

"CLEAR SKIES"



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

March, 2006

PRESIDENT'S MESSAGE

Well, March is upon us, and the first thing I have to say is PLEASE pay your membership dues! We have a number of members who are about to be dropped from the membership list, and we suspect it's just an oversight.

The turnout of both club members and members of the public was high for the February meeting, and I'd call it a wonderful success. Several refractors and several reflectors were brought in for alignment, assistance with electronic drives, help with assembly, or just general question answering. We had the planetarium lobby quite full of people and instruments and we'd helped out most people by 8pm or so. Then we took a quick peek at the club's 16" Dob (which Guy Hampel had brought in), and discovered that its coating was failing badly. The evening ended with club members seated around a table, talking telescopes. Aside from the coating issue, it was a good evening.

I'd like to keep the ball rolling with good meeting attendance – please let us know your ideas for meeting programs. Have an astronomy-related talk you'd like to give? Drop the club or any officer an email. We'd like to continue with fun, interesting meeting programs that everyone can enjoy. We need your feedback and suggestions.

We have quite a bit of observing scheduled this year. In addition to the two monthly Saturday-night observing sessions, we have three dates at Allerton booked (first is in April), and one at Hessel Park in May. There may be more additions to the schedule too, so if you haven't made it out to a public skywatch night or another public event lately, please think about bringing a scope out. We need you, and you might just have a great time showing the sky.

In the interest of making use of some of the items donated to the club in the past, my telescope making group has been testing the mirrors from two telescopes that were donated to the club – a 6" F/8 on an equatorial mount, and a 10" F/6.8 in a duct-tape-tubed Dobsonian. Both mirrors have serious optical problems, and will require work. These telescopes have been stored in the shed and used very little in recent years, and I think it's time they be put in the hands of someone who wants and will appreciate a telescope. I am proposing that we fix the telescopes up as best we can, including refiguring the optics to high accuracy, and then sell them to interested members for a reasonable price. This will put some money in our club account, and put another telescope under the skies with a member of our club. Please let us know what you think of the idea, and if you are interested in obtaining a telescope. I already know of one person interested in a smaller scope such as the 6" F/8.



CUAS DIRECTORY:

Mike Lockwood, President	398-9778
Guy Hampel, Vice-prez.	352-3690
Jeff Bryant, Secretary	840-5251
Phil Wall, Treasurer	352-5442
Dave Leake, 5 th 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

Finally, work is proceeding with the Curtis Road interchange. This has the potential to seriously damage the quality of our skies at our observing site. If we are going to do anything, now is the time to make some noise and let our local government know that we will not go quietly into a lit-up night. Right now I am hopeful that rising energy prices will make municipalities think more about lighting costs and efficiency, but the horrifically fast pace of development on the west side of Champaign makes me fear this will be overlooked in the interest of plopping down tax revenue-generating subdivisions overnight. I swear they just airlift them in while we all sleep....

If we don't make our stand now, we may not get another chance.

Clear, darker skies,
Mike Lockwood

LOOKING UP THIS MONTH

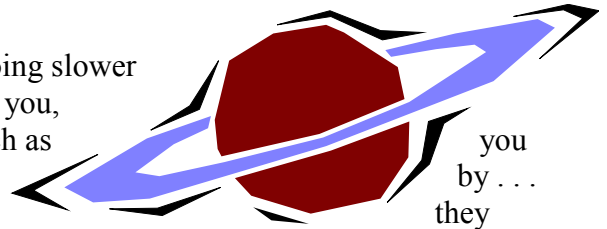
If you hurry you can catch a glimpse of Mercury in the western evening sky as it completes its second best evening performance of the year. Mercury's greatest separation from the Sun actually occurred on February 23 and it now hastily heads back towards the Sun. On March 5, it sets at 7pm. By the 12th it swings between the Sun and Earth and then into the morning sky. By month's end, it can be seen in the east-southeast to the lower left of Venus, but it's low! Check out a very thin crescent Moon just to the right of Mercury on the 27th.

If we jump back to the evening sky, Mars is high in the west and fading as it heads for the horns of Taurus, the Bull. By month's end, it will be situation between the horn stars. Compare the reddish hue of Mars to that of the eye of the bull, Aldebaran. Which is brighter? Mars sets just after midnight all month.

