CONSTELLATION

The Official Publication of the Bucks-Mont Astronomical Association, Inc

VOL XIX, NO 3/4w **MARCH/APRIL 2004** **Scott Petersen, Editor**

Vega Rising

- by Alan Pasicznyk

It's late on an August night with the crickets happily chirping, and as I begin to put away the dew laden telescope and eyepieces I can see a bright twinkling star, Capella, rising over the apple orchard to the northeast. Then it's September, October, Halloween and the first frost of the season, the Pleiades begin to rise in the east early in the crisp Autumn night, a ghostly Halloween apparition. November, December, the first snow of the season, and now the three belt stars of Orion are visible rising on the eastern horizon shortly after sunset. Unless you're at the Winter Star Party in the Florida Keys, it's a safe bet to say that whenever you can see Orion the Hunter in the night sky, it's pretty darn cold out! The last of the bright summer stars, Vega now low in the west, starts to set as Orion begins to climb higher and higher to take his prominent position to rule the winter night sky. January, February, and now Orion is due south, Vega has somehow mysteriously disappeared in the west, and Capella in the constellation Auriga is directly overhead. It is now in the dead of winter, and Auriga the charioteer summons all the weak batteries in cars and trucks and other vehicles of conveyance to join him in heaven!

At this point it sometimes seems like winter is going to go on forever, but to cheer myself up during this somewhat dismal time of the year, one of my favorite pastimes is to look to the north and see the Big Dipper or the Great Bear Ursa Major standing on his tail. And if you punch holes in the "bottom of the dipper" and let the water fall through, going down, down, into the eastern sky, it will land on Leo the lion's head! Even though cats, especially BIG cats, hate having water dripping on their head, the point of this whole exercise is that it's late at night in February, and I can see Leo, a spring constellation! Although it may not seem that way at the time, winter will not go on forever, because every night this springtime constellation climbs higher and higher into the night sky.

It's March now, and I can follow the curve of the handle in the Big Dipper to Arcturus in the east, looking like a bright red mars-like planet in the night sky. Still the weather is sometimes nice but often miserable, maybe even some late season snow; old man winter refuses to release his clutches on planet Earth. But then suddenly, late on a clear March night, I can see a strange new bright bluish star shining in the northeast. It is Vega Rising, a summertime star in the constellation Lyra the harp, and pretty soon winter subsides, spring, then summer arrives, and before you know it, it's late on an August night with the crickets happily chirping...

* * * * * * *

BMAA member Alan Pasicznyk provides occasional articles of interest for the CONSTELLATION.
Alan can be reached at constellation@bma2.org *[-ed]*

BMAA 2004 Calendar of Events inside on page three
'NASA Space Place' column inside on pages four and six
'Tips' column inside on page five
President's View on page seven

Wednesday, March 3 at 8:00p - BMAA General Meeting at Peace Valley
BMAA Business Meeting - March 17 at 8:00p
The next BMAA General Meeting is scheduled for Wednesday, April 7 at 8:00p

---

BMAA MESSAGELINE - 215/579-9973
email: info[at]bma2.org
website: http://www.bma2.org/

Bucks-Mont Astronomical Association, Inc
General Meeting Minutes
Peace Valley Nature Center, Doylestown PA
February 4th, 2004

BMAA minutes are available in the members' area only

Bucks-Mont Astronomical Association, Inc
General Meeting Minutes
Peace Valley Nature Center, Doylestown PA
March 4, 2004

BMAA minutes are available in the members' area only

Submission deadline for articles is the 15th of the month prior to publication.

SCOTT PETERSEN
CONSTELLATION EDITOR
WYCOMBE PA 18980-0333
constellation@bma2.org

Bucks-Mont Astronomical Association, Inc

2004 Calendar of Events

StarWatch Chairman: George Reagan, starwatch@bma2.org
Information Line - 215/579-9973

