

# "CLEAR SKIES"



NEWSLETTER of the CHAMPAIGN-URBANA ASTRONOMICAL SOCIETY, Inc.  
An affiliate of the Champaign Park District

May, 2006

## PRESIDENT'S MESSAGE

I love May.

The trees finally have leaves, the weather is warming up, the students leave and town is less congested, I often take a vacation, and to top it off the summer sky starts to rise at a reasonable evening hour, with Vega and Lyra popping up in the east, Scorpius raising its claws over the southeastern horizon, and the summer Milky way on the horizon.

It's time to get into summer observing mode – dig out the bug spray and douse yourself with it, make sure your dew heaters are working properly, and watch the weather forecast. If it's humid and still, get ready for planetary observing. If it's clear, drier and cooler, hope for some decent transparency and track down the faint fuzzies. If there are storms in the distance, here in Illinois with our excellent horizons we can watch the lightning and look for sprites and the other mysterious companions of distant lightning.

This May our club has an observing session on National Astronomy Day, May 6<sup>th</sup>. We also have public observing at Hessel Park on May 20<sup>th</sup>, with a rain date the next day. Let's see if we can raise our profile in town a bit with these two events – we have lost some members of late, so it's time to get the word out and recruit some new ones, or convince those who have left us to come back. Our club has achieved a lot in the last two years, but I believe we could be far better known in town – not enough people know we exist in this town where many of the residents are highly educated and involved in higher education.

The Allerton event on April 22<sup>nd</sup> was well attended by both members and the public. The excellent weather made for lots of last-minute signups, and Bob Rubendunst gave a great talk on extrasolar planets. We fought roving swarms of mosquitoes for about an hour before the temperature dropped, the bugs went away, and many of us went digging around in cars looking for our winter coats. We had an enjoyable (and late) evening observing galaxies after the public had left, and we were alone under a fairly dark sky with some large telescopes. Thanks to those members that attended.

Also, thanks to Guy Hampel for getting the club a new self-propelled lawn mower. This summer it should make mowing much more bearable.



### CUAS DIRECTORY:

Mike Lockwood, President	398-9778
Guy Hampel, Vice-pres.	352-3690
Jeff Bryant, Secretary	840-5251
Phil Wall, Treasurer	352-5442
Dave Leake, 5 <sup>th</sup> Director	359-6644
Mike Rosenberger, Obs. Dir.	598-2254
Chris Pond, Webmaster	352-5426
Dave Leake, Newsletter Ed.	359-6644
Kevin Crump, CPD	398-2372

So aside from raising our public profile, what should our club do next? I invite you to bring your thoughts to the next club meeting. Hope to see you there.

Clear, darker skies,  
Mike Lockwood

## LOOKING UP THIS MONTH

Per usual, we begin the May planet tour in the west where Mars lurks. As Mars fights to stay ahead of the Sun, it sets earlier and earlier in the day, but the Sun won't catch up to it until October! This month Mars sets 12:15am CDT (on the 15<sup>th</sup>). Look in the west about five degrees to the lower left of Pollux, in the Gemini twins. Watch Mars approach Saturn this month. It begins the month about 2.5 "fists" (25°) and ends up only 9° from Saturn at the end of May.

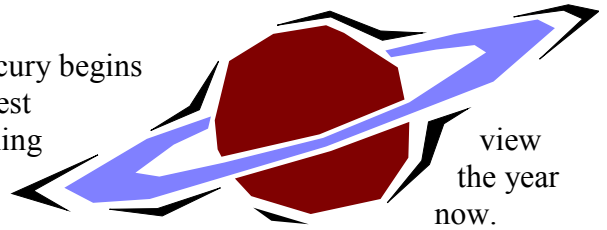
Speaking of Saturn . . . it's in the west as well, above the star Procyon in the star-poor region of Cancer. Watch in binoculars as Saturn inches closer and closer to the Beehive cluster this month on its way back eastward from its retrograde motion. See if you can catch the large moon, Titan, in the field of view. Titan is pretty easy . . . but how many other moons can you count? Saturn sets at just after 1am at midmonth.

