A S T R O N O M Y

Rochester Skies

A publication of the Rochester Astronomy Club

A Quarterly Newsletter **Issue #17 1st Quarter 2011**

Looking Forward

by President Randy Hemann

Greetings and Happy New Year all RAC members! I am looking forward to a great astronomical year in 2011. I would like this year to be one in which we continue to develop our presence in the community. Our bylaws state: *The RAC is a volunteer organization dedicated to promote the enjoyment and education of astronomy and related sciences to members and the general public.* In our operations the Rochester Astronomy Club functions in three ways. One is through our monthly club meetings that serve the purpose of education and camaraderie. Here is where we share information with one another and provide a formal setting for business matters and teaching. Our club is still considered to be small-to-medium in size and it should be important to vary our meeting topics to accommodate all levels of expertise. Second is through public outreach. Many of us have participated in club and individual outreach sessions that gets our club's name out in the public. This gives people the opportunity to do and see something that they normally don't have access to in southeast Minnesota. I hope we continue to have more members find opportunities to do these types of activities. Third, are our own star parties which are the meat and potatoes of what we do. This is where the most fun is had, as we actually get to apply our knowledge, use our equipment, and play show-and-tell all night.

I would encourage all members to "spread the word" of our club activities. Bring a co-worker, friend, or family member to one of our

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RAC
Rochester Astronomy Club

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meetings or events. Prepare a small topic for one of our meetings, or, if not able to present, introduce ideas or topics that you would like to learn about. I plan again to bring in a few professors and other experts to enlighten us on real world astronomical research and development.

So members, let's get astronoming! That's our new code word meaning to participate, learn, teach, apply, show, and share our love of the cosmos with others. We'll have an outstanding 2011!

Five Questions With:

Jeff Newland

1. What got you interested in Astronomy?

Probably watching, reading about the Gemini and then Apollo flights. It has been a long time. Back at that time there was quite a bit on TV. Didn't everyone want to be an astronaut back then? I seem to recall getting Apollo and lunar module models, I think from sending something in from a cereal box. I like science fiction in all forms, book, movies, TV. It helped to keep me interested through the years. Shouldn't we be going beyond the solar system by now? I didn't do too much actual astronomy. Always wanted a telescope, but never got one. I just knew basics, like Orion, Big Dipper, North Star. I went to a Rochester Astronomy Club outreach at Bamber Valley School in 2006 and found out about RAC. From there, started going to some club meetings and then joined the club. Followed that by buying a telescope. Darn, even got a second telescope, oh no!

2. What objects are you most passionate about observing?

Can't miss Jupiter and Saturn. If they are up, first thing I go to, easiest to see and find. A lot of the time I seem to go to globular clusters, probably because Gerarda, my wife, really likes them. I also like many of the open clusters, the more stars the better. I would like to start spending more time on the Moon. Maybe start doing that more.

3. What equipment do you currently use?

Lately I have been using a Meade LX200GPS 10 inch CAT. I picked that up this summer, a sweet deal. Thank you John [Preston]!!! I really like it as it tracks and it finds things for you. Hey, some times you just want to see things. Other times, you want to find them yourself. That's where my Zhumell 8 inch Dobsonian comes in. That really comes in handy. You can find your favorites quickly and show them to other people without having to try and align a scope. But, once you get the Meade aligned, you can show them quite a bit. I also have a set of Nikon 12x50 binoculars.

4. What is the best part of the Rochester Astronomy Club?

What's not to like? You associate with a great group of people. They'll help you and answer any questions you may have. You get to look at a lot of different astronomy equipment at the star parties. We have great speakers and presentations. Hmm, perhaps my favorite is participating in the outreaches. You never grow tired of hearing people go: Wow! That's cool! Neat! Thank you!

5. What's your day job?

I am a computer programmer doing software testing.

