



Mingo Creek Park
Observatory

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



Nicholas E. Wagman
Observatory

April 2010

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APRIL'S MEETING TOPIC

The AAAP general meeting is Friday April 9th at the Carnegie Science Center at 7:30 PM and will feature Lou Coban, an AAAP Member and employee at the Allegheny Observatory.

From Lou on this presentation: "Allegheny Observatory update: What we're doing, where we're going". Often when people see me arriving/leaving the observatory they all say the same thing, "I thought this place was closed?" Nothing could be further from the truth. While it is true that with the retirement of Professor George Gatewood the main astrometry research program has been

curtailed, we still use the observatory quite a bit. Come to the April meeting to see what we've been up to and get a glimpse of all the improvements that have been made in the past decade, see what we're currently working on and where we hope to go with this venerable old institution.

MOON ZOO IS COMING

By Kathy DeSantis

Maybe you participated in **Galaxy Zoo**:

<http://www.galaxyzoo.org/> involving previewing images from the [Sloan Digital Sky Survey](http://www.sdss.org/) (<http://www.sdss.org/>)? Now there is a new citizen scientist image analysis project, **Moon Zoo**.

Moon Zoo will use **high resolution lunar images** from the **Lunar Reconnaissance Orbiter Camera (LROC)** on NASA's **LRO** spacecraft. **Moon Zoo** is expected to be even more popular than **Galaxy Zoo**, benefiting from the recent (2009) attention given to the 40th anniversary of Apollo 11:

(<http://www.scibuff.com/2009/07/21/40-years-after-one-small-step/>), http://www.nasa.gov/mission_pages/apollo/40th/ and NASA's LRO/LCROSS mission: (<http://www.scibuff.com/2009/06/18/nasa-goes-back-to-the-moon/>), <http://lcross.arc.nasa.gov/>

Moon Zoo will ask the participants to **classify and measure the shape** of features on **lunar surface** with the main focus on:

1. **Counting** the number of and **measuring** the size of **impact craters**.
2. **Categorizing locations of interest** such as lava channels, crater chains, lava flooded impact craters, volcanic eruptive centers, etc.
3. **Assessing the degree of boulder hazard** by comparing boulder density on two images.
4. **Identifying recent changes** on lunar surface by comparing LRO and Apollo photographs.
5. **Determining the location of space mission hardware** on the Moon (Apollo landers, Luna rovers, European and Chinese probes).

If you have a discriminating eye, ever wanted to be part of lunar research, or if you just like to have fun with a computer and astronomy, **Moon Zoo** may be for you. Get a head start, by viewing the archived March 25, Moon Zoo Telecon at:

http://nightsky.jpl.nasa.gov/download-view.cfm?Doc_ID=442.

DEADLY PLANETS

By Patrick L. Barry and Dr. Tony Phillips

About 900 light years from here is a rocky planet not much bigger than Earth. It goes around its star once every hundred days, a trifle fast, but not too different from a standard Earth-year. At least two and possibly three other planets circle the same star, forming a complete solar system.

Interested? Don't be. Going there would be the last thing you ever do.

The star is a pulsar, PSR 1257+12, the seething-hot core of a supernova that exploded millions of years ago. Its planets are bathed not in gentle, life-giving sunshine but instead a blistering torrent of X-rays and high-energy particles. "It would be like trying to live next to Chernobyl," says Charles Beichman, a scientist at JPL and director of the Michelson Science Center at Caltech.

Our own Sun emits small amounts of pulsar-like X-rays and high energy particles, but the amount of such radiation coming from a pulsar is "orders of magnitude more," he says. Even for a planet orbiting as far out as the Earth, this radiation could blow away the planet's atmosphere, and even vaporize sand right off the planet's surface.

Astronomer Alex Wolszczan discovered planets around PSR 1257+12 in the 1990s using Puerto Rico's giant Arecibo radio telescope. At first, no one believed worlds could form around pulsars—it was too bizarre. Supernovas were supposed to destroy planets, not create them. Where did these worlds come from?

