

"CLEAR SKIES"



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

February, 2006

PRESIDENT'S MESSAGE

Well, here I am, working on the second month's "column" for the newsletter and I can't think of much to write about. But after a long day of testing some bad commercial optics, one word jumps to mind – quality. It was sorely lacking in what I saw today with my Foucault tester, but that just made me long for it more – a job well done, a finely crafted item – both are a thing of beauty and are somewhat rare.

When an organization, a group, or a club bites off more than it can chew, that is, takes on too many projects or one that has the possibility of sending it into financial troubles, the overall "quality" of the club seems to suffer. It is possible that the group will unite under the burden of the project, but this is not the most likely outcome. More likely the group splinters or simply gives up.

As we consider our club goals for the coming year(s), we should keep these things in mind. I think it is best to focus on tasks that are important to achieve and will add quality to the experience of being in our club, but are not that tough to accomplish.

These tasks include fixing up and possibly renting, selling, etc., our extra equipment (that has not seen starlight for years) to members who will use it. It's a shame to watch the coating on a mirror corrode without it catching any photons from above. We've also discussed working on these instruments during the informal, weekly telescope making meetings I've been hosting. Every Tuesday meeting we gather at my house to help someone out with a mirror, but eventually we will have a lull in mirror-making activity and we will need something to do. We will also look at a couple of those club instruments during the February "telescope clinic" meeting.

It seems that publicity for the club and for the preservation of our dark skies was a very popular sentiment among those that attended the January meeting. I think that a great goal for our club this year is to double or triple the number of people in town that know what CUAS is and what we do.

Personally, I think a goal of 100 members is a great mark to shoot for a year or two down the road, and this should be achievable with some well-publicized public viewing sessions.

As for our facilities, I think we should start to slowly (but steadily) improve them. Based on the rather soggy condition of the field for most of the winter, maybe some carefully-placed concrete pads, possibly surrounded by gravel, might be a logical addition to our observing field. While these do radiate heat after dark, they provide to members a location where their instruments and feet will not sink into the soft soil. It also might make those regularly doing donuts in our parking lots think twice about it!



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 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

That's about all I have for now. Here is a closing thought - statistically December and January are the cloudiest months here in central Illinois. Starting with February, we have a greater chance of clear skies each night, and this chance improves all spring and summer before peaking in September. So, let's look forward to a new year of observing.

By the way, if you're an S&T subscriber you can see my article describing my 10" F/8.8 telescope in the March issue.

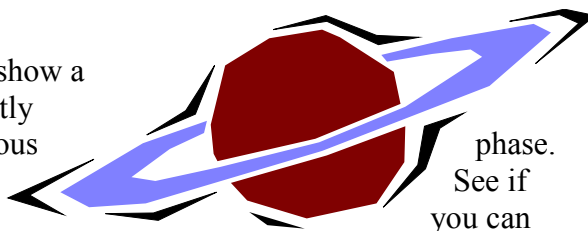
Mike Lockwood

LOOKING UP THIS MONTH

This month, all eyes will be glued to the western horizon for the rising of Mercury. This will be the second best evening view of Mercury for the year (the other being in June), so don't miss this one! Mercury rises from the glare of the Sun beginning technically at the end of January. By February 5th, it sets at 6pm (in the evening twilight). By the 26th, it is setting at 7:15pm, a full 45 minutes after the end of evening twilight. Mercury is at magnitude -0.6 (and anytime you see a negative magnitude, it's pretty bright) plus there aren't any other bright stars in the area, so there should be no mistaking it. Greatest separation from the Sun occurs on the 23rd. A telescope will show a tiny half-lit world that looks a lot like a shrunken version of our Moon. Note a very thin crescent Moon to the lower left of Mercury on the 28th and then a slightly larger Moon to the upper left the next night.