Time to Go

Tom Koonce

The history of astronomy has always been tied closely to the accurate measurement of time. We take it for granted that even the least expensive digital watch keeps better time than the finest timepiece of a few hundred years ago. Even so, anyone who has put up with jet lag during a long trip knows how difficult it is to keep track of the local time. If we could all think in Universal Time, I suppose it would still be a struggle to get an idea of local sunrise and sunset times. These days, dual time-zone watches make it easier,

Figure 1 – Ivory Portable Timepiece; c. 1600.

but before pocket watches and other portable clocks, it must have been impossible for the Renaissance-period road warriors to track, right? At least I thought so until a recent visit to a museum where I saw ingenious portable timepieces dating from c. 1600.

A "Traveler" timepiece was a portable sundial with a magnetic compass built in to allow for its initial alignment. The models that I saw were made of ivory or brass (in later models) and consisted of a base with small embedded compass, a hinged "lid", and either a small hole in the lid (*Figure 1*), or a string that connected base and lid at a 45 degree angle (*Figure 2*). Note the listing of cities on the underside of the lid in *Figure 1*.

After aligning the Traveler sundial with magnetic north and correcting for magnetic declination, the user used the shadow cast by the Sun on the string or the spot cast by the hole in the lid to determine the time on the scale marked on the base in the manner of sundials. Despite the small size of the unit and the user's likely errors in alignment, the instrument still gave times accurate to within an hour or so. The accuracy depended on the time of year, time of day, and the 2 axis leveling of the Traveler. And of course, if it was a cloudy day, the user was simply out of luck.

The workmanship on the pieces that I photographed for this article were finely detailed and carefully inscribed. These instruments were not inexpensive, nor were they something that everyone of the period needed to have. But portable spring powered clocks of the day were unreliable on long trips because of their constant need of winding. After one forgetful day or night and the owner would be left with a temporarily useless timepiece, but on a sunny day, the Traveler sundial timepiece was always reliable. People of means such as scholars and business men who traveled far and regularly enough to make this instrument a necessity would have been the

Figure 2 – Brass Portable Timepiece; c. 1650.

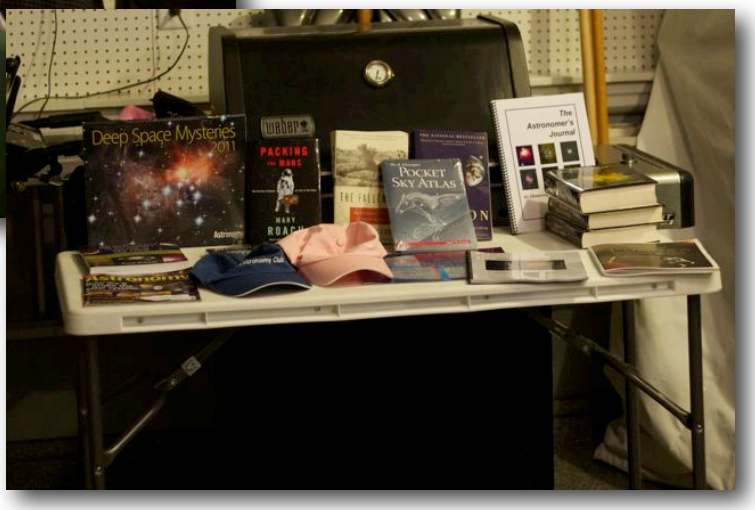
primary consumers. While I won't trade in my quartz watch anytime soon, I think these instruments are cool enough, even now, that I'd like one to demo before a star party.

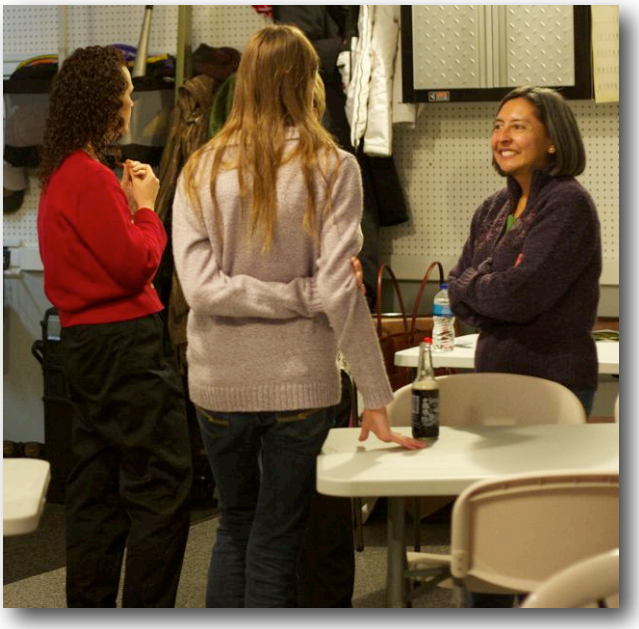
RAC Holiday Party 2010

Photos by Scott Regener

Below: The door prizes, waiting the results of the lottery.

