Volume 30 #1
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The Prairie Astronomer

View The Sun!

by Rick Johnson

Talking to club members I am surprised that no one seems to be watching the sun. earlier this week (Jan 16, 1989) there were two sunspot groups large enough to be seen naked eye. Did anyone else see them? We are in the midst of the greatest solar activity I have seen in my 35 years of sun watching but no one is looking!

All you need is a pair of binoculars. You can easily project an image (two in fact) of the sun with any pair of binoculars. The farther you project the image the larger, and fainter, it will be. I find a 10 power pair of binoculars projected about 5 feet is sufficient to see most sunspot groups and the larger individual sunspots. Cover one lens and put cardboard around the binoculars so they cast a large shadow in which to project the image. Don't try to make the image much larger than 3 times the diameter of the front lens of the binoculars as the image will tend to be too dim.

Of course a small 2.4" telescope is ideal for sun watching. Most of the time in Nebraska the seeing by day isn't very good and a 2.4" will show about as much detail as you will ever see. On a good day you might find a 3" will show a bit more detail. I am working at 3.5" and only once in the last 18 months has the seeing reached the point where I saw all the aperture was capable of delivering. Again eyepiece projection is the best bet. If you want to view direct the cheapest way is to get Solar Skreen material from Tuthill. A piece big enough for a 3" telescope is only about $29 and can be held on with a rubber band.

Those with 'scopes much larger than 3" should be wary of eyepiece projection unless the mirror is stopped down to about 3" as the heat buildup in the eyepiece can do damage. A 6" telescope can project an image for a few minutes without harm but be sure to check for heat buildup in the eyepiece. Don't try to go more than 5 minutes without a cool down period or your eyepiece will slowly degrade as the balsam cement between the elements overheats. I ruined a good 16mm Orthoscopic eyepiece that way. A two element uncemented eyepiece will be less prone to heat damage. Lately I have been using a very inexpensive eyepiece for projection. For some reason you can't seem to hurt the cheap ones, but the expensive ones die a quick death! If you don't have a clock drive watch out that you don't' drift off of the sun. When you do the nearly focused light and tremendous heat will now be hitting the inside of your telescope. I use a 4" stop on my 10" telescope when projecting the sun's image and one day forgot the drive was turned off as I went inside for a minute. When I came back out smoke was pouring from the tube assembly. I had nearly burned down my 'scope as the epoxy resins in the fiberglass tube had nearly reached the ignition point! The smoke did so coat my mirrors they had to be realuminized as the stop held in the smoke which settled on the cool mirrors! Solar Skreen prevents heat from ever entering your 'scope in the first place so it does have that advantage over projection methods.

Of course I do most of my viewing in H-alpha light with my T-Scanner filter from DayStar which I reported on last year. While white light activity is such that the sun shows a different face each day in H-alpha light it shows a different face every 5 minutes! On January 17, 1989, I tried to count the filaments I saw on the sun's disk but kept getting lost there were so many. There were over 70 of them and the total might have been as high as 100! Going through all the sun pictures I have and that we have at Hyde I could find no full disk picture of the sun with more than 15 filaments and I looked at nearly 100 such observatory photos supposedly taken at ore near maximum solar activity! The following day Dave Knisely and I watched as three flares, two of which were larger than any I had ever seen, blew up all at the same time near the area where the filaments were most dense the day before. The larger of the flares even made the national news (ABC radio, anyway) and so far is the only flare I have seen that was mentioned by WWV. This time signal station gives a solar activity broadcast at 18 minutes after the hour. Tune to 10 or 15 MHz by day and 2.5 or 5 MHz by night on a shortwave radio to hear the station.

