



Observations

2006 Winner of the Astronomical League's
Mabel Sterns Best Newsletter Award

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CHESTER COUNTY ASTRONOMICAL SOCIETY

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Visit our website at www.ccas.us

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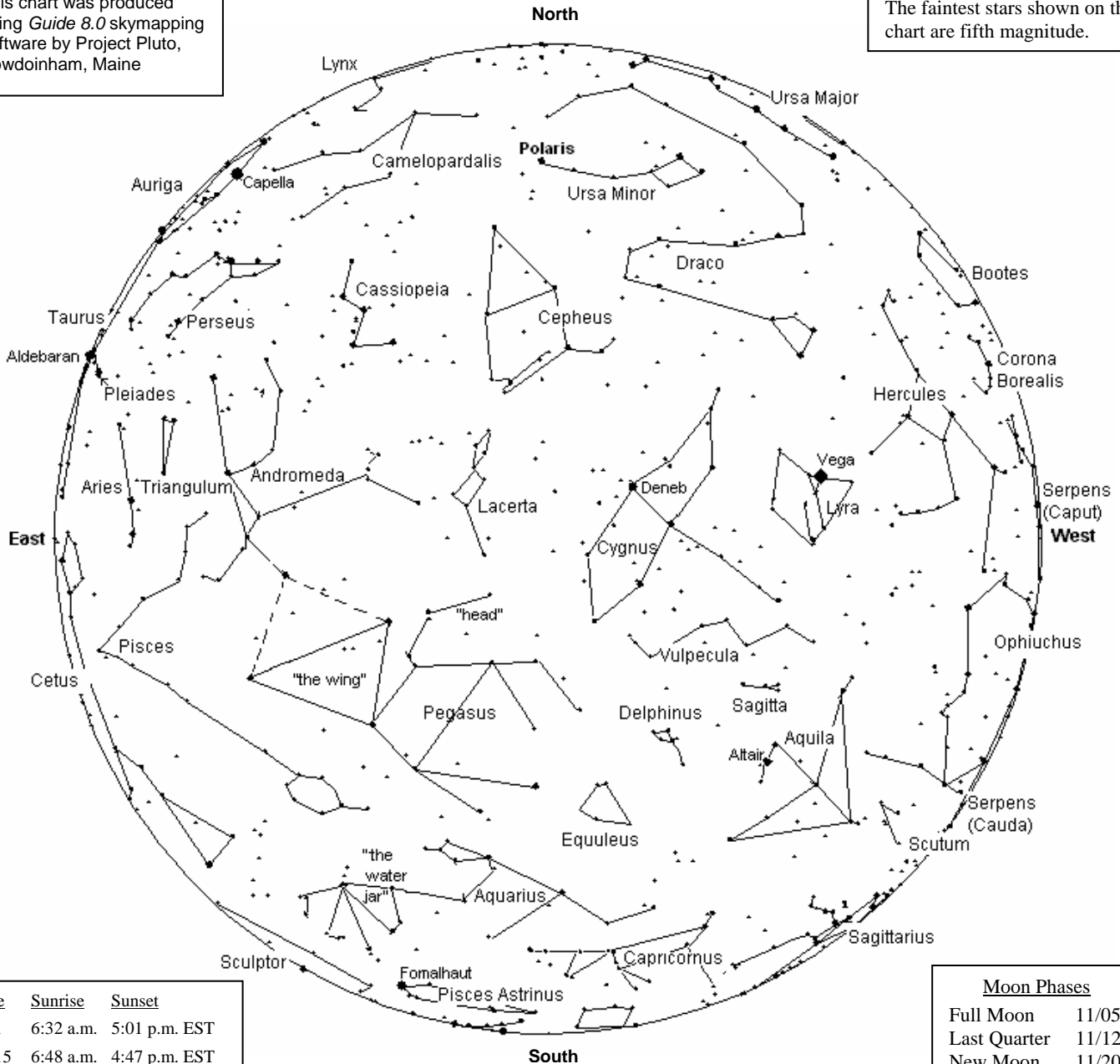
Important November 2006 Dates

- 5 Full Moon—the Beaver Moon, or the Frost Moon.
- 7 Hercules Observing Cluster meets.
Call Kathy Buczynski at 610-436-0821 for details.
- 8 **Mercury transits the Sun** for five hours starting in mid-afternoon as seen from Chester County.
- 12 Last Quarter Moon.
- 14 **CCAS Meeting 7:30 p.m.** EST (see page 4)
Location: West Chester University
COM: Lacerta
Presentation: "The Specialness of Water: Water and Life"
- 18 **Leonid meteor shower** peaks at around 11:45 p.m. EST.
- 20 New Moon.
- 21 Hercules Observing Cluster meets.
Call Kathy Buczynski at 610-436-0821 for details.
- 23 **Happy Thanksgiving!**
- 24/25 **CCAS Observing Session**
Location: Brandywine Valley Association
Time: sunset, or earlier (see page 3)
- 25 Mercury reaches greatest elongation, twenty degrees west of Sun.
- 26 Deadline for contributions to the December issue of *Observations*.
- 28 First Quarter Moon.



This chart was produced using *Guide 8.0* skymapping software by Project Pluto, Bowdoinham, Maine

The faintest stars shown on this chart are fifth magnitude.



Date	Sunrise	Sunset
11/1	6:32 a.m.	5:01 p.m. EST
11/15	6:48 a.m.	4:47 p.m. EST
11/30	7:05 a.m.	4:39 p.m. EST

Moon Phases	
Full Moon	11/05
Last Quarter	11/12
New Moon	11/20
First Quarter	11/28

The sky over Chester County
November 15, 2006 at 7:00 p.m. EST

The Planets, by Don Knabb

Mercury: The transit on November 8th is the last such event until the year 2016 (although there will be a transit of Venus in 2012). Late in the month Mercury will be visible in the dawn sky, leaping up from the sunrise glow and reaching its greatest western elongation on November 25th.

Venus: Venus is not easily observed until early December. At that time Venus will once again become the "Evening Star."

Mars: Mars is also hiding out in the glare of the sun and will not be easily viewed until December, although the keen eyed might find it rising one hour before sunrise at the end of the month.

Jupiter: Jupiter is even harder to find at month's end than Mars since it is rising only ½ hour before sunrise.

Saturn: Saturn is in Leo during November and rises near 1:30 a.m. on November 1 and just before midnight at the end of the month. Saturn shines brighter than Regulus, the heart-star of Leo below it or to its lower left.

Uranus & Neptune: Both gas giants are in reasonably good position for viewing at the end of evening twilight. The May issue of *Sky and Telescope* magazine has charts to help you find the blue and green planets. If you don't have that issue send me an e-mail (dknabb00@comcast.net) and I can send you a copy.

Pluto: Pluto is poorly placed for viewing at nightfall; it's too close to the Sun.

Note: the constellation stick figures used on the chart above were adapted from the book *The Stars: A New Way to See Them*, by H. A. Rey. This excellent guide to learning the constellations can be purchased at many area book stores, or online.

November Observing Highlights

by Don Knabb, CCAS Observing Chair

Planets: November is a month with very few planet observing opportunities unless you stay up very late or get up before dawn to see Saturn. Fortunately this is balanced by a rare event—a transit of Mercury across the Sun. Mercury crosses the Sun on November 8th and in Chester County we are well positioned to see the start of the event.

Comet Swan: Comet C/2006 M4 (SWAN) continues to be visible in the early evening sky. The November issue of *Sky and Telescope* has observing charts to find this fleeting visitor of the solar system. The best time to view this comet during November is from November 8th to the 25th, which avoids bright moonlight. The comet is high in the west to southwest after dusk.

Constellations: During November the summer triangle is diving into the west and the dim but huge Great Square of Pegasus dominates the southern sky. By 9:00 the Pleiades are well up in the east followed by the "V" of Taurus the Bull. Bright Capella in Auriga is a beacon that rises before Orion climbs over the horizon.

Deep sky: The deep sky highlight of this time of year for me is the Andromeda Galaxy, M31. You don't need to be up late to catch the wonderful Double Cluster in Perseus, and the compact star cluster M34 is just a bit to the south, also in Perseus. Around 9:00 you can see three star clusters in Auriga: M36, M37 and M38. If you stay out late you can zoom in on the Great Orion Nebula, M42, in the sword of Orion.

Meteor shower: The Leonid meteors peak on Saturday November 18th just before midnight. Don't expect a tremendous show because Leo is low above the east-northeast horizon at that time. But, any meteors that you might see will be long, dramatic Earth grazers and they can be an amazing sight!

