A S T R O N O M Y

Rochester Skies

Saturn & Venus Images • Call for Observations • NCRAL • Astro-Fun

Rochester Astronomy Club Newsletter Issue #6 Q2 '07

Our Loss — Their Gain

Dave Bailey has been an active participant of the Rochester Astronomy Club for years. Now he's heading for slightly more southerly skies and a job programing firmware for John Deere GPS units in Des Moines, IA.

Although this is an opportunity to extend the RAC network, it's hard not to see it as losing a great member. Dave is a regular attendee of our monthly meeting and star parties. He has a very good eye for dim objects and I'll miss him pulling in those faint sights that would otherwise go overlooked. At a recent star party he pulled up NGC6818, a tiny planetary known as *the Little Gem*. It was the first look I've ever had at this beautiful blue jewel.

Dave is also our webmaster. He will continue to work on our web site for the time being as he gets to know the Des Moines Astronomical Society, a large club with a two dome observatory. It Sounds like we'll be visiting Dave when he gets settled in!

Dave, you're appreciated and will be greatly missed. Best wishes and may your observing nights be clear!

Contents

RAC Rochester Astronomy Club — Come Experience the Universe

Rac Secretary
Amanda Lee

When I was in 9th grade, I had the pleasurable opportunity to take Ecology and Astronomy for a semester, which sparked my interest and desire for astronomy. I really enjoyed that semester, however I did not continue observing. I was mesmerized as I looked into the heavens but didn't know what I was looking at because I didn't continue my studies.

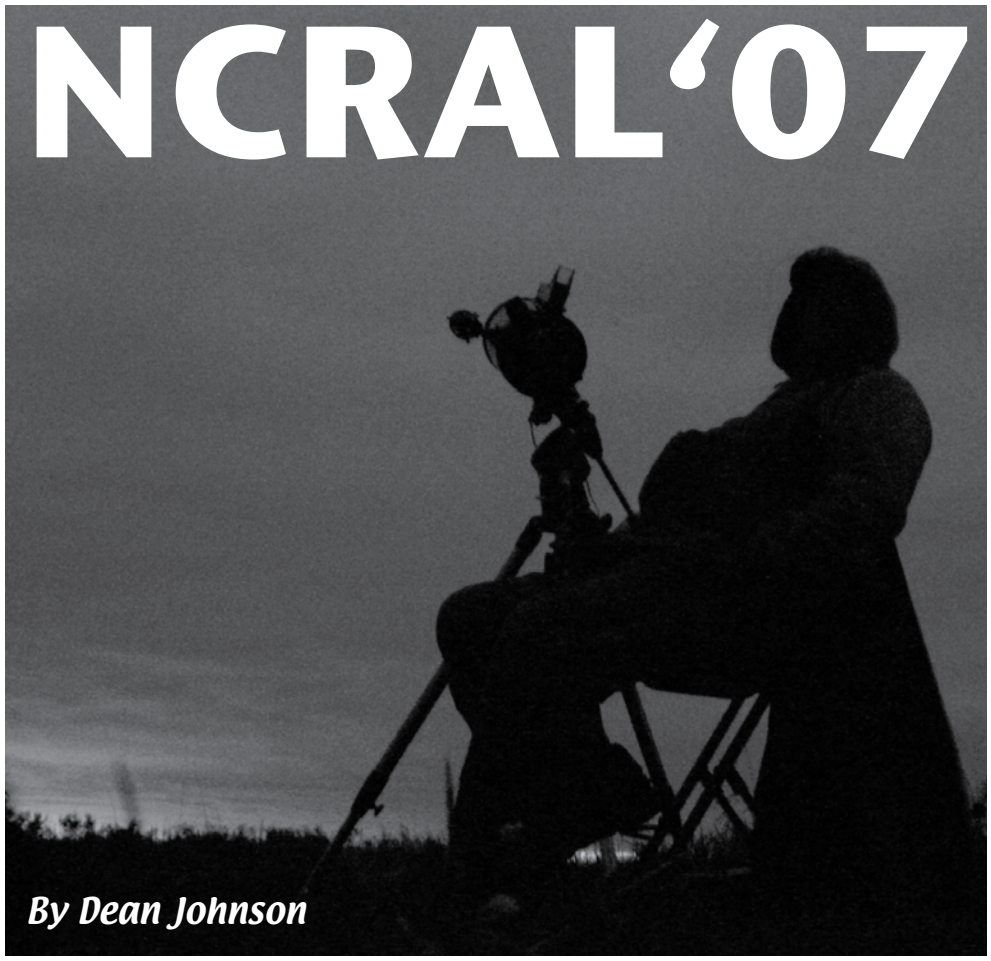
Eight years later I moved to Rochester, MN and surfed the Internet for an astronomy club. I knew a town this size had to have something. Sure enough, I was delighted to find the Rochester Astronomy Club. My thanks to Mark Callahan, the club's Secretary, for answering my many questions. I attended my first meeting in June of 2005, and to be honest, I was a smidge intimidated by all those members with so much knowledge. However, at the very next meeting I felt very welcomed! This is still true to this day; the RAC is a very welcoming club. It consists of members who are very knowledgeable amateur astronomers and those like me with general knowledge.