Jupiter reaches opposition on May 3-4, meaning it rises in the southeast as the Sun sets and is above the horizon all night. You can't miss Jupiter as it's the brightest thing in the southeast., just west of a line drawn between the two "Z-stars" . . . Zubenelschmali and Zubenelgenubi, in Libra. Say that three times fast, now. The magazines say that, this month, Jupiter will show us its largest apparent diameter for all of 2006. Check out the full Moon just to the right of Jupiter on the 11<sup>th</sup>.

We skip to the morning sky with a peek at Venus, now rising at just after 4am in the middle of May, which is about an hour before the beginning of twilight. A telescope will show a waxing gibbous phase.

We should also mention Mercury, which passes behind the Sun on May 18 to go into the evening sky. Start watching for Mercury by the end of May. On the 28<sup>th</sup>, it sets at 9:30pm, roughly 15 minutes after the end of twilight.

Mercury begins  
its best  
evening  
of



view  
the year  
now.

It'll be visible in a very dark sky for all of June, so you have no excuses *NOT* to see it! For now, look in the west-northwest and don't mistake it for Capella. Mercury sits below a nice crescent Moon on the 28<sup>th</sup>.

Cheers to Comet Schwassmann-Wachmann 3 for keeping us on our toes. The comet is nicely placed in the morning sky (when it is at its highest) and brighter than they thought it might be. The comet split into fragments with the largest two being visible in a backyard telescope. Have any of you seen the comet yet? Post your observations to the list! The 5<sup>th</sup> magnitude comet passes from Hercules, through Lyra and into Cetus in May. Why so fast? It's close! In fact the comet comes to within 7.3 million miles of the Earth on May 12. This is the closest a comet has come to us since 1983 and the 12<sup>th</sup> closest on record. Now before you go calling Bruce Willis, seven million miles is roughly 30 times the Earth/Moon distance . . . so rest easy. But watch as it moves sometimes five degrees a day in an easterly direction. On May 7<sup>th</sup>, the comet will appear to come very close to the Ring Nebula (M57) in Lyra at roughly 10pm. It's cruising, so be sure to catch it. Comet updates can be found on the <http://skyandtelescope.com> website.

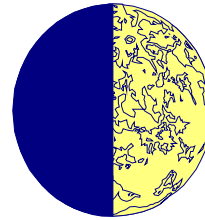
Have fun!  
-DCL

Planet	Date	Constellation	Magnitude	Distance*	Apparent Diameter
Mercury	5/21	Taurus	- 2.1	122.3	5.1''
Venus	5/15	Pisces	- 4.0	100.0	15.5
Mars	5/15	Gemini	+1.6	189.8	4.6
Jupiter	5/15	Libra	- 2.5	414.8	44.1
Saturn	5/15	Cancer	+0.3	874.5	17.6
Uranus	5/15	Aquarius	+5.9	1896.3	3.4
Neptune	5/15	Capricornus	+7.9	2785.1	2.2
Pluto	5/15	Serpens	13.9	2813.4	0.1

\* in millions of miles from Earth

Moon Phases:

1 <sup>st</sup> Quarter	May 5	June 3
Full	May 13	June 11
3 <sup>rd</sup> Quarter	May 20	June 18
New	May 27	June 25



## CUAS NEWS

Please come to the **public star party** at Hessel Park on May 20, a 3<sup>rd</sup> quarter Moon weekend. We'll probably start around 8 pm. The officers wanted the club to be a bit more visible and, though our observatory events are darker, a public session will hopefully entice more people to come look. We'll have several planets in the sky to check out. The rain date is the next night, May 21. We hope you can volunteer to bring a telescope or show up and help talk to people about the club. Or just show up and observe with us! This event will be in the newspaper and in the park district's spring brochure.

Our **Bottenfield Junior Stargazers** have ordered their personalized T-shirts from Cotton Expressions and now they're looking to do a field trip or two. If you'd like to visit the Illinois State University Planetarium or even the Adler Planetarium in Chicago, let Dave Leake know. There's talk of a possible bus trip to Chicago, depending on the number of people interested. No date has been set as of press time.

