

# CONSTELLATION

An Official Publication of the Bucks-Mont Astronomical Association, Inc.

VOLUME 22, Issue No. 2.	April/May/June 2007	Chris Sommers and Scott Petersen, Editors
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## Stella-Della Valley 2007 October 12-14, 2007 Cam Onas, Ottsville, PA

Join the Bucks-Mont Astronomical Association in its 21<sup>st</sup> year of the Stella-Della Valley StarParty in beautiful Bucks County, PA. This weekend will be filled with vendors, a swap meet, a great pizza party and door prize raffles, guest lecturers, and of course two nights of terrific stargazing. Stella-Della valley has built a reputation as a friendly relaxed StarParty where astronomical friends gather from all over southeastern PA, NJ, DE and NY.



Stella-Della Valley will be held again at Camp Onas, a private camp near Ottsville, PA. This site in northern Bucks County offers some of the darkest skies remaining in the Philadelphia area. Our registration fee includes indoor plumbing and hot showers at no additional fee. There are also a number of pavilions or pre-erected tents on wooden floors with bunk beds available on a first come first-serve basis.

We are pleased to welcome back “Mays Munchables” as our food service provider for SDV in 2007. Mays provides around the clock good food and service for hungry astronomers. On Saturday afternoon we will present several outstanding lecture programs followed by a raffle of door prizes and our traditional pizza party.

Visit our website at [www.bma2.org](http://www.bma2.org) for more information or contact Dwight Dulsky, the SDV Chair at [sdv@bma2.org](mailto:sdv@bma2.org).

### BMAA Gophers

Position	Name
President	Bernie Kosher
Vice President	Dwight Dulsky
Treasurer	Ed Radomski
Secretary	Herb Borteck
Star Watch Coordinator	George Reagan
Constellation Editors	Chris Sommers and Scott Petersen
Webmaster	Jim Moyer

For More Information About BMAA Go to [www.bma2.org](http://www.bma2.org).

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## What Happened This Spring

**BMAA AstroImages.** Well, our webmaster extraordinaire Jim Moyer has done it again! If you haven't been to [www.bma2.org](http://www.bma2.org) there has been a major change. That change is the addition of the BMAA AstroImage Gallery. Ever wanted a web site to post your own images? Now you have one. It is as simple as registering and getting a password. Create your own albums and sub-albums. This site has been well visited, with over 100 for most of the albums started since April. Well-done Jim.

**Events at Barnes and Noble.** Other activities include our new haunt at the Barnes and Noble on Rt. 309 and Knapp Rd. for BMAA's outreach activities. Our own resident educator Dwight Dulsky, has been at the front of this activity and Debbie, the Barnes and Noble Program Coordinator, has been a wonderful host. We had an eclipse watch, and had well over 100 people look through our telescopes even though there were only brief moments of moderate seeing. At the second Star Watch Dwight used a Night Sky Network kit about how craters are formed. Lots of moon watching, and some good views of Saturn. Again, with a couple of hundred people looking through scopes Art Baldwin, Herb Borteck, Dwight, and Chris Sommers set up.

**StarWatches.** Other well-attended StarWatches include those held at New Britain's Covered Bridge Park and Pennypack Ecological Trust in Huntingdon. Both were attended by 50 – 100 guests who had a wonderful time observing the spring planets including Saturn, Venus, and Jupiter which has been making it's appearance over the tree-tops. At these StarWatches the Moon converted itself to a STAR, as people who looked through a telescope for the first time were amazed at its incredible natural beauty. The goddess Luna never disappoints.

BMAA'ers can look forward to a summer of high quality out-reach educational activities and StarWatches.

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## Early Bird Gets the Worm or “Black Hole Breakfast” The NASA Space Place

➤ by Dr. Tony Phillips

We all know that birds eat worms. Every day, millions of birds eat millions of worms. It’s going on all around you! But how often have you awakened in the morning, stalked out in the dewy grass, and actually seen a bird having breakfast? Even though we know it happens all the time, a bird gulping a worm is a rare sight.

Just like a black hole gulping a star...

Every day in the Universe, millions of stars fall into millions of black holes. And that’s bad news for the stars. Black holes exert terrible tides, and stars that come too close are literally ripped apart as they fall into the gullet of the monster. A long burp of X-rays and ultraviolet radiation signals the meal for all to see.