Left: Lottery winner "Dark Sky" Jim with "The Fallen Sky" by Christopher Cokinos





Luka Bajzer took home two observing awards: the Messier and Deep Sky Binocular awards. Well done, Luka!

DSLR Astrophotography

by Scott Regener

Astrophotography. For some, the word is exciting. For others, it means the end of a positive bank balance. For many, many, more, it seems out of reach. After all, there are many experts out there who struggle night after night, and they never once get a decent shot. And then there's the post-processing, since what comes out of the camera can be a bit... ugly. For years, I avoided pointing my family camera at the sky for one simple reason: I didn't think I could do anything with it.

Just a few years ago, I finally took my camera out under the stars, but I didn't photograph them. I didn't have a tracking mount, so it only made sense that exposures would need to be short. Short exposures are ideal for the Moon and brighter planets, so that is what I took. A few conjunctions later, my curiosity sated, I put the camera back inside to stay.

Last year, I started doing some more reading and discovered that my DSLR, humble though it may be by modern standards, is more than adequate to take images that go beyond the Solar System. Then the clouds rolled in, the extreme cold gripped the region, and my dream of taking the camera out under the stars, affixed to nothing more complicated than a steady tripod, had to wait.

Finally, in early February 2011, the skies cleared and temperatures refused to drop below twenty. My chance had come. Armed with precious little knowledge, I attached the camera and, while I waited for my 10" Dobsonian to cool on the deck, took a series of pictures.

My camera is a now-aged Canon 20D. It is unmodified for astronomy, and is most definitely not the 20Da, the model Canon released for the astronomy community with the IR filter removed. As a family camera, it has served me well and I have a 16x20" print on my living room wall taken with it. A modest 8MP, it has most of the features of the professional models, but lacks the rugged body the more expensive models cost. I bought mine used on eBay for $350. They have since dropped in price even more.

Gemini

For my first night out, I attached my widest-angle lens, a 28mm f/2.8 lens. Because the 20D is an APS-sized sensor, it effectively crops the outer edge of the lens, making the 28mm a 45mm equivalent on a 35mm camera. In other words, it works as a "normal" perspective lens on the 20D. I also purchased this lens used for about $300.

Then it was time to attach it to a tripod. For landscape photography, I did not choose a light tripod, which means it is very stable with such a light load on board. I used my Manfrotto 3021 tripod legs with a Bogen 3047 head, each rated to carry 16 pounds.

Outside in the dark, two problems became apparent. The first is that my Bogen head was not designed for astrophotography, and would only raise up about 20 degrees above the horizon. I worked around this by shortening a leg, but this made the center-of-gravity dangerously off line. The second is that in my dim viewfinder, I can see nothing. But that was the point of the widest-angle lens in the first place, so I struggled on.

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Orion, Single, unprocessed Shot


Orion, stacked and processed Shot


Cassiopeia

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Focus is tricky when you can't see what you're shooting, but with the lens set on infinity, I took a test exposure and examined the stars on the LCD. The stars were nice sharp points, even at maximum zoom. Some lenses will focus "past" infinity, so a test is worth conducting in daylight. Point your camera at a very distant object (a quarter mile is sufficient) and autofocus on it. Note where the lens focuses, switch to manual and see if you can focus further. If not, everything is good with your lens set at maximum focus. Otherwise, note the setting and either freeze it there or mark it in some way to find it in the dark.