Mars is still up there but the attention it draws will probably be with binoculars. Mars is now pretty tiny (compared to last November anyway) and high in the south right as the twilight fades. A telescope view will be a little disappointing but binocular will show Mars a mere 2.5 degrees from the Pleiades Star Cluster on the nights of February 16-17. A telescope

will show a slightly gibbous



phase. See if you can

notice that the disk is not a perfect circle. The Moon makes a nice triangle with the Pleiades and Mars on the 5th of February.

Saturn's opposition was at the end of last month, so it's nicely placed in the east as the twilight fades. Like Mars, Saturn is near a star cluster . . . about 2/3 of a degree from the Beehive. Check it out with binoculars. Saturn is still retrograding westward across Cancer.

Next comes Jupiter, rising at roughly midnight on the 19th. Look for it in the southeast in the morning hours. Same with Venus, which rises at 4:30am in the southeast. At magnitude -4.6, it doesn't get any brighter than this! You can't miss it. A lovely crescent Moon is to the lower right of Venus on the 24th.

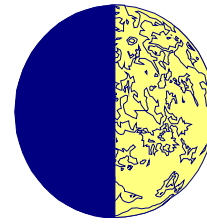
Lastly we'll mention Uranus as it comes to within a half-degree of Mercury in the western sky at dusk on Valentine's Day. -DCL

Planet	Date	Constellation	Magnitude	Distance*	Apparent Diameter
Mercury	2/19	Aquarius	- 1.0	100.1	6.2"
Venus	2/15	Capricornus	- 4.6	36.5	42.7
Mars	2/15	Taurus	+0.5	111.7	7.8
Jupiter	2/15	Libra	- 2.1	485.6	37.7
Saturn	2/15	Cancer	- 0.2	762.9	20.2
Uranus	2/15	Aquarius	+5.9	1956.2	3.3
Neptune	2/15	Capricornus	+8.0	2886.2	2.2
Pluto	2/15	Serpens	14.0	2934.3	0.1

* in millions of miles from Earth

Moon Phases:

1 st Quarter	February 5	March 6
Full	February 12	March 14
3 rd Quarter	February 21	March 22
New	February 27	March 29



CUAS NEWS

Remember to renew your dues!!! Most CUAS members are on a prorated dues system, meaning your \$15 membership dues (and dome key fee, if appropriate) are *due ASAP!!* Why not use the handy dandy form on the last page of this newsletter and renew today! Or you can bring your check made out to "CUAS" to the February meeting. Might you have magazines (Sky & Telescope or Astronomy) that need to be renewed? Consider taking advantage of the club's discount plans. Don't be dropped!

The **February program** is a clinic of sorts for those who have telescopes that don't appear to work or you don't know how to make them work. It might be a simple collimation problem or using the wrong eyepiece. Guy will bring some of the club telescopes to adjust in case we get few people. The first year we did this, we had a dozen people with telescopes in the planetarium lobby working one-on-one with CUAS members! If you're a member, bring your scope if you'd like some questions answered.

Mike Lockwood reports that Tuesday nights have become a meeting night for ATMs (Amateur Telescope Makers) at his home. Currently John Stone and Bob Rubendunst are working on their 8-inch mirrors. If anyone would like to join them, give Mike a call.

Would anyone out there in CUAS-land be interested in being a **Science Fair judge**? The fair is on the morning of March 11 at Parkland College and you would be given instruction on what to do. Call Dave Leake at 351-2567 if you're interested.

TREASURER'S REPORT 29 JANUARY 2006:

Income last 30 days:

\$150 - 10 membership renewals

50 - 5 annual keyholder fees

12 - donations: Thank you very much!

80 - 8 calenders at \$10 each

\$292 - Total income

Outgo last 30 days: \$0

Current checkbook balance: \$2377.06

Petty cash envelope: \$101.00

Note: I will soon reimburse the Champaign Park District for several months of postage they've paid for newsletters and also send out a few hundred dollars in magazine subscription renewals. Memberships: 39 (of these, 5 expire June 30th (due to overpayment), 29 expire December 30th, and 6 in 2007 (due to overpayment) *Memberships not yet renewed*: 32. Membership level is not the same as newsletter circulation because (1) four newsletters we send gratis; and (2) we have a grace period extending to the end of March for people to renew their memberships.

