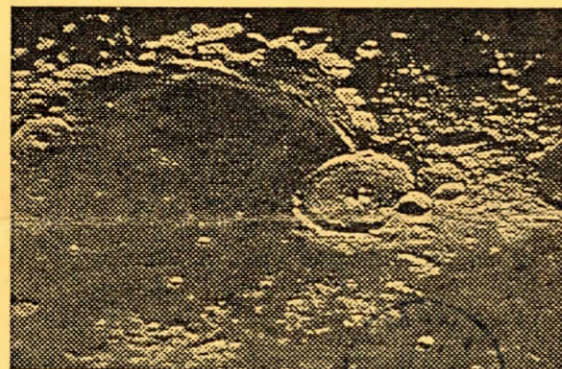


hazy rectangle in an eight inch. On a good night, one of the HII regions is visible as a faint spot on the north end. A ten inch shows some vague variations in brightness, but the galaxy is far from a winner. It is one of the nearest galaxies to our own, but it's light has to pass through all the gas and dust our own galaxy has to offer, thus the little dwarf galaxy is barely visible.

For a final target, try the interesting globular cluster M30, located half a degree west and slightly north of 41 Capricorni. Visible in binoculars, this object will show a few stars in a six inch, with an eight resolving it well except for the core. In a ten, the cluster resolves nicely, with a bright and slightly elongated core.



# THE *Prairie Astronomer*

Volume 33 #7  
July 1992

## Some Changes in Membership Terms

The PAC membership terms were revised at the last meeting as a result of Sky & Telescope dropping their requirements for member subscriptions. Here are some of the changes as reported by Lee Thomas:

- Junior and Newsletter subscriptions have been merged into the Regular membership. Lee will accept Newsletter subscriptions only from someone outside of the club's geographic area. This leaves two membership types, Regular (\$10) and Family (\$12).

- Site key renewals must be done when membership is renewed. New keys can be issued at any time during a period of active membership, but the fee will be prorated at \$1.25 per month for the number of months remaining to membership renewal at which time the annual fee of \$15 will be assessed.

- Optional magazine subscriptions can be placed at any time during a period of active (paid) membership. This includes both Astronomy (which previously required subscriptions or renewals only at the start of the year) and Sky & Telescope (which

previously accepted new/renewal subscriptions only at the time the membership was started or renewed).

- Since Sky & Telescope subscriptions are no longer required as a part of membership, Sky Publishing will NOT be sending renewal cards to those members not subscribing. Previously, we relied upon subscription renewal notices to inform members that their membership was coming due for renewal. Since some members won't receive these cards, hereafter we will mail a gaudy (chartreuse dayglow—or worse) post card to each member about 6 weeks before membership expires. Members are asked to return that card, along with any magazine renewals they want to make, with payment to the club's post office box, or to the treasurer at the next meeting.

- In addition to the post card, starting with next month's newsletter an asterisk will appear on the newsletter mailing label if it is time for you to renew. A message will also be placed above the label reminding you to look for this asterisk.

The Prairie Astronomer

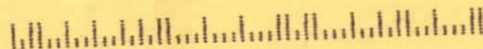
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Lincoln, NE 68501



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Duane Hutchinson  
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Lincoln NE 68507