Saturn is in a prime spot for viewing all month in Cancer, the Crab. Cancer contains no real bright stars so Saturn is basically it. At dusk, it's high in the southeast, east of Orion and the Hunting Dogs. Saturn has passed the Beehive Cluster in its retrograde loop and, by April, it will reverse and head back towards the cluster. The rings will be a preferred target at the Skywatches.

Jupiter now rises in the southeast at about 10pm in mid-March. Jupiter is about to begin its retrograde motion in Libra. You can experience retrograde motion in the day time if you want to "take the chance." If you're out on a four-lane highway and you pass someone who

is going slower
than you,
watch as
go
.do



appear to be going backwards? That is what's happening with the outer planets as the Earth passes them in its faster orbit.

Early risers won't miss Venus in the southeast at dawn. It's nothing short of brilliant. In fact, as the morning sky gets orange, you can see Venus in the southeast and Jupiter nearly due south. Check out the lovely Moon to the lower right of Venus on the 25th. If you drag out the telescope that early you can see Neptune about 20 south of Venus on the mornings of March 26-27.

For the asteroid hunters out there . . . and you know who you are . . . Juno (at magnitude 9.3) is a half degree north of the star λ Orionis on the 11th. If that's too faint, Vesta is brighter (magnitude 7.7) is nearly $\frac{3}{4}$ degree from ϵ Geminorum on the 21st.

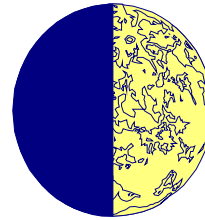
I guess I should mention the eclipses this month . . . but we can't see either of them. A penumbral lunar eclipse on March 14-15 and a huge total solar eclipse on the 29th. The path of the total solar eclipse starts in Brazil, crosses the "big pond" and then hits northern Africa and Turkey. I'm collecting donations for a trip fund if anyone is interested. -DCL

Planet	Date	Constellation	Magnitude	Distance*	Apparent Diameter
Mercury	3/19	Pisces	+0.3	74.7	8.4"
Venus	3/15	Capricornus	- 4.4	54.4	27.6
Mars	3/15	Taurus	+1.0	138.6	6.3
Jupiter	3/15	Libra	- 2.3	446.1	41.1
Saturn	3/15	Cancer	- 0.0	788.3	19.5
Uranus	3/15	Aquarius	+5.9	1956.9	3.3
Neptune	3/15	Capricornus	+8.0	2869.0	2.2
Pluto	3/15	Serpens	13.9	2891.8	0.1

* in millions of miles from Earth

Moon Phases:

1 st Quarter	March 6	April 5
Full	March 14	April 13
3 rd Quarter	March 22	April 20
New	March 29	April 27



CUAS NEWS

Note the calendar addition of the Icko Iben Distinguished Lecture on March 28. **Steven Squyres** will be at the Foellinger Auditorium for a free talk on the Mars rovers.

Though it doesn't appear on the calendar yet, know that we now have a **public star party** at Hessel Park on May 20, a 3rd 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 paper and in the park district's spring brochure.

Do you have a neat idea for a meeting topic? The officers brainstormed some ideas to bring people to the meetings. We could have talks on current space probes, color filters, solar observing, amateur radio, the future of telescopes, mirror making, or even the Messier catalog. And the list doesn't stop there. We would just need someone to volunteer for a month to assemble a short presentation. The thought of bringing in a UI professor is an idea, too. Let us know what you think or if you'd like to take a month!

Our one and only Junior Stargazers group has been active, thanks to coordinator Kim Dalluge. Kim has a meeting planned on March

TREASURER'S REPORT 23 February 2006

Concerning magazine subscriptions handled by CUAS: Magazine subscription renewals (or starts) can be handled at any time of year, not just at membership renewal time. In fact, I recommend getting the renewal to me soon so that you don't risk missing issues if your magazine subscription runs out too close to the end of the year.