- | | |
|----------------|---|
| Nov. 5 | Full Moon, the Beaver Moon or Frost Moon. |
| Nov. 8 | Mercury transits the Sun. As seen from Chester County, the transit starts around 2:12 p.m. EST. |
| Nov. 12 | Last quarter Moon. |
| Nov. 18 | Leonid meteor shower peaks at 11:45 p.m. EST. |
| Nov. 20 | New Moon |
| Nov. 25 | Mercury reaches greatest elongation 20 degrees west of Sun. Get up early to see it in the dawn sky. |
| Nov. 28 | First Quarter Moon. |



Through the Eyepiece: M11, the Wild Ducks of the Sky

by Don Knabb, CCAS Observing Chair

This summer was the first time I saw M11, the Wild Duck Cluster, through a telescope. I remember the sense of awe and wonder as Barb and I looked at this marvelous open cluster. Many open clusters are exactly that—open. But the Wild

Duck Cluster has so many stars that it looks more like you are viewing a globular cluster at high magnification.

At our observing session at the Brandywine Valley Association (BVA) in October we had near ideal observing conditions. The Wild Duck Cluster was crisp and clear in a very dark sky. At 60x the impression was of a loose globular cluster. At 140x the individual stars were very easily observed. If only a picture could capture the actual experience of viewing such a sight in the eyepiece.

Burnham's¹ describes M11 as an "Exceptionally fine galactic star cluster, lying on the north edge of the prominent Scutum Star Cloud, and one of the outstanding objects of its type for telescopes of moderate aperture."

There are not too many weeks left in 2006 to see M11 before it slips below the horizon. In early November if you look to the southwest just after it gets dark you can find the Wild Ducks in the small constellation Scutum.

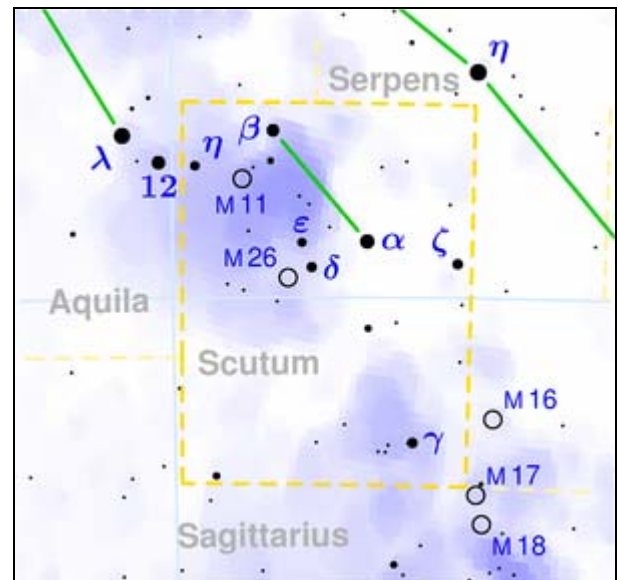


Image source:

<http://en.wikipedia.org/wiki/Scutum>

There are an estimated 2,900 stars in the Wild Duck Cluster, about 500 of which are brighter than magnitude 14. A planet at the center of M11 would have a remarkable night sky filled with several hundred first magnitude stars. Go out and find Vega, the brightest star of the Summer Triangle. Now imagine a sky filled with several hundred stars of this brightness!

M11 was discovered by the German astronomer Gottfried Kirch of the Berlin observatory in 1681. Charles Messier included it in his catalog on May 30, 1764. According to Burnham's it was Rev. William Derham of England who first resolved the cluster into stars in 1732. It was Admiral Smyth who noted that the main group of brighter stars resemble "a flight of wild ducks."

I looked through many sites on the world wide web but could not find an image that really does the Wild Duck Cluster justice. I selected the NASA image on the next page as one that at least gives the impression that I get when I see the Wild Ducks in the eyepiece of my telescope.



<http://en.wikipedia.org/wiki/Image:Messier11.jpg>
(NASA public domain)

Many stars like our Sun were formed in open clusters like M11. The stars in M11 all formed together about 250 million years ago. Open clusters, also called galactic clusters, contain fewer and younger stars than globular clusters. Also unlike globular clusters, open clusters are generally confined to the plane of our galaxy.

So before all the ducks head south for the winter grab your binoculars or telescope and enjoy the view of one of the most amazing clusters in the night sky!

Information credits:

http://www.nasa.gov/multimedia/imagegallery/image_feature_003.html

http://www.daviddarling.info/encyclopedia/W/Wild_Duck_Cluster.html

<http://www.seds.org/messier/m/m011.html>

<http://bongo69.vela.net/2006/06/12/wild-duck-cluster-m11/>

Footnote:

1. *Burnham's Celestial Handbook, Volume 3: Pavo Through Vulpecula*, Robert Burnham, Jr., Dover Publications, Mineola, NY, 1978.



CCAS Observing Session November 24/25, 2006

CCAS Observing Sessions will be at the Brandywine Valley Association's Myrick Conservancy Center (see map on page 16) on Fridays starting at sunset; or earlier, if you can get there earlier. If it's too cloudy on Friday, then the Observing Session will be on the next day, Saturday. At the observing sessions, there will be help available to set up and use your telescopes. If you're having trouble using your telescope, or finding your way around the sky, come on out and get some assistance. All members are invited whether they have a telescope or not. Telescope owners are always glad to share the view through their telescope. CCAS Observing Sessions are free of charge and open to the public.



CCAS November Meeting

DATE: **Tuesday November 14, 2006**

TIME: **7:30 p.m. EST**

PLACE: Room 113 – Boucher Building
West Chester University

LOCATION: South Church Street
West Chester, PA

A map of the campus showing the location is on page 17.

This month's Constellation of the Month (COM) will be Lacerta, presented by Jim Anderson.

The title for the main presentation is "The Specialness of Water: Water and Life," presented by CCAS member Nicholas La Para. Why do scientists consider water to be necessary for the formation of life in the universe? What are the unique properties of water that make it so special? Come to the November meeting to hear answers to these questions about the relationship between water and life!

Many thanks to Nicholas for putting this presentation together for us!



Transit of Mercury

by Kathy Buczynski

A relatively rare daytime event will take place on Wednesday, November 8, 2006, and will be visible from our area. Mercury will be seen moving across the face of the sun. This is known as a transit. Only transits of Mercury and Venus are possible for us to view from the Earth. Transits of Venus are much rarer than that of Mercury. Transits of Venus occur in pairs (about 8 years apart), with more than a century separating each pair but there are about 13 transits of Mercury per century.

In 2004, many of us witnessed the Transit of Venus as the sun rose on a June morning. This Transit of Mercury will begin in broad daylight and the Sun will set with Mercury still in transit. First contact will occur at about 2:12 PM EST and the sun will set about 4:43 PM EST. Don Knabb and I have checked out some locations and received approval from West Chester University to meet at the parking lot on South Campus on South New Street, across the street from the tennis courts. This location has a view of the western horizon so we can get the longest view we can of the transit as the sun sets.

This is a work day for many. I plan to take off half the day and set up the scope in the parking lot before first contact, at about 1:30 or so. The club telescope will be used to project the image of the sun so many can view the transit at one time. Since we will have some time to view the transit before sunset, I plan to bring a bag lunch since I probably will not have time to eat prior to the beginning of the event. If you are also planning to bring a lunch or snacks, please be conscious of litter.

The next transit of Mercury will occur in May, 2016. If you have an opportunity to see this one, please join us on November 8. We will also be hosting University students and students from Fugett Middle School. Hope to see you there.



Keep the date open (Note the time change)

Tuesday, December 12, 2006, 7:00 p.m. EST

The December meeting will again be our Holiday Gathering held on Tuesday, December 12, 2006, 7:00 at Houlihan's Restaurant at the Exton Mall.

The Executive Committee invites you to join us for some good food, holiday cheer, astronomical stories and camaraderie. Food and beverages will be the individuals' responsibility.

Hope to see you there!

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Star Party: Wednesday November 15, 2006

by Don Knabb

ALL TELESCOPES NEEDED

On Wednesday November 15, the night after our monthly meeting, we will host a Star Party for the 8th grade classes of the West Chester Area School District. The event will be from 7:00 to 9:00 at East Goshen Park on the north side of Paoli Pike just past Route 352. Enter at the main park entrance, which is the second entrance you come to if you are traveling east on Paoli Pike. Take a right onto the circular road and look for the soccer fields on the right. We will set up on the raised soccer field as we did this past spring.

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Report on Comet SWAN

by Don Knabb

During the last few days Comet Swan has brightened considerably. Although some articles state that it is now a naked eye object I cannot find it in the Chester County skies without binoculars. My observations of the comet compared to last weekend at BVA is that it has indeed become much brighter. Tonight, Thursday October 26, the comet is considerably brighter than M13, the globular cluster in Hercules. When I view the comet with my large binoculars and use averted vision and a bit of motion I can detect the comet's tail.