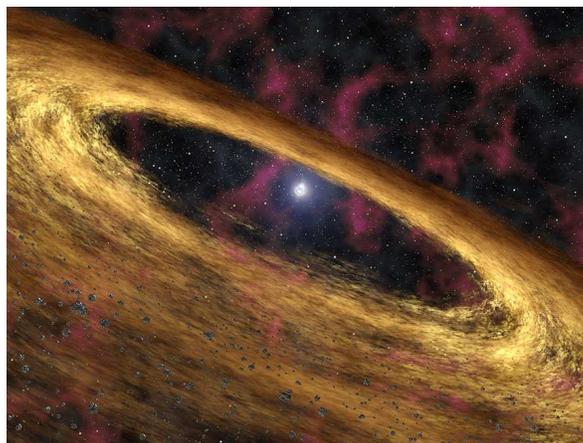
NASA's Spitzer Space Telescope may have found the solution. In 2005, a group of astronomers led by Deepto Chakrabarty of MIT pointed the infrared telescope toward pulsar 4U 0142+61. Data revealed a disk of gas and dust surrounding the central star, probably wreckage from the supernova. It was just the sort of disk that could coalesce to form planets!

As deadly as pulsar planets are, they might also be hauntingly beautiful. The vaporized matter rising from the planets' surfaces could be ionized by the incoming radiation, creating colorful auroras across the sky. And though the pulsar would only appear as a tiny dot in the sky (the pulsar itself is only 20-40 km across), it would be enshrouded in a hazy glow of light emitted by radiation particles as they curve in the pulsar's strong magnetic field.

Wasted beauty? Maybe. Beichman points out the positive: "It's an awful place to try and form planets, but if you can do it there, you can do it anywhere."

Find more news and images from Spitzer at: <http://www.spitzer.caltech.edu/>.

In addition, The Space Place Web site features several games related to Spitzer and infrared astronomy, as well as a storybook about a girl who dreamed of finding another Earth. Go to <http://tiny.cc/lucy208>.



Artist's concept of a pulsar and surrounding disk of rubble called a "fallback" disk, out of which new planets could form.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

VP COLUMN

By Craig Lang

As I write this, I see the Clear Sky Chart for Pittsburgh looks so blue that I wonder if the Chart for some town in West Virginia was accidentally assigned the wrong URL. Very disappointed this beautiful night has to happen on a night right before I have to work, but I hope some of you are out there observing.

Next month is election time once again. Be sure to vote, either in person at the May meeting or via mail, although we would all prefer to see you at the meeting. If you have not considered running for an office, why not consider it now. It is a great way to help out the organization and connect with more members than you imagined and even more so with the public.

We'll also make one more attempt to hear about the latest news from the Allegheny Observatory and Louis Coban at the April 9th meeting.

Now get out there and start wondering...

ANTIQUE TELESCOPE DONATED TO AAAP BY TRUMAN KOHMAN

By John Mozer

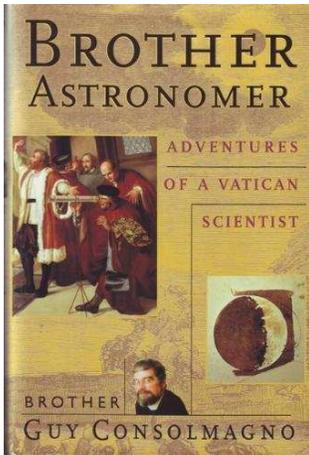
This message is to announce that Truman Kohman has donated his antique telescope to the AAAP. It is a Bardou 70mm refractor that was manufactured in Paris probably in the late 19th century. Its EQ mount is similar to a Clark-Lundin No. 6 mount, which is considered to be quite rare. Truman purchased it in 1930. To view photos of the telescope and see more information on it, please go to the following link:

<http://www.andrew.cmu.edu/user/tk11/firstscope.html>

On behalf of the AAAP, I want to thank Truman for making this donation to our organization. Also, I want to thank Art Glaser for taking the time to pick up the telescope and to spend some time visiting with Truman and his wife and daughter. Truman also donated a box of his personal astronomical records that Art is going to go through to select items that should be kept in the AAAP archives.

