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Observations

A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

FEBRUARY 2005
(VOLUME 13, NO. 2)
Visit our website at www.ccas.us

In This Issue

Newsletter Deadlines

March 2005 issue ..... February 25
April 2005 issue ..... March 28
May 2005 issue ..... April 27
June 2005 issue ..... May 27

Important February 2005 Dates

1 Introductory Astronomy class meets at West Chester University. Class starts at 7:00 p.m. EDT. Topic: *Spaceship Earth*.

2 Last Quarter Moon

7/8 Mars passes between M20 (Trifid Nebula) and M8 (Lagoon Nebula), visible in the early morning hours.

8 New Moon

Also: CCAS Meeting 7:30 p.m. EST
Constellation of the Month: Lepus
Members' Night. Details on page 3.

9 Three of Jupiter's moons (Io, Callisto, and Ganymede) make a compact group at about 11:00 p.m. EST.

11/12 CCAS Observing session at Myrick Conservation Center (BVA) starts at sunset. Map with directions is on page 9.

15 First Quarter Moon

Also: Introductory Astronomy class meets at West Chester University. Class starts at 7:00 p.m. EDT. Topic: *The Moon*.

18 Mars is very close to globular cluster M22; you should be able to see both in a telescope at the same time.

23 Full Moon

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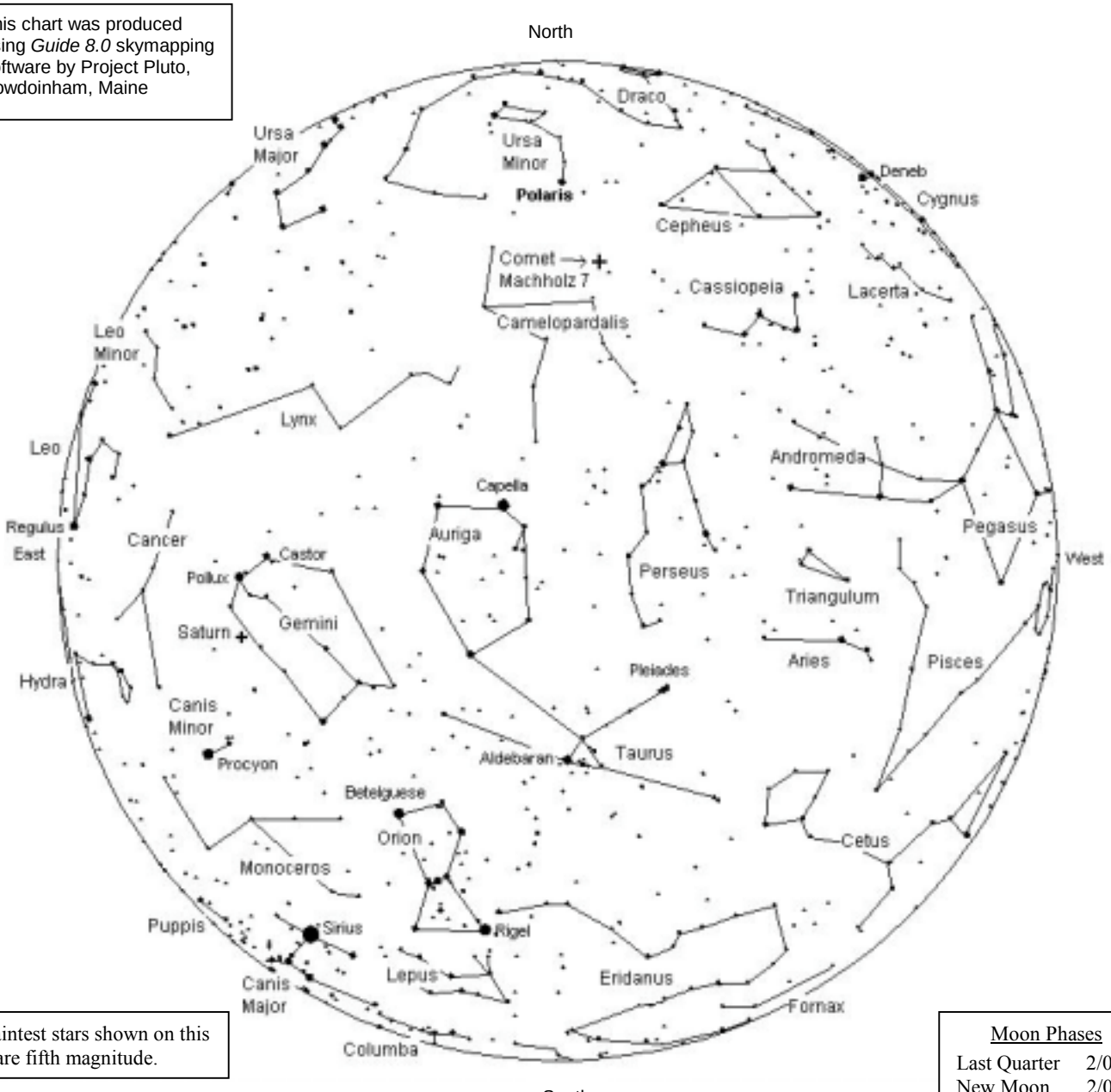
This chart was produced using *Guide 8.0* skymapping software by Project Pluto, Bowdoinham, Maine



The faintest stars shown on this chart are fifth magnitude.