Here is a picture from www.spaceweather.com:



Image credit: Thorsten Boeckel, Fuerstenfeldbruck, Bavaria

I have not been able to discern any color in the comet, although some claim that it is visible.

www.spaceweather.com posts a map every day to help you find the comet. At the end of October the comet is below Hercules and is heading in the direction of that constellation. On November 1 the comet will be above (east) of Hercules and by the 10th it will be between Hercules and Aquila.

Don't miss this opportunity to see a live comet!

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Treasurer's Report by Bob Popovich

September 2006 Financial Summary

Beginning Balance	\$1,401
Deposits	75
Disbursements	<u>53</u>
Ending Balance	\$1,423

Membership Renewals Due

11/2006	Athens
	Bower
	Buczynski
	Cook
	Hepler
	Malloy
	Murray
12/2006	Duncan
	Roseberry
01/2007	Furman
	Kovacs
	Whitman

Membership Renewals

You can renew your CCAS membership by writing a check payable to "Chester County Astronomical Society" and sending it to our Treasurer:

Bob Popovich
416 Fairfax Drive
Exton, PA 19341-1814

The current dues amounts are listed in the *CCAS Information Directory* on page 13 in this newsletter.

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Minutes from CCAS October Meeting

by Vic Long, CCAS Secretary

For the meeting held on Tuesday October 10, 2006.

Main Presentation:

"The Astrolabe," presented by CCAS member Bob Popovich. Bob demonstrated how this early (7th century AD) astronomical instrument was used to find local time, sunset and sunrise, sidereal time and the RA of a star.

Constellation of the Month:

Lyra was presented by Don Knabb.

Additional Topics:

Ed Lurcott and Kathy Buczynski described how occultation timing measurements from multiple locations could be used to obtain an approximation of the shape of an asteroid. They also

presented a movie of a star blinking in and out in a grazing occultation by lunar mountains.

Don Knabb showed a Mars orbiter photo showing a Mars rover at Victoria Crater.

Vic Long showed a Jet Propulsion Lab animation depicting the Lunar Rover mission and deployment on Mars.

Reports:

President: December meeting (the annual CCAS Holiday Gathering) to be held at Houlihan's Restaurant in Exton on December 12th at 7 PM.

Treasurer: Bob Popovich noted that all dues checks should be made out to the club. Spring Ford wants to make a payment to CCAS for supporting their star party.

Education: Kathy Buczynski noted that classes will be held starting February 8th and that we are still looking for a suitable room.

Website: John Hepler has incorporated some new features, and is working on some problems like the email forwarding list members@ccas.us.

US Naval Observatory trip: Linda has received only two positive responses; will try again.

Observing: (Don Knabb)

- Spring Ford Observing night (adult school) was held on Wednesday September 27th.
- Mercury will make its first transit of the Sun since 2003 on Wed Nov 8th. First contact at 2:12 PM and Sun sets at 4:53 p.m. Members plan to meet at WCU South Campus to observe with telescopes equipped for safe solar viewing.
- Comet Swan in evening sky – suitable for binocular viewing.
- Star party to be held in East Goshen Nov 15?

Program: Jim Anderson is looking for members to do Constellation of Month talks for the January through March meetings in 2007.

Election: 2007 is election year for CCAS; election committee forming in March



October Observing Report from BVA

by Don Knabb, CCAS Observing Chair

On Saturday October 21 several members met at the Brandywine Valley Association for our monthly observing session. This was the first time in a few months that Mother Nature cooperated. The conditions were absolutely wonderful. As Bob Popovich said, it rarely gets any better than this at BVA.

Just after sunset the scopes were set up and we started looking for Comet SWAN. With just a bit of hunting and a map from Spaceweather.com the fuzzy spot was found at the top of Bootes. Although the comet has been described as green, I could not discern any color in the eyepiece of my binoculars or telescope.

One member spotted a meteor, most likely from the Orionid shower that had peaked the night before. We also tracked a bright satellite most of the way across the sky.

Before long Ed Lurcott had picked out Uranus and Neptune. Bob Popovich was bagging one Binocular Messier Club object after another while I let my "coffee grinder" "go-to" computerized scope find numerous deep sky objects. It may not be as fulfilling as finding the objects manually, but I sure get to see a lot of beautiful things in the sky.



Ed Lurcott and Bob Popovich enjoying the night sky.

As the night progressed conditions only got better. Other than the light pollution near the horizon the sky was dark and clear. The temperature was moderate and the winds were calm. After a few hours the damp grass began to chill my feet and we packed up for the night. But it was really a night to remember!

Conditions permitting we will gather for our November observing session on Friday November 24th, the day after Thanksgiving. If you have family visiting for the holiday bring them along to BVA and share the night sky with them. The sun sets quite early at that time of year so we will have plenty of time for observing. I'll send out a reminder e-mail and will make the call for Friday or Saturday observing depending on the weather forecast.



Podcasts and WebQuests

by John Hepler, CCAS Webmaster

Podcasts and WebQuests, two strange terms. No, we haven't been invaded by little green men exclaiming "Take me to your Podcast, I'm on a WebQuest!" or some other nonsense. Instead, they are exciting tools that can be used to spread the word about astronomy, or any subject for that matter.

Podcasts are web feeds of audio or video files placed on the Internet for anyone to subscribe to, and also the content of the feeds. Podcasters' websites generally offer direct download of their files, but the subscription feed of automatically delivered new content is what distinguishes a podcast from a simple file download. After you subscribe to the Podcast, you don't have to do anything to receive the latest one; the file is automatically sent to your computer when the podcaster publishes it. Podcasts are generally short, ranging from 3 to 10 minutes in length and can be truly portable. You can download to your iPod or burn them to a CD and listen to them anywhere, even in the car!

There are hundreds of astronomy-related podcasts available for subscription on the Internet. Just do a search in Google or

Yahoo on the words “Podcast” and “astronomy” and see what the results bring. Here are a few of my favorites: Hubblesite—Sky Watch, Earth & Sky Radio Series, Spitzer Space Telescope, and Astronomy a Go-Go!, just to name a few.

WebQuests are web pages, or web sites, which have a specific educational objective. Usually created by teachers and educators, WebQuests consist of learning activities that enhance and extend existing classroom experiences. Developed by Bernie Dodge, a Professor of Education at San Diego State University in 1995, they are identified as constructivist lesson format for learning. The goal of the WebQuest is to promote critical thinking at the levels of analysis, synthesis and evaluation.

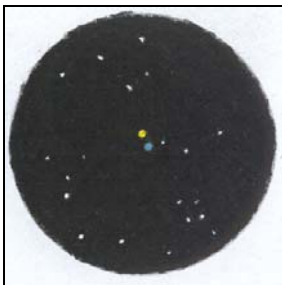
A WebQuest is an inquiry-oriented activity in which most or all of the information used by students is found on the Internet. By providing links necessary to complete the quest, the student is able to focus on the material rather than spend time looking for it. Depending on the student age group and the complexity of the goal established, a WebQuest can last for several hours or up to several weeks.

A standard WebQuest is divided into six parts: *Introduction*, *Task*, *Resources*, *Process*, *Evaluation*, and *Conclusion*. The *Introduction* identifies the educational goal of the WebQuest. The *Task* identifies what the students must do to complete the WebQuest. The *Process* describes how the students must proceed to complete the WebQuest. The *Resources* part identifies the websites (or other research materials) the students can use to find the required information. The *Evaluation* contains information on how the students will be graded in the form of a rubric. The *Conclusion* describes the outcome of the WebQuest and includes information for students to continue their research independently. Generally there is a seventh part, the *Teacher’s Page*, which gives background information on the creation of the WebQuest and how it responds to teaching standards (varies from state to state).

Here are a few interesting WebQuests: Planet WebQuest!, Poetry and the Planets, and Planetary Predictions. For more WebQuests on a multitude of subjects, visit www.webquest.org, the official website devoted to WebQuests.

You can find more astronomy-related Podcasts and WebQuests on our website, www.ccas.us. Look under *Resources* for links to pages created to highlight more of these educational resources.

★ ★ ★ ★ ★



Double star 145 Canis Majoris

drawn by Jim Anderson
as seen through 10” f/6
Newtonian telescope

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Shooting the Moon with a Digicam

by Vic Long, CCAS Secretary

I just purchased a digital camera with a built in 12X zoom for nature photography on vacation (I don’t want to get too close to them alligators). Yesterday the Moon was near full and the sky was murky. Not worth hauling out a telescope, so instead I set the zoom to 12X, camera to AUTO, pointed at the Moon and snapped a shot. The Moon was overexposed, but the clouds were beautiful!