BOOK REPORT ON CONSOLMAGNO'S BROTHER ASTRONOMER

By John Cheng



It looks as if the book is no longer being printed but is still available. I put up a small review of this book on Amazon in May, 2000:

A Multi-Faceted Book...

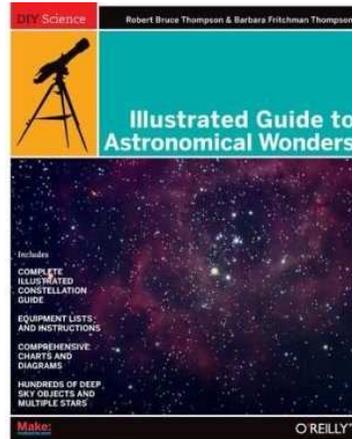
Following are just some of the things this small book manages to be:

- An autobiography tracing a career in science and a path toward a religious calling.
- A discussion of meteor and planetary science.
- An adventure set against the harshness of Antarctica.
- A discussion of the Occidental attitude toward nature, which has led to the historical development of the scientific method.
- A meditation on life as a gift and love superseding both obligation and duty as a motive for action.

Finally, a gentle reminder that the threadbare proposition that science is incompatible with religious belief is far too facile and much too simple. Brother Consolmagno portrays a reality that is more complex, more ambiguous and flat out more interesting. By the way, it's all related with a winning sense of humor.

ILLUSTRATED GUIDE TO ASTRONOMICAL WONDERS

Book Report by John Cheng



Robert and Barbara Thompson's "*Illustrated Guide to Astronomical Wonders*" has uniform 1 square degree black and white photographs of almost all of the deep sky objects in their book. (It's a great book by the way—maybe the best single volume deep sky manual available).

Their small images better approximate what a visual observer might actually see at the eyepiece by eliminating vibrant colors and being printed at a small scale on the page.

The operative word for the photos is "approximate".

The closest thing I've seen to what I actually observe for many DSO's is the drawing of some amateur observers, some gifted, some not so much. They're scattered across the internet.

ASTROPHOTOGRAPHY QUESTION AND ANSWERS

Question by Mike Markiw

For quite a while I've been a big fan of astrophotography, and after attending the October meeting (my first!) and seeing the results of the astrophotography contest, I'm definitely hooked. However, I only purchased my first real telescope this past summer and have very little experience with more advanced equipment. I'm hoping I can lean on some of you here for some advice. I've spent quite a lot of time on the Orion Telescope website looking at their different astrographs, but I'm having trouble finding information on what exactly each different model is suited for. My primary interest is deep-sky objects, but I'd also like to do some planetary imaging at some point as well. I'm guessing that might require two different telescopes, but again, I'm just not familiar enough with how something like the focal length affects a view of the sky to a camera.

I know that I'll need an equatorial mount, and I'm looking at the Orion Sirius EQ-G Goto as it seems to get pretty good reviews from what I've seen. I don't think I would need anything as hefty as the Atlas yet; most of the scopes I'm looking at weigh less than 20 pounds. If I get an Orion tripod, that doesn't limit me to just Orion telescopes, right?

Finally, what kind of cameras (DSLR or otherwise) are best suited for astrophotography? I'm leaning towards a DSLR since I will be able to use it for regular photography as well,

but I'm interested in what other people use as well.

I'm sorry for the lengthy questions, but I'm just kind of excited to finally be around some people who actually share my interest.

[Answer by Fred Klein](#)

Perhaps I can push you in one direction. Others may have other opinions.