Assets

\$2135.81 - checkbook balance
101.00 - petty cash envelope
25.00 - cash waiting to be deposited
\$2261.81 - total

Income past 30 days*

\$ 375.00 - membership renewals: 25 @ \$15
15.00 - new membership: 1 @ \$15
90.00 - annual dome key fee: 9 @ \$10
80.00 - calendars to members: 8 @ \$10
37.00 - donations, \$15, \$2, \$10, \$10
\$ 597.00 - total

Outgo past 30 days*

\$ 18.40 - www.cuas.org 2-year domain renewal

*These categories do not include magazine subscriptions, since we simply send the same money out again.

Phil Wall, CUAS Treasurer 2006

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. Also, Chris Pond has done a magnificent job in keeping our web site up to date. There has been talk of expanding the **web site** (more photos for example), but Chris has asked for help if this is to happen. If you're interested in working on the web site and expanding it, contact an officer.

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 to post.

OBSERVATORY NEWS!

Still no word at press time on the dome lease, but we're expecting a document any day now. Anyone out there with some legal experience? The club doesn't officially have a lawyer but someone with that knowledge should probably look at the lease. Call Dave Leake at 351-2567 if you think you can help. Thanks!

The officers voted to give the old metal fork that's in the shed back to Bob Lozar. This will clear out some needed space in there.

The club needs a volunteer to collect the data from the temperature/humidity sensor that is in place at the dome. Mike Matthews can instruct you. The device is to help us monitor conditions near the primary mirror of the Cassegrain.

A plan is afoot to replace the Cassegrain mount. The same shaft might be used but new, smaller bearings may be put in place.



A priority list is being developed for the observatory. Items that are on the currently-incomplete list include (in no order . . . yet):

- * replace the visqueen below the observing deck
- * repair/replace right ascension bearings on Cass scope
- * composting or incinerating toilet on-site
- * repair/replace mowers in the shed
- * auction of some club equipment
- * construction of a warm room
- * making the dome more accessible



LOOKING AHEAD

- | | | | |
|---|------------------------------|----------|-----------------------|
| March 3 | “World of Science” talk | 7pm | Staerkel Planetarium |
| Geologists Sallie Greenberg will talk about radiocarbon dating and what it tells us about the history of the Earth. Admission is \$1 at the door. | | | |
| March 4 | CUAS Family Skywatch | 7-9pm | CUAS Observatory |
| Our public event for the month . . .and 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. | | | |
| March 9 | CUAS Club meeting | 7-8:30pm | Staerkel Planetarium |
| March 17 | “Spring Prairie Skies” opens | 7pm | Staerkel Planetarium |
| March 25 | New Moon Observing | 7pm-? | Observatory |
| Our members-only, dark sky (well, somewhat dark anyway) session for the month. See the “faint fuzzies” at the observatory . . .weather permitting. | | | |
| March 28 | Icko Iben Lecture Series | 7pm | Foellinger Auditorium |
| Come to the UI campus for a free talk by astronomer Steve Squyres from Cornell University. His talk is on the Mars Exploration Rover mission. More info can be found at http://www.astro.uiuc.edu/events/iben.shtml | | | |
| March 31 | “The Stargazer” opens | 8pm | Staerkel Planetarium |
| The show about UI astronomer Jim Kaler returns! | | | |
| April 1 | CUAS Family Skywatch | 8-10pm | CUAS Observatory |
| April 4 | In-town observing | 7-9pm | Bottenfield School |
| Lets do some in-town observing for our growing group of Junior Stargazers. Set-up in the Bottenfield School yard. We expect maybe 20-25 people, but who knows! Weather permitting. | | | |
| April 2 | Daylight Savings Time begins | | |
| April 7 | Open House: UI Observatory | dusk | UI campus |

April 8	GLPA State Meeting	9-2pm	Staerkel Planetarium
April 13	CUAS Club Meeting	7-8:30pm	Staerkel Planetarium
April 22	Allerton Park Viewing	7:30-10pm	Allerton Park meadow
A great chance to see some really dark sky from a beautiful venue. We'll need someone to give a short presentation in the visitor's center and then viewing with telescopes in the meadow.			
April 27	"Zula Patrol" Family workshop	TBA	Staerkel Planetarium
"Zula Patrol" is a delightful kid's animated TV show on the solar system that airs on WILL-TV on Sunday mornings. WILL teams up with the planetarium to offer this outreach event for families. More news to come!			
April 29	State finals of Science Olympiad	all-day	University of Illinois
May 6	National Astronomy Day/Skywatch	7-10pm	Observatory
We have a Skywatch public event scheduled . . . do we want to do anything else? Bring your ideas to one of the meetings!			