Not having read the manual yet, I noticed an EV dial and lowered the exposure by 2 EV. The next shot looked a lot less overexposed, but I was still not too hopeful so I packed it in. Today, after adjusting the brightness in Photoshop, I was surprised at the results—especially considering that the shot was handheld (the camera’s image stabilization was turned on).



On October 12 there were no clouds, and this shot came out even nicer:



I think I’ll keep the camera.

Celestial Adventure on the Beach

by Steve Limeburner

After attending the Winter Star Party in the Florida Keys in February, 2005, I was inspired to find a closer and more convenient location for oceanfront stargazing during cold weather.

There is something very special about listening to the waves hit the shore as you comfortably enjoy the night sky. As the Milky Way beams brilliantly overhead, it's a rare and exotic sight to see the light of the crescent Moon and Sirius reflect off the waves as they compete with the light of distant ships. Southern constellations such as Piscis Austrinus are visible to the naked eye in their entirety. Far southern constellations such as Grus and Phoenix seem to be swimming in the ocean, struggling to be seen through the ocean haze, only to disappear like a sinking ship until they reappear the following night. The all-night light-show is culminated by a spectacular sunrise over the Atlantic.

Although I had a wonderful time at the Winter Star Party in Florida, I did not have the privilege of witnessing all of these sights there. It all happened last month at a Maryland seashore! On October 13-15, encouraged by a very favorable weekend weather forecast, I drove about 150 miles to stargaze and camp at Assateague Island National Seashore, Maryland. I was not disappointed; all three nights were dark and crystal clear.

I have found no mention of Assateague in local amateur astronomy forums; instead I found the park by researching light pollution maps of the Northeastern United States. On the "Clear Sky Clock" maps at www.cleardarksky.com, the campsites at Assateague Island National Seashore are color coded green, which translates as:

"Zodiacal light seen on best nights. Milky Way shows much dark lane structure with beginnings of faint bulge into Ophiuchus. M33 difficult even when above 50 degrees. Limiting magnitude about 6.2 to 6.5."

When there is cold, dry weather, Assateague Island National Seashore proves to be a great dark sky site. Managed by the National Park Service, it is open year-round and is located approximately 10 miles south of Ocean City, Maryland. The light pollution from this popular resort does not spoil the view during the off-season. Because the ocean lies to the south and east of the campsite, the horizons there are particularly dark, although hazy from water vapor and skyglow. This haziness is somewhat compensated by the fact that there are more southern constellations visible at this site than at my home in Southeastern Pennsylvania.

You can stargaze for free at the "South Beach Parking Lot" if you buy a weekly entrance pass, which is \$10. For \$20 you can buy an annual entrance pass, which is good from January to December. Camping fees at Assateague Island National Seashore are \$15 a night from mid-October to mid-April. Reservations are not accepted during this period because campsites are "first-come first-served." I usually call the park office (410-641-3030) if I have any questions. For more info, check out their website at www.assateagueisland.com.

There is very little shade available on the island, so most campsites offer panoramic unobstructed views of the sky. I find the "Oceanside Drive-In" sites to be most convenient for setting up telescopes and other equipment. Here there are large paved areas that can fit at least two vehicles, so there is plenty of room to set up right next to your parking space. Campsites have a grill, picnic table, drinking water, cold water showers and chemical toilet. There are no electric outlets available; that's one of the reasons it's dark!

I have visited Assateague during the months of January, February, March, and most recently in October of this year. During these months I have had no known encounters with mosquitoes, ticks, or subfreezing temperatures. According to Weather Channel data, the wintertime low temps on Assateague Island average 7 degrees higher than those of my favorite observing site near West Chester, PA. Although 2006 has been the warmest year on record, late autumn and winter nights may still prove to be very cold. Here are some of my techniques for staying warm throughout the night:

- Wear multiple layers (thermals, sweatshirts, jackets with hoods, etc.)
- Drink lots of hot liquids (caffeinated if planning to stay up late!)
- Use chemical hand warmers (they also feel good on the face)
- Warm up in a heated vehicle during breaks
- Find a site with shelter and observe from a spot which blocks the wind.

When observing from Assateague on a very windy night, I use the "Bayside" campsites because they are less windy and have more natural shelter.

When used in conjunction, all of the above methods keep me reasonably comfortable on even the coldest nights. I often use nearby amenities at Ocean City, Maryland. Even during the fall and winter, some fine seafood restaurants are open for business, along with lodging in the form of hotels, cottages, beach houses, campgrounds and bed & breakfasts. I have stayed at several comfortable (weekly rental) condominiums in Ocean City, all at very reasonable off-season rates.



“The Beach Scope.”

Illustrated “Beach Bum” accessory sold separately.



Astronomus

“Milky Way Zig Zag”

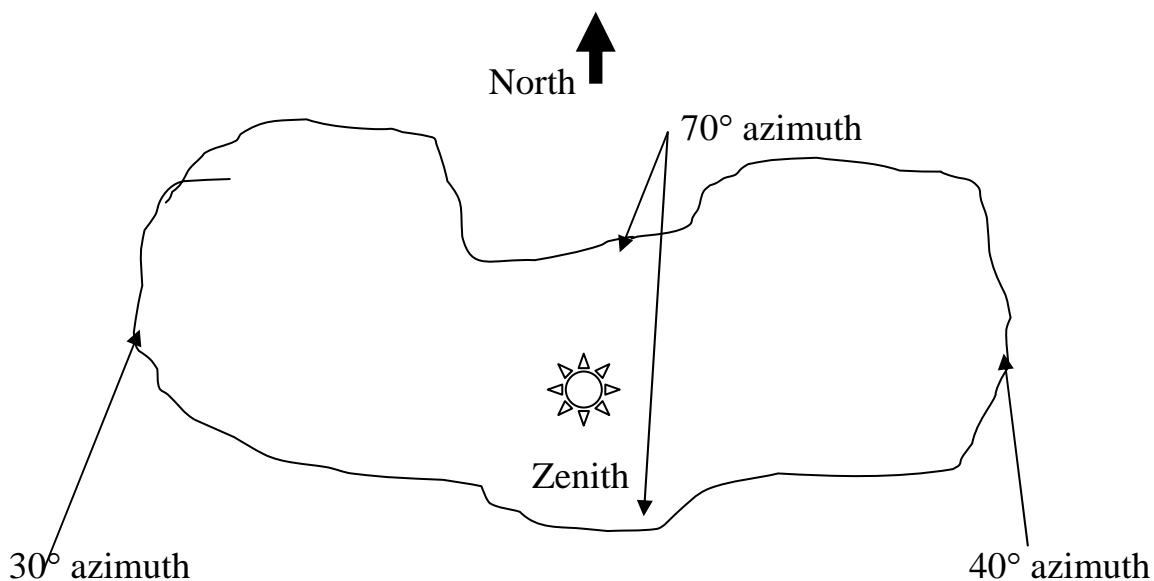
By Bob Popovich

As I wend my way through the Milky Way, whether in the night sky or on the pages of a book, I encounter many constellations. Some of these I like, and some of them I don't. How, in the name of the heavens, can I have a list of constellations that I don't like? A fair question. To begin with, since I do most of my observing from home, I have house rules. If this isn't quite scientific enough for you, consider the following:

Some constellations like Ursa Major, by virtue of their star pattern (thank you H.A. Rey), size or inclusion of bright stars are easy to locate. And so I like these constellations. Others, like Aries, possess none of these attributes and so it makes perfect sense not to like these. Besides, hard-to-find constellations with a bunch of 5th magnitude stars can be deemed insignificant, anyway. And such a proclamation relieves one of the guilt that often accompanies not being able to find that particular constellation. And thus we're free to continue our zigzagging through the galaxy. Got past that potential pitfall, didn't I?

Some constellations like Pegasus and Andromeda contain interesting features that make them very likable. Others, like Delphinus, present no features of interest and thus must be classified as insignificant. (Remember—house rules!) And here's a question for the International Astronomical Union, what are you going to do about hard-to-find, featureless constellations? Don't waste your time de-Plutoizing the solar system, but give thought to eliminating marginal constellations!