1. The first thing you will need is a substantial mount. The Orion Sirius EQ-G Goto that you mentioned would be good, but if you are interested in that, I would suggest the Celestron CGEM, which is essentially the same mount at the same price but somewhat more refined and with much better software in the controller. These mounts are pretty good and plenty sturdy, but you may have some trouble with their lack of precision, but not a bad start. The troubles may be in backlash and periodic error in the gears. But better is a lot more money. To start, you might be able to get by with the Celestron Advanced Series Computerized Equatorial Mount but not for more than an 80mm refractor.
2. A DSLR is a good place to start for a camera. You can pick up a used Canon for ~\$300. The next step up is about \$1200. The problems with DSLR are the dark current and lack of the response at the Hydrogen alpha wavelength, which is the red color in many nebula.
3. For planetary, most of the best work is being done with inexpensive webcams and lots of processing.
4. The telescope is a big problem to choose the one you want. The best deep space work is being done with APO refractors 80mm or larger. But these are expensive. If I was just starting, I might try Astronomy Technologies Astro-Tech 6" f/9 Ritchey-Chrétien astrograph.
5. If you want to do deep sky, you will need to autoguide. This requires an autoguider camera, which can be done under \$500. And also either an off-axis guider or a piggyback guide scope and a way to mount this. Also, guiding software, everyone uses PHD, which is free from <http://www.stark-labs.com/>
6. You will need a computer to collect images in the field and software to control the camera. I use Nebulosity 2, which is \$60 from <http://www.stark-labs.com/>.
7. You will need a power supply for use in the field, deep cycle marine battery.
8. You will need access to a dark site for deep sky, but not for planetary.
9. You will need to spend a lot of time and effort to get all of this working together.
10. I suggest that you concentrate on either deep sky or planetary. They are very different.

Don't hesitate to ask more questions. I hope I haven't put you off with all of this.

[Answer by Nate Brandt](#)

I think you'll find that there are many ways to accomplish your goals in astrophotography and you will get a whole range of opinions. I think all of us AP'ers will attest to our rapidly changing rigs over the past few years. We all have pretty different systems but we all succeed in capturing images. We should have some AP rig demos a few times per year so everyone can see how different they can be!

I just want to put a few comments out there:

1. Buy the best mount you can. I think an Atlas / CGEM is the starting point. Don't let the added weight capacity put you off. A mount will perform better running well under its maximum weight limits than one run on the edge. Even though my scopes have changed three times and my camera changed three times, the one and only thing I still use from my original AP purchases is my Atlas mount. And I just bought a second one!
2. When choosing a mount, consider how you will be controlling it. I think the CGEM has a very good and better refined hand controller software but also consider the free EQMOD software for computer control of the Atlas mounts. If you're using a laptop to control your camera, autoguider, etc., then why not control the mount with it too so everything can work in harmony? I haven't used my hand controller once in the past two years. Celestron offers computer control software too but from what I've seen, it is more option limited than what is available in EQMOD.
3. I started with an 80mm ED scope for imaging and moved to a 100mm APO. I prefer not having to fuss with collimation and guiding is MUCH easier with shorter focal lengths. I would start again with a small APO refractor so long as it has a dedicated flattener / reducer available. Visually these scopes are great but doublets and triplets aren't designed to give a large flat photographic field. Find one that offers a dedicated flattener / reducer for it so you know your stars will be good corner to corner. Stellarvue seems to be moving in the direction of offering matched flatteners for all their scopes now.
4. I started out with a DSLR and then got it modified down the road to be more sensitive to Ha emission. With the cost and learning curves involved, I still think starting with a DSLR is the best and easiest way to go. With custom white balance and a little extra effort you can use a modified camera for everyday photos without a problem.
5. I would buy two scopes; one for lunar/planetary and one for deep sky. Besides, a decent 8-inch Newtonian is pretty darn cheap compared to a quality deep sky imaging scope and will give you better results!
6. There are many different guiding setups and you'll find fans of both on and off axis guiding. It really depends on your setup which you choose to go with. I cannot say that one is better than the other and I have used both. It all depends.
7. Scope mechanics: Pay the extra money for a better focuser! When that focuser tube sags, your stars

trail! The heavier your camera, the worse it sags! The more you stick on the back of your scope like an off axis guider, the more it will sag. The OAG might guide that sag out but you still end up with a tilted image plane. Rigid camera mounting is essential. We don't want things sagging, shifting, etc.