CHECK OUT ALL CLUB EVENTS ON THE CUAS HOME PAGE:

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

Micro-sats with Macro-potential



By Patrick L. Barry

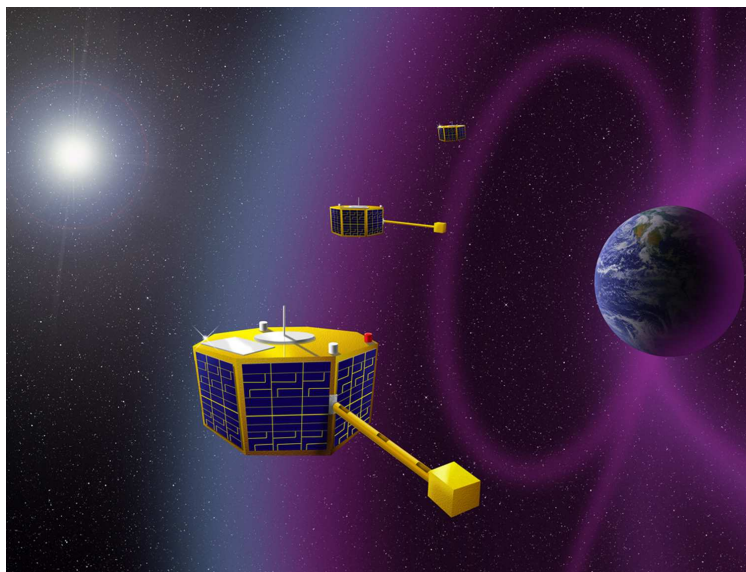
Future space telescopes might not consist of a single satellite such as Hubble, but a constellation of dozens or even hundreds of small satellites, or "micro-sats," operating in unison. Such a swarm of little satellites could act as one enormous telescope with a mirror as large as the entire constellation, just as arrays of Earth-bound radio telescopes do. It could also last for a long time, because damage to one micro-sat wouldn't ruin the whole space telescope; the rest of the swarm could continue as if nothing had happened.

And that's just one example of the cool things that micro-sats could do. Plus, micro-sats are simply smaller and lighter than normal satellites, so they're much cheaper to launch into space. In February, NASA plans to launch its first experimental micro-sat mission, called Space Technology 5. As part of the New Millennium Program, ST5 will test out the crucial technologies needed for micro-sats—such as miniature thrust and guidance systems—so that future missions can use those technologies dependably. Measuring only 53 centimeters (20 inches) across and weighing a mere 25 kilograms (55 pounds), each of the three micro-sats for ST5 resembles a small television in size and weight. Normal satellites can be as large and heavy as a school bus.

"ST5 will also gather scientific data, helping scientists explore Earth's magnetic field and space weather," says James Slavin, Project Scientist for ST5. Slavin suggests some other potential uses for micro-sats: A cluster of micro-sats between the Earth and the Sun—spread out in space like little sensor buoys floating in the ocean—could sample incoming waves of high-speed particles from an erupting solar flare, thus giving scientists hours of warning of the threat posed to city power grids and communications satellites. Or perhaps a string of micro-sats, flying single file in low-Earth orbit, could take a series of snapshots of violent thunderstorms as each micro-sat in the "train" passes over the storm. This technology would combine the continuous large-scale storm monitoring of geosynchronous weather satellites—which orbit far from the Earth at about 36,000 kilometers' altitude—with the up-

close, highly detailed view of satellites only 400 kilometers overhead.

If ST5 is successful, these little satellites could end up playing a big role in future exploration. The ST5 Web site at nmp.jpl.nasa.gov/st5 has the details. Kids can have fun with ST5 at spaceplace.nasa.gov, by just typing ST5 in the site's Find It field.



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

The Space Technology 5 mission will test crucial micro-satellite technologies.

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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>



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- Membership renewal [attach mailing label]
- Change of address only

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 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 & 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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