As I flit to and fro, another key factor in determining which constellations to like relates to my backyard. If I can see the constellation from my backyard observing location, then I have the opportunity to like them. And if it's not visible...how can I possibly be expected to like something I can't see? That's not very scientific, is it? The open sky visible from my Exton home has roughly this configuration:



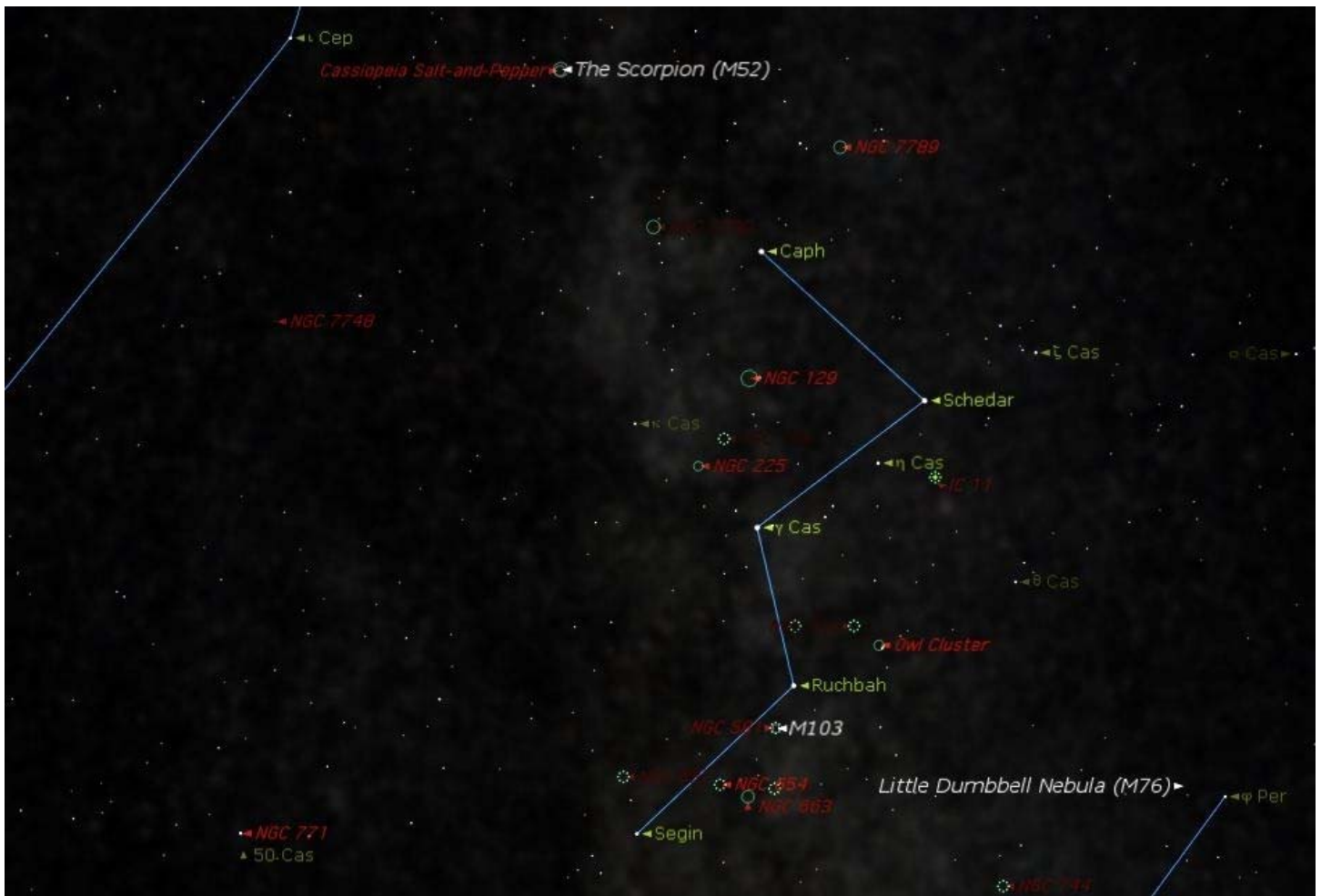
As you might guess, the reason for my stellar porthole is:



Now you might say that I should just pack up my equipment and go to another location to observe. Unfortunately, my observing sessions are more often precious stolen moments of zigzagging rather than preplanned outings. And besides, if I did go elsewhere I'd have to make up a whole new set of house rules! Who's got time for that?

My final consideration is pronouncibility. I like constellations whose name (both nominative and genitive cases) I can pronounce. Like Cygnus. But likeability drops precipitously with constellations like Canes Venatici.

So, have I convinced you of the wisdom of my house rules? [I hope not!] Have I successfully eliminated all 4-dozen of the classical constellations? Not quite. One that's near the top of my list is a featured constellation of the sky this time of year—Cassiopeia. It is easy to find, has a lot of interesting features, is visible from my backyard and I can pronounce both its nominative and genitive names. Grab your binoculars and do some zigzagging of your own with this autumn gem. Here are some targets *[see next page]*:



M103—Near Ruchbah, this is a faint patch that my 7x50 binoculars can't resolve. But nearby is a string of stars that makes the field lovely to look at.

M52—This is a beautiful open cluster that is partially resolvable with binoculars. Notice the spacing between Schedar and Caph is about 5°. Continue in a straight line just about another 5° and you'll come upon M52. If you've got a telescope, take a good long look—it is beautiful.

NGC129—Another open cluster from which binoculars can pick up about five stars. At its heart is DL Cassiopeiae—a Cepheid variable.

Stock 2—A couple of degrees north of the Double Cluster (which happens to be part of Perseus) it is a very open cluster of rather dim stars. Due to an asterism within this cluster that resembles a man flexing his biceps, this cluster is sometimes called the "strongman" cluster.

Since Cassiopeia zigzags its way right through the Milky Way, you may just want to sit and enjoy the view. And on some nights, that's the only house rule needed.

Next Time: What To Do on a December Night



The Planet in the Machine

By Diane K. Fischer and Dr. Tony Phillips

The story goes that a butterfly flapping its wings in Brazil can, over time, cause a tornado in Kansas. The “butterfly effect” is a common term to evoke the complexity of interdependent variables affecting weather around the globe. It alludes to the notion that small changes in initial conditions can cause wildly varying outcomes.

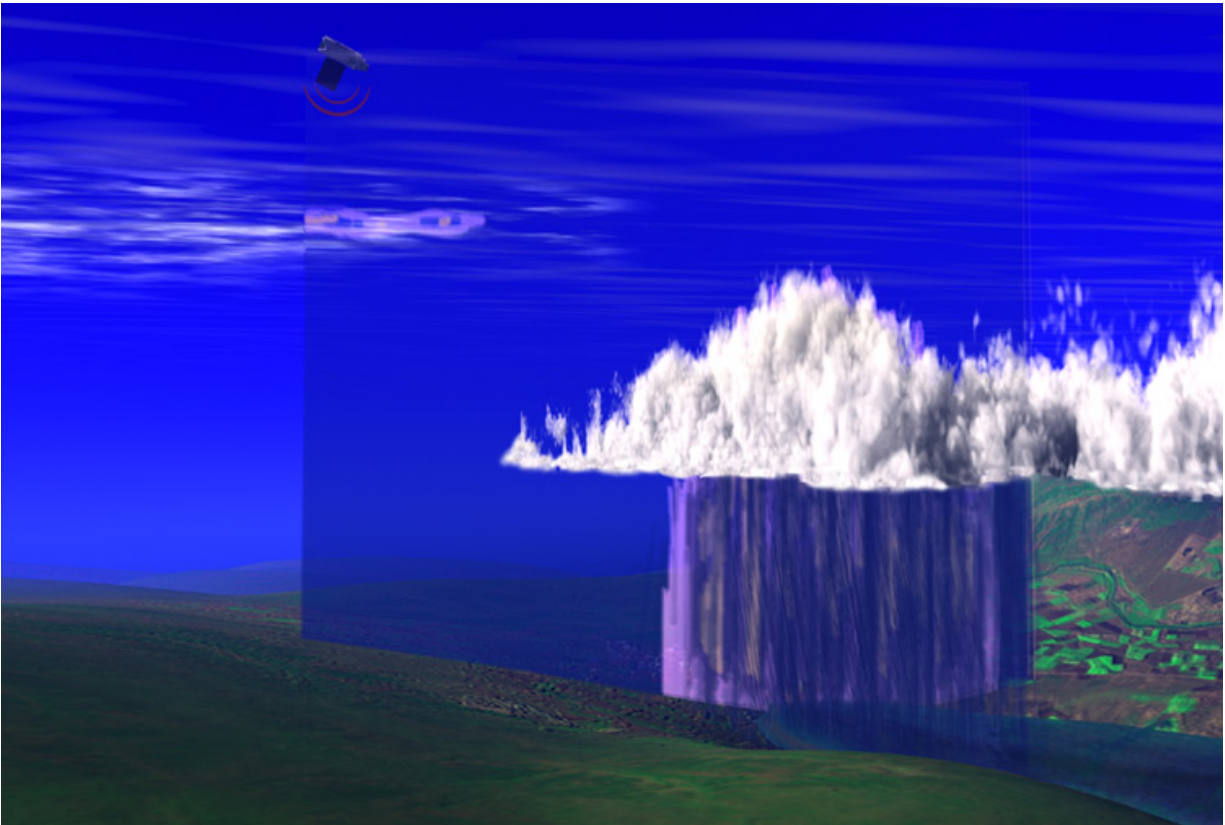
Now imagine millions of butterflies flapping their wings. And flies and crickets and birds. Now you understand why weather is so complex.