8. Mounting mechanics: Make sure you have got yourself a rigid mounting system. Vixen dovetails can be terrible for flexing. Some people are making solid dovetails that are better but most imagers are using heftier mounting systems like the Losmandy D-style dovetails, which are much wider and more rigid (but heavier = bigger mount requirements).

I think I could ramble on for hours here. My main points are: Don't skimp on the mount. Buy a shorter focal length imaging scope that has good mechanics and dedicated flatteners / reducers available. Make sure the mechanics of your mount, scope, focuser, mounting rings, rails, etc. are very rigid. Be prepared for a long and steep learning curve!

And most importantly, don't be afraid to ask for advice but be prepared to hear lots of differing opinions! We all started somewhere and here's a reminder of that!

My First M16

http://i152.photobucket.com/albums/s189/nbrandt/060907M16_small.jpg



My Latest M16

http://i152.photobucket.com/albums/s189/nbrandt/062609-M16-Ha-O3-RedoA_crop.jpg



So don't be afraid to share your first photos with us!

AAAP PARTICIPATES IN A PSO EVENT

By John Mozer

From March 19 to 21, 2010, a group of eight AAAP members participated in a unique program with the Pittsburgh Symphony Orchestra during its performances at Heinz Hall of the "The Planets," an early 20th century orchestral masterpiece by Gustav Holst. In performing Holst's composition, the PSO was conducted by Yan Pascal Tortelier, Guest Conductor, and was accompanied by the Women of the Mendelssohn Choir of Pittsburgh, directed by Betsy Burleigh. Although Holst treated the planets in an astrological sense, the AAAP members did an excellent job in preparing and presenting exhibits that described the astronomical aspects of the planets and other night sky objects as opposed to the astrological aspects.

The nine AAAP volunteers were Mary DeVaughn, Eric Fischer, Fred Klein, Ed Moss, Bill Moutz, Maureen Moutz, John Mozer, Ann Norman and Joyce Osborn-Fischer. Eric and Fred did a wonderful job of putting together a series of images and descriptive text material on the planets and our solar system. The PSO graphics staff took electronic files of these images and text material and created a display, which was exhibited on a large display board located in the grand tier lobby of Heinz Hall. They also put a smaller version of this material in the PSO program book for these performances. Both of these displays were beautiful and very impressive. Also, Fred's 80-mm Celestron Onyx refractor telescope and Al Paslow's home-made 8-inch, f/8, Pyrex mirror and mounting cell were exhibited in display stands located in the grand tier lobby along with a photograph of AAAP founder, Leo Scanlon, and Albert Einstein during a 1933 science conference in Pittsburgh.

Eric and Fred also assembled three PowerPoint presentations comprised of images of Earth and night sky objects taken by several members of the AAAP. These were shown continuously on three laptop computers on exhibit tables located in the grand lobby and in the lounge on the mezzanine level of Heinz Hall. These exhibit tables also contained items such as: Ann's 3D view of the Martian terrain; Ann's star map book in which she marked the current locations of the planets; Ann's and Bill's large planispheres; brochures containing the star party schedules and maps to the Wagman and Mingo Creek Observatories; an anti-light pollution demonstration; Mars globes; and Bill's large book of astronomy images. Wall exhibits included the incredible rendering by Eric Fischer of the January 1984 cosmic convention of the eight planets and exhibit panels containing Dave Smith's photos of past star parties with some additional text by Bill Moutz. Finally, there were three floor exhibits comprising of Maureen Moutz's 15x70 binoculars on a parallelogram mount, Mary DeVaughn's Celestron 80-mm go to refractor telescope and John Mozer's Orion 8-inch Dobsonian reflector telescope.

It is estimated that approximately 500 people visited our exhibits before and during the intermission for all of the

three performances. They were a very intelligent group of people to talk with and were delighted that we were there with our exhibits to enhance their concert-going experience. In conclusion, it was a great experience for all of us and we were invited by the PSO staff to do this again. Photos below taken by Yonca Karakilic, Audience Engagement Assistant for the PSO.