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!

There has been talk of doing more in-town observing, either by doing a huge "CUAS Day" or even a park tour. The latter would be holding an observing session in one park a month, possibly with a rain date. This can be a lot for volunteers since this would be in addition to the Skywatches. Is anyone interested in doing this? Given the lateness of the sunset in the summer months, we could do the Saturday closest to the 3rd Quarter Moon. Any takers?

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 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!

As this issue goes to press, we're awaiting word from a Daniel Crawmer at the University of Illinois on our observatory lease, which expired December 31, 2005. The new lease will be between us and the UI with the park district not involved. The previous lease was between the UI and the CPD and then the CPD subleased the land to us. 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 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.

When at the observatory, remember to fill out the logbook, even if it's just date, time, and who was at the dome. We need to keep track of approximate attendance in case we might want to apply for a grant or ask for a donation. A typical question is "how many will this serve?" We also need to develop some sort of flier and invite the neighbors to observe with us. They might then realize what their lights are doing to our sky conditions and, what's best, is they would figure this out for themselves.

Mike Lockwood reports that the main instrument in the dome isn't holding collimation and we're not sure why. Stay tuned as Mike will investigate.

It was suggested at the January meeting that we replace the visqueen that acts as a moisture barrier beneath the rock below the floor in the dome. The one that is there is original! The discussion then turned to ridding the place of small rodents. Mike Rosenberger uses dryer sheets on his farm equipment and Audrey Ishii mentioned the possibility of peppermint oil as a method.

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

The UI group has apparently been asked to leave the UI field station to the northeast of our dome. We talked about the possibility of the UI club building something on our leased property, though nothing definite has been decided.

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

- * 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

- | | | | |
|---|------------------------------|----------|--------------------------|
| February 3 | “World of Science” talk | 7pm | Staerkel Planetarium |
| The planetarium welcomes back astronomer James B. Kaler to talk about something a little different. Art and science “collide” in an artistic look at the universe. Admission is only \$1 at the door. | | | |
| February 4 | CUAS Family Skywatch | 7-9pm | 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. | | | |
| February 8 | CUAS Officer’s meeting | 7pm | Village Inn Pizza Parlor |
| February 9 | CUAS Club Meeting | 7-8:30pm | Staerkel Planetarium |
| We’ve reserved time at the February meeting to allow members of the public to bring in their new and old telescopes that just don’t seem to work (or they can’t figure out how to work them) and they need a little advice. Bring your collimation tools and expertise and learn something about telescope operation. If you know someone who has a telescope that they just can’t get working, tell them about this night. Advice is free! | | | |
| February 12 | “String Theory with a Twist” | 2, 4pm | Staerkel Planetarium |
| The planetarium hosts the “Bow-dacious String Band” for two shows in the dome, beneath the stars. Come hear the kid’s playin the dark in this odd light show featuring two dozen mucisians. Call 351-2568 for information. | | | |
| February 24 | “Across the Sky” | 7pm | Staerkel Planetarium |
| Storytelling program for kids. Call 351-2568 for information. | | | |
| February 25 | New Moon Observing | 7pm-? | Observatory |
| Our members-only event under dark skies (we hope). | | | |
| 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 |
| March 9 | CUAS Club meeting | 7-8:30pm | Staerkel Planetarium |
| March 11 | Science Fair | | Parkland College |

March 17	“Spring Prairie Skies” opens	7pm	Staerkel Planetarium
March 25	New Moon Observing	7pm-?	Observatory
March 31	“The Stargazer” opens	8pm	Staerkel Planetarium
April 1	CUAS Family Skywatch	8-10pm	CUAS Observatory
April 2	Daylight Savings Time begins		
April 8	GLPA State Meeting	9-2pm	Staerkel Planetarium

CHECK OUT ALL CLUB EVENTS ON THE CUAS HOME PAGE:

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



Snowstorm on Pluto

by Dr. Tony Phillips

There’s a nip in the air. Outside it’s beginning to snow, the first fall of winter. A few delicate flakes tumble from the sky, innocently enough, but this is no mere flurry.