All kidding aside, insects are not in control. The real “butterfly effect” is driven by, for example, global winds and ocean currents, polar ice (melting and freezing), clouds and rain, and blowing desert dust. All these things interact with one another in bewilderingly complicated ways.

And then there’s the human race. If a butterfly can cause a tornado, what can humans cause with their boundlessly reckless disturbances of initial conditions?

Understanding how it all fits together is a relatively new field called Earth system science. Earth system scientists work on building and fine-tuning mathematical models (computer programs) that describe the complex inter-relationships of Earth’s carbon, water, energy, and trace gases as they are exchanged between the terrestrial biosphere and the atmosphere. Ultimately, they hope to understand Earth as an integrated system, and model changes in climate over the next 50-100 years. The better the models, the more accurate and detailed will be the image in the crystal ball.

NASA’s Earth System Science program provides real-world data for these models via a swarm of Earth-observing satellites. The satellites, which go by names like *Terra* and *Aqua*, keep an eye on Earth’s land, biosphere, atmosphere, clouds, ice, and oceans. The data they collect are crucial to the modeling efforts.



CloudSat is one of the Earth observing satellites collecting data that will help develop and refine atmospheric circulation models and other types of weather and climate models. *CloudSat*'s unique radar system reads the vertical structure of clouds, including liquid water and ice content, and how clouds affect the distribution of the Sun's energy in the atmosphere.

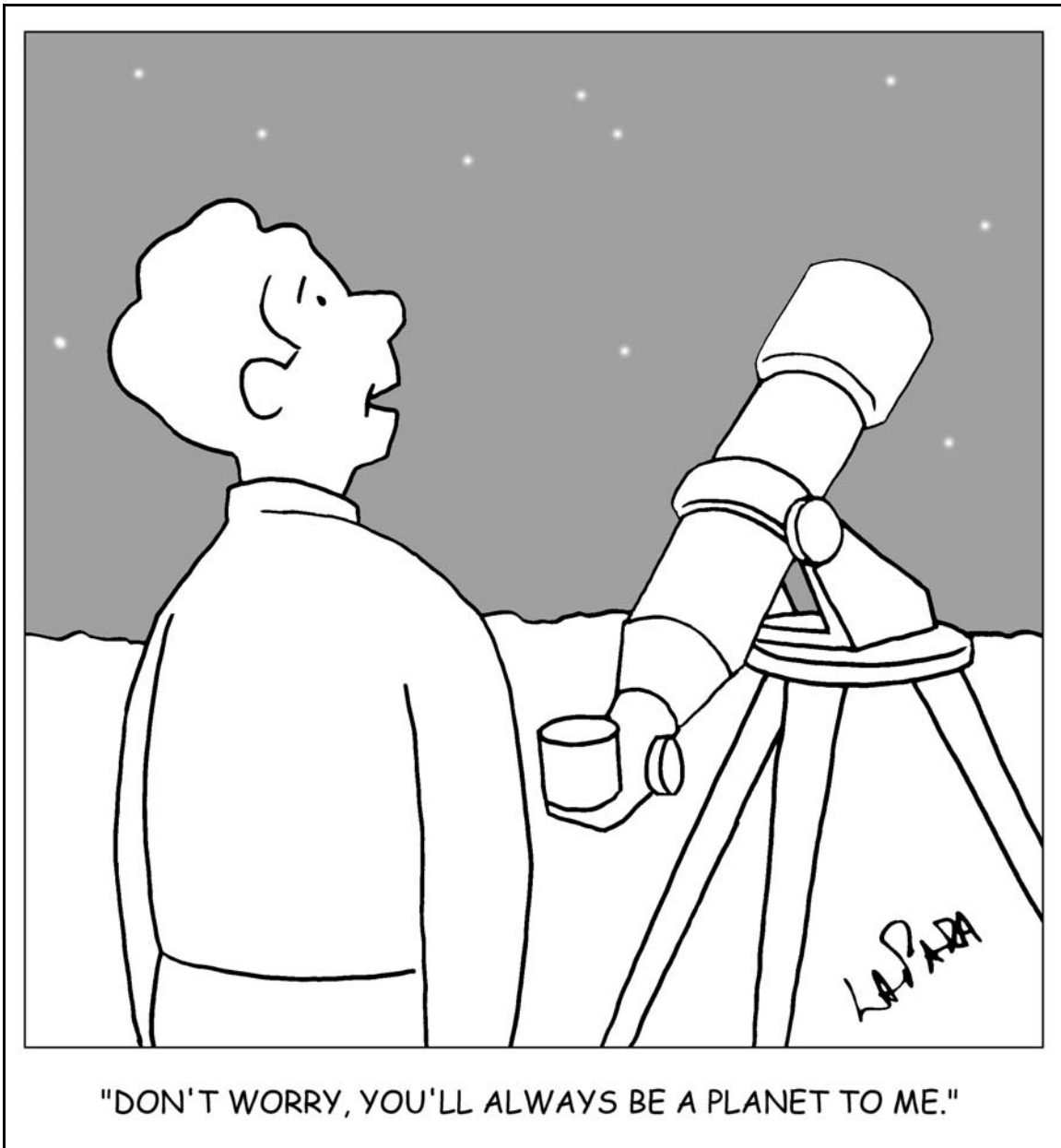
See animation of this data simulation at www.nasa.gov/mission_pages/calipso/multimedia/cloud_calip_mm.html.

Some models aim to predict short-term effects—in other words, weather. They may become part of severe weather warning systems and actually save lives. Other models aim to predict long-term effects—or climate. But, long-term predictions are much more difficult and much less likely to be believed by the general population, since only time can actually prove or disprove their validity. After all, small errors become large errors as the model is left to run into the future. However, as the models are further validated with more near-term and longer-term data, and as different models converge on a common scenario, they become more and more trustworthy to show us the future while we can still do something about it—we hope.

For a listing and more information on each of NASA's (and their partners') Earth data-gathering missions, visit science.hq.nasa.gov/missions/earth.html.

Kids can get an easy introduction to Earth system science and play Earthy word games at spaceplace.nasa.gov/en/kids/earth/wordfind.

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



Cartoon by Nicholas La Para



CCAS Information Directory

Join the Fight for Dark Skies!

You can help fight light pollution, conserve energy, and save the night sky for everyone to use and enjoy. Join the nonprofit International Dark-Sky Association (IDA) today. Individual memberships start at \$30.00 for one year. Send to:

International Dark-Sky Association
3225 North First Avenue
Tucson, AZ 85719

Telephone: 520-293-3198
Fax: 520-293-3192
E-mail: ida@darksky.org

For more information, including links to helpful information sheets, visit the IDA web site at:

www.darksky.org

Note that our CCAS Webmaster John Hepler has a link to the IDA home page set up on our Society's home page at www.ccas.us.

Dark-Sky Website for PA

The Pennsylvania Outdoor Lighting Council has lots of good information on safe, efficient outdoor security lights at their web site:

<http://home.epix.net/~ghonis/index.htm>



Good Outdoor Lighting Website

One of the biggest problems we face in trying to reduce light pollution from poorly designed light fixtures is easy access to good ones. When you convince someone, a neighbor or even yourself, to replace bad fixtures, where do you go for good lighting fixtures? Now there is a web site and business intended to address that very problem. At this site you can find information on all kinds of well-designed (that is, star-friendly) outdoor lighting fixtures. This company, Starry Night Lights, intends to make available all star-friendly fixtures they can find, and information on them, in one place. Check it out, and pass this information on to others. Help reclaim the stars! And save energy at the same time!

<http://www.starrynightlights.com/>



Our Local Astronomy Store: *Skies Unlimited*

In case you didn't know it, there is an astronomy equipment store called *Skies Unlimited* in our area, in Pottstown to be specific. **The store has moved from its former location to:**

Suburbia Shopping Center
52 Glocker Way
Pottstown, PA 19465

Phone numbers:

610-327-3500
888-947-2673

Fax:

610-327-3553

<http://www.skiesunlimited.net/>

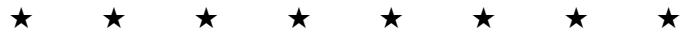


Find out about Lyme Disease!