Moon Phases	
Last Quarter	2/02
New Moon	2/08
First Quarter	2/15
Full Moon	2/23

The sky over Chester County

February 15, 2005 at 7:00 p.m. EST

The Planets

Mercury is lost in the Sun's glare during the first part of February. It emerges into the evening sky at month's end, setting about 30 minutes after the Sun.

Venus is in the morning sky, but is now moving much closer to the Sun. By mid-month it will be lost in the Sun's glare for the rest of February.

Mars is in the morning sky. On the 7th and 8th Mars passes in between M20 (Trifid Nebula) and M8 (Lagoon Nebula). On the 18th Mars is close enough to globular cluster M22 that you should be able to see both at once in a telescope.

Jupiter is rising in mid to late evening, and is best seen in the early morning hours when it's highest in our sky.

Saturn is visible almost all night long. Take a look and enjoy the true "Lord of the Rings."

Uranus is too close to the Sun to find with a telescope.

Neptune is also too close to the Sun to find with a telescope.

Pluto is rising before the Sun this month, but it is best to wait until later in the spring or summer to look for it.

Holiday Comet: Comet Machholz 7 (C/2004 Q2) moves across Camelopardalis in February. It has been living up to brightness forecasts so far, and may be near naked-eye visibility this month. The comet's position on February 15th is shown on the chart above.

CCAS Officer Elections are in 2005

The offices of president, vice-president, treasurer and secretary are up for election this year. The term of office is two years. This is how the elections work:

In March, we announce the members of the Election Committee. These three people are charged with conducting the election. Usually they contact, or try to contact, each Society member to see if that member would like to run for office, or to nominate someone else. People who wish to run for office may not serve on the Election Committee, to avoid any possible conflicts of interest.

In April, the slate of candidates is announced to the Society. In mid-April, a ballot is mailed to each Society member who is eligible to vote. I usually help with that, since I already have the mailing list and the setup to print envelopes for the newsletter.

Voted ballots can be mailed to the Chair of the Election Committee, but mail-in ballots must be received by the May Society meeting (May 10). Ballots can also be returned at the May Society meeting. At that meeting, the Election Committee will count the votes and announce the results.

The newly-elected officers' terms officially begin at the June Society meeting (no, there is not any Inauguration party.)

Please consider serving on the Election Committee. If you would like to help in that capacity, contact a member of the Executive Committee (members are listed in the CCAS Information Directory on page 8).

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CCAS February Meeting

DATE:	**Tuesday February 8, 2005**
TIME:	7:30 p.m. EST
PLACE:	Department of Geology and Astronomy Lecture Room (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 10.

We will be starting a new series of 15-20 minute presentations called "The Constellation of the Month". The constellation for February will be Lepus, presented by Jim Anderson.

For our February program, after the Constellation talk, we will have a "Member's Night", opening the floor to CCAS members. If anyone would like to tell the other members about a favorite observing experience, or perhaps do a slide show of astrophotographs they've taken, they can do so. Or perhaps you've devised an interesting and useful telescope or binocular observing trick or accessory, and would like to share it. "Presentations" like that at Member's Night do not have to be long, nor elaborate, nor illustrated. We will also open the floor for a question-and-answer session, where you can ask any astronomy or space exploration question. We don't say we'll be able to answer everything right then at the meeting, but if we have to look something up we'll let you know what we find out. Come join us for a varied and interesting program.

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CCAS February Observing Session

The next CCAS Observing Session will be at the Brandywine Valley Association's Myrick Conservancy Center (see map on page 9) on Friday February 11, 2005 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 Saturday February 12, 2005. 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.

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CCAS Introductory Astronomy Class

The Education Committee of the CCAS is offering a class intended to introduce people to basic astronomy. This series of eight classes will be held on the first and third Tuesdays of each month, starting at 7:00 p.m. and ending at 8:00 p.m. These are the dates on which classes will be held:

February 1	Spaceship Earth
February 15	The Moon
March 1	The Other Kids on the Block
March 15	Planispheres/Star Charts
April 5	Stars by Design: Constellations
April 19	The Secret Life of Stars
May 3	Planetarium Field Trip (WCU)
May 17	Telescopes, Binoculars and Mounts

The classes will be held in Room 216 of the Boucher Building at West Chester University. The Boucher Building is the same building where our monthly CCAS meetings are held.