Mar	3	Wed	8:00p		**BMAA Monthly Meeting** - Peace Valley Nature Center, Doylestown
	12	Fri	7:00p		StarWatch, Tamanend Park, Southampton
	17	Wed	8:00p		**BMAA Executive Meeting** - Peace Valley Nature Center, Doylestown
	20	Sat	7:00p	*	StarParty (Messier Marathon) , location to be announced
	25	Thu	7:00p		StarWatch, Honey Hollow Nature Center, Solebury
	30	Tue	7:00p		StarWatch, Peace Valley Nature Center, Doylestown
Apr	7	Wed	8:00p		**BMAA Monthly Meeting** - Peace Valley Nature Center, Doylestown
	15	Thu	8:30p		StarWatch, Lower Nike Park, Warrington
	17	Sat	8:30p	*	StarParty, location to be announced
	19	Mon	8:30p		StarWatch, Neshaminy High School, Langhorne
	21	Wed	8:00p		**BMAA Executive Meeting** - Peace Valley Nature Center, Doylestown
	24	Sat	1-5p		**ASTRONOMY DAY** – to be announced
	24	Sat	8:30p		StarWatch, Goodnoe's Restaurant, Newtown
	27	Tue	8:30p		StarWatch, Silver Lake Park, Bristol
May	5	Wed	8:00p		**BMAA Monthly Meeting** - Peace Valley Nature Center, Doylestown
	14	Fri	9:00p		StarWatch, Peace Valley Nature Center, Doylestown
	18	Tue	9:00p		StarWatch, Willard Markey Centennial Park, Perkasie
	19	Wed	8:00p		**BMAA Executive Meeting** - Peace Valley Nature Center, Doylestown
	22	Sat	9:00p	*	StarParty, location to be announced
	25	Tue	9:00p		StarWatch, Cedar Hill Park, Horsham
	28	Fri	9:00p		StarWatch, Pennypack Trust, Huntingdon Valley
Jun	2	Wed	8:00p		**BMAA Monthly Meeting** - Peace Valley Nature Center, Doylestown
	7	Mon	9:00p		StarWatch, Gwynedd Wildlife Preserve, Upper Gwynedd
	16	Wed	8:00p		**BMAA Executive Meeting** - Peace Valley Nature Center, Doylestown
	18	Fri	9:30p		StarWatch, Nockamixon State Park, Quakertown
	19	Sat	9:30p	*	StarParty, location to be announced
	25	Fri	9:30p		StarWatch, Green Lane Nature Center, Green Lane
Jul	7	Wed	8:00p		**BMAA Monthly Meeting** - Peace Valley Nature Center, Doylestown
	9	Fri	9:30p		StarWatch, Peace Valley Nature Center, Doylestown
	15	Thu	9:30p		StarWatch, Honey Hollow Nature Center, Solebury
	17	Sat	9:30p	*	StarParty, location to be announced
	21	Wed	8:00p		**BMAA Executive Meeting** - Peace Valley Nature Center, Doylestown
	23	Fri	9:30p		StarWatch, Tamanend Park, Southampton
Aug	4	Wed	8:00p		**BMAA Monthly Meeting** - Peace Valley Nature Center, Doylestown
	12	Thu	9:00p		StarWatch, Green Lane Nature Center, Green Lane
	14	Sat	9:00p	*	StarParty, location to be announced
	16	Mon	9:00p		StarWatch, Peace Valley Nature Center, Doylestown
	18	Wed	8:00p		**BMAA Executive Meeting** - Peace Valley Nature Center, Doylestown
	20	Fri	9:00p		StarWatch, Silver Lake Park, Bristol
	23	Mon	9:00p		StarWatch, Gwynedd Wildlife Preserve, Upper Gwynedd
Sep	1	Wed	8:00p		**BMAA Monthly Meeting** - Peace Valley Nature Center, Doylestown
	9	Thu	8:30p		StarWatch, Cedar Hill Park, Horsham
	13	Mon	8:30p		StarWatch, Lower Nike Park, Warrington
	15	Wed	8:00p		**BMAA Executive Meeting** - Peace Valley Nature Center, Doylestown
	18	Sat	8:30p	*	StarParty, location to be announced
	21	Tue	8:00p		StarWatch, Silver Lake Park, Bristol
Oct	6	Wed	8:00p		**BMAA Monthly Meeting** - Peace Valley Nature Center, Doylestown
	8	Fri	7:30p		StarWatch, Nockamixon State Park, Quakertown
	13	Wed	7:30p		StarWatch, Pennypack Trust, Huntingdon Valley
	15-17	Fri-Sun			**STELLA-DELLA-VALLEY XVIII**, Camp Onas, Ottsville
	20	Wed	8:00p		**BMAA Executive Meeting** - Peace Valley Nature Center, Doylestown
	22	Fri	7:30p		StarWatch, Tamanend Park, Upper Southampton
Nov	3	Wed	8:00p		**BMAA Monthly Meeting** - Peace Valley Nature Center, Doylestown
	4	Thu	7:00p		StarWatch, Honey Hollow Nature Center, Solebury
	9	Tue	7:00p		StarWatch, Peace Valley Nature Center, Doylestown
	13	Sat	7:00p	*	StarParty, location to be announced
	15	Mon	7:00p		StarWatch, Penn View Christian School, Souderton
	17	Wed	8:00p		**BMAA Executive Meeting** - Peace Valley Nature Center, Doylestown
	18	Thu	7:00p		StarWatch, Willard Markey Centennial Park, Perkaise
Dec	1	Wed	8:00p		**BMAA Monthly Meeting** - Peace Valley Nature Center, Doylestown
	11	Sat	7:00p	*	StarParty, location to be announced
	15	Wed	8:00p		**BMAA Executive Meeting** - Peace Valley Nature Center, Doylestown