Anyone who spends much time outdoors, whether you're stargazing, or gardening, or whatever, needs to know about Lyme Disease and how to prevent it. Hopefully you will not also need to know how to recognize its symptoms, but you can learn all about it at:

www.LymePA.org

Take the time to learn about this health threat and how to protect yourself and your family. It is truly "time well spent!"



www.ccas.us

CCAS Information Directory

CCAS Lending Telescopes

Contact Kathy Buczynski to make arrangements to borrow one of the Society's lending telescopes. CCAS members can borrow a lending telescope for a month at a time; longer if no one else wants to borrow it after you. Kathy's phone number is 610-436-0821.

CCAS Lending Library

Contact our Librarian, Linda Lurcott Fragale, to make arrangements to borrow one of the books in the CCAS lending library. Copies of the catalog are available at CCAS meetings, and on the CCAS website. Linda's phone number is 610-269-1737.

Contributing to *Observations*

Contributions of articles relating to astronomy and space exploration are always welcome. If you have a computer, and an Internet connection, you can attach the file to an e-mail message and send it to stargazer1956@comcast.net

Or mail the contribution, typed or handwritten, to:

Jim Anderson
1249 West Kings Highway
Coatesville, PA 19320-1133

Get CCAS Newsletters via E-mail

You can receive the monthly newsletter (**in full color!**) via e-mail. All you need is a PC or Mac with an Internet e-mail connection. To get more information about how this works, send an e-mail request to Jim Anderson, the newsletter editor, at:

stargazer1956@comcast.net

CCAS A.L. Award Coordinators

These are the members to contact when you have completed your observing log for the Messier, Binocular Messier, Lunar, or Double Star Awards:

Messier (both): Jim Anderson
(610-857-4751)

Lunar: Ed Lurcott
(610-436-0387)

Double Star: Jim Anderson
(610-857-4751)

Constellation Hunters: Jim Anderson
(610-857-4751)

CCAS Purpose

The Chester County Astronomical Society was formed in September 1993, with the cooperation of West Chester University, as a non-profit organization dedicated to the education and enjoyment of astronomy for the general public. The Society holds meetings (with speakers) and observing sessions once a month. Anyone who is interested in astronomy or would like to learn about astronomy is welcome to attend meetings and become a member of the Society. The Society also provides telescopes and expertise for "star nights" for school, scout, and other civic groups.

CCAS Executive Committee

For further information on membership or society activities you may call:

President: Kathy Buczynski
610-436-0821

Vice Pres: Jim Anderson
610-857-4751

ALCor and Treasurer: Bob Popovich
610-363-8242

Secretary: Vic Long
610-399-0149

Newsletter: Jim Anderson
610-857-4751

Librarian: Linda Lurcott Fragale

Observing: Don Knabb
610-436-5702

Education: Kathy Buczynski
610-436-0821

Webmaster: John Hepler
484-266-0699

Public Relations: Deb Goldader
610-304-5303



CCAS Membership Information

The present membership rates are as follows:

REGULAR MEMBER\$25/year
SENIOR MEMBER\$10/year
STUDENT MEMBER\$ 5/year
JUNIOR MEMBER\$ 5/year
FAMILY MEMBER\$35/year

Membership Renewals

Check the Treasurer's Report in each issue of *Observations* to see if it is time to renew your membership. If you are due to renew, you can mail in your renewal check made out to "Chester County Astronomical Society." Mail to:

Bob Popovich
416 Fairfax Drive
Exton, PA 19341-1814

Sky & Telescope Magazine Group Rates

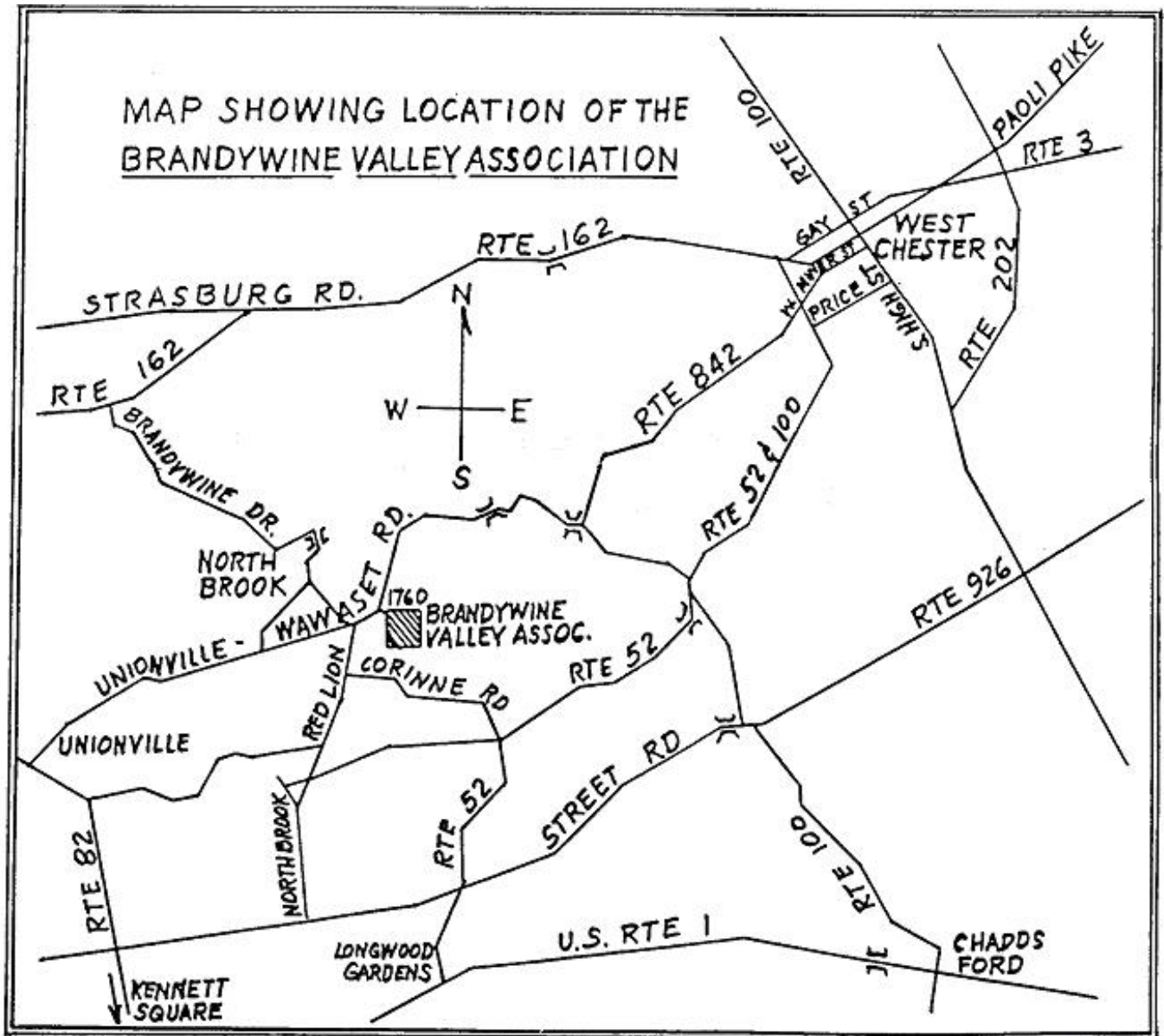
Subscriptions to this excellent periodical are available through the CCAS at a reduced price of **\$32.95** which is much less than the newsstand price of \$66.00, and also cheaper than individual subscriptions (\$42.95)! Make **sure** you make out the check to the **Chester County Astronomical Society** (do **not** make the check out to Sky Publishing, this messes things all up big time), note that it's for *Sky & Telescope*, and mail to Bob Popovich. Or you can bring it to the next Society meeting and give it to Bob there. **If you have any questions by all means call Bob first (610-363-8242).** Buying a subscription this way also gets you a 10% discount on other Sky Publishing merchandise.