Yet astronomers rarely catch a black hole in the act. “It’s like the problem of the bird and the worm,” says astronomer Christopher Martin of Caltech. “You have to be in the right place at the right time, looking in the right direction *and* paying attention.”

A great place to look is deep in the cores of galaxies. Most galaxies have massive black holes sitting in their pinwheel centers, with dense swarms of stars all around. An occasional meal is inevitable.

A group of astronomers led by Suvi Gezari of Caltech recently surveyed more than 10,000 galactic cores—and they caught one! In a distant, unnamed elliptical galaxy, a star fell into a central black hole and “burped” a blast of ultraviolet radiation.

“We detected the blast using the Galaxy Evolution Explorer (GALEX), an ultraviolet space telescope,” explains Gezari. Her team reported the observation in the December 2006 issue of *The Astrophysical Journal Letters*. “Other telescopes have seen black holes devouring stars before,” she adds, “but this is the first time we have been able to watch the process from beginning to end.”

The meal began about two years ago. After the initial blast, radiation diminished as the black hole slowly consumed the star. GALEX has monitored the process throughout. Additional data from the Chandra X-ray Observatory, the Canada-France-Hawaii Telescope and the Keck Telescope in Hawaii helped Gezari’s team chronicle the event in multiple wavelengths

Studying the process in its entirety “helps us understand how black holes feed and grow in their host galaxies,” notes Martin.

One down, millions to go.

“Now that we know we can observe these events with ultraviolet light,” says Gezari, “we’ve got a new tool for finding more.”

For more on this and other findings of GALEX, see [www.galex.caltech.edu](http://www.galex.caltech.edu). For help explaining black holes to kids, visit The Space Place at [spaceplace.nasa.gov](http://spaceplace.nasa.gov).



*In this artist’s concept, a giant black hole is caught devouring a star that ventured too close.*

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

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## My Two Travel Scopes: The Astronomy Technologies 66ED Refractor and the Orion 102mm Mak-Cass.

➤ By Chris Sommers, BMAA

I started off as an amateur observer when my wife bought me an Orion Star-Max 102mm Mak-Cass on an EQ2 Mount for Christmas a few years back. I now have a SC8 and an 80mm refractor for serious observing. My travel scope has been the Orion 102mm Mak-Cass, which was mounted on a standard photo tripod, and has served me well for the last few years. The Mak-Cass came with a soft case, now sports an Orion red-dot finder, and a 1.25" diagonal. I have a dew shield for the telescope, which was an extra. The emergence of new relatively inexpensive small ED refractors put the bug of going to a small refractor as a travel scope into my mind.



After looking through Art Baldwin's Astronomy Technologies (AT) 80mm ED refractor, a pretty darn good scope for the money, I decided to take a chance on their 66mm ED refractor. AT advertises that "This 11.5" long refractor has the right balance of aperture and focal length to use as a low-power rich field telescope, as a medium-power planetary telescope, or as any kind of telescope in between."



Table 1. Telescope Specifications

	<b>Orion 102mm Mak-Cass</b>	<b>AT 66mm ED Refractor</b>
Cost	\$279 (has since gone up)	\$329
Fit and Finish	Excellent	Excellent
Case	Soft Case	Aluminum Hard Case (with Lock)
Diagonal	1.25 inch (Included)	Not included
Finder	Included	None
Weight	4.8 lbs	3.9 lbs.
Length	11.8"	11.5"
Dew Shield/Lens Shade	Not Included	On OTA-Extendable
Optics and Coatings	Fully Multi-Coated Meniscus.	Fully Multicoated ED Doublet
Tripod Adapter	Photo Tripod	Dove Tail and Photo Tripod
Focal Length	1300mm (f/12.7)	400mm (f/6.0)
Focuser	Mirror Focus	Dual Speed Crayford

My previous experience with the Orion 102mm Mak-Cass was that it out-performed an 80mm short-tube (400mm focal length) achromatic refractor. However, the newer short-tube refractors are now made with ED glass and sport high quality dual-speed focusers. (See the Orion 102mm Mak-Cass, left; AT 66ED Refractor, right) My subjective ratings on various celestial objects are listed below.



In general the AT 66ED out-performed the Orion 102mm Mak-Cass in optical quality, based on my totally subjective and non-scientific opinions, as I am not a professional astronomer or optician. The bottom line is the views were crisper, with better contrast, for virtually all the objects observed with the AT 66ED. There were clear advantages to the longer focal length of the 102mm Mak-Cass for observing globular clusters such as M13 and M92.