Filaments are dark, linear features seen against the sun's disk. They are really prominences seen against the chromoshpere. When a filament goes up to the edge of the sun it then continues as a prominence over the limb as it is seen against the dark background of space. They come in two types, quiescent and active. As its name implies, the former just sits there and does nothing, changing little from day to day as the solar rotation carries it eastward. The active ones can come and go in a matter of minutes to hours. It turns out the "smokestacks" I mention in my T-Scanner article last year are a type of active filament known as an eruptive prominence. They are heavily blue shifted as the erupting hydrogen is rising very very rapidly from the surface of the sun. The gas then flows along the magnetic field lines as it thins out. The denser highly confined gas makes a jet black spot, the smokestack, while the thinning less dense gas flowing along the magnetic field lines are the smoke coming from the smokestack. These gases, while moving rapidly are moving mostly parallel to the viewer, so are not blue shifted. This too makes them appear like smoke because

the filter isn't tuned to their exact frequency. Anyway the "smokestack" mystery is now solved.

I have found I can do a fairly good job of photographing the flares and other disk activity in H-alpha and white light using a video camera. At least one that Jack Dunn loaned me for a couple days did catch a small flare from start to finish. I hope to have this at a meeting in the near future. Maybe then I'll start to get some of you interested in solar viewing. You can do it from your backyard any sunny day which means far more hours of viewing than you'll ever find time for at night. You don't need a large telescope and finding the sun is rather easy even without a star chart. Just remember to cover up your finder 'scope so you don't burn out the crosshairs! Then watch the shadow of the 'scope. It will be the smallest possible and perfectly round (if you have a perfectly round tube assembly) when pointed at the sun.

I view the sun around noon every clear day so anyone interested in seeing the sun in H-alpha light is welcome. It's a shame to watch something spectacular on the sun and know that everyone else is missing something unique that will never be seen again! This is the big excitement of solar viewing. Every time I look in the eyepiece I see something different and usually unexpected, even if I looked 5 minutes ago! Dave came up on the 18th and the sun wasn't doing much so we went inside to view the flare on tape. We were inside only a few minutes but when we went back out to the telescope the previously inactive sun had three spectacular flares all blowing up at the same instant! Will I ever see three flares at one time again? I doubt it as none of the pictures of the sun I have seen even show two going off o73 at once let alone three! No other type of amateur astronomy can offer such sudden and unexpected excitement. But knowing that the maximum activity is yet to come does make the heart beat a bit faster for maybe next time I'll see FOUR flares at once!

President's Message

by Ron Debus

Starting out the 1989 year, the PAC needs to find someone or some group of members to take over the club library. Club librarian Norma Coufal has moved. There is really too much for one person to take and it may be wise for a group of us to each take a box. We could then trade the boxes every two months or so. Anyone with suggestions should pass them along to me. Presently, the library of materials is at Rick Johnson's house. I know that Rick would like to get the library location issue resolved as soon as possible. There is a tremendous wealth of information in the club library for anyone wishing to scan all the books and magazines.

January skies have never really excited me, so I usually start the year out slowly. As soon as the sky changes and the galaxies are high, my real observing year starts. I hope this year I can find and record the rest of the Messier Objects.

Any members who have yet to take the 'tour through the galaxies' should come to the Site when Leo is high overhead. This is a fascinating tour, and most of the galaxies are bright enough to give an excellent view. That's it for now. I hope to see you all at the next meeting. Let's have a great turn out!

Treasurer's Report

by Lee Thomas

We have ordered an additional supply of RASC handbooks, because of the unprecedented additional demand. I am hopeful that the shipment will make it across the border in time for this month's meeting. If so, those who had their names on the new list, and a limited number of others, can get a handbook for the club price of $6.90. Bring money.

Also, the Astronomical Calenders have arrived. About 10 members who ordered them didn't make it to the December meeting to pick them up. Please make arrangements to get yours at the January meeting. They're $7.20.

Again this year, our taxes on the Atlas Site in Gage County remained very reasonable. The bill was $61.20, which is right on target with our budget. The taxes have been paid, so no board member should be hauled off to jail (for that, anyway!)

