The Chicago Astronomical Society
Announces their 3-day Celebration of Astronomy

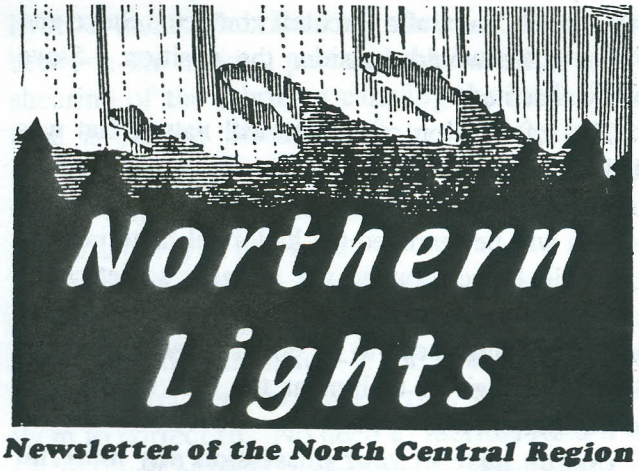
Astrofest 2003

Thursday, Friday, Saturday, September 18, 19, 20, 2003



Astrofest is a nationally recognized conference of observers and amateur telescope makers. There is an extensive flea market and a large number of commercial vendors

Only the first 1,000 properly completed registration forms postmarked before Saturday, August 16, 2003 will be accepted. To see an expanded brochure visit their web site: **www.chicagoastro.org.**



Newsletter of the North Central Region of the Astronomical League
Paul R. Castle, Editor
2535-45th Street, Rock Island, IL 61201





MARQUETTE ASTRONOMICAL
SOCIETY
C/O STEPHEN PETERS
908 W. MAGNETIC ST.
MARQUETTE, MI 49855

First Class Mail

FROM THE EDITOR:

Here it is, the first reissue of *Northern Lights*. For some time our Region had been without its newsletter. Much thought was given by your officers in considering various ways to reinstitute the publication, at least on a limited basis. The Region needed to provide a means of communications between the various clubs and MALs. Organizational cohesion is difficult without communication. The individual clubs and MALs need to feel that they are part of the larger Regional community.

At the business meeting this year in Sturgeon Bay, those present in the business meeting deemed a newsletter worthwhile, and voted to allow the Secretary/Treasurer as much as $600 to get the project up and going. It will still be a quarterly, and will still be called *Northern Lights*.

Each club is now requested to add me, the Secretary/Treasurer, to their mailing list to provide a copy of their individual newsletter and/or other communications. I will sift through those received and glean from them articles and tidbits that I hope may be of interest to the Region.

I do reserve the right to accept or reject articles, the right to modify to correct for spelling errors, etc., or to edit for space. Articles not previously published in a club newsletter are also welcomed

Each individual Member-at-Large will receive the resulting *Northern Lights,* as well as each club ALCor. Each ALCor can then distribute any information to their club member as they see fit. Perhaps it could be included at club meetings in the form of an ALCor report, or perhaps excerpts could be made a part of their clubs own publication. It is my job to get information distributed, it is up to you to utilize it.

Send copies of your newsletters to:

Paul R. Castle
NCRAL Sec/Treas.
2535-45 Street
Rock Island, IL 61201

Or electronic communication to:

prc29@aol.com

If you use E-mail, be certain to state in the subject line what it is so I don't assume it's junk mail. amd delete it.

PRC

REGIONAL HISTORIAN APPOINTED

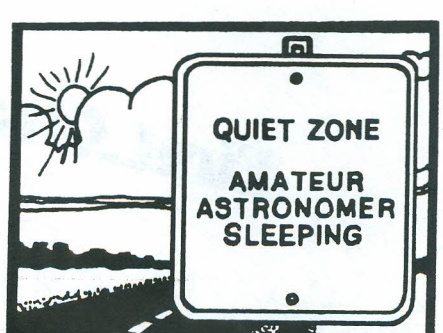
In the life of any organization it is helpful to be able to look back at its past to be able to plan for the future. What has worked or been popular in past years? What has flopped, or at least, not been met with enthusiasm? What, according to the bylaws or the conventions of the organization should be being accomplished? What has been forgotten? Has the organization made any actual progress? For these and many other reasons an organization needs to have past materials preserved.