An attempt is going to be made to invite our **observatory neighbors** to our May open house. This means delivering a few fliers to the houses within a radius of the dome. The April event was cancelled due to clouds. Hopefully we'll share the night sky with a new population and maybe entice some lights to either go off or get redirected!

The membership voted to do a **fall telescope buyer's clinic** for the public, probably during one of our meeting times (but nothing is definite at the moment). We'll discuss scope types, advantages, disadvantages and mounts with interested persons. Stay tuned.

The club voted down participation in "**Taste of CU**" in West Side Park. The thought was that the fee was too high and we would have a difficult time breaking even on the event.

We're still looking for a **new editor** for the "Clear Skies" newsletter to begin with the August, 2006 issue. You can merely fill in the current template for the newsletter or, better yet, come up with your own design. Contact an officer if you're interested.

If you'd like to receive your **newsletter via email** (a pdf file) instead of through the mail, contact either Dave Leake or Phil Wall. This will save the club some postage money and save some trees in the process . . . plus any photos are in color!

If you want to get your club news fast, please subscribe to the **Cuas-l email list**. Sometimes people will email and say they will be observing that night and will ask for people to join them. There is also news of new comets and possible auroral displays. To subscribe, just go to the Cuas-l web page at <https://mail.prairienet.org/mailman/listinfo/cuas-l> and follow the subscription directions. Email [cuas-l@lists.prairienet.org](mailto:cuas-l@lists.prairienet.org) to post.

## OBSERVATORY NEWS!

An inventory was done to some of the equipment in the shed. We have two 16-inch OD sonotubes. Does anyone want them? Speak up now! There is also a 10-inch f/6.8 that was donated by Sean Mauney. Mike Lockwood reports that the mirror needs work, plus it needs a new mirror cell and secondary. There's also a Criterion 6-inch reflector that needs a new focuser, though the mirror seems to be OK. Mike Rosenberger also reports he has a second Criterion scope that could be added to the mix. Is anyone interested in purchasing one of these instruments? Again, please give a holler! CUAS members will get first dibs on the instruments.



Thanks to Guy Hampel, we have a new self-propelled mower in the shed for our use.

A priority list is being developed for the observatory. Items that are on the currently-incomplete list include:

- 1) Replace the visqueen below the observing deck (should be done soon)
- 2) Repair/replace right ascension bearings on Cass scope
- 3) Composting or incinerating toilet on-site
- 4) Auction of some club equipment
- 5) Construction of a warm room
- 6) Making the dome more accessible

The now infamous "**Mow List**" returns! In fact, we're already through the first two people! If you get finish mowing, call the next person immediately so they can plan to check the lawn roughly a week later. The club authorized Guy to purchase a new self-propelled mower (\$400) at the April meeting. If you want to be on the list (or be taken off of it), contact Dave Leake. Recall that observatory keyholders are expected to help out at the dome in some manner . . . this is a good opportunity to help out!

- |                     |                     |                  |
|---------------------|---------------------|------------------|
| 1) Mike Rosenberger | 4) Audrey Ishii     | 7) Mike Lockwood |
| 2) Dave Leake       | 5) Willard Brinegar | 8) Mike Matthews |
| 3) Mark Prather     | 6) Guy Hampel       | 9) Wayne James   |



## LOOKING AHEAD

May 6

National Astronomy Day/Skywatch 7-10pm

Observatory

We need some volunteers to set-up some scopes at the dome, plus open the dome for viewing. Take I-57 to the south to the Monticello exit. Turn right and go 1.4 miles to county road 700E. Turn left here and the dome is 0.8 miles south on this road, on your left.