Table 2. My Totally Subjective Image Quality Ratings from the Philadelphia Suburbs

	<b>Orion 102mm Mak-Cass</b>	<b>AT 66mm ED Refractor</b>
Saturn (Planet)	Excellent	Excellent
The Double Cluster	Fair	Good
Andromeda Galaxy (M31)	Fair	Good
Orion Nebula (M42)	Fair	Good
Albiero (Double Star)	Good	Excellent
Alcor and Mizar	Good	Excellent
M13 (Globular Cluster)	Good	Fair
M92 (Globular Cluster)	Good	Fair
Moon (Moon)	Good	Excellent
Solar (With FILTER!!!)	Excellent	Not Examined

It is not really fair to compare a small ED refractor to a small inexpensive Mak-Cass (see the “parachute man” in the double cluster taken with the Meade DSI Pro II Imager and the AT 66ED, right).

Can the small Mak-Cass telescopes survive the small ED (almost apo) refractor onslaught?

I think it is a question of what you are looking for.

The small ED refractor was more expensive and might require the purchase of a good diagonal and better quality eyepieces to obtained full performance (\$329 OTA + \$89 diagonal + eyepiece?). It is nice little scope.

For the last 4 years I have gotten very satisfactory performance out of the Orion 102mm Mak-Cass (\$279 OTA + \$19 dew shield), as can be seen from the good quality moon and solar images shown at the start of the article, when used with mid-price range Plossls. The longer focal length (1300 mm) of the Mak-Cass also has some definite advantages over the 400mm refractor.

Only you can decide which scope is best for you.

PS: I have no financial interest or any other arrangement with either Orion or Astronomy Technologies.



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## Even Solar Sails Need a Mast The NASA Space Place

➤ by Patrick L. Barry

Like the explorers of centuries past who set sail for new lands, humans may someday sail across deep space to visit other stars. Only it won't be wind pushing their sails, but the slight pressure of sunlight.

Solar sails, as they're called, hold great promise for providing propulsion in space without the need for heavy propellant. But building a solar sail will be hard; to make the most of sunlight's tiny push, the sail must be as large as several football fields, yet weigh next to nothing. Creating a super-lightweight material for the sail itself is tricky enough, but how do you build a "mast" for that sail that's equally light and strong?

Enter SAILMAST, a program to build and test-fly a mast light enough for future solar sails. With support from NASA's In-Space Propulsion Program to mature the technology and perform ground demonstrator tests, SAILMAST's engineers were ready to produce a truss suitable for validation in space that's 40 meters (about 130 feet) long, yet weighs only 1.4 kilograms (about 3 pounds)!

In spite of its light weight, this truss is surprisingly rigid. "It's a revelation when people come in and actually play with one of the demo versions—it's like, whoa, this is really strong!" says Michael McEachen, principal investigator for SAILMAST at ATK Space Systems in Goleta, California.

SAILMAST will fly aboard NASA's Space Technology 8 (ST8) mission, scheduled to launch in February 2009. The mission is part of NASA's New Millennium Program, which flight tests cutting-edge technologies so that they can be used reliably for future space exploration. While actually flying to nearby stars is probably decades away, solar sails may come in handy close to home. Engineers are eyeing this technology for "solar sentinels," spacecraft that orbit the Sun to provide early warning of solar flares.

Once in space, ST8 will slowly deploy SAILMAST by uncoiling it. The truss consists of three very thin, 40-meter-long rods connected by short cross-members. The engineers used high-strength graphite for these structural members so that they could make them very thin and light.

The key question is how straight SAILMAST will be after it deploys in space. The smaller the curve of the mast the more load it can support. "That's really why we need to fly it in space, to see how straight it is when it's floating weightlessly," McEachen says.

It's an important step toward building a sail for the space-mariners of the future.

Find out more about SAILMAST at [nmp.nasa.gov/st8](http://nmp.nasa.gov/st8). Kids can visit [spaceplace.nasa.gov/en/kids/st8/sailmast](http://spaceplace.nasa.gov/en/kids/st8/sailmast) to see how SAILMAST is like a Slinky® toy in space.