Once I achieved focus and a good test frame, it was time to take some pictures. With no tracking, I knew exposure times would be limited. I boosted the ISO to 800, a level that shows some noise, but not as bothersome as higher levels. I set aperture to minimum (f/2.8 in this case) and started firing away, taking care to squeeze the shutter rather than punching it, and not touching the camera until the shot was complete. Mirror lockup is worthless for this length of exposure, though a timer could eliminate any tripod shakiness. I then fired off several frames of 8 second each. Choosing targets was relatively easy. I couldn't go high because of the tripod issues, and I needed things that I could recognize when they were processed. Constellations like Orion are the beginning astrophotographer's cliche. I added in Gemini and Cassiopeia for fun, and then put the camera away and spent the rest of a pleasant evening driving my Dobsonian around the sky.

The next day, I loaded the pictures into the computer. I was surprised at what I could see, but I knew there was more to be had. A fruitless search for free stacking software for the Mac forced me to boot into Windows XP where I quickly loaded Registax, the program everyone hears about when they read about processing astrophotos. Turns out, however, that Registax is designed for stacking video frames, and for relatively small areas of the total image, such as planets, not deep sky or constellation shots. I found DeepSkyStacker, a free dedicated program written for stacking of deep sky images, and set to work processing my images.

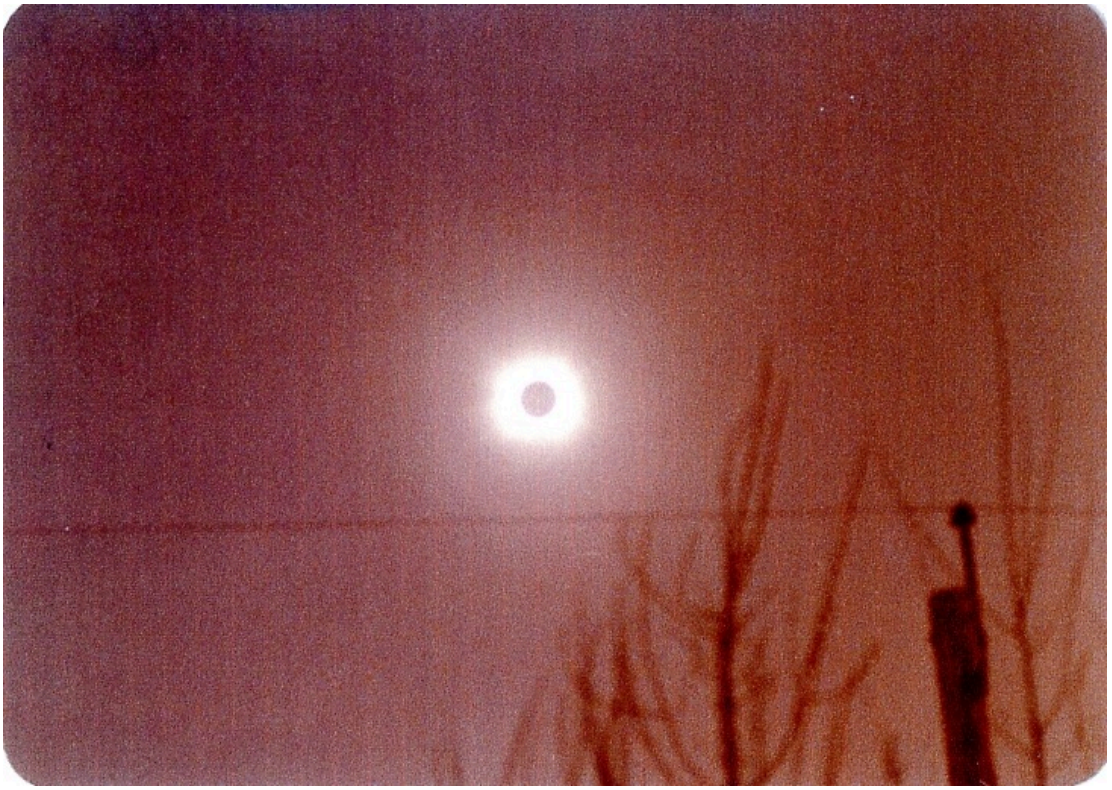
I have to say, I was pleasantly surprised at what I was able to capture. Using my Uranometria 2000.0 atlas, I verified stars in Gemini down to magnitude 9.5, though stars at 9.7 were not visible. For 80 seconds of exposure time, in the city, and with no real idea what I was doing, this is encouraging!