May 11	CUAS Club Meeting	7-8:30pm	Staerkel Planetarium
Jeff Bryant will be our speaker for the evening. His presentation will revolve around (?) cataclysmic variable stars. Should be a good one! See you there!			
May 20	Hessel Park Star Party	8-10:30pm	Hessel Park, Champaign
Join us in Hessel Park, just off Kirby Avenue in Champaign, for a night of star & planet gazing (weather permitting, of course). The rain date is May 21.			
May 27	New Moon Observing	8-? pm	Observatory
Our members-only night to look at the faint fuzzies. Weather permitting.			
June 3	CUAS Family Skywatch	8-10:30pm	Observatory
June 8	CUAS Club Meeting	7-8:30pm	Staerkel Planetarium
Program to be announced.			
June 23	“Summer Prairie Skies” opens	7pm	Staerkel Planetarium
June 24	New Moon Observing	9-? pm	Observatory
July 1	CUAS Family Skywatch	8-10:30pm	Observatory
July 13	CUAS Club Meeting	7-8:30pm	Staerkel Planetarium
July 22	New Moon Observing	9-?pm	Observatory

**CHECK OUT ALL CLUB EVENTS ON THE CUAS HOME PAGE:**

<http://www.prairienet.org/cuas> or <http://www.cuas.org>



## Who Wants to be a Daredevil?

By Patrick L. Barry and Dr. Tony Phillips

When exploring space, NASA naturally wants to use all the newest and coolest technologies—artificial intelligence, solar sails, onboard supercomputers, exotic materials. But “new” also means unproven and risky, and that could be a problem. Remember HAL in the movie “2001: A Space Odyssey”? The rebellious computer clearly needed some pre-flight testing.

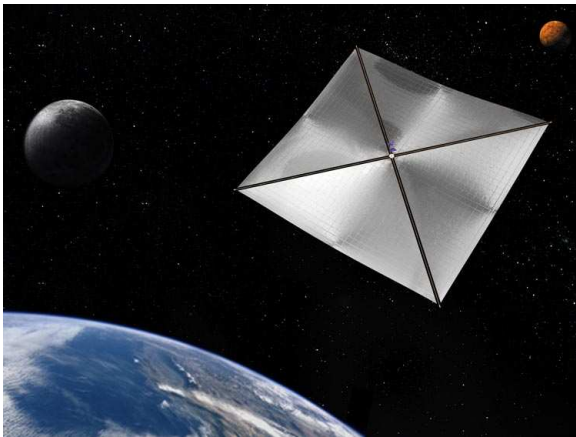
Testing advanced technologies in space is the mission of the New Millennium Program (NMP), created by NASA’s Science Mission Directorate in 1995 and run by JPL. Like the daredevil test pilots of the 1950s who would fly the latest jet technology, NMP flies new technologies in space to see if they’re ready for prime time. That way, future missions can use the technologies with much less risk.

Example: In 1999, the program’s Deep Space 1 probe tested a system called “AutoNav,” short for *Autonomous Navigation*. AutoNav used artificial intelligence to steer the spacecraft without human intervention. It worked so well that elements of AutoNav were installed on a real mission, Deep Impact, which famously blasted a crater in Comet Tempel 1 on July 4, 2005. Without AutoNav, the projectile would have completely missed the comet.

Some NMP technologies “allow us to do things that we literally could not do before,” says Jack Stocky, Chief Technologist for NMP. Dozens of innovative technologies tested by NMP will lead to satellites and space probes that are smaller, lighter, more capable and even cheaper than those of today.

Another example: An NMP test mission called Space Technology 9, which is still in the planning phase, may test-fly a solar sail. Solar sails use the slight pressure of sunlight itself, instead of heavy fuels, to propel a spacecraft. Two proposed NASA missions would be possible only with dependable solar sails—L1 Diamond and Solar Polar Imager—both of which would use solar sails to fly spacecraft that would study the Sun. “The technologies that we validate have future missions that need them,” Stocky says. “We try to target [missions] that are about 15 to 20 years out.”

A menagerie of other cool NMP technologies include ion thrusters, hyperspectral imagers, and miniaturized electronics for spacecraft navigation and control. NMP focuses on technologies that have been proven in the laboratory but must be tested in the extreme cold, vacuum, and high radiation environment of space, which can’t be fully recreated in the lab. New NMP missions fly every year and one-half to two years, taking tomorrow’s space technology for a daredevil test drive.