Please look at the address label on your newsletter. The top line shows your current status according to our records. The numbers indicate expiration date for your membership, year followed by month, e.g., "89/03" would mean you're up for renewal in March, 1989. The first letter following that shows your membership classification: "R" is regular, "F" is family, "J" is junior, and "N" is a newsletter-only subscription. We have one "H" -- our honorary lifetime member, Philo Prell.

The letters following that show any magazine subscriptions over and above the Sky & Telescope subscription that goes with your membership: "A" is Astronomy, "D" is Deep Sky, "T" is Telescope Making. Thus "RAT" is a regular member with Astronomy and Telescope Making subscriptions.

We have worked hard to update the mailing list and make it as complete a record of the membership as possible, so if you detect any errors, please let me know.

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: Junior Members and Newsletter Only Subscribers...$10/yr; Regular Members... $24/yr; Family Memberships...$27/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: Ron Debus(Pres)435-5688, Dave Knisely (V.Pres)223-3968, Kim Ellen Owen (Sec)423-7440, 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, 9255 CADY AVE #14, OMAHA, NE 68134 no later than 7 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

THIS MONTH'S STAR PARTY WILL BE HELD ON FRIDAY, FEBRUARY 3RD AT THE ATLAS SITE. Start this month off with a preview of the spring skies and a bright galaxy, NGC 2403 in Camelopardalis. Located about a degree west of the faint star 51 Camelopardalis, this object can be glimpsed in a pair of 10x50 binoculars as a small faint fuzzy spot. A six inch will show the slightly brighter nuclear region and several faint stars on the face of the galaxy. A ten inch will show a dark spot in the north part of the outer haze and a hint of one of the galaxies' spiral arms, but otherwise, this object is nearly featureless.

Farther south in Gemini is the bright two-shell planetary NGC 2392, also known as the Eskimo Nebula. It can be found about 1.5 degrees east and a half north of 56 Geminorum and appears as a small faint fuzzy spot with a brighter center when viewed in a small telescope. A six inch will show the central star and a very faint outer shell. Larger instruments make the outer shell look patchy, as well as adding vague detail to the inner one. Also in Gemini is the difficult but rich open cluster NGC 2304, located three degrees east and a half north of 28 Geminorum. Under excellent conditions, it can be seen in a six inch as a very faint moderate sized hazy area with a few faint stars mixed in. An eight inch shows the cluster as a fuzzy ball of very very faint stars in a rich group that almost looks like a loose globular cluster.

In Monoceros are a number of interesting open star clusters. NGC 2264, located around the star S Monocerotis, is a large group of fairly bright stars that has been called the "CHRISTMAS TREE CLUSTER". Users of large instruments will notice a faint nebulosity in the area. To the south-west lies the famous Rosette Nebula, NGC 2237-9. It lies about two degrees east and slightly north of Epsilon, and can be glimpsed in a good pair of binoculars as a hazy area surrounding the open star cluster NGC 2244. Small telescopes only show the central star cluster, but interestingly enough, the nebula can be seen with the naked eye when the Lumicon UHC filter is held up to the eye. Rich field telescopes will show the nebula well when nebular filters are used, and with a ten inch and the OIII filter, the nebula shows extensive dark detail.

In Canis Major about four degrees south and a half a degree east of Sirius lies the bright open star cluster M41. Visible to the unaided eye under good conditions, this object is a good one for moderate to small apertures, showing over 50 stars. An eight inch will even show a few of the red giant stars in this group. Another interesting cluster surrounds the bright star Tau Canis Majoris, namely NGC 2362. Even fairly small instruments will make this group look like a bunch of fireflies dancing around a yard light.