In other words, as your editor of this newsletter, I will no longer accept the excuse that you can't take good images for your articles. Start writing and shooting!

The Solar System / Planetary Observer's Award

by Dean Johnson

Sometimes when you start something, you're not even aware of doing it. That's what happened to me when I asked my Mom for a telescope and it continued when I saw the only total eclipse of the Sun that I have seen in my life in February of 1979. Little did I know then that asking for something so innocently and seeing something so cool would bring me to another milestone on my quest to become a Master Observer.



When I was 12 years old I asked my Mom for a telescope. She looked at me like I was crazy and just said in a thick Norwegian accent, "HUH! A TELESCOPE? If yew want a telescope, yew get a paper route!" So I did. I got a route with the Winona Daily News, 51 stops long on the west side of good old Spring Grove and saved up enough money for a little Jason tabletop refractor. I took that little scope out on the upstairs porch, pointed it at Saturn, cranked up the magnification to 45X and saw that magnificent planet with its beautiful rings for the very first time.

It was magic. I was hooked. I delivered a lot more papers, and when I got to be 13 I started baling hay for my sister Audreyjean, that many of you have met, and her husband Ed Myrah. I was a pretty runty kid, but baling hay put some muscle on me and gave me a good work ethic. I saved up more money and got two more Jason refractors, the second of which was, as I thought at the time, a really cool scope. It had a finderscope that was built right into the OTA. All you had to do was flip a little knob on the side and it could switch back-and-forth from the finder to the star diagonal assembly that housed those really awesome .96 Sirius eyepieces. Pardon my sarcasm.

This was the scope that I took with me to Bemidji State University after I got out of the Marine Corps, and it made the trip to Winnipeg, Canada for the total solar eclipse of 1979. I had done a lot of observing as a kid, looking mainly at first magnitude stars, the Moon and the planets, a few deep sky objects like the Orion Nebula, the Pleadies, M13 in Hercules and M44 the Beehive in Cancer. The most notable thing that I had seen was when the Moon occulted Venus at Christmastime in 1978. I got up at 4:30 in the morning and bundled up and took my scope down to the ball

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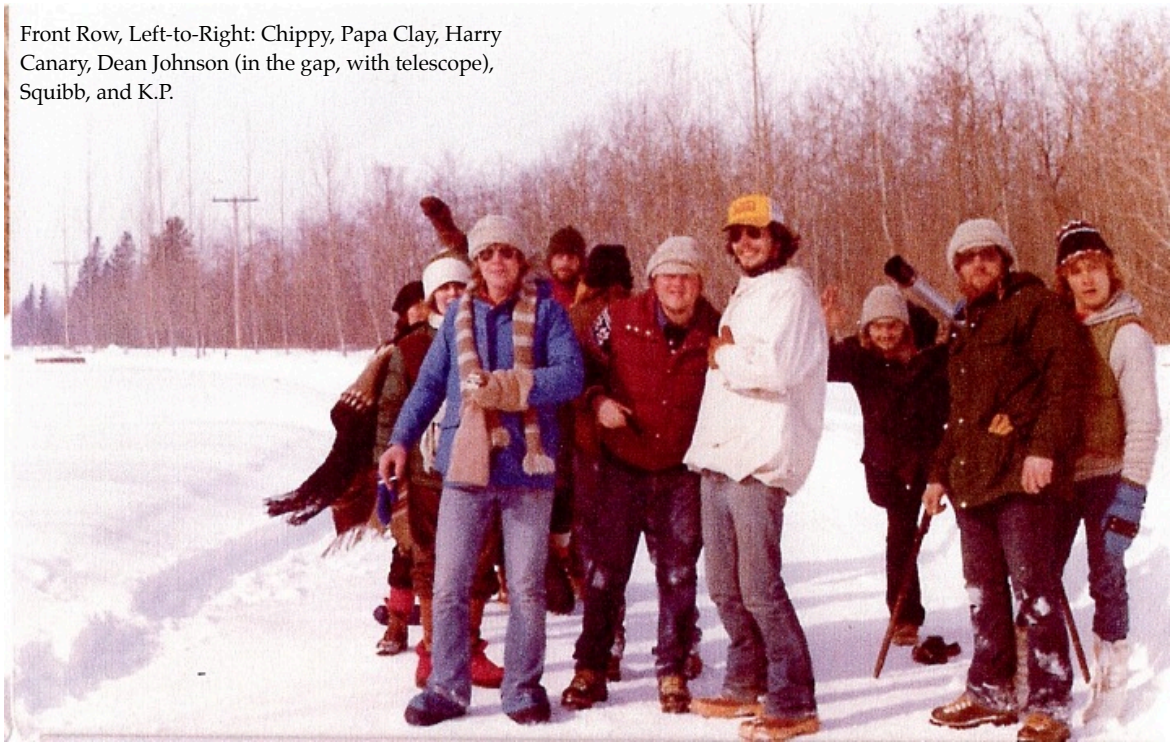
diamond one block south of my house.