*SAILMAST is the thin triangular truss in front of the picture. It is attached to a section of a silver foil solar sail section shown here in a laboratory test. The mast in the picture is 2m (6 ft) long. The Space Technology 8 mission will test the SAILMAST, which is 20 times longer.*

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

**Achmet for July-Aberrations**  
**(Subtitle, "What the devil is coma?")**  
**(Reprinted from April 2007)**

➤ **By Bernie Kosher, BMAA**

The following song is offered with apologies to the writer and singer of "Why do the stars go on shining?"

Why do my stars look like bird splat?  
Why is the detail washed out?  
Don't they know I paid \$500 for this 450X 60mm Super Zoomo with Barlow and amazingly stable tripod?

OK, so I forced the last line. Big deal.

Why do some scopes give a star image that looks like a Rorschach inkblot? Some of the problems are easily correctable, some with more effort, some are tough luck.

As you know the star images with a perfect objective on a perfect night should be round, without spikes or irregularities. On close inspection a diffraction ring should be visible, and the black ring between the central ("Airy") disk and the first bright ring should be clean and without a halo of scattered light.

What if the image is not a match for this specification? Chances are it won't be, so we'll ask why.

First off consider the conditions of the atmosphere and temperature effects. If the out of focus diffraction pattern is boiling or visibly moving, if it is showing ripples and colored flares, then the night is not a good one for star testing. Be sure the night is still and stable and the scope has come to equilibrium. For further info on seeing refer to the literature or ask someone who can help out. The subject has been touched on in prior columns and could require much more space than we have.

So on to scope aberrations.

The vast majority of poor images are caused by misalignment. Without going into the math, a small error in your primary or secondary alignment, an error in the squaring of the focuser to the tube or a poor optical component will give one or several aberrations. The primary one will be coma (also written as OSC-Offense against the Sine Condition-don't even ask), with a bit of astigmatism. In a refractor the primary problem is 'chromatic aberration'. Big words. Here's a short and perhaps not exact definition of the commonly seen ones.

Aberrations are either 'axial' or extra-axial', meaning, of course, those which are visible on the axis (affecting the whole field) and those which are only visible away from the center.

Among the axials, the most obvious is 'chromatic aberration' referring to a color error. This fault is not found in reflectors, unless it is in the eyepiece, as the mirrors treat all visible colors equally. Chromatic aberration occurs with two-element OG's (usually a crown and a flint glass) as they can only correct for two colors, normally a line in the blue and red. This gives a good correction across the yellow-green to which the eye is most sensitive. In a doublet OG (Object Glass, the usual abbreviation for a lens) the color error is most noticeable as a purple fringe around bright objects, the moon and Venus being examples. OG's using ED glass are less troubled as the color correction is broader due to the glasses having a better offsetting effect on each other. Further explanation is available in the literature or ask someone who has worked a lens. A true 'apochromat' consists of three or more elements and can bring chromatic aberration to a negligibly small amount. The term 'semi-apochromat' is usually an ED glass doublet, and the term is loosely used.

Once again the column is rambling. More next time, beginning with an explanation of the basic aberrations.

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## Quarterly Meeting Minutes

**Bucks-Mont Astronomical Association, Inc.**  
**General Meeting Minutes**  
**Peace Valley Nature Center, Doylestown PA**  
**April 4<sup>th</sup>, 2007**

Officers Present: Bernie Kosher, President; Dwight Dulsky, Vice President; Ed Radomski, Treasurer; Herb Borteck, Secretary; Chris Sommers and Scott Petersen, Constellation. Attendance: 16 members. President Bernie Kosher called the meeting to order at 8:05 pm.

Treasurer's Report: By Ed Radomski. All Accounts as of 4/04/07, Total Assets \$XXXX.XX, Liabilities \$0.00. Ed Radomski reported that there are presently 45 paid up members.

Chris Sommers reported on the Constellation which is now on-line at <http://www.bma2.org/>. This was a superb job and we should all thank Chris and Scott for their efforts. There will be copies made by Bernie Kosher.

George Reagan Star Watch Report: Two special Star Watches.  
April 17, 6:30 at the Quarry Hill Elementary School, 1625 Quarry Rd., Yardley.  
April 26, 6:45 at the Grey Nun Academy, Right across the street from 1625 Quarry Rd, Yardley.  
George would appreciate any help that you may offer. You can contact him at [Starwatch@Bma2.org](mailto:Starwatch@Bma2.org).

There were two new people present at the meeting, Norm Guarni and Bill Rogers. We all hope to see them at our future meetings.