The cost for non-members is $20.00 per person, and $30.00 per family (with the same address). **For current CCAS members, the classes are free!** Space is limited to just 30 people, however, so call Kathy Buczynski to reserve your space **now** (610-436-0821). Also, please call Kathy if you'd like to help at the classes. We have all the instructors lined up, but we can always use help with registration and setup/takedown.

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Welcome New Members!

We'd like to welcome the members who have joined the Society so far this year: Larry Reimer of West Chester, and Marc Henderson of Newark (DE). Welcome and Clear Skies to Larry and Marc!

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CCAS Polo Shirts Available

Thanks to the diligent efforts of our president Mike Turco we are pleased to offer CCAS members the opportunity to purchase a classy polo shirt with the CCAS logo embroidered on the left breast. Yes, it's embroidered, not silk-screened or otherwise printed on the material. Price is $30.00 per shirt. Adult sizes S, M, L, XL only. Contact our Treasurer Bob Popovich to purchase yours! Hurry before they're all gone!

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Treasurer's Report by Bob Popovich

December 2004 Financial Summary

Beginning Balance	$1,166
Deposits	256
Disbursements	123
Ending Balance	$1,300

Membership Renewals Due

02/2005:	Carlucci
	Cuttler
	Deeney
	Ehrgott
	Farrelly
	La Para
	Levy
	Marcelli
	Renshaw
	Ruggeri
	Viallet
	Wilcox
03/2005:	Grey
	Holenstein
	Nelson
	Vitanza
04/2005:	Dunlop
	Imburgia

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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 a later page in this newsletter.

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Calendar Notes

February 1, 2005 (Tuesday)	Introductory Astronomy class Location: West Chester University 7:30 p.m. EST
February 8, 2005 (Tuesday)	CCAS Meeting Location: West Chester University 7:30 p.m. EST
February 11/12, 2005 (Friday/Saturday)	CCAS Observing Session Location: BVA sunset
February 15, 2005 (Tuesday)	Introductory Astronomy class Location: West Chester University 7:30 p.m. EST
March 1, 2005 (Tuesday)	Introductory Astronomy class Location: West Chester University 7:30 p.m. EST
March 8, 2005 (Tuesday)	CCAS Meeting Location: West Chester University 7:30 p.m. EST
March 11/12, 2005 (Friday/Saturday)	CCAS Observing Session Location: BVA sunset
March 15, 2005 (Tuesday)	Introductory Astronomy class Location: West Chester University 7:30 p.m. EST
April 5, 2005 (Tuesday)	Introductory Astronomy class Location: West Chester University 7:30 p.m. EDT
April 8/9, 2005 (Friday/Saturday)	CCAS Observing Session Location: BVA sunset
April 12, 2005 (Tuesday)	CCAS Meeting Location: West Chester University 7:30 p.m. EDT
April 16, 2005 (Saturday)	**National Astronomy Day**
April 19, 2005 (Tuesday)	Introductory Astronomy class Location: West Chester University 7:30 p.m. EDT
May 3, 2005 (Tuesday)	Introductory Astronomy class Location: West Chester University 7:30 p.m. EDT
May 10, 2005 (Tuesday)	CCAS Meeting Location: West Chester University 7:30 p.m. EDT
May 13/14, 2005 (Friday/Saturday)	CCAS Observing Session Location: BVA sunset
May 17, 2005 (Tuesday)	Introductory Astronomy class Location: West Chester University 7:30 p.m. EDT
June 10/11, 2005 (Friday/Saturday)	CCAS Observing Session Location: BVA sunset
July 8/9, 2005 (Friday/Saturday)	CCAS Observing Session Location: BVA sunset
August 12/13, 2005 (Friday/Saturday)	CCAS Observing Session Location: BVA sunset

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Astronomus

"Good, **Old** Constellations"

By Bob Popovich

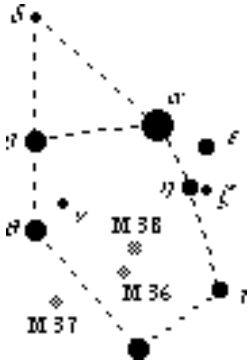
Regardless of the type of star chart you use—whether it be an Edmund planisphere or an expensive software suite—the image presented of most constellations is virtually identical. Orion with his uplifted club, Cygnus with wings outspread or Perseus clutching the Medusa's severed head—the constellation figures *appear* as fixed and timeless as the heavens themselves. But as every English schoolboy knows, this simply isn't so.