To the east in Puppis are a couple of bright open star clusters M46, and M47. M47 is about four degrees south and a degree west of Alpha Monocerotis and is a pretty group of 25 or 30 bright stars in an irregular array. Just over a degree east and slightly south of M47 is the rich cluster M46. Its stars are fainter than those of M47, but is has a lot more of them, plus, it has a nice planetary nebula, NGC 2438, on the north edge. The nebula can be seen in a six inch as a small faint fuzzy disk with a slightly darker middle and a faint star near the center. An eight inch with a nebular filter makes it look like a smaller version of the Ring Nebula in Lyra.

EDITORS NOTE: Those of you who have submitted articles (i.e. Rick and Dave) that are not appearing in this month's newsletter, please be advised that I am merely saving those articles for later editions of the Prairie Astronomer. As it usually happens, when it rains it pours, and I am only preparing for next month when I no doubt will have to hunt and peck for good material. Of course, if I do get overwhelmed with articles next month, well, you'll see an eight page newsletter!!!

At The Last Meeting

by Ellen Owen

The meeting was called to order at 7:33 by President Ron Debus, with 22 members, 2 out-of-town members, and 3 guests present. Since the Secretary had been absent at the November meeting, and no minutes were taken at that meeting, there was no Secretary's report. The Secretary promised on her honor, to never, never, NEVER miss a meeting again, and the club grudgingly forgave her. Treasurer Lee Thomas reported that we do have money, about $75.00 in the checking account. There is no list of names for those members who ordered RASC Handbooks and calendars (at $6.90 and $7.20 respectively), but members who did order need to pick these up or they will be offered for sale to other members.

Under Old Business, Ron reported that the roof on the shed at Earl Moser's place which houses the club telescope had been repaired. Earl will paint the shed in the spring. The roof was in much worse repair than expected, was totally rotten, and even had a hole.

There was a question about the cost of the repair of the gate. Someone had damaged it for a second time. The Firth COOP wanted to split the cost, which amounted to about $20.00 cost to us.

A group of about 12 to 15 students and 3 adults came out to the Site to observe.

Under New Business, members were again reminded to take care of orders as soon as possible.

A Star Party will be held January 6 at the Atlas Site.

Ron received a call from Gary Reber at the Beatrice Sun-Tribune; he would like to come to the next Star Party.

Discussion about the date of the annual Club Picnic and Star Party was held, due to the fact that the dates of it and other important club events could be submitted to Astronomy Magazine to be published in a calendar of events. Harlan made a motion to hold the Picnic on August 26; the motion carried.

Discussion was held about the amount of work and time John Lortz donates to the club. Lee moved to pay John's dues, site key fee, and magazines for the year as a recognition of his work. The motion carried.

Ron Veys has made a list of labeling error in Uranometria I, and will make it available to interested members.

Doc Manthey wondered if it was too early to think about Astronomy Day. Usually it is held the day of the Spring game at UNL, which is the last Saturday in April. Jack Dunn reported that the lobby of the Planetarium will be double in size by then, and ideal for the displays. Doc thought it might be good to avoid last minute planning. Ron Debus mentioned a possible display by the Pound Junior High students, and suggested displaying posters in the junior and senior high school buildings. Jack suggested contacting Lincoln Public Schools, and Ellen Owen offered to talk to Bob Reeder, the Science Consultant. Dave Knisely suggested the possibility of radio time on one of the morning talk shows, and advertising.

Donn Baker moved to adjourn the meeting; motion carried, and the meeting was adjourned at 7:58.

The Prairie Astronomer

c/o The Prairie Astronomy Club, Inc.

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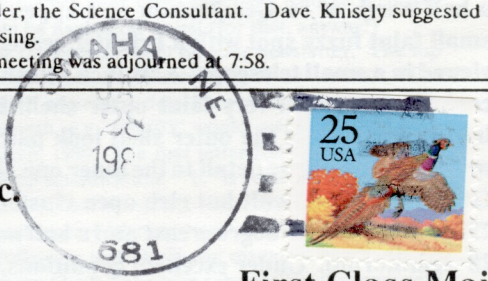

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Next PAC Meeting January 31, 1989