There was a short discussion on the telescope belonging to The Honey Hollow Nature Center. The club is going to prepare a 6-inch telescope to replace their broken 8-inch Celestron. Bernie will fix their mount to receive the newer scope. Bob Jackson is taking what is left of the old scope and will try to salvage some of the parts.

There being no more business. Dwight Dulsky stepped up to the plate and batted a home run with his presentation. He gave us several tips on the problems viewing the planets; passed out information on which filters were useful for specified planets; and he gave us descriptions of, and showed us photos of the various planets. This was followed by Bernie's specific information on Saturn, Mars, etc., all brought to mind by Dwight's talk.

This was another excellent meeting which certainly whetted MY appetite for more star gazing. The meeting was adjourned at 9:27, (all too soon, in my opinion).

Respectfully submitted,  
Herb Borteck, Secretary.

**Bucks-Mont astronomical Association, Inc.**  
**General Meeting Minutes**  
**Churchville Nature Center**  
**May 2<sup>nd</sup>, 2007**

Meeting called to order at 8:10 PM by President Bernie Kosher 18 people present, including President Bernie Kosher, Vice-President Dwight Dulsky and Treasurer Ed Radomski.

Ed Radomski gave the Treasurer's report.

StarWatch Report: George Reagan

Upcoming Special StarWatches in May. Wednesday May 9th @ Council Rock High School South (6 BMAA members attended - Thank You! + 60 students, teachers & parents). Saturday May 19th @ Haycock Elementary School, Quakertown 10:00AM - 2:00 PM (free food for Astronomers!). Thursday May 24 @ Barnes & Nobel Bookstore in Montgomeryville (Store is located near CompUSA, not in the mall) Time: 7:00 PM.

Plus regular StarWatches on:

May 14th Cedar Hill Park, Horsham 9:00 PM

May 18th Lower Nike Park, Warrington 9:00 PM

May 23rd Covered Bridge Park, New Britain 9:00 PM

Stella Della Valley Report: Dwight Dulsky. Notification was given to all major national magazines and publications (Sky & Telescope, The Reflector, Astronomy and related websites). BMAA Webpage update coming soon. Notice to neighboring clubs and past attendees, late May early June

General Discussion: Ed Radomski reminded club members of the Montgomery County Community College (MC3) "Evening Under the Stars" Gala fundraiser on Saturday Sept. 15th. We encourage BMAA members to attend and support MC3 in the opening of their new observatory this fall. Hopefully, a mutually beneficial partnership may arise between our two institutions.

Discounted Guy Ottwell Astronomical Calendars are still available. All members will receive a subscription to "The Reflector", the official quarterly publication of the Astronomical League. However, since this is a quarterly publication there may be some delay in new members receiving their first subscription, please be patient. Alan Pasicznyk - Reminds the membership of discount subscriptions to Sky & Telescope, Astronomy and other publications. Give Alan a call to arrange your discount subscription.

Bernie Kosher - Reported that Kirsten of the Churchville Nature Center is planning a Fall 6-10 week Intro to Astronomy program with BMAA. More information will follow over the summer. Bernie thanked some of the members that have volunteered to assist him in presenting the course at Churchville.

Bob Jackson - Offers pre-drilled Lexan mounting plates for your tripod. See Bob if interested.

Edward P. Murray - Presented updates regarding the Wind Farm at Cherry Springs. Environmental Activist Al Gore expressed his support of the Cherry Springs Dark Sky Park/Preserve in the following statement. "Cherry Springs State Park is a natural treasure in the Pennsylvania State Park system. The view of the Night Sky that it gives us, unencumbered by man-made light, is part of our human heritage that must be protected. Therefore, we stand in support of Cherry Springs State Park as the Nations' very first Dark Sky Park/Preserve. We oppose the construction of any large facility such as the proposed AES Corp Windfarm which will ultimately destroy Cherry Springs as a Dark Sky site. Furthermore, we also oppose the development of any other facility, in surrounding counties, that will compromise Cherry Springs Dark Sky Park/Preserve."

Statement regarding light pollution - "We stand in support of the control of Light Pollution which is the unneeded and unnecessary wastage of artificial light into the sky. Not only does it obliterate the natural beauty of the Night Sky but it is extremely wasteful costing Americans several Billion Dollars per year. It is part of our American Carbon Footprint because we emit 1 Million Tons of CO2 every year. Other environmental studies indicate that this excess light may cause cancer in humans and also causes bird populations to decrease as well as problems with the life cycles of turtles."