Soon the air is choked with snow, falling so fast and hard it seems to pull the sky down with it. Indeed, that’s what happens. Weeks later when the storm finally ends the entire atmosphere is gone. Every molecule of air on your planet has frozen and fallen to the ground.

That was a snowstorm—on Pluto.

Once every year on Pluto (1 Pluto-year = 248 Earth-years), around the beginning of winter, it gets so cold that the atmosphere freezes. Air on Pluto is made mainly of nitrogen with a smattering of methane and other compounds. When the temperature dips to about 32 K (-240 C), these molecules crystallize and the atmosphere comes down.

“The collapse can happen quite suddenly,” says Alan Stern of the Southwest Research Institute. “Snow begins to fall, the surface reflects more sunlight, forcing quicker cooling, accelerating the snowfall. It can all be over in a few weeks or months.”

Researchers believe this will happen sometime during the next 10 to 20 years. Pluto is receding from the warmth of the Sun, carried outward by its 25% elliptical orbit. Winter is coming.

So is New Horizons. Stern is lead scientist for the robotic probe, which left Earth in January bound for Pluto. In 2015 New Horizons will become the first spacecraft to visit that distant planet. The question is, will it arrive before the snowstorm?

“We hope so,” says Stern. The spacecraft is bristling with instruments designed to study Pluto’s atmosphere and surface. “But we can’t study the atmosphere if it’s not there.” Furthermore, a layer of snow on the ground (“probably a few centimeters deep,” estimates Stern) could hide the underlying surface from New Horizon’s remote sensors. Stern isn’t too concerned: “Pluto’s atmosphere was discovered in 1988 when astronomers watched the planet pass in front of a distant star—a stellar occultation.” The star, instead of vanishing abruptly at Pluto’s solid edge, faded slowly. Pluto was “fuzzy;” it had air. “Similar occultations observed since then (most recently in 2002) reveal no sign of [impending] collapse,” says Stern. On the contrary, the atmosphere appears to be expanding, puffed up by lingering heat from Pluto’s waning summer.

Nevertheless, it’s a good thing New Horizons is fast, hurtling toward Pluto at 30,000 mph. Winter. New Horizons. Only one can be first. The race is on....

Find out more about the New Horizons mission at <http://pluto.jhuapl.edu> . Kids can learn amazing facts about Pluto at spaceplace.nasa.gov/en/kids/pluto.

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



This artist's rendering shows how Pluto and two of its three moons might look from the surface of the third moon. Credit: NASA/ESA and G. Bacon (STSci)

There isn't room for "Oddz & Endz" this month, but there's a lot going on! Be sure to see the web sites for the *Stardust* mission (as they open the aerogel capsule), plus the *Mars Reconnaissance Orbiter* gets to Mars next month, and "*New Horizons*" is on its way to Pluto (a 9-year wait). The Mars Exploration Rovers celebrated their 3rd year on Mars (which totally amazing) and *Cassini* continues to impress at Saturn. Why are these missions grabbing some headlines? And have you seen the new Hubble photo of the Orion Nebula (M42)? It's a mind-blower. It should be on <http://hubblesite.org>.

"Clear Skies" is published twelve times per year for its membership. [Circulation: 78]

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>



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 & Telescope</i> renewal*	\$33
Donation	\$ _____
Total Enclosed	\$ _____

*enclose mailing label

Detach and mail to:

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 C/o Phil Wall
 607 West Healey #11
 Champaign, IL 61820

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REMEMBER TO RENEW YOUR MEMBERSHIP!!!!