Beginning in 1482 with the publication of *Poeticon Astronomicon*, science and art have engaged in a dance of intricate beauty as the constellation figures familiar to us slowly evolved. Sadly, this tandem divorced rather quickly in the 19th century. That said, were we to study the star charts of our predecessors we would see images that were both instantly recognizable and, at the same time, a wee bit odd.

Seeing as there are quite a few constellations (the current official total is 88; the classical catalogue of Ptolemy logged 48), I'd like to propose that we focus on just one—Auriga the charioteer. Easily recognizable in the winter sky and full of wondrous targets for binoculars and telescope alike, its fascinating pictorial evolution involves some of the greatest astronomers and astro-cartographers of all time.

To understand the ways in which Auriga is shown in star atlases, we must first recall the mythology surrounding this constellation. Nearly all classical civilizations describe him as both a charioteer and as a herdsman. The one I recall from childhood has him as the *lame* child of the god Hephaestus (Vulcan) who invented the chariot as a way of getting around. *Did you know that the gods could be born lame*? *Then what's the point of being the child of a god?* But it's this second reference—as a herdsman—that actually seems to fit better with the depictions of Auriga that I've come across.

Let's start by showing the constellation as it appears in a contemporary star chart:

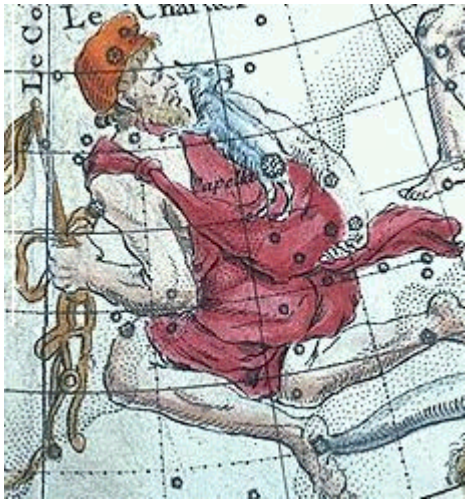


It's familiar, easy to interpret and…really UGLY. Now let's look at how Johann Bayer depicted it in his 1603 tome *Uranographia*:

This is not a utilitarian piece of astro-information but a work of art. Unlike the contemporary star chart, this plate does true justice to the beauty of the constellation.

And notice the goat! Auriga is looking over his shoulder (as is the goat). Perseus stands in that general direction—let's hope he wasn't looking at the Medusa because we all know the consequence of that! Though shown as being rather long of tooth, he certainly looks to be in good shape. The alpha star, Capella, marks not Auriga but the goat. Capella, by the way, means "she goat." The beta star (his right shoulder) is Menkalinan, meaning, "shoulder of him of the reins." In his left hand (only partially visible) he holds reins. A goatherd with a chariot? I can't decide if that's efficient or just lazy. You'll also note that M36, 37 & 38 are not are shown in this drawing. Of course Messier wasn't even born at the time this atlas was published, and, as the telescope's invention was still 7 years in the future neither Bayer, nor anyone else for that matter, even knew that the clusters were there.

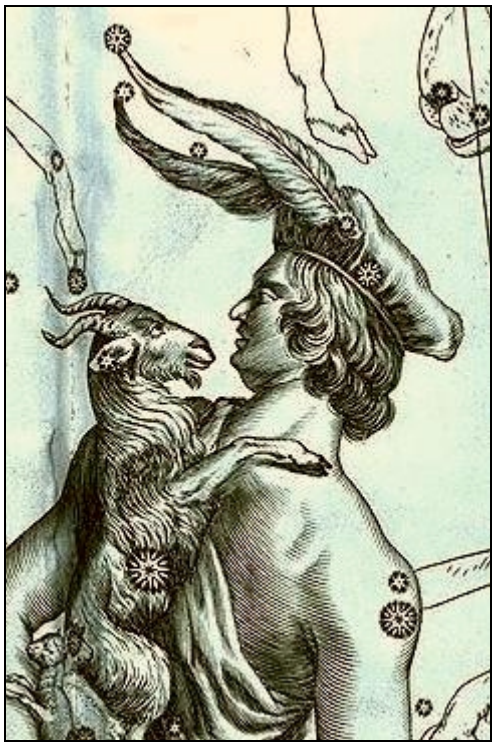
Equally as beautiful as Bayer's version is this drawing made by La Hire a century later in 1705:



While the drawing of this figure changed little from Bayer's version, notice that the stars are aligned just a bit differently relative to the figure. And notice the star Elnath marks not only Auriga's right heel but also the tip of Taurus' horn. Lastly, this rendering clearly shows reins. And of course, that darn goat.