Next Meeting July 28, 1992  
Annual Star Party August 1





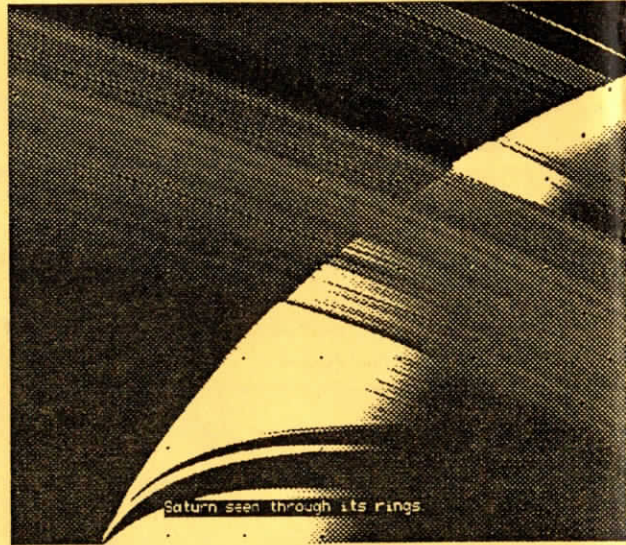
# Annual Club Star Party August 1st

I hope to see all of you at the annual club picnic and star party on Saturday August 1st. We will be meeting as usual at Hyde around 5:00 p.m. or so, and will begin eating at six sharp. And, speaking of eating, the meal will be a pot luck, so bring whatever covered dish you can (the club is springing for the pop), and join us at Hyde. We will have our usual star party weather permitting at the site beginning around 8:00 or so. The picnic gives us all a chance to get to put some names on some faces, and to just eat and talk.

Part of the reason I like this organization so much is its easy-going attitude and its willingness to have fun with astronomy. So many astronomical societies are so concerned with who has the biggest telescope, or the latest gadget, that they lose sight of the most relevant fact: THIS IS A HOBBY! We do it because we enjoy it, and not because its some sort of status game or serious project. Let's keep that in mind when we are working this year and next, especially when we are "working" on the 1993 convention. This should keep us working together so we can keep on enjoying our hobby.

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The Prairie Astronomer is published monthly by the Prairie Astronomy Club, Inc., and is free to all club members. Membership status and expiration date are listed on the mailing label. Membership dues are: Regular Members...\$10/yr; Family Memberships...\$12/yr; Address all new memberships, renewals, or questions to THE PRAIRIE ASTRONOMY CLUB, INC., P.O BOX 80553, LINCOLN, NE 68501. For other club information contact one of the following officers: Dave Knisely (Pres)223-3968, Eric Hubl (V.Pres)423-6267, Ron Veys (Sec)486-1449, Lee Thomas(Tres)483-5639, Jack Dunn (2nd V. Pres)475-3013. All newsletter comments and articles should be sent to Newsletter Editor JOHN LORTZ, 12023 PARKER PLZ #105, OMAHA, NE 68154 no later than 10 days before monthly club meetings. Club meetings are held the last Tuesday of each month at Hyde Observatory in Lincoln, NE.



## Observing Chairman's Report

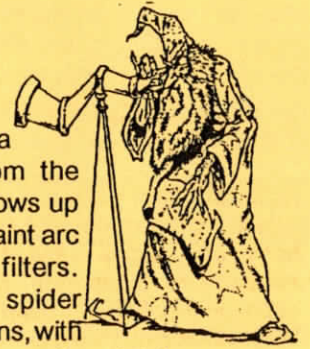
by Dave Knisely

THE NEXT SCHEDULED STAR PARTIES WILL BE THE CLUB PICNIC, SATURDAY, AUGUST 1st (rain date, August 29th) AND FRIDAY, AUGUST 8th AT THE ATLAS SITE. Milky Way objects dominate the late summer sky. One prominent open cluster is Collinder 399, better known as the "Coathanger". It can be seen by the naked eye in southern Vulpecula as a fuzzy patch, but binoculars will easily show the coathanger shape. Since it is over a degree in length, very low power must be used. Telescopes six inches and larger will show a faint open cluster NGC 6802 just east of the star 7 Vulpeculae as a fuzzy cigar-shaped patch. An eight inch at high power will resolve the cluster into several discreet sub-groups of very faint stars.

Also in Vulpecula is M27, the Dumbbell nebula, located 3.3 degrees due north of the orange star Gamma Sagittae. Visible in binoculars as a faint fuzzy patch, small telescopes usually make this object look like a fuzzy box with diffuse ends, while a four to six inch will show the dumbbell shape clearly. Larger scopes and nebular filters will greatly enhance the appearance of faint "wings" of light off each side of the dumbbell, and will add to the detail visible.