My Mom thought I was stark raving mad. I don't think she ever understood my obsession with astronomy. But I set that little Jason refractor up in right field and watched as the Moon and Venus rose together in the eastern sky. They were very close and again, I felt that feeling of magic. The Moon was well into its waning last quarter phase, and as I looked through my scope I could see two crescents, one big, one little, drawing closer and closer together. Finally, Venus touched the edge of the Moon and our nearest celestial neighbor occulted that beautiful planet so very much farther away.

I didn't see Venus come out of occultation because clouds rolled in and obliterated the event. Plus, I was nearly frozen solid, (those winters back around then were spurring talk of another Ice Age) so I packed up and went home. Mom still thought I was crazy.



Front Row, Left-to-Right: Chippy, Papa Clay, Harry Canary, Dean Johnson (in the gap, with telescope), Squibb, and K.P.

I was still crazy about astronomy when I got out of the Marine Corps and went to college at Bemidji State University. Secondary education was extremely fun and by going to college so far north put me within shouting distance of Winnipeg, Canada for the total eclipse of 1979. Even though it was due to occur in February, that was no problem because I had a pile of buddies from Spring Grove that were avid winter campers. I was able to talk five of them into coming up to Bemidji, then on to Canada, and I can be very persuasive when it comes to astronomy. Dave Bergsgaard, Jerald Oakes, Jeff Clauson, Harris Glasrud and Karl Onstad drove all the way up to BSU, picked me up and from there to Winnipeg, Manitoba.

We crossed the border no problem. There was lots of traffic heading north with people wanting a chance to view the eclipse so the customs officials were pretty much waving everybody through. We saw a few sights in Winnipeg and I took the boys to the Spaghetti Factory for supper. If you ever get to Winnipeg, it is well worth going to. It is a huge place with WWI biplanes hanging from the ceiling and the food is excellent.

Our lodgings that night were also excellent as we went to Birds Island Provincial Park on the east side of the city and pitched our tent in the snow. David (Chippy) Bergsgaard had a huge tent that all six of us could crowd into and sleep. We all had our best winter gear on; everyone had a massive sleeping bag and we were quite comfortable as we had a few beers, told stories and laughed a lot. The one nagging thing in the backs of our minds was, "What is the weather going to be like tomorrow?" because the whole time since they picked me up in Bemidji, it had been very cloudy.

The next morning, I was the first one up. I stepped outside the tent and my heart just sank. No

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clear sky. No clouds either because it was so darn foggy you could hardly see to the end of the parking lot. The boys slowly stirred into action and I had to break it to them that the weather didn't look good. That troubled me to no end, because my friends had come an awful long way at my urging to see this.

But they were, and still are, a very easy going bunch, and wouldn't you know it, by the time breakfast got over, things were starting to lighten up. The fog had disappeared completely, and the sky was getting lighter all the time. Presently you could even see the disc of the Sun, so I set up my telescope. First Contact , when the Moon's disc touched that of the Sun, was now within an hour.

Lo and behold, by the time of First Contact, the sky was completely clear, the parking lot was filling up, and we were in for the show of our lives. I felt a thrill run through me as I saw the Moon start to cover the Sun, and my buddies were getting very excited. Our crowd attracted an even bigger crowd because I had the only telescope in the parking lot, even though it was a fairly cheap refractor.