Since becoming a member of the RAC, I have participated in several star parties and enjoyed seeing my favorite nebulas, double stars, planets and their moons—thanks to the gracious generosity of those who share their 'big' scopes. How fascinating!

At our December 2006 Holiday Party I was elected the new 2007 RAC Secretary. I have truly enjoyed this spectacular experience. We have great growth potential and have taken some long strides in the nearly two years of my membership. If you have an inkling of interest to see what is out in our universe, I strongly encourage you to indulge in the RAC. As a final note, I am honored to say that I am an avid member of the Rochester Astronomy Club!

Amanda Lee

NCRAL'07



By Dean Johnson

Duane Deal and I kicked off the NCRAL convention weekend in style by going to Eagle Bluff for six hours of star gazing the night of May 17/18. The skies were fabulous! Clear, cool and no wind, plus Duane delivered my new laser pointer! We started our tour of the heavens with Venus, and Duane got a look at a mysterious reflection in my Celestron G8 that looks like a *Romulan Warbird*. Then we put in a hunt for M48 in Hydra. Duane needed it for his Messier list. M67 in Cancer was next. After that we turned our attention to Saturn followed by M56, a much overlooked globular cluster in Lyra. We had a short discussion and comparison of Polaris and Klochab in Ursa Minor. I think that Klochab has been brightening somewhat.

From 10:30 p.m. to 12:40 a.m we toured through NGC 4565 the "Needle Galaxy" in Coma Berenices, M4, Antares and M80 in Scorpio and then checked out Nu, Beta, Chi, and Struve 1999, all doubles in Scorpio. Then I nailed M19 (globular cluster in Ophiuchus), M7 and M6 (open clusters in Scorpio) and M22 (globular cluster in Sagittarius) for my Binocular Messier list.

From 2:15 to 3 a.m. we got two looks at Jupiter and saw Io disappear behind the planet and saw M17 the Swan Nebula in Sagittarius. I looked at M16, M17, M24, M20 and M8 but I was too tired to record them as B.M.O.'s. Still, it was a great way to kick off an NCRAL weekend and it was a good thing that we got out, because there was very little stargazing after that.

After way too little sleep, we took off for Fargo, ND at about 9:30AM talking astronomy most of the way. We had fun speculating on how the Fargo-Moorhead Astronomy Society (FMAS) would stack up against the RAC. Sure enough some of our guesses proved to be right on.

When we got to the hotel, they weren't quite ready. The president, Paul Seifert PhD, was on hand to greet us, along with a group that was busy putting together the name tags and nice metal ring folders with info about what was happening that weekend. Their "computer guy" (every club has to have at least one) was an intelligent, bespectacled, and currently harried looking young man by the name of Shawn Johnston with an interest in geology and volcanism.

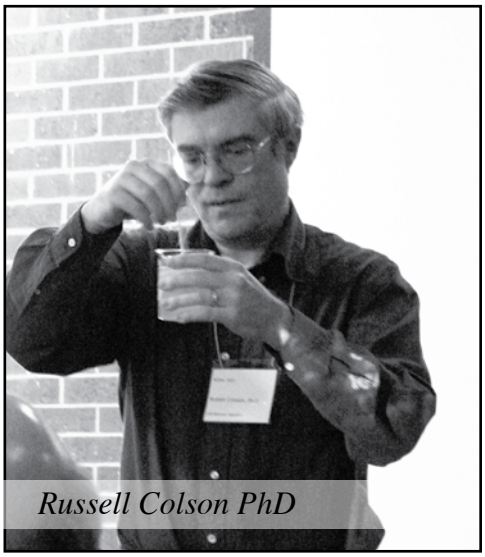
Paul Seifert PhD
FMAS President

We checked into our room while the folks were getting things sorted out and I made a recon for batteries

Shawn Johnston

and beer in the malls close by. Batteries were expensive, beer wasn't too bad. Back at the motel the FMAS had gotten the bugs out of their system and got everybody registered, which didn't take too long because the total number of attendees wasn't much more than we have at a busy monthly RAC meeting. North Dakota is a long way from anywhere.