It came to the Regional Council's attention that the Region had no official Historian. Frank Roldan, the League's Historian, had been keeping a lot of our historical information and Steve Peters, the previous Regional Secretary/Treasurer, had also maintained a considerable file. But both of these individuals were doing it as a courtesy to the Region and not because it was in their job description.

Stephen Peters, Cataloger/Professor, Olson Library at Northern Michigan University, had done such a marvelous job of organizing the material in his possession, he seemed to be the natural person for the task. Regional Chair Julia Bachtell contacted Steve and asked him if he would consider the position. Steve graciously accepted.

The information of a historical nature that was included in the secretary's box when he passed it on to the present Sec./Treas. will be returned. The Regional Chairs files will be searched for historical material, and a request will be sent out to the member societies for information of a historical nature pertaining to the Region. All of this needs to be either be sent to Steve, or collected and given to him at the convention next year in Burlington, IA.

Do you have in your possession any material that would pertain to the Region's history? Contact Steve at speters@nmu.edu.



NORTHERN LIGHTS
JULY 2003

TELESCOPE BEARINGS

This article is restricted to the way bearings are used in a telescope mount. Bearing types and applications is one of the more arcane sciences. If a bearing is used where a shaft rotates at some speed a different selection process is used from the one for a slow speed shaft. If the shaft moves at glacial speeds as in a telescope Right Ascension shaft some other criteria become important in selecting the proper bearing. My source for the information herein comes from the 25th Ed. of "Machinery's Handbook" published by Industrial Press Inc. It's the sort of book guaranteed to put anyone to sleep.

Bearings are divided in three broad categories: radial bearings, thrust bearings, and slipper bearings. The first category are those used in journals or shafts. The second group supports axial loads or resist the pressure of the load pushing the shaft end wise. The third category refers to bearings supporting a sliding load.

Bearings are made to operate under two main conditions: dry as in Teflon or plastic bearings; with hydrodynamic lubrication where a fluid wedges between the moving part and the bearing surface the shearing of the lubricant carrying the load. This last type is further divided into hydrostatic lubrication where fluid under pressure is introduced to separate the moving parts and bearings using rolling contact or anti-friction type bearings.

Plastic molded bearings are generally a good thing but for telescope use they appear to lack some desirable characteristics— for the user. For the manufacturer they are wonderful. No need to ream them to correct fit. No need to lubricate and if things are not well aligned the bearing is very tolerant. It is also much cheaper to purchase and to install. Short bearings of any kind operate best when the unit load is increased which causes the load (shaft) to ride or operate with some eccentricity. Couple that fact to plastic bearings and that is the main cause of telescopes that don't always reset to the original position. Of course you can always replace bearings.
Bearings requiring lubrication should always be lubricated with the lowest viscosity lubricant that will stay in place. All that is required is a film of lubricant and not a bath. A drop or two of common motor oil does well in most applications we encounter. Where a shaft carries a large load and operates at slow speed a light grease is the preferred lubricant. For use in cold weather a lithium grease (purple automotive chassis lube) works best. This type grease is best at low temperatures and also tolerates higher temperature better than most.

Ball, roller, and needle bearings are often called anti or reduced friction bearings mainly because of their greatly reduced STARTING friction. Once things get moving that distinction disappears. They do have a lower running friction loss than sleeve bearings but this is related to operating speed. If the shaft turns slowly and or if the load is not excessive there isn't much to differentiate between ball bearings and sleeve bearings. The coefficients of friction are almost all 0.4 for the usual metals used in any kind of bearing. Teflon is the outstanding difference with a coefficient of 0.04. You don't need to go into the design formulas to appreciate the distinction. So, the Teflon "plastic" bearing has a lot going for it to make it a good choice. Low friction, cost, and almost no maintenance.