---

* StarParties are open to members and guests only.
StarWatches are free and open to the public.

NASA Space Place

Deep Space Network 2-for-1 Sale!

- by Patrick L Barry

Call it a "buy one, get one free" sale for astronomers: Build a network of radio dishes for communicating with solar-system probes, get a world-class radio telescope with a resolution nearly as good as a telescope the size of Earth!

That's the incidental bonus that NASA's Deep Space Network (DSN) offers the astronomy community. Designed to maintain contact with distant spacecraft in spite of the Earth's rotation, the large, widely spaced dishes of the DSN are ideal for performing a form of radio astronomy called "very long baseline interferometry" (VLBI).

VLBI produces very high resolution images of the cosmos by combining the output from two or more telescopes. The result is like having a giant "virtual" telescope as large as the distance between the real dishes! Since bigger telescopes can produce higher resolution images than smaller ones, astronomers need to use dishes that are as far apart as possible.

That need dovetails nicely with the DSN's design. To maintain continuous contact with deep space missions, the DSN has tracking stations placed in California, Spain, and Australia. These locations are roughly equally spaced around the Earth, each about 120 degrees of longitude from the others-that way at least one dish can always communicate with a probe regardless of Earth's rotation. That also means, though, that the straight-line distance between any two of the stations is roughly 85 percent of Earth's diameter-or about 6,700 miles. That's almost as far apart as land-based telescopes can be.

"We often collaborate with other VLBI groups around the world, combining our dishes with theirs to produce even better images," says Michael J. Klein, manager of the DSN Science Office at NASA's Jet Propulsion Laboratory. "Since our 70-meter dish in Canberra, Australia, is the largest dish in the southern hemisphere, adding that dish in particular makes a huge difference in the quality of a VLBI observation."

Even though only about 1 percent of the DSN's schedule is typically spared from probe-tracking duty and scheduled for radio astronomy, it manages to make some important contributions to radio astronomy. For example, the DSN is currently helping image the expanding remnant of supernova 1987A, and Dr. Lincoln Greenhill of the Smithsonian Astrophysical Observatory is using the DSN dishes to explore a new way to measure the distances and velocities of galaxies.

And all this comes as a "bonus" from the dishes of the DSN.

* * * * * * *

To introduce kids to multi-wavelength astronomy, NASA's website for kids, The Space Place, has just added the interactive demo, "Cosmic Colors," at spaceplace.nasa.gov/cosmic .

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

Observing Tips

The suburban amateur observer

- by Bernie Kosher

Night has fallen, the sky is clear and the moon has set. A fine night to get out the scope and enjoy the beauty of the stars.
But it's too late to drive out to a dark sky site, so you set up the scope in the backyard. As you have most likely done before, you take a tour of the regular targets. They are bright and easy to find. After a bit, you realize you've run out of things to look at. You feel a reluctance to pack it up, as the night is so nice, but you are becoming a bit bored with the same old sites. And light pollution in your yard is fairly bad.

You've looked at Jupiter and Saturn.

Why, it must be time to try something new!

But what? After all, you've tried to find some of the galaxies that are so easy from the mountains, but they are just too faint for the scope to pull out of the murk. The large nebulosities are washed out and without detail.

From my backyard in the outskirts of Trenton, I rarely get stars of fifth magnitude directly overhead, and the light pollution increases dramatically to my west and south, both areas very bright due to the cities of Trenton and Philadelphia.