Featured Presentation: Chris Sommers of BMAA gave a nice presentation on observing the asteroid Vesta. By the end of May, Vesta will appear as a naked eye object shining at mag. 5.4 between the constellations Ophiuchus & Scorpius. A little later in the year, the Mag. 7 asteroid Ceres can be found near Taurus (binocular & small scopes).

Follow up Presentation: Bernie Kosher discussed and showed us pictures of his recent trip to some mountaintop observing in Stokesville, Va.

The Meeting was adjourned at 9:08 PM to a pleasant evening of observing in the parking lot of Peace Valley.

Respectfully submitted,  
Dwight Dulsky

**Bucks-Mont astronomical Association, Inc.  
Executive Meeting Minutes  
Churchville Nature Center  
May 16<sup>th</sup>, 2007**

Present at the meeting: Bernie Kosher, President; Dwight Dulsky, Vice President; Ed Radomski, Treasurer; Herb Borteck, Secretary; The meeting was called to [dis]order at 7:45PM.

Ed Radomski gave the treasurer's report, and we have 53 paid up Members

Dwight Dulsky gave us a report on the up-coming StellerDeller, that grand affair that we all look forward to. And then we had a great BS meeting in which we discussed all of the many things that we were interested in. YOU MISSED IT because you did not come. It was great and I was sorry when we ended the meeting at 8:45. Our next meeting is June 6 at Peace Valley Nature Center. [Don't blame me if you miss another good one.]

Respectfully submitted,  
Herb Borteck, Secretary

**Bucks-Mont Astronomical Association, Inc.  
Executive Meeting Minutes  
Churchville Nature Center  
June 20, 2007**

Present at the meeting: Bernie Kosher, President; Dwight Dulsky, Vice President; Ed Radomski, Treasurer; Herb Borteck, Secretary; George Reagan, Star Watch Chairman; Chris Sommers, Constellation Editor; Bob Backson; Frank Schubert. The meeting was called to order at 7:30PM.

Ed Radomski gave the treasurer's report.

And we have 56 paid up Members George Reagan said that there are dues to be sent to the Astronomical League. Dwight Dulsky gave Bernie Kosher the finished club brochures. Bernie will adjust the contrast and colors and then he will print them out. These brochures will be the handouts that we will give to others who may be interested in our club's activities.

David Holewinski contacted George Reagan and we will be able to have Star Watches in the Covered Bridge Park. George will let us know when these will be held. Dwight Dulsky went over his list of what had to be done in preparation for the fall Stella Della. Chris Sommers noted that no-one had sent any posts to be included in the up-coming Constellation. If you have information to be placed, please call at once.

IMPORTANT!!!! The usual first Wednesday meeting has been changed to July 11. [This is because July 4th is a holiday.] We held our meeting outside. The weather was great and no mosquitoes came to visit us. Remember: the next club meeting is JULY 11.

Respectfully submitted,  
Herb Borteck, Secretary

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## Constellation-Instructions to Authors

You need to be a BMAA member to submit an article. Articles are typically ½ to 2 pages in length. They can vary in topic from reviews of books, star parties, observing, equipment, issues of general astronomical interest, etc. Go to the BMAA website and take a look at *CONSTELLATION* back issues and you will get the idea. Another good example for articles is on the Cloudy Nights web site (<http://www.cloudynights.com>).

As to the format for articles, please adhere to the following:

Word Processor: MS Word.

Font: Times New Roman

Margins: 1 inch all sides.

Title Font Size: 14 pt

Text Font Size: 10 pt

Spacing: Single Space

Original Figures: Gray scale or color, jpeg format, and please save the file as the size as it would appear in the article (about 2" x 3"). The figures should be original due to copyright issues.

The Editors will modify the article as needed to fit the format.

Email articles to: [constellation@bma2.org](mailto:constellation@bma2.org)

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The *CONSTELLATION* is the official publication of the Bucks-Mont Astronomical Association, Inc., a 501c3 non-profit organization incorporated in the Commonwealth of Pennsylvania and exists for the exchange of ideas, information, and publicity among the BMAA membership, as well as the amateur astronomy community at large. The views expressed are not necessarily those of BMAA, and those of contributors may be edited to fit within the format and confines of the publication. The contents this publication, and its format (published hard copy or electronic) are copyright of ©2006 BMAA, Inc., and may not be reproduced or distributed without express written consent of BMAA, Inc.