Ball bearings must be made with some "looseness" in their components or you'd never get the balls to move between the inner and outer races. Also the dimensions of each ball is subject to the usual manufacturing tolerances. This accounts for the wobble you can feel when trying to twist the bearing by holding the inner race while holding the outer race steady. These bearings have axial as well radial play and another characteristic called run out. That refers to the fact they don't all rotate perfectly in a circle but "run" in and out. Ball bearings are also prey to contaminants. A speck of dirt or an internally generated metal flake will seriously impair its functioning. A sleeve bearing will usually accept into its soft surface any contaminant material.

As I stated at the beginning there is much to the selection of a bearing and the application determines which is best. All bearings are excellent if they are used in a manner suited to their design. The cost of a bearing or its complexity is no indicator of excellence. If absolute stability between a shaft and its journal is the requirement then a bearing type that can be adjusted or machined to fit is the obvious choice.

Richard Placensia, *The Prime Focus*, newsletter of the Cedar Amateur Astronomers

NEWS RELEASE

The Planetary Society
65 N. Catalina Avenue, Pasadena, CA 91106-2301
(626) 793-5100 Fax (626) 793-5528 E-mail: tps@planetary.org Web: http://planetary.org

For Immediate Release: June 26, 2003

THE PLANETARY SOCIETY LAUNCHES GLOBAL "MARS DAY CELEBRATION"

PASADENA: On August 27, the planet Mars will be closer to Earth than it has been in more than 50,000 years. The planetary event will enable the public, space enthusiasts and astronomers to view greater detail on a planet that is increasingly seen as humankind's next giant leap.

Bright red-orange in the evening sky, Mars will be in perihelic opposition this summer, meaning the celestial body is at a point in its orbit when it is both closest to the Sun and to the Earth.

To celebrate this once-in-a-lifetime event, The Planetary Society will mark this occasion with special events around the world, including an 83rd birthday party for a man whose name is now synonymous with the Red Planet - Ray Bradbury, author of the famous *The Martian Chronicles*. Bradbury's birthday comes the same week as this historic Mars opposition.

"If ever there was a man who could be billed 'the leading man of Mars,' it is the brilliant Ray Bradbury," commented Dr. Louis Friedman, Executive Director of The Planetary Society.

The public can participate in Mars Day in a wide variety of ways. The Planetary Society will collect birthday wishes for Ray Bradbury, which will then be presented to him in the form of an enormous card. The Planetary Society also will host Internet events with Bradbury near the time of Mars Day.

The public can also participate by going outside to see Mars and learn more about it. To facilitate this, The Planetary Society has launched a Mars Watch campaign to raise public awareness and to function as a co-sponsor for world events. Over 100 such events in 60 locales are already being planned with more scheduled each week. Event locations include such diverse venues as the Zeiss Planetarium in Vienna, Austria; the Nagoya City Science Museum in Japan; and the Children's Science Center in Cape Coral, Florida.

For details on observing Mars from your own location, check the Mars Watch site at http://planetary.org/marswatch2003/. This site is full of information about the Red Planet and includes data on the planet's geological and exploration history, hands-on activities for children, a list of worldwide Mars Watch events, upcoming Mars photo and art contests, and recipes for fun Martian snacks.

In addition to observing Mars from Earth, people around the world will also be keeping an eye on several spacecraft, representing various nations, on their journey to the Red Planet. Five spacecraft are on their way, and late this year will join two others already in orbit around Mars. The five robotic space explorers en route include NASA's Mars Exploration Rover mission (*Spirit*), the European Space Agency's (ESA) *Mars Express* and *Beagle 2*, and Japan's *Nozomi* mission. NASA's second Mars Exploration Rover -- *Opportunity* -- is slated to launch on June 28 from Cape Canaveral.

Bolted to each of NASA's Mars Exploration Rover spacecraft is a mini-DVD. Each disc is provided by The Planetary Society to carry to the surface of Mars the names of 4 million people collected by NASA. Astrobots, which are representations of LEGO mini-figures suited up for space, appear as part of the structure that mounts the mini-DVD onto each spacecraft. The astrobots, named Biff Starling and Sandy Moondust, explore the spacecraft and Mars and chronicle their adventure in fun, educational ways at http://redrovergoestomars.org/astrobots.

The Mars celebrations will culminate January 2-4 at Planetfest in Pasadena, California, where thousands are expected to attend a weekend festival observing the first Mars Exploration Rover lander as it touches down on the Martian surface.

Contact: Susan Lendroth
The Planetary Society
Ph: 626-793-5100
http://planetary.org



AN ANTI-REFLECTION TEST

I've heard of many ways to make the insides of optical instruments anti reflective. I decided to do a side by side test of four anti reflective methods. To do this I applied different coatings to surfaces and then compared them, using just my eye. Most reflections from interior tube walls involve glancing light rather than light reflecting nearly perpendicular to surfaces, so I designed my experiment so I could compare how effectively glancing reflections were reduced.

Foot-long sections of cardboard mailing tube were cut in half lengthwise. Each of the four such trough-shaped sections were given a different treatment on their inside surface. One section was spray painted with flat black paint. The second section was coated with glue, and then a piece of 60-grit sandpaper, rough side up, was applied. The sandpaper was then spray painted with the same flat black paint as was the first section. This was done to "roughen up" the surface and create light traps. The third section was coated with adhesive, and then black toner from a copy machine was dusted on to the still tacky surface. This produced a smooth, but dull, surface. The fourth section was coated with glue, and a black velvet was applied.

I now had four "half tubes" that I could mix with each other. For example, to compare a smooth painted surface with rough painted surface, those two halves were simply joined together to form a tube, and held up to the eye. This direct, side by side comparison made it easy to see how each surface performed relative to another.

The first revelation was just how poorly the smooth painted surface performed. Although the surface looked black when viewed straight-on, it hardly attenuated glancing reflections. The painted sandpaper, to my surprise, was about as bad. The only difference was the reflections from the rough surface were "grainy," compared to the smooth painted surface. (Maybe better than the numerous protrusions of the sandpaper, would be numerous steep sided pits.) The velvet was by far the best of the four at absorbing light. Even at low glancing angles, the little hairs of the velvet literally sucked in the light. Black velvet is really inky black!

This simple experiment was very effective in demonstrating the problem of glancing reflections. Velvet is expensive, but if you want a serious anti-reflection, velvet may be a good value. **Mark Zell, *Reflections*, Newsletter of the Popular Astronomy Club**

MAS LOSSES A MEMBER

We were all saddened this month to hear of the death of MAS Board of Director member Tom Pelnar of complications relating to his diabetes. Toms wife Joan told me that Tom slipped into a coma and died a few days later. Tom was Program Director for the last year before his health started to fail.. He was also a mentor to several of our members in learning the sky and to appreciate the beauty around them. Tom will be remembered for his love of nature and constant emphasis on truly seeing what is around you.

I had a personal experience with this aspect of Toms personality one day when I was talking to Tom and some other members about the day before when I had recorded the minima of 4 separate eclipsing binary stars. I had taken great delight in the fact that my data was of high quality and the minima could be determined to an accuracy of minutes for reporting to the AAVSO. Most everyone seemed to be impressed, but Tom seemed to be just listening quietly. After the others left, he turned to me and said that my good data was nice but had I ever actually looked into the eyepiece that night? After being somewhat taken aback by this comment I answered that I guess I had not. He then said I had completely missed the beauty of the sky and the excitement of seeing the many beautiful objects available that night such as Saturn and Jupiter. It is easy to forget that that is the main reason people get into the hobby of astronomy in the first place. I made some lame comment that I had seen them before and would try to remember to actually look through the eyepiece next time. Some time later, after finishing a binary light curve run I remembered Tom's comment and decided to remove the camera and spend a short time observing visually. It was an unusually clear and quite night and the short time extended into the wee hours of the morning. I hadn't had that much fun in a long time and as I closed up my observatory that morning I said a quiet thank you to Tom for his insight.