However, I have found many of the deep sky objects listed in the Edmund Mag 5 Star Atlas and quite a few from the Edmund Mag 6 Atlas. No, it wasn't easy, but it can be done. How?

A list of essentials.

Knowledge of the night sky. If you thought I was going to make this easy, you're wrong. Get out your planisphere, basic atlas or whatever and learn the brighter constellations, at least to the extent they are visible. Get a feel for location of the stars in respect to others. Develop your own mental map. Say to yourself "Leo is located by following the Dippers Pointer stars in the opposite direction of Polaris".

Learn to match the star patterns on your chart to the sky. Charts use a set of dots to represent the stars. Usually, a stars of a given magnitude range are considered to be the same dot size. Therefore, a star of mag 1.49 will be shown larger than a star of 1.51, while that same 1.51 will be shown as the same dot size as one of 2.49. This is called "binning" and can be terribly disorienting. The patterns in the sky will not seem to match your chart. Oh well.

Drop your preconceived notions of what can and cannot be spotted in your scope. I believe I have mentioned this in a prior column, but here goes again. While searching for the planetary NGC 6543, I had the dead certain idea it was a large and puffy target, sort of like the Ring Nebula or the Dumbbell. How I had decided this is beyond me. Call it innocence, or perhaps arrogant stupidity.

Anyhow, I had searched carefully for at least a half hour, recalling that it's magnitude as listed in the atlas indicated it should be as bright as either. What the ####? Where was the little devil? Are the atlases wrong? Are they conspiring to drive me away from astronomy? Is Achmet doomed to a life of failure? But what is this? At 60X with my 4.5" refractor, I noticed a star that just did not look right. A bit larger than the others. Cranking up the voltage revealed a lovely little disc that appeared slightly greenish blue. The feeling was a bit hard to describe.

Be prepared to fail to find it. Just because you couldn't, you still enjoyed the hell out groping around and perhaps seeing a chain of stars, or a pattern of them. Perhaps you found a fine red star, of a nice looking double. It was enjoyable just being under the night sky wasn't it? If it wasn't, then give up the hobby. You have died and left us.

Develop a feel for the magnitude of your targets. Just because the magnitude of a deep sky object is such and such, it may not look like that in the scope. A large and diffuse target listed as magnitude 7, such as the lovely spiral M33, is far less obvious than many galaxies listed as mag 10 or so that are small and brighten toward the center.

Learn the size of the field visible in your instrument. At least in a vague sort of way. Learn what a size of, say, 10 minutes of arc looks like. This will help you learn to star hop, and give you an idea as to the size of your target. But beware! A galaxy listed as 10 minutes of arc in size may only appear to be a few minutes in your scope. The listed sizes are photographic (in most atlases), as are the magnitudes. The visual magnitude and size will differ considerably.

Dark adapt. Try to locate your scope or such that the local lights are blocked. If necessary, keep your observing eye closed if you run into the house for a break.

Go outside on clear nights. The number of deep sky objects visible through the walls and roof of your house is limited. Planetary nebulae are rarely visible located on the TV screen. Bright meteors that turn colors and burst in a display of fragments are tough to see through from your seat at the computer.

Well, I seem to have totally failed to mention optical instruments. I wonder why? Perhaps next time.

* * * * * * *

- BMAA member Bernie Kosher provides the monthly 'Tips' column. He can be reached at constellation@bma2.org. *[-ed]*

NASA Space Place

Sciencecraft

- by Patrick L Barry and Tony Phillips

Probes that can distinguish between "interesting" things and "boring" things are vital for deep space exploration, say JPL scientists.

Along with his colleagues in NASA's Space Technology 6 Project (ST6), JPL's Steven Chien is working to develop an artificial intelligence technology that does just that. They call it the Autonomous Sciencecraft Experiment, and it's one of many next-generation satellite technologies emerging from NASA's New Millennium Program.

As humanity expands its exploration of the outer solar system-or even neighboring solar systems!-the probes we send suffer from two unavoidable handicaps. First, commands radioed by mission scientists on Earth take a long time to reach the probe: six hours for the planned New Horizons mission to Pluto, for example.

Second, the great distance also means that data beamed back by the probe trickles to Earth at a lower bandwidth-often much less than an old 28.8 kbps modem. Waiting for hundreds or thousands of multi-megabyte scientific images to download could take weeks. And often many of those images will be "boring," that is, they won't contain anything new or important for scientists to puzzle over.