This was good news and bad news. The good news was my scope didn't have a clock drive and I was too young and dumb in those days to set up the equatorial mount correctly. That meant that I had to constantly adjust to offset the motion of the Sun and the Moon in the sky. It wouldn't be until June of 2004 that I began to realize how important it is to belong to an astronomy club. Pretty soon I had a very respectable line of people that wanted to see the eclipse close up, so for every look everyone else got, I got one too. The bad news is that my "Sun Filter" was one of those cheap accessories that you screwed onto the eyepiece. At the time I thought, "It's a 'Sun Filter', they wouldn't sell you something that wasn't safe!" Boy was I a dummy, but I was a lucky dummy because the damn thing never broke. The Good Lord was looking out for us in more ways than one on that day.

Post-eclipse Shenanigans

By the time of halfway between First Contact and totality, things started to get real strange in that parking lot. The sunlight was losing its intensity and the animals in the area started freaking out. We watched as birds started to dive bomb into the

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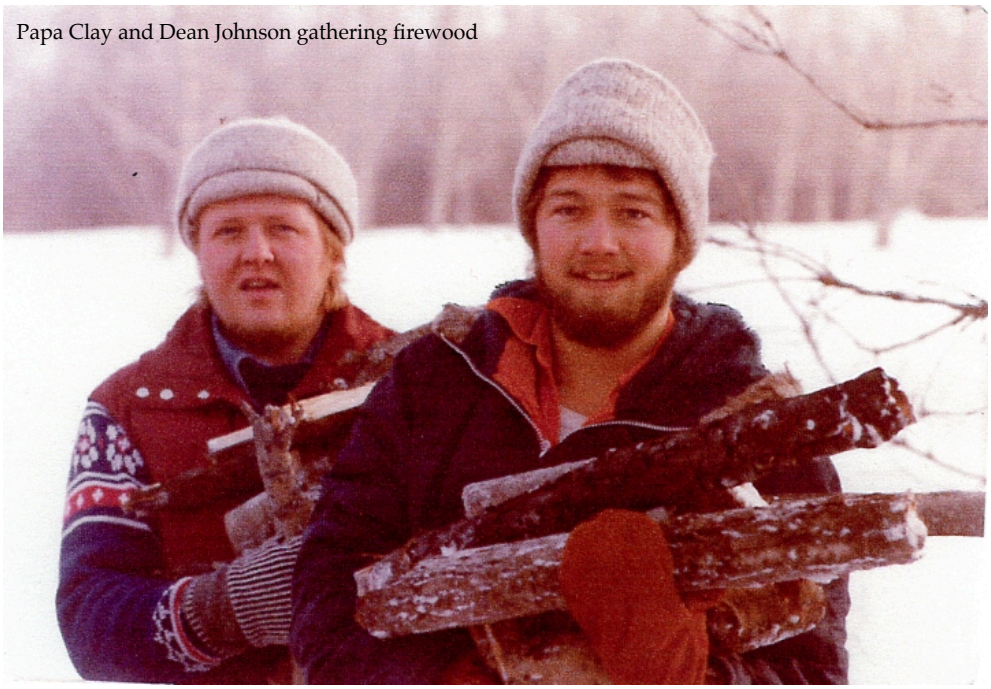
snowbanks and the squirrels were scrambling everywhere like mad. The shadows started to go in waves across the ground and an intense hush from the people in the parking lot was only broken by a few quiet murmurs. The sky was completely clear and the anticipation was palpable. We were going to see a total eclipse of the Sun!

When the Moon was covering the last vestiges of the Sun and the Diamond Ring effect took place, a person could safely look at the Sun with the naked eye. Most everyone in the park had used projection methods or had No. 14 welding glass or my telescope up until then.