The three Messier objects are still lacking though telescopes of the day could certainly have seen them. Some 55 years after La Hire's atlas was published Messier would methodically observe and record the clusters and nebulae that still bear the catalogue initial "M." Once this catalogue was issued, atlases were quick to respond with their own updates because many astronomers, like Messier, did not want to confuse a cluster or nebula for what they really scanned the skies for: comets.

Though we prefer looking up at the sky, let it never be said that astronomers don't pay attention to the world around them. Not many years preceding La Hire's atlas, in 1683 to be precise, there occurred the all too terrestrial bloodletting called the siege of Vienna. This marked the furthest inroad into Europe for the Ottoman Turks. And it also produced the great Polish hero Jan Sobieski. His valor earned him respect all across Europe and a prominent place in the heavens as depicted in 1690 by Johan Hevelius:



Hevelius honored Jan Sobieski by changing the mature herdsman/charioteer of Bayer and La Hire for a much younger version sporting a stylish Polish cap. As beautiful a work as you could ask for, but look at the differences relative to the prior 2 atlases! To begin with, the figure is reversed. As if that weren't enough, the stars are reversed as well. Now before you run outside in a panic to see which version is correct, I will tell you that Bayer and La Hire projected stars as they appear looking up from the Earth while Hevelius decided to show them as they would appear looking down on a star globe.

The goat, now larger and more ominous than prior versions remains, though this time staring right at his master. And if you look carefully just below the goat you can actually see what's supposed to be a kid. In fact, if you look at the contemporary star chart presented at the outset, you'll notice 3 stars below Capella labeled ζ, η and ε. These three carry the names of Al Aanz (he goat) and Haedi I and Haedi II ("The kids"). Go back to the previous two illustrations and see if you can make out the kids. And if you can find an explanation of the significance of these goats, please let me know!

Conventional wisdom views these great atlases as too ornate and thus interfering with the serious study of astronomy. I disagree. They add immeasurably to the pleasure of observing for the stellar patterns come alive in the presence of the stories and pictures behind them. What these charts lack in detail they more than make up for in engaging beauty. And isn't that a big part of why we love to stargaze? Besides, spending time observing and pondering museum-quality art is a much richer experience than staring at a hangman stick figure. Even if goats do smell…

Next Time: The Viewing O' The Green

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NASA Space Place

Stardust Up Close

By Patrick L. Barry and Dr. Tony Phillips

Like discarded lumber and broken bricks around a construction site, comets scattered at the edge of our solar system are leftover bits from the "construction" of our solar system.

Studying comets, then, can help scientists understand how our solar system formed, and how it gave rise to a life-bearing planet like Earth.

But comets have long been frustratingly out of reach—until recently. In January 2004 NASA's Stardust probe made a fly-by of the comet Wild 2 (pronounced "vilt"). This fly-by captured some of the best images and data on comets yet—and the most surprising.

Scientists had thought that comets were basically "rubble piles" of ice and dust—leftover "construction materials" held together by the comet's feeble gravity. But that's not what Stardust found. Photos of Wild 2 reveal a bizarre landscape of odd-shaped craters, tall cliffs, and overhangs. The comet looks like an alien world in miniature, not construction debris.

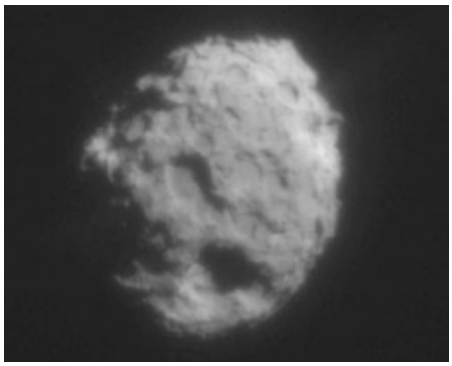


Image of nucleus of Comet Wild 2 taken from 150 miles away by Stardust spacecraft (NASA/JPL)