That's certainly not the most efficient way of using a multi-million dollar probe.

Even worse, what if one of those images showed something extremely "interesting"-a rare event like a volcanic eruption or an unexpected feature like glaciers of methane ice? By the time scientists see the images, hours or days would have passed, and it may be too late to tell the probe to take a closer look.

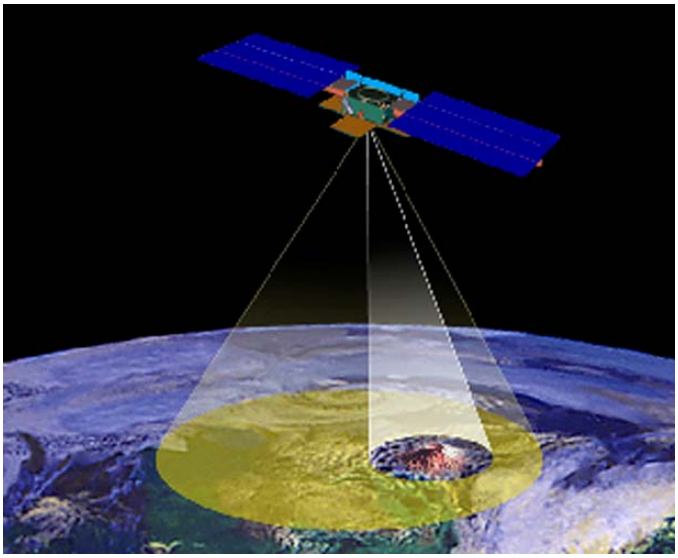
But how can a probe's computer brain possibly decide what's "interesting" to scientists and what's not?

"What you really want is a probe that can identify changes or unique features and focus on those things on its own, rather than just taking images indiscriminately," says Arthur Chmielewski, one of Chien's colleagues at JPL.

Indeed, that's what Chien's software does. It looks for things that change. A mission to Jupiter's icy moon Europa, for instance, might zero in on newly-formed cracks in the ice.

Using artificial intelligence to set priorities, the probe could capture a complete movie of growing fractures rather than a single haphazard snapshot.

Until scientists can actually travel to deep space and explore distant worlds in person, they'll need spacecraft "out there" that can do some of the thinking for them. Sciencecraft is leading the way.



The Autonomous Sciencecraft technology that will be tested as part of ASA's Space Technology 6 mission will use artificial intelligence to select and transmit only the scientifically significant images.

* * * * * * *

Learn more about Sciencecraft at nmp.nasa.gov/st6.
Kids can make a "Star Finder" for this month and learn about another of the ST6 technologies at spaceplace.nasa.gov/st6starfinder/st6starfinder.htm .

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

President's View

Do you think this stuff grows on trees?

- by Antoine Pharamond

By "stuff", I refer to that wonderfully written, hyper-informational and astronomically pertinent text one usually finds in the back half of this newsletter. We all take it for granted. The Constellation comes, and we go straight to "the article". "What's it gonna be about this month?" we ask. Planets? Optics? Interstellar travel? You name it, and Bernie has either written about it, or will. Really. Ah, yes, Bernie Kosher. He's the mysterious and eloquent character that contrives most of this great "stuff" that keeps us reading and pondering late into the night. But does that seem fair?

It must be hard work for poor 'ole Bernie to keep coming up with all this, month after month, article after article. So what do you say we try to give him a little break once in while? I bet he'd appreciate it. Anyone can contribute to the Constellation. So if you have something that might be of interest to other members – a story, an experience, a certain expertise – share it. Just type it up, send it to Scott, and voila, you're published! Let's see who rises to the challenge first…

Clear Skies…

* * * * * * *

- BMAA President Antoine Pharamond can be reached at pres@bma2.org. *[-ed]*

Executive Meeting Minutes
Peace Valley Nature Center, Doylestown PA
February 18, 2004

BMAA minutes are available in the members' area only

Bucks-Mont Astronomical Association, Inc
Membership Application

- photocopy as needed -

Name and address

_____

_____

_____

_____

Telephone

Home_____

Cell_____

E-mail_____

☐ 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

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 by offering 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 if you would like 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 Website http://bma2.org

Please return this form, with a check payable to BMAA, to:

Ed Radomski
36 Far View Rd.
Chalfont, PA 18914

Revised 1/04