CCAS Website

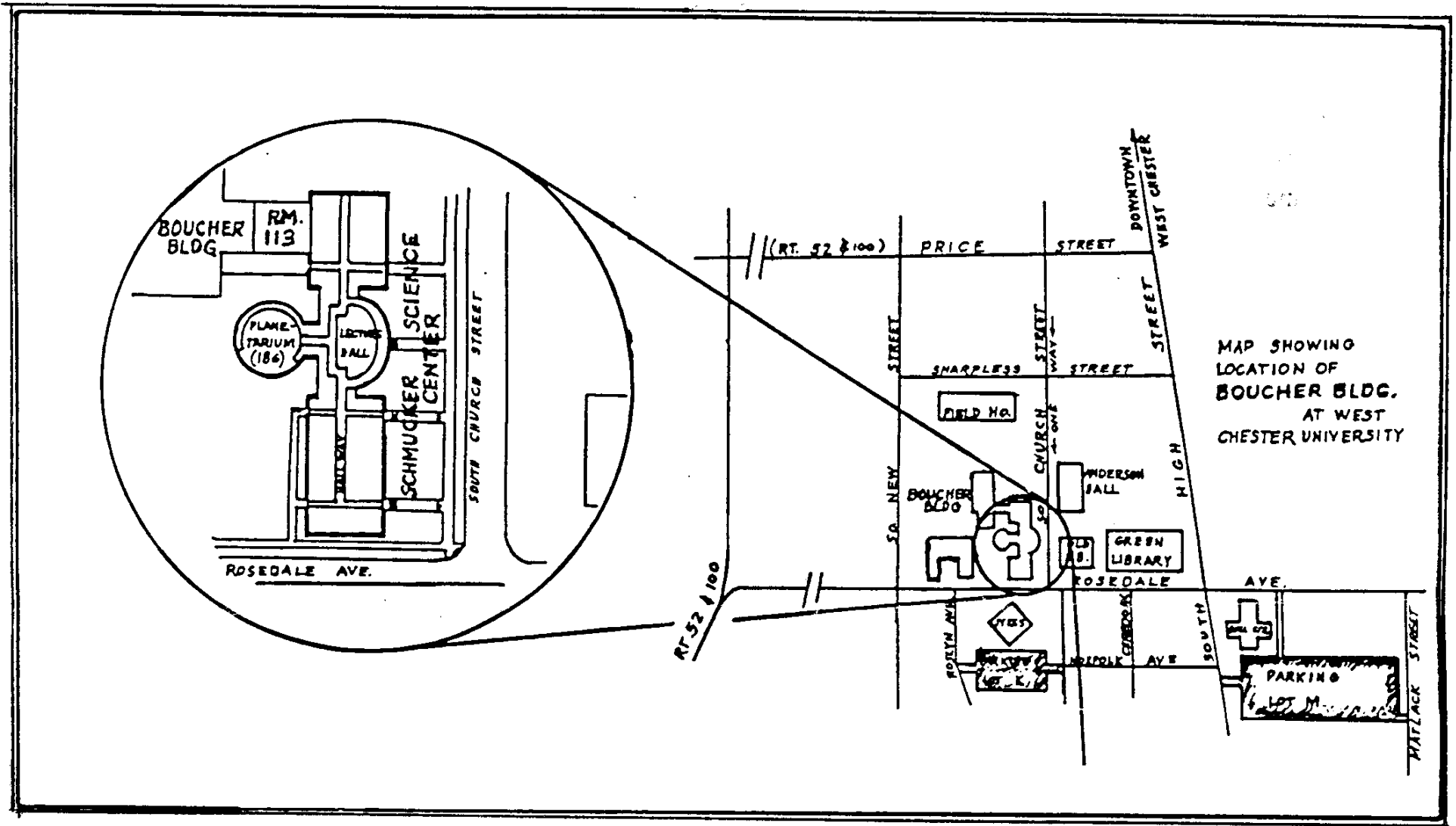
John Hepler is the Society's Webmaster. You can check our Website at:

<http://www.ccas.us/>

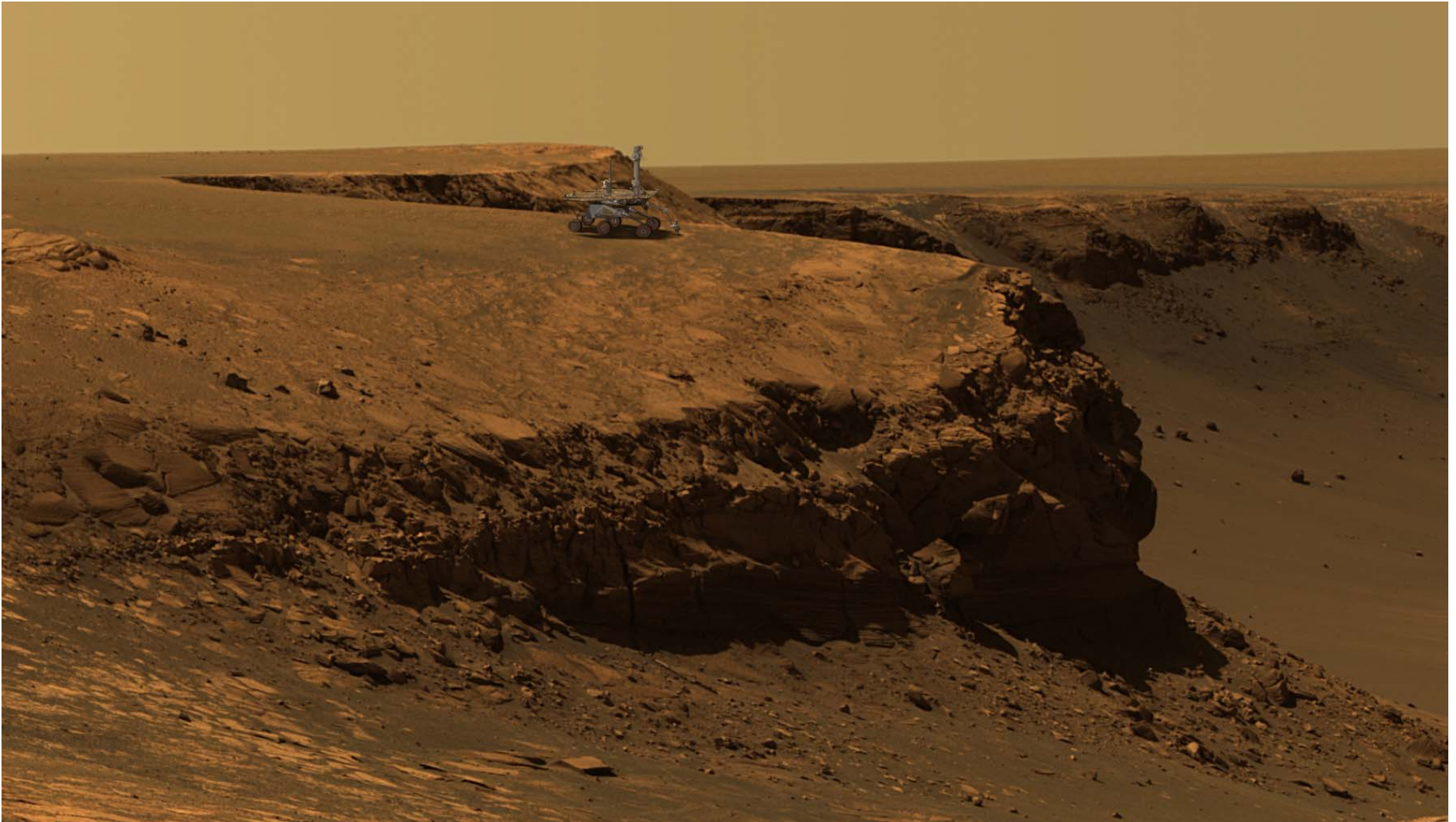
John welcomes any additions to the site by Society members. The contributions can be of any astronomy subject or object, or can be related to space exploration. The only requirement is that it is your own work; no copying copyrighted material! Give your contributions to John Hepler (484-266-0699) or e-mail to webmaster@ccas.us



To get to the Myrick Conservation Center of the Brandywine Valley Association from West Chester, go south on High Street in West Chester past the Courthouse. At the next traffic light, turn right on Miner Street, which is also PA Rt. 842. Follow Rt. 842 for about 6 miles. To get to the observing site at the BVA property, turn off Route 842 into the parking lot by the office: look for the signs to the office along Route 842. From that parking lot, go up the farm lane to the left; it's about 800 feet or so to the top of the hill. If you arrive after dark, please turn off your headlights and just use parking lights as you come up the hill (so you don't ruin other observers' night vision).



Parking is available behind Sykes Student Center on the south side of Rosedale Avenue (Parking Lot K), and behind the Bull Center at the corner of Rosedale Avenue and South High Street (Parking Lot M). If you arrive early enough, you may be able to get an on-street parking space along South Church Street, or along Rosedale Avenue. You can take the Matlack Street exit from Rt. 202 South; Matlack Street is shown on the map at the lower right corner with Rt. 202 off the map. If approaching West Chester from the south, using Rt. 202 North, you would continue straight on South High Street where Rt. 202 branches off to the right. This would bring you onto the map on South High Street near Parking Lot M, also in the lower right corner.



Mars Rover *Opportunity* at Victoria Crater

Artist's impression based on photos from *Opportunity* and *Mars Reconnaissance Orbiter*.

To see the whole image, and to download the full-sized image (which you can enlarge on your computer for even more impressive views) go to

http://marsprogram.jpl.nasa.gov/mro/gallery/press/20061006d/Sol952B_P2389_L257atc_withNew_Rover_v008.jpg

or, to type less, go to the main mission page and follow the links to the gallery:

<http://marsprogram.jpl.nasa.gov/mro>