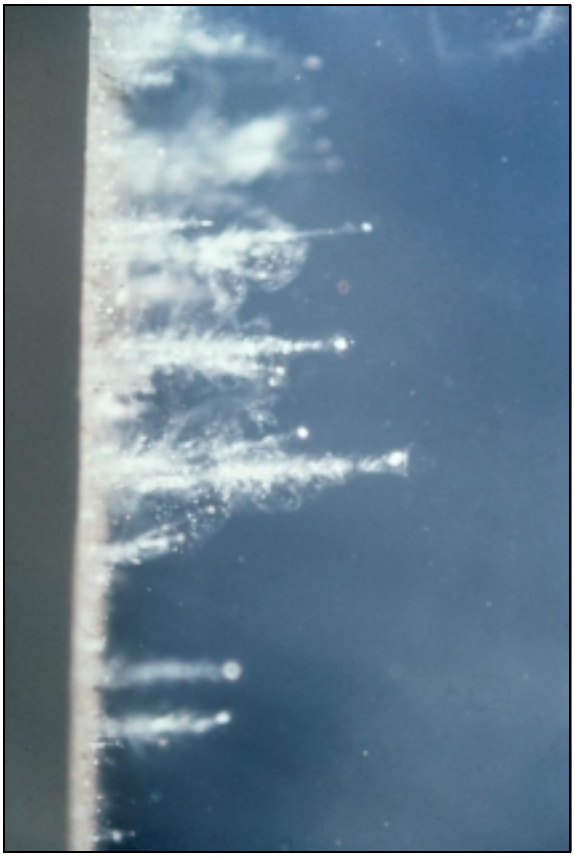
To support these shapes against the pull of gravity, the comet must have a different consistency than scientists thought:

"Now we think the comet's surface might have a texture like freeze-dried ice cream, so-called 'astronaut ice cream': It's solid and can assume odd, gravity-defying shapes, but it's basically soft and crumbles easily," says Donald Brownlee of the University of Washington, principal investigator for Stardust.

Scientists are currently assembling a 3-D computer model of this surface from the photos that Stardust took. Those photos show the sunlit side of the comet from many angles, so its 3-dimensional shape can be inferred by analyzing the images. The result will be a "virtual comet" that scientists can examine from any angle. They can even perform a virtual fly-by. Using this 3-D model to study the comet's shape in detail, the scientists will learn a lot about the material from which the

comet is made: how strong or dense or brittle it is, for example.

Soon, the Stardust team will get their hands on some of that material. In January 2006, a capsule from Stardust will parachute down to Earth carrying samples of comet dust captured during the flyby. Once scientists get these tiny grains under their microscopes, they'll get their first glimpse at the primordial makings of the solar system.



The Stardust spacecraft used a grid holding aerogel to capture dust particles from comet Wild 2. In this test, high velocity dust particles are stopped unharmed at the end of cone shaped tracks in a sample of aerogel

It's heading our way: ancient, hard-won, possibly surprising and definitely precious dust from the construction zone.

Find out more about the Stardust mission at stardust.jpl.nasa.gov. Kids can read about comets, play the "Tails of Wonder" game about comets, and hear a rhyming story about aerogel at http://spaceplace.nasa.gov/en/kids/stardust/.

The preceding 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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Dark-Sky Website for PA

The Pennsylvania Outdoor Lighting Council has lots of good information on safe, efficient outdoor security lights at their Website: http://home.epix.net/~ghonis/index.htm

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 N. First Avenue
Tucson, AZ 85719-2103

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CCAS Library Notes

The CCAS library has recently received several additions to the collection:

The New Solar System, Fourth Edition, by Beatty, Petersen and Chaikin

Atlas of the Lunar Terminator, by John E. Westfall

Atlas of the Skies, published by TAJ Books

Solar System Evolution, Second Edition, by Stuart Taylor

Seeing in the Dark, by Timothy Ferris

The Whole Shebang, by Timothy Ferris

God and Cosmos, by John Byl

The CCAS extends much gratitude to the members who donated the above books. Future issues of *Observations* will feature brief descriptions of these books.

To borrow any CCAS Library book, including these new ones, contact our Librarian, Linda Lurcott Fragale, at 610-269-1737.

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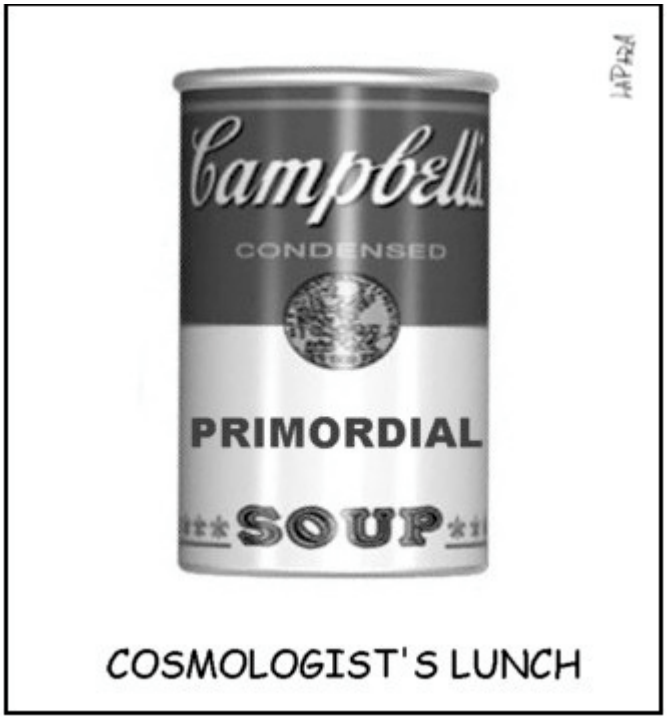