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

*Artist's rendering of a four-quadrant solar sail propulsion system, with payload. NASA is designing and developing such concepts, a sub-scale model of which may be tested on a future NMP mission.*

## ODDZ & ENDZ FROM THE COSMOS . .

. .

**Item:** Have you seen the International Space Station in our evening skies? You can get updates on the visibility of the space station from [www.heavens-above.com](http://www.heavens-above.com). Be sure to get the hyphen in there, too, or you'll get information on horoscopes! Go to “select” and then to “USA” and then type in your city. “Champaign” is in the database. Then pick your satellite! There are nice charts for the comet here and you can click on “ISS” for the station. May 7 and May 9 are good nights with the space station high in the northwest heading southward and nearly 80° high around the 9pm hour. Check it out!

**Item:** News from the outer solar system! The Hubble Space Telescope has made some new measurements of what could be our 10<sup>th</sup> planet and found it to be smaller than originally thought. 2003UB<sub>313</sub> is now listed as having a diameter of 2400 +/- 100 kilometers, still 5% larger than Pluto. The original size was based on its reflectivity. The revised size implies the object has a very reflective, icy surface. It reflects 85% of the sunlight it receives. This is second only to Enceledas, which orbits Saturn. We'll know in September whether we officially have a 10<sup>th</sup> planet or a huge Kuiper Belt Object (that's when the IAU will make a judgement). 2003EL<sub>61</sub> was found just before 2003UB<sub>313</sub> and it has two moons. The object is the fastest rotator of all objects in the solar system this size and larger, where a “day” is just under four hours! The spectral signatures of the moons suggest that they were created in an impact and not captured.

**Item:** The solar system is swarming with spacecraft!! Messenger is on its way to Mercury, the Mars Recon Orbiter is now aerobraking at Mars, Cassini is working wonderfully at Saturn, and Venus just got a new artificial satellite. The European Space Agency reports that their Venus Express (a sister to the successful Mars Express) has made it to Venus. Launched last November 9<sup>th</sup>, the craft is in a 9-day orbit. Eventually that will become a 24-hour polar orbit around the planet, coming to within 150 miles of the surface. ESA will observe the atmosphere over the next two Venusian years. For more info, go to: <http://sci.esa.int/science-e/www/area/index.cfm?fareaid=64>.

**Item:** Happy anniversary to the Hubble Space Telescope who recently celebrated 16 years of science. To commemorate the event, the HST people released this photo of M82 in Ursa Major. Cool, eh?

**Item:** Still no word yet on the sale of Yerkes Observatory and its 77 acres. Two groups are interested. One wants to preserve the dome as a science center, plus create 11 lots. Sales of those homes would support an endowment to keep the observatory going. A second group wants to build an inn and spa, plus put in 100 homes.



## MEMBERSHIP FORM

- Enroll me as a new member!  
 Membership renewal [attach mailing label]  
 Change of address only

Name \_\_\_\_\_  
 Address \_\_\_\_\_  
 Phone # \_\_\_\_\_  
 Email address: \_\_\_\_\_

Make all checks payable to:  
 "Champaign-Urbana Astronomical Society"

Circle all that apply:

- |                                     |          |
|-------------------------------------|----------|
| Basic membership                    | \$15     |
| Observatory key fee                 | \$10     |
| <i>Astronomy</i> magazine renewal*  | \$34     |
| <i>Sky &amp; Telescope</i> renewal* | \$33     |
| Donation                            | \$ _____ |
| Total Enclosed                      | \$ _____ |

\*enclose mailing label

Detach and mail to:

C.U.A.S.  
 C/o Phil Wall  
 607 West Healey #11  
 Champaign, IL 61820

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The Champaign-Urbana Astronomical Society is an affiliate group of the **Champaign Park District**.

<http://www.champaignparkdistrict.com>

**William M. Staerkel Planetarium** has public shows on Friday evenings in August. Call 217/351-2446 for more information.

<http://www.parkland.edu/coned/pla>



**Champaign-Urbana Astronomical Society  
C/O William M. Staerke Planetarium  
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