The Veil Nebula in Cygnus used to be considered a difficult and not terribly spectacular object, that is, until large apertures were coupled to nebular filters. Probably the easiest way to find it is to look for the star 52 Cygni in the eastern part of Cygnus. That portion of the nebula (NGC 6960) runs directly through the star, and has been seen in a four inch Astroscan equipped with Lumicon's UHC or OIII filter. Without filters, the nebula is a barely visible wispy streak running through 52 even through large apertures. With filters, the nebula becomes a ghostly spiderweb of filamentary detail. The East half of the nebula

lies just over a degree away from the west half, and shows up as an enormous faint arc of light without filters. With filters, the spider web like form returns, with numerous interwoven fine details.



In northern Cygnus is the bright open star cluster M29, located 1.5 degrees south of Gamma Cygni. It is an ideal object for binoculars or small telescopes, although it isn't as rich as many other Messier objects. Its 15 to 20 member stars are placed on a faint but rich Milky Way background which adds to the beauty of the scene.

Another very interesting but fainter cluster is NGC 6939, located 1.25 degrees south and just under two west of Eta Cephei. This group is moderate to small in size, but fairly rich with faint stars. In an eight inch aperture, several of the stars fall into rows making the group look a bit like a set of stadium lights. Not far away is the faint spiral galaxy NGC 6946, located only 1.5 degrees west and 1.5 south of Eta. Visible in a six inch as a faint fuzzy oval area, this object begins to show its brighter center in an eight inch, as well as some irregular outer haze. A ten inch begins to show some vague detail in the outer haze. Larger apertures will show a vague broken spiral structure similar to that seen in M33.

Back down in Sagittarius is a lonely dwarf irregular galaxy, NGC 6822, located 1.4 degrees north and 0.7 degrees east of 55 Sagittarii. Also known as Barnard's galaxy, this object is moderate in size, but extremely low in surface brightness, appearing as a very vague



Like I said, it's been awhile... Lee

**Fm: Ed Groth 70240,435**

Lee - you recall that there are three methods of heat transfer - conduction, convection, and radiation. The key here is radiation. The eyepiece, or mirror for that matter, if pointed at clear sky is in "thermal contact" by radiation with a very cold source. At wavelengths where the atmosphere is transparent, it's with the 3K background radiation and at wavelengths where the atmosphere is opaque, it's with layers in the atmosphere where radiation from your eyepiece has been attenuated by a factor of 1/e (where the optical depth is unity). Since the wavelengths of interest are in the IR, these layers are usually high in the atmosphere, where it is quite cold. I leave my car in the street overnight. I often find dew or frost on the front and back windows but not on the side windows. The same effect is responsible. The side windows are vertical, so they see my house, or the house across the street or trees, etc. - all of which are warm. The front and back windows are sloped, so they are looking at the cold sky.

**Fm: Sheldon Cohen, TN 72140,327**

Dan, For a dewshield for a 9x60 finder, I use a former can of beans, sans beans, wrapped inside and out with duct tape. I remove dew from my Telrad with my right thumb.

With dewing on an 8" LX3 I used to pop it off the wedge and let it sit on the still somewhat warm car hood for a few minutes. This was usually good for a hour. Meade's dewshield was pretty helpful, but in a fair breeze putting it on is like unfurling a sail.

Do you only have this problem with corrector plates? My experience is that big refractors and Newtonians rarely fog up. My fogging problem is with eyepieces, the Telrad, and finders. I am going to try Sidgwick's cure on my eyepieces: warm flannel. My dark site heat source will be the exhaust manifold.

Are you considering going to the Blue Ridge Sky Gaze this fall?