Cartoon by Nicholas La Para

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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. 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 newsletter@ccas.us

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 by 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:

jimanderson1956@aol.com

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: Mike Turco
(610) 399-3423

Vice Pres: Steve Limeburner
(610) 353-3986

ALCor and Treasurer: Bob Popovich
(610) 363-8242

Secretary: Caitlin Grey
(610) 918-9049

Newsletter: Jim Anderson
(610) 857-4751

Librarian: Linda Lurcott Fragale
(610) 269-1737

Observing: Ed Lurcott
(610) 436-0387

Education: Kathy Buczynski
(610) 436-0821

Public Relations: Vic Carlucci
(610) 458-7457

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 date printed on the address label of this issue of *Observations*; "exp." appears in front of it, just after your name. If you are due to renew, you may send 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

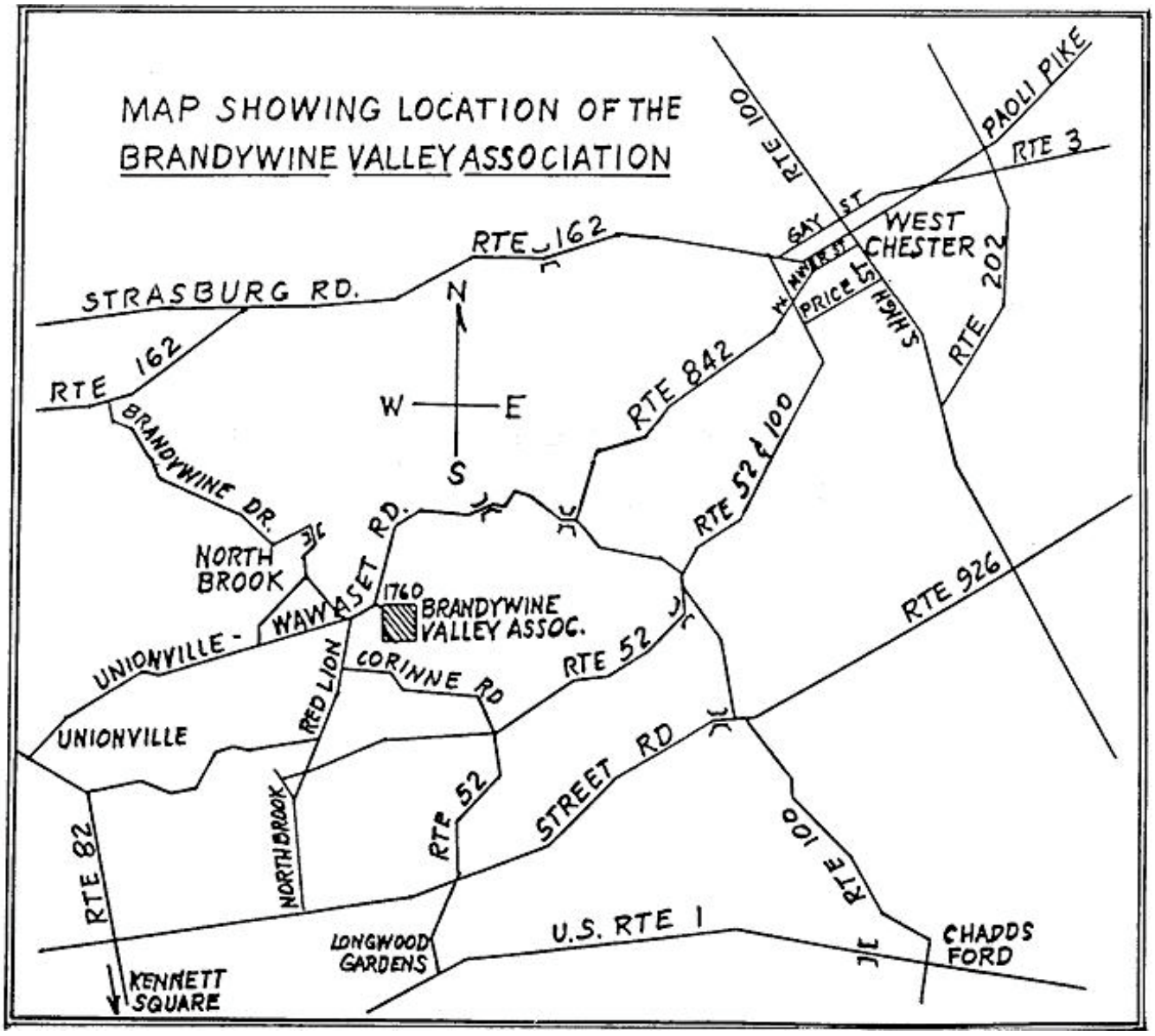
Subscriptions to this excellent periodical are available through the CCAS at a reduced price of **$32.95** which is much less than the newsstand price of $66.00, and also cheaper than individual subscriptions ($42.95)! Make **sure** you make out the check to the **Chester County Astronomical Society** (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:

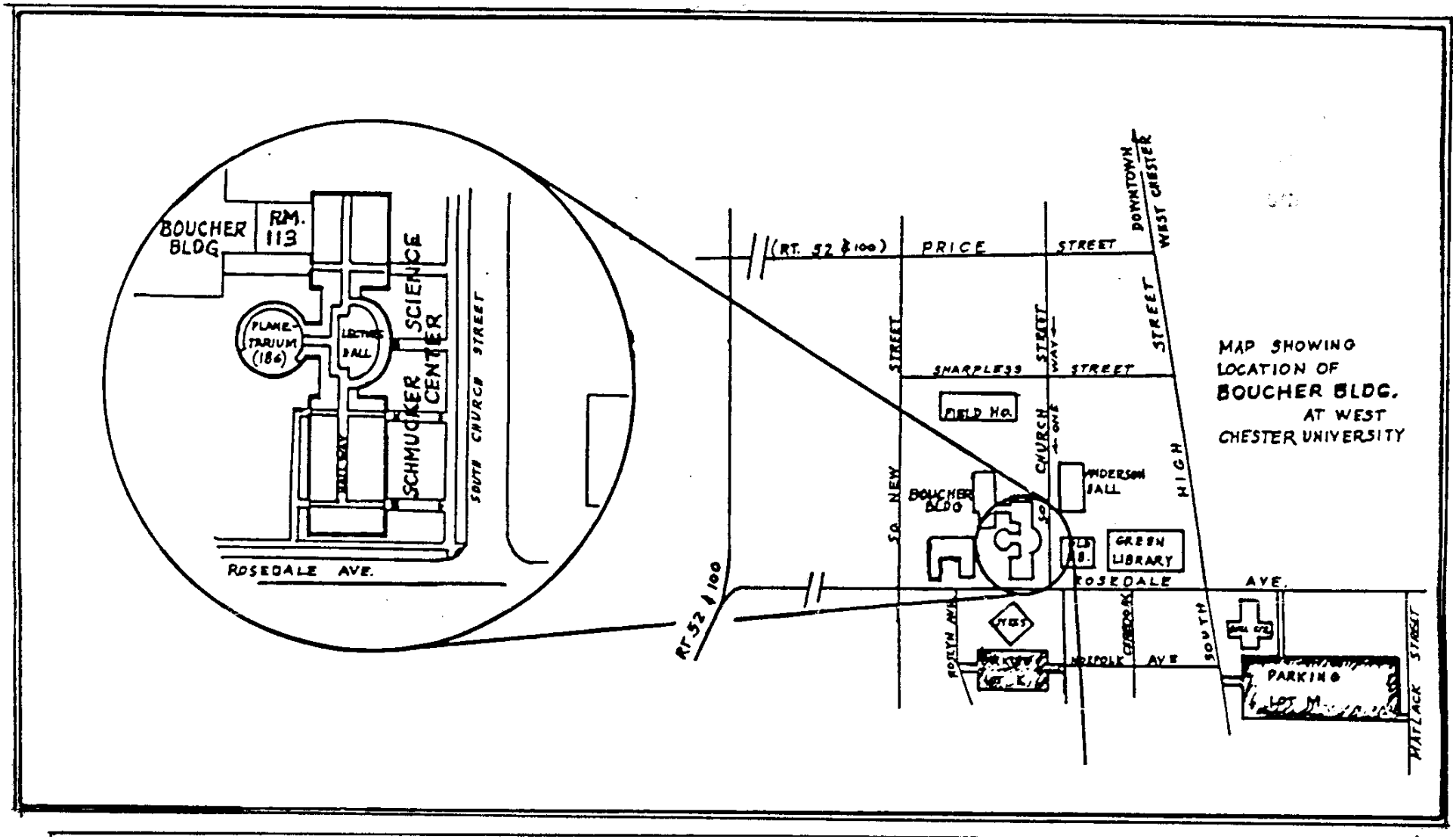
http://www.ccas.us/

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 (610-363-0811) 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.