We could have gone to the Air Museum that night, but skipped that in hopes of going star gazing instead. One of their clubs more colorful characters cautioned us that while "it might be clear right now, it won't stay that way." He turned out to be quite the Prophet of Doom. A storm front came in and just hammered the whole area with torrential rain, lightning, thunder, and hail as big as golf balls but with the consistency of wet slush. No matter, Duane has a ton of astronomy podcasts which go pretty well with ice cold Sam Adams.



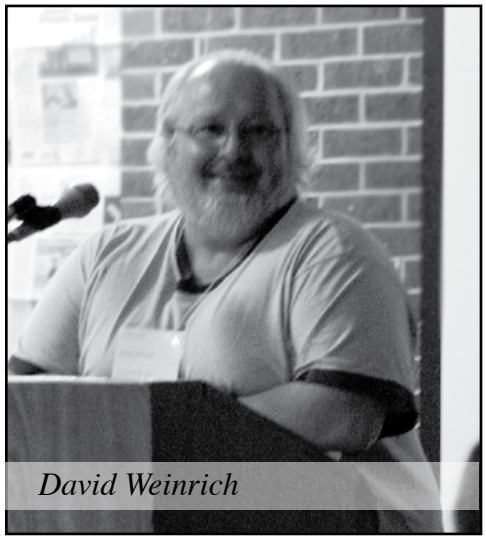
Russell Colson PhD

The next morning we walked into the convention, which was quite small and not nearly as elaborate as the previous year's NCRAL in Appleton, WI. There were no tables to put our stuff on, which I would have liked because I take a lot of notes, but it was very friendly, informal and cozy. Some of the attendees I had met before. With only 38 people in attendance it wasn't hard to meet just about everybody.

The speakers were excellent. Russell Colson PhD started things off with 'Exploring the Moon From a Laboratory: Mysteries and Resources on the Moon.' He is involved in research on how future astronauts can extract enough water and oxygen from lunar soil to have a realistic chance of permanent settlement. This was followed by a group picture in what I would guess is the only tropical spot in North Dakota, the atrium of the hotel complete with palm trees and waterfall.

Mike Gaffey Phd next gave us an extremely interesting talk of 'Telescopic Studies of Potentially Hazardous Asteroids'. His research involves him and others on the quest to keep our planet safe from impacts. He gave us a rundown on the sizes and times of known impacts to planet Earth and described the current efforts to find threats to our planet using telescopes and spacecraft. I would love to see him speak at a RAC meeting sometime.

David Weinrich gave a quiet, but moving talk on 'The Photon Connection'. No matter how many ways to study astronomy, there is nothing quite like looking through a telescope



David Weinrich

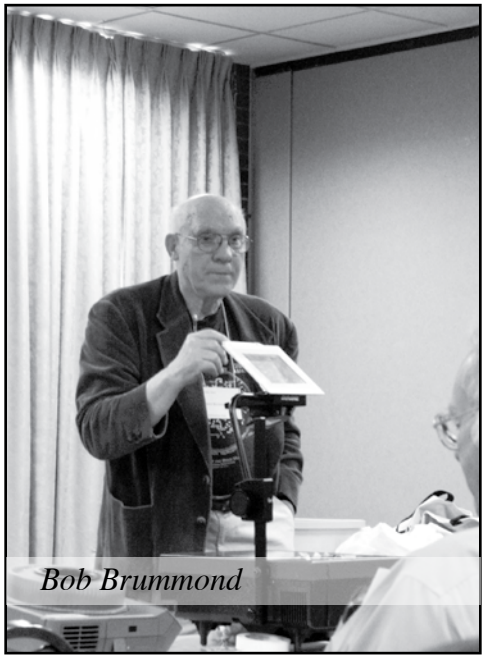
and having photons of a distant object connect with your eye. It is the source of the WOW! factor and truly brings a person in direct contact with the larger universe surrounding us. I deeply enjoy my telescope time and his words struck a chord within me. I was very pleased to see David receive the 'North Dakota Amateur Astronomer of the Year' award at the banquet that evening.