Our hearts go out to Joan and her family in this difficult time. The beauty of a dark sky for visual observing is a real thrill and is the main reason we have for trying to find a darker location for the club. We have resumed our search and will continue to prepare for the day we succeed. I must admit I find this task to be very time-consuming and frustrating but, thanks to Tom, I again feel it is worth it. Thanks Tom and, I promise, I will keep "looking through the eyepiece".
Scott Jamieson, *Focal Point*, Newsletter of the Milwaukee Astronomical Society

AROUND THE REGION

Notes from the Regional Business Meeting:

Treasurer Paul Castle presented the annual financial report, which was approved.

Brought forward from last year:	$5,628.34
Income:	
Interest:	$56.97
Profit from St. Paul Convention:	$480.56
Expenses:	
2002 Regional Award:	$52.47
IDA Membership:	$100.00
Current Balance:	$6,013.40

Regional Rep David Bachtell reported that there are now 40 societies in the NCRAL with a membership of 2,428. ALCon 2003 will be in Nashville, TN and in 2004, Oakland, CA.

Chair Julia Bachtell reported that the next NCRAL convention (2004) will be in Burlington, IA, April 30-May 1st, sponsored by the **Southeastern Iowa Astronomy Club**.

At this point it was learned that there has been no club scheduled for the 2005 convention although the **Door Peninsula Astronomical Society.** is giving it consideration. In 2006 the convention is being hosted by the **NE Wisconsin Stargazers**.

Jim Fox, chair of the By-Laws Review Committee, reported that the committee has been busily working and a complete report will be presented at next years convention.

All of last years officers were re-elected:

Chairman, Julia Bachtell, **Southeastern Iowa Astronomy Club** (Burlington, Iowa.).

Vice Chairman, Ty Westbrook, **NE Wisconsin Stargazers** (Appleton, Wisconsin

Secretary-Treasurer, Paul Castle, **Popular Astronomy Club** (Rock Island, Illinois).

Regional Representative, David Bachtell, **Southeastern Iowa Astronomy Club** (Burlington, Iowa).

Julia Bachtell expressed the thanks of the region to the **Door Peninsula Astronomical Society** for their fine hospitality and reminded us in her remarks that we need to continue to involve young people in our hobby.

✷

The **Chicago Astronomical Society** lost a Director and Educator in May. Dr. Andrew "Doc" Perez was an experienced photographer and was in charge of CAS publicity. He gave special attention to providing club and astronomical information to local universities, colleges and secondary schools. Dr. Bobbie M. Anthony-Perez, Andrew's wife of 27 years, donated his telescope and accessories to the CAS in Andrew's name.

✷

On April 11, 2003 the Peoria Academy of Science held their annual banquet. Longtime **Peoria Astronomical Society** member, Eric Clifton was recognized and awarded an Honorary Membership in the Peoria Academy of Science for his years of work for its Astronomy Section.

Eric has presented astronomy talks and programs to numerous groups and organizations from the Cub Scouts to church groups. One of Eric's proudest moments came when during a star party for Comet Hale-Bopp he helped a severely visually-handicapped young girl to see her first star, her first planet and her first comet.

According to PAS officer Mike Hay, had it not been for Eric working for years with the State of Illinois, PAS likely would not have the current Jubilee Decker-Grebner-Van Zandt Observatory site, "Eric was the fellow who cinched the deal."

✷

The **Popular Astronomy Club** will be hosting a MARS SEMINAR at the John Deere Planetarium on the campus of Augustana College in Rock Island, IL. It begins at 8:00PM Saturday the 6th of September. There will be displays, a planetarium presentation, a lecture on Mars by Dr. Lee Carkner, professor of astronomy at the college, and observing of Mars through the 14-inch of the Carl H. Gamble Observatory. Questions may be addressed to the editor of this newsletter.

TO CONTACT YOUR OFFICERS:

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REGIONAL REP.
David Bachtell (Same as Julia)