WELCOME NEW MEMBER

GREG MIZERA



IMPORTANT DATES

April 6—Last quarter Moon 5:37 a.m.
Pluto appears stationary
April 7—Vesta appears stationary
April 8—Mercury at greatest elongation 19° east
Moon at apogee
April 9—CSC AAAP Meeting 7:30 p.m.
Neptune 4° south of Moon
April 11—Jupiter 6° south of Moon
April 12—Uranus 6° south of Moon
April 14—New Moon 12:29 p.m.
April 15—Mercury 1.5° south of Moon
April 16-24—Lyrid Meteor Shower
Mingo Public Star Party
Wagman Public Star Party
April 16—Venus 4° south of Moon
April 17—Frick Park Earth Day
Mingo Public Star Party
Wagman Public Star Party
April 18—Mercury appears stationary
April 21-May 1—Eta Aquarids Meteor Shower
First quarter Moon 2:20 p.m.
Lyrid Meteor Shower
April 22—Earth Day
Mars 5° north of Moon
Lyrid Meteor Shower
April 24—AAAP Demo Westmoreland County Earth Day
Winnie Palmer Nature Preserve 10:00-4:00 p.m.
AAAP Demo Pittsburgh Zoo 11:00-4:00 p.m.
Moon at perigee
April 25—Saturn 8° north of Moon
April 28—Full Moon
Mercury in inferior conjunction
April 29—Ceres appears stationary

May 4—Pallas at opposition
Venus 6° north of Aldebaran
May 5—Eta Aquarid Meteor Shower
May 6—Last quarter Moon 12:15 a.m.
Moon at apogee
Eta Aquarid Meteor Shower
May 7—Neptune 4° south of Moon
May 7 & 8—Mingo public star party
May 9—Jupiter 7° south of Moon
Uranus 6° south of Moon
May 10—Mercury appears stationary
May 12—Mercury 8° south of Moon
May 13—New Moon 9:04 p.m.
May 14—Carnegie Science Center Meeting—Elections
May 16—Venus 0.9° south of Moon
May 20—First quarter Moon 7:43 p.m.
Moon at perigee
Mars 5° north of Moon
May 21 & 22—Wagman & Mingo public star parties
May 23—Saturn 8° north of Moon
May 25—Mercury at greatest elongation 25° west
May 27—Full Moon 7:07 p.m.
May 29—Ceres 0.9° north of Moon
May 31—Saturn appears stationary
Neptune appears stationary

Some information taken from *the year in SPACE* 2010 desk calendar.

NOTICE TO ALL STAR PARTY ATTENDEES

Please take and submit photos to the gseditor@3ap.org so they may be included in the Guide Star. Thank you.

NOMINATIONS FOR AAAP OFFICERS WILL BE TAKEN FROM THE FLOOR AT APRIL'S CARNEGIE SCIENCE CENTER MEETING

Don't forget to come out to the May Carnegie Science Center Business Meeting and vote for club officers. Ballots will be in the May issue of the Guide Star. If anyone wants to run for office, please contact John Close.

FROM BILL AND MAUREEN, YOUR GUIDE STAR EDITORS

We want to take this opportunity to thank AAAP for the privilege of editing the Guide Star for these past few years. We have learned much and had wonderful experiences interacting with all of you. We have decided to give up the position so some other member can grab the reins and take the Guide Star galloping ahead. We will continue to attend scheduled star parties at the observatories and also stay involved in the away star parties. Whomever is the next Guide Star Editor, we will help you in this new endeavor in any way we can.

Amateur Astronomers Association of Pittsburgh, Inc.

Founded June 9, 1929 by

Chester B. Roe and Leo J. Scanlon

2009-2010 Executive Officers:

- President: **Edward Moss**
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- Membership Sec: **Don Hoecker**
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- Guide Star Editors: **Bill & Maureen Moutz**
gseditor@3ap.org

AAAP Member Dues*:

AAAP 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



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