After lunch, Timothy Young PhD gave the talk 'Type IA Supernova—The Greatest Show in the Universe'. This was an interesting, intensely technical lecture on Type IA supernovas, one of the most important tools astronomers use in determining distances and the rate of expansion of the Universe. I was a little sleepy

Mike Gaffey PhD

after lunch so I didn't get as much as I could have out of this presentation except for one thing. As much as we know about supernovas (which is a lot) no one knows when the next one is going off.

After this discussion which could have graced any college classroom, we jumped right into hands on science that brought back memories of freshman science in high school. A very entertaining older gentleman named Bob Brummond taught us how to make our own spectroscope. It was fun, lively and very quaint.



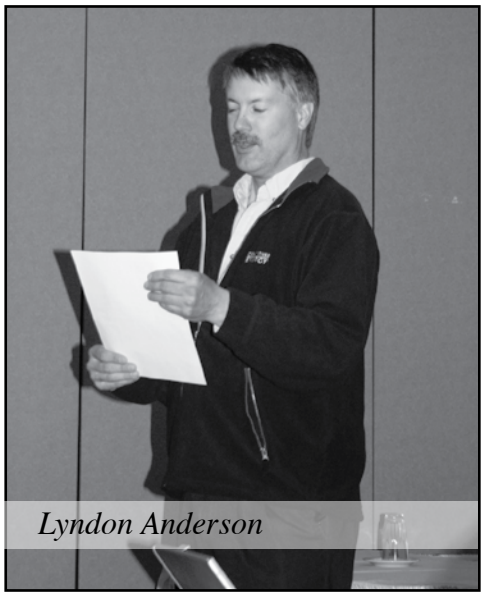
Bob Brummond

The next order of business was just that, the NCRAL business meeting. The outgoing Chairman, Ty Westbrook took the time to thank the FMAS for their hosting of this year's event and stressed that not every NCRAL convention has to be as elaborate as the one in Appleton. That is one of the most important lessons I took home with me from North Dakota. I liked this year's convention better than last year's, which to me was too fancy and expensive. Any club can host an NCRAL. It can be as formal or fancy as you want, but as Ty stressed, there has to be one every year for the NCRAL to continue. He stepped down as chairperson and Gerry Kochen from Green Bay Wisconsin was elected the new chair. He is a talented architect and a devoted amateur astronomer with a killer antique telescope collection. I feel he will be an outstanding leader for the NCRAL and just might possibly give a Powerpoint presentation at a RAC meeting in the future. If he does, be there. You won't want to miss it.

The banquet was fun and with so few people there, just about every single person won a door prize. I got real lucky and won the grand prize of a Meade Deep Sky Imager for my telescope. I don't know a darn thing about astrophotography, but I'm going to learn. I am officially signed up at the Duane Deal School of Deep Sky Imaging once he gets his observatory up and running. I can't wait!

The final talk was given by Lyndon Anderson on 'Photographing the Northern Lights'. Lyndon is the first guy to tell you "I'm no scientist", but his collection of pictures of Aurora Borealis is simply stunning. He is a rugged handsome son of North Dakota and his devotion to the phenomena of Northern Lights is heartfelt and enduring.

You can see some of his work on his web site at *www.prairiejournal.com*.



Lyndon Anderson

Now the convention broke up and several of us were excited at the prospect of going out to Buffalo River State Park for observing. The Prophet of Doom warned us, "it's clear right now, but it won't stay that way." I think the Christians going to their deaths in the Roman Coliseum had a better attitude than he did.

We drove out to the Observatory and about ten of us had our gear set up to catch the Moon very close to Venus in the evening twilight. Sure enough, after an hour the clouds,

already threatening, moved in and would not relent. Duane and I hung out until 12:15 before we finally gave up. But at least for a little while we were literally "Sharing Astronomy on the Northern Plains".

On the long ride home the next day, Duane and I talked about how we hoped that one day in the future, our Rochester Astronomy Club would play host to an NCRAL convention. That day may not come until 2013, but we have the talent and resources to pull it off one day. Once we officially have our 501(c)(3) status as a non-profit organization, all we need is the planning and dedication to see it through. I feel we have an excellent club and to host an NCRAL would be a mark of distinction in the Astronomical League. Next years NCRAL will be held in Port Washington, Wisconsin and Duane and I are planning to be there. These things are a blast!