Papa Clay and Dean Johnson gathering firewood

Finally came the moment of totality and a great shout went up from everyone present. For two minute and seventeen seconds we all stood in the shadow of the Moon. It was a spellbinding thing to experience. The Solar Corona engulfed the Moon and I could see solar flares coming off the disc through a telescope for the very first time in my life. I was 23 years old. I let other folks look through the scope and as I stepped back briefly and looked up, I could see that stars had appeared in the sky. More importantly, I could see planets lined up on either side of the Sun. It was as if I could see the whole Solar System arrayed in the sky above me. I was absolutely stunned and amazed. The only thing that I have seen that was as profound was when I watched my children being born. For months afterwards I dreamed of the eclipse in my dorm room in Bemidji, and even while I write this I have tears in my eyes thinking about it. If you ever have a chance to see a total eclipse of the Sun, I urge you to do so. It is like nothing else on Earth.

At Third Contact, when the Diamond Ring reappeared and the Sun emerged from behind the Moon, a wild party broke out in the parking lot. Everyone was laughing, shouting and jumping around, pretty much with the Spring Grove gang leading the charge. Canadian beer, schnapps and champagne appeared all over the place and my hand got sore from all the high-fives. I nearly had the telescope all to myself during the exit phase of the eclipse and while I enjoyed the libations, I took every minute I could to look through the scope. I knew the next eclipse in North America wasn't until 2017 when I would be 62 years old and I wanted to see the Moon's disc against the Sun.

Everybody got home safe and sound from that trip to Winnipeg, but sadly, there are only four potential survivors that may see the eclipse in 2017. Harry "Canary" Glasrud died in a car accident in Colorado three years later, and Dave "Chippy" Bergsgaard died from brain cancer in 1990. Jeff "Papa Clay" Clauson lives and works in Wisconsin and is still active in the great outdoors, as is Jerald "Squibb" Oakes, to whom I am indebted for pictures of the event. Karl "K.P." Onstad lives in Spring Grove and loves riding motorcycle and snowmobile despite having two metal rods in his back.

Me? Little did I know it, but seeing a total eclipse of the Sun will give me credit towards achieving my Solar System/Planetary Observers Award. It is a very involved piece of work, but more about that later. However, when I get the award I will have taken my sixth step towards becoming a Master Observer. That will be almost as cool as seeing a total solar eclipse.

A New Logo... Coming Soon!

by Randy Hemann

During these dark cold days of winter, one finds the need to try to bring springtime ahead a little faster. You get the golf clubs out and regrip them. Yank on the starter cord to see if the lawnmower fires up. Dust off your telescope and make sure your gear box is all in order. Things like that.

To get out of the window doldrums, I have been working on a vehicle wrap graphic for my telescope trailer with a couple different sign companies here in Rochester. As I worked through a few variations including our club's logo, I noticed it looked a little dated. Maybe it was time to dust that off and freshen it up a tad.

I like our logo. Duane Deal designed it for the club about 6 or 7 years ago. It is unique in that it is one of the few astronomy club logos without a star or telescope in it. It is a simple useful design.

I wanted to preserve the basic design but make it look bolder and more in motion. So you can see the font is changed (Agency FB Bold Italic – which is found in almost all word and picture editing software), and the font is drop shadowed to give it depth consistent with the depth inferred by the orbiting circle emanating from the moon. Also, all of the lettering shadows are consistent with the Moon's shadow, as though the logo is illuminated from the right.

The "RAC" itself projects in perspective, growing larger from left-to-right, consistent with perspective of the circling orbit.

Now I admit, that's a lot of over-thinking for changes so minor, but winter is long…

There you have it – our updated club logo. Thanks to Rebecca, Scott, and Don who provided their opinions and suggestions. Check it out soon, on our website and upcoming newsletters!

Rochester Skies

Upcoming Events

March 8th	-	Globe at Night Light Pollution Survey Ends
April 1st/2nd	-	Dark Sky Weekend at Eagle Bluff*
April 12th	-	RAC Observational Meeting (Members only)*
April 22nd	-	Lyrid Meteor Shower Peak (Moon conflicts)*
April 29th-30th	-	NCRAL at Green Bay, WI
April 29th/30th	-	Dark Sky Weekend at Eagle Bluff*
May 6th/7th	-	Astronomy Day*
May 10th	-	Monthly Meeting @ RCTC
June 14th	-	Monthly Meeting @ RCTC

* Events subject to change due to weather. Check Rochesterskies.org for updates

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