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**BMAA 2007 Calendar of Events**  
(Check for Updates at [www.bma2.org](http://www.bma2.org))

July	11 Wed	8pm	BMAA General Meeting, <u>Peace Valley Nature Center</u> , Doylestown
	13 Fri	9pm	StarWatch, <u>Pennypacker Mills</u> , Schwenksville
	19 Thu	9pm	StarWatch, <u>Hansell Park</u> , Buckingham
	24 Tue	9pm	StarWatch, <u>Peace Valley Nature Center</u> , Doylestown
August	1 Wed	8pm	BMAA General Meeting, <u>Peace Valley Nature Center</u> , Doylestown
	10 Fri	9pm	StarWatch, <u>Pennypacker Mills</u> , Schwenksville
	16 Thu	9pm	StarWatch, <u>Cedar Hill Park</u> , Horsham
	20 Mon	9pm	StarWatch, <u>Upper Gwynedd Wildlife Preserve</u> , Upper Gwynedd
September	21 Tue	7pm	StarWatch, <u>Mercer Museum</u> , Doylestown
	5 Wed	8pm	BMAA General Meeting, <u>Peace Valley Nature Center</u> , Doylestown
	6 Thu	8:30pm	StarWatch, <u>Honey Hollow Environmental Education Center</u> , Solebury
	11 Tue	8:30pm	StarWatch, <u>Peace Valley Nature Center</u> , Doylestown
October	14 Fri	8:30pm	StarWatch, <u>Nockamixon State Park</u> , Quakertown
	18 Tue	8:30pm	StarWatch, <u>Silver Lake Park</u> , Bristol
	3 Wed	8pm	BMAA General Meeting, <u>Peace Valley Nature Center</u> , Doylestown
	5 Fri	7:30pm	StarWatch, <u>Pennypack Ecological Restoration Trust</u> , Huntingdon Valley
November	12-14 Fri-Sun		<u>STELLA-DELLA-VALLEY XXI</u> , <u>Camp Onas</u> , Ottsville
	16 Tue	7:30pm	StarWatch, <u>Lower Nike Park</u> , Warrington
	19 Fri	7:30pm	StarWatch, <u>Tamanend Park</u> , Upper Southampton
	01 Thu	7:30pm	StarWatch, <u>Honey Hollow Environmental Education Center</u> , Solebury
December	7 Wed	8pm	BMAA General Meeting, <u>Peace Valley Nature Center</u> , Doylestown
	9 Fri	7:30pm	StarWatch, <u>Covered Bridge Park</u> , New Britain (Adjacent to the Covered Bridge)
	15 Thu	7:30pm	StarWatch, <u>Willard Markey Centennial Park</u> , Perkasi
	20 Tue	7:30pm	StarWatch, <u>Peace Valley Nature Center</u> , Doylestown

# Bucks-Mont Astronomical Association

## Membership Application

Name and address

Renewal( ) New Member( )

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Renewal Dues are \$25.00/year and are due starting in November

Dues for new members are:

January	\$25.00
February	\$23.00
March	\$21.00
April	\$19.00
May	\$17.00
June	\$15.00
July	\$13.00
August	\$11.00
September	\$9.00
October	\$25.00
November	\$25.00
December	\$25.00

Telephone

Home

Cell

E-mail

Additional members from the same household are 1/2 price.

Your name, city of residence, telephone number and e-mail will be posted in the member's area of the website that can be viewed by using a club issued name and code word. The code is changed periodically and issued to club members only.

( ) Do not list my name or any personal information on the website.

The Association saves considerable money each year through electronic delivery of the Constellation. Printed copies will always be available at the meetings. You will receive the Constellation by being notified by E-mail when it is available on the website.

( ) Check here to receive the Constellation by Traditional mail.

Your e-mail address will be added to the e-group list and you will receive one e-mail a day containing all the mail that is sent to the group address by other members that day. This will allow you to be aware of current activities and discussions, and you may respond to any message by addressing your response to the e-group address. You must be a member to send to or receive messages from the e-group. You may cancel or change this option by contacting Jim Moyer, info[at]bma2.org.

BMAA Web site - <http://www.bma2.org>

Please return this form, with a check payable to BMAA, to:  
Ed Radomski  
36 Far View Rd.  
Chalfont, PA 18914