RAC

The Next Great Space Based Observatory

There are few spacecraft that achieve recognition like that of the Hubble Space Telescope. The Hubble Space Telescope (HST) refined the cosmic distance scale, verified and quantified the expanding universe, sparked the dark energy theory and verified a super massive black hole at the center of the Milky Way. The pillars of life , the Hubble deep field, and countless other images are etched in our minds forever. One more service mission will guarantee that this incredible instrument retires in style.

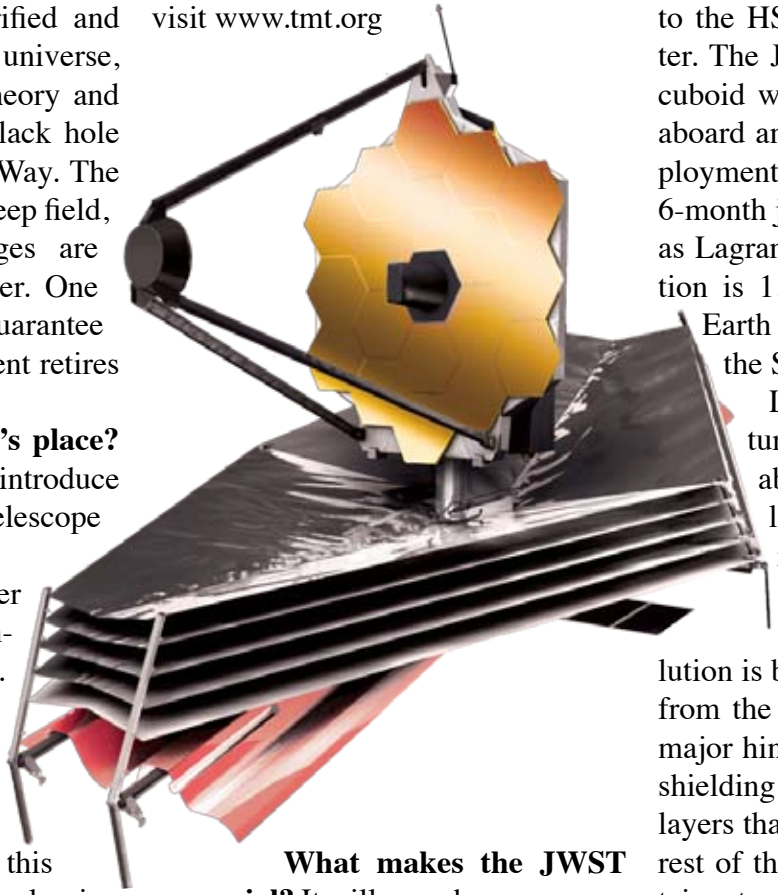
What will take Hubble's place? The time has come to introduce the James Webb Space Telescope (JWST).

The JWST is named after James Webb, NASA administrator from 1961-1968. James Webb lead the US to the Moon. He also made science a fundamental goal for NASA. That direction continues to this day and this telescope wears his namesake in gratitude.

This scope is not another Hubble. Its 6.5m mirror will image primarily in the infra-red. The HST had a 2.5m mirror and imaged primarily in UV and visible light. Due to the long wavelength of IR radiation, the 6.5m mirror is necessary to achieve the same resolution as the HST.

Doesn't the Spitzer Space Telescope imaging in IR? Yes, and it serves well. Spitzer images farther into the IR spectrum than the JWST but only has a .85m mirror.

Does this mean no more incredible visible light images? No, visible-light images will come from complementary instruments such as the earthbound Thirty Meter Telescope (TMT). Its gigantic mirror is too huge to launch into space but through the use of adaptive optics it can achieve higher resolutions than ever before, even from the ground. For more information about TMT, visit www.tmt.org



What makes the JWST so special? It will see where no scope has seen before, deeper into cosmic dust clouds and farther into the past. It will directly image exoplanets, protostars, ancient galaxies and quasars. It will even image the reionization of the universe itself. In other words, the James Webb Space Telescope will peer all the way back to when God said, "Let there be light."

Scientists will study the first stars, the formation of galaxies and the birth of protoplanetary systems. Onboard spectroscopes can analyze the composition of its targets. The advanced spectroscopic tools on board JWST can analyze up to 100 objects simultaneously or analyze a smaller area pixel by pixel for more detailed analysis.

A feat of engineering, the JWST is designed with its optics completely in the open. At 7 tons, it's still considered amazingly light