**Fm: Dan Ward 72040,3357**

So far, I've not had any problem with my reflectors, only the finder and the Telrad. I haven't actually used my C8 since I've moved here, but I know that the corrector will be a problem. I saw a guy pour about a tablespoon of condensation off each of the objectives of his 25x100 binos at a recent star party. It was impressive!

I also remember one star party where a guy left his 8"

reflector pointed straight up and uncovered when he went to bed. The next morning, he had the cutest little puddle of water filling in the curve of his mirror!

I've got a cover for the Telrad, made out of a piece of cardboard. Chris Schur recommended that I also keep a piece of kleenex between the lens and the glass while I'm not using it, to soak up excess moisture. Sounds like the telrad fix is solved pretty simply.

Tell me more about the Blue Ridge Sky Gaze. Sounds like something I would want to do.

**Fm: Lee Buck 76430,1067**

Dan:

So far I've been too lazy to attach the felt liner to the flexishield (I keep asking my wife to get me some at the "sewing" store, so it's her fault <g>) What I envision doing though is gluing in strips about 3 inches wide and leaving about 3/4 in between them — running them lengthwise, so the strips and clear spans run along the axis of the "cylinder". I imagine that will prevent any "buckling" problems and fact is, probably a little felt will go a long way to absorbing excess moisture.

A little clarification (expansion) on your flexishield description:

..<< (For those unfamiliar with this product, it resembles a dense foam pad, about 3/8" thick, and folds flat when not in use. Orion sells them in various sizes for SCTs) >>

...

The flexishield is actually a piece of flexible plastic (like toy material) that is just slightly over 1/32" thick (not 3/8"). One edge of the rectangular piece has a 1 1/2" wide foam strip attached to it, making the total thickness along this one edge about 1/8" — this is the part that wraps around, in contact with, the end of the scope — the foam pad keeps the shield from slipping. Along two opposite "ends" of the plastic sheet is a velcro strip ("hooks" and felt). It is very durable, and would probably be easy to make (and cheaper!)

Along the electrical resistor approach: somebody (I'm pretty sure it was S&T) ran an article recently (12 months) on building them. If I ever wade thru the 8-inch high mess here at home and find the article, I'll let you know.....Lee

**Fm: Dan Ward 72040,3357**

My eyepieces always stay either in the case, or in a pocket on the fishing vest that I usually wear while observing. Usually don't have a problem with them when I am doing serious observing, but I could see needing something for a public event.

I think I have reached workable solutions, but I am always interested in hearing any better ideas that might be out there. Thanks for the suggestions!

## Sky & Telescope News

*From the Compuserve Info Service*

July 10, 1992

### GIOTTO'S SECOND COMING

Today a European spacecraft called Giotto flew through the comet Grigg-Skjellerup only a few hundred kilometers from its nucleus. The event took place at 11:30 a.m. Eastern time, when Giotto was 214 million kilometers from Earth. According to scientists from the European Space Agency, which built the spacecraft, the flyby went extremely well. Seven instruments gathered data on the comet's dust, neutral gases, plasma, and magnetic fields during the flyby.

You may recall Giotto as one of the probes that plunged through Halley's comet in March, 1986. Miraculously, Giotto survived, though its camera and two other instruments suffered irreparable damage. ESA controllers later redirected it onto a new trajectory that would meet up with Grigg-Skjellerup. With an orbital period of only 5.1 years, this comet is relatively inactive and old in an evolutionary sense. Even so, scientists will now have data from three different comets. (In addition to this one and Halley, a third called Giacobini-Zinner was visited by NASA's International Cometary Explorer in 1985.)

### GALILEO MARKS TIME

Controllers at the Jet Propulsion Laboratory have just concluded the last in a series of maneuvers that they had hoped would free the stuck antenna on the Galileo spacecraft. The idea was to heat, then cool, the antenna, such that temperature-induced flexure might release the antenna's three

jammed ribs. But this try, the seventh to date, did not work. Now hope of freeing the antenna hinges on an attempt to be conducted in December, when the spacecraft passes close to the Earth before heading toward Jupiter. Controllers will rapidly pulse the electric motor that opens the antenna one or two thousand times, a kind of "hammering" technique that could well pop the umbrella-like antenna open.

