 7	Wagman Obs. & Mingo Creek Park Obs.
June 3, 4	Mingo Creek Park Obs.
June 10, 11	Wagman Obs.
July 8, 9	Wagman Obs. & Mingo Creek Park Obs.
August 5, 6	Wagman Obs. & Mingo Creek Park Obs.
September 2, 3	Wagman Obs.
September 17	Wagman Obs. & Mingo Creek Park Obs.
October 1	Mingo Creek Park Obs.
October 8	Wagman Obs.
October 15	Wagman Obs. & Mingo Creek Park Obs.
October 29	Mingo Creek Park Obs.

Raystown Lake Your help is requested....

Melissa Bean one of the rangers at Raystown Lake is requesting a star party August 20, 2011.

Melissa will make available a free one night camp site for any member attending. Please let me know at least one month in advance if you can make it. I will then notify Melissa of how many camp sites we need.

I have sent a e-mail to CPO inviting them also. As in years past they had a large turn out of their members. Our last Raystown event was in 2009. There were over 100 campers attending. In fact there were so many George Guzik had to do his Power Point Presentation twice.

- Bill Moutz

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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