July 17, 1992

### MAGELLAN TAKES SOME HEAT

Things are heating up for the Magellan spacecraft, but that's bad news. The transmitter that has been relaying its radar data to Earth is not working, and controllers think the problem is due to overheating. So they've switched it off to cool down. In the mean time, the orbiter continues to gather and store radar reflections from the planet's surface. But it's unable to transmit them to Earth. Mission officials hope the cooling off period will enable them to turn the transmitter back on in mid-August, when the spacecraft will be positioned to map an area of the planet previously missed. The spacecraft has logged nearly two years in orbit around Venus, and to date has mapped more than 97 percent of Venus's surface.

### SAMPEX IN ORBIT

The Sampex spacecraft appears to be just fine after being boosted into orbit on July 3rd from the Vandenberg launch site in California. Sampex stands for Solar Anomalous and Magnetospheric Explorer, and from its polar orbit the 345-pound spacecraft will collect data on cosmic rays and solar flares.



## Some "Facts" About Other Life In Space

From Compuserve Astronomy Forum

If you have nothing else to think about, consider this...

**FACT:** In the Milky Way Galaxy, there are 10,000,000,000 (10 billion) stars in various states of development at any given time. **THEN:** If we allow that only 5% of those stars have planetary systems, that would be 500,000,000 (500 million) planetary systems, or solar systems.

**AND THEN:** If we allow that only 5% of those solar systems have the right combination of elements to allow for carbon-based life forms to exist on a single planet within the system, that would be 25,000,000 (25 million) solar systems with planets where life forms similar to those found on Earth could develop.

**AND THEN:** If we allow that only 5% of those inhabitable planets have indigenous, basic life forms developing, that would be 1,250,000 planets with lower (vegetable-like), non-intelligent life forms.

**AND THEN:** If we further allow that only 5% of those planets with vegetative life forms developing have also intermediate, semi-intelligent (animal-like) life forms developing, that would be 62,500 planets with intermediate life forms.

**AND FINALLY:** If we allow that ONLY 1% of those inhabitable planets with lower and intermediate life forms also have INTELLIGENT LIFE FORMS (beings with self-determination), that would be 624 other planets like Earth with intelligent beings similar to us.

Ever wonder what they are like?

And that's only in our "home" galaxy, The Milky Way. At present time, there are over 10,000 identified and numbered galaxies, many larger than our own, known to astronomers. More are being discovered annually.

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## Dew and Other Nasties

From Compuserve Astronomy Forum

This is a 'thread' from the Compuserve Astronomy Forum concerning how to deal with dew and humidity on telescope optics.

Fm: Dan Ward 72040,3357

Any good ideas on humidity & dew zappers, dew shields, etc?

I've got a paper by Gene Lucas, delivered at Riverside about five or six years ago, which describes various techniques for dew zapping. However, it seems pretty power hungry. Do you, or your boots, have any suggestions? <g>

Fm: Pierre Belanger 72421,564

Dan: Unfortunately the three of us (I and the boots) are no experts when it comes to humidity. If it exceeds the temperature by 20 degrees, the latter must be very low... Only in the middle of summer do I have to be careful about dew, but that season is quite short here. I use a homemade cardboard dew shield and haven't tried anything else. For a while I thought about buying the Orion dew zapper. My 12 amp hour battery should have been able to handle the power requirement (1 watt). I would tend to trust that system. A relatively warm corrector plate may not be perfect, but that's what

you want to have with a dew shield anyway. Still better than the lens cap...

Fm: DAVID LANE 71601,247

Dan: On all but 10% of the nights, a dew cap is absolutely necessary on my Meade 2120 if you want to observe for longer than 30 minutes. BTW, I live on Nova Scotia (Canada's Ocean Playground<g>)...

Fm: Lee Buck 76430,1067

Dan:

If I may contribute an unsolicited suggestion, I use the Orion "FlexiShield" dew cap/shield (on a 10" Meade SCT). I generally can't observe more than 30 minutes (summer or winter) without dew accumulating on everything (in winter it often becomes frost as the night goes by). It works well and lets me extend my observing session for hours. I still get some dewing on occasions (beyond a few hours it starts to show up), but applying some felt liner to the flexishield will probably eliminate all of it.

Fm: Dan Ward 72040,3357

I've heard that the Flexishield is a great dewshield. I know a guy with a C-11 that recently got one, and he loves it. He seldom has dew problems, but when he does, this is enough to do the trick. (For those unfamiliar with this product, it resembles a dense foam pad, about 3/8" thick, and folds flat when not in use. Orion sells them in various sizes for SCTs)

Your concept of adding a felt liner sounds like a good one. One guy that I've talked to took an empty commercial ice cream bucket and lined it with a brown paper bag. He uses it on a Meade 2080 and said that it lasted twice as long as a friend's C8 metal dewshield on a humid night last December. I suspect a felt liner on the flexishield will probably come close to doubling your benefits, too.

I've only seen a flexishield once. Do you expect any problems connecting the felt to the pad? Will it interfere with the flexing?

Thus far, I have picked up a 12 volt defroster gun at an auto supply place that looks just like the dew blasters sold in Orion (I only paid half Orion's price in the auto place!) For the time being, I'll use it until I can build a dew shield. (I'm basically a cheapskate! <g>)

I hope to make something like the flexishield, with a felt liner for my C8, and plan to wire it for a heat boost on the really humid evenings. I still need to do a little research and I am not yet certain what I will do for my finders, Telrad and eyepieces. I am certainly still open to suggestions from those who have been successfully dealing with the problem!

Fm: Pierre Belanger 72421,564

Dan: if we prevent the eyepieces from being exposed to the night sky, they won't become cooler than the air around and dew will not form on them. The eyepiece case cover should stay closed most of the time. The finder and main scope eyepieces should be exposed only when looking through them. They could be protected with a loose cap (upside down paper cup or whatever, something easy to take out without moving the scope). The finder should have its own dew shield. The dew remover gun (defroster) should give you total peace of mind. However, as I do not live in a very humid place, all this should be considered theory. I'm certainly no expert here (and there...).

Fm: Lee Buck 76430,1067

Pierre: This is as good a place as any to show my ignorance, and bring up for discussion an "astronomical wisdom" that has always bugged me: from your msg: ...<<Dan: if we prevent the eyepieces from being exposed to the night sky, they won't become cooler than the air around and dew will not form on them.>>...

I \_always\_ read that this is the explanation for dewing — "the eyepieces (or whatever) become cooler than the air around them". My thermodynamics education is severely covered over with cobwebs and dust (at least 15 yrs), but that vaguely seems impossible to me! (yet "everyone" always says it)

If I put a beer in the frig, it never gets colder than the frig, but it's temperature, over time, becomes \_equal\_ to the temp of the frig (following an exponential time decay). To get it colder than its environment I have to do "work" on it — otherwise the world's energy problems would be solved!

Air has an "average temperature" based on the motion of the molecules, but it's pressure is made up of the sum of "partial pressures" — that of dry air and that of water vapour in the air (humidity, I think, is some formula relating these partial pressures). Dewing occurs "when the temperature of an object equals the 'saturation temperature' corresponding to the partial pressure of the water vapour". Huh??! Well, water has three phases (solid, liquid, or gas) depending on the relationship between it's pressure and temperature. The "line" between phases (i.e., gas -> liquid) is the saturation line. So at a given water vapour pressure there is a temperature at which gas becomes liquid — this is dewing. "Eyepieces colder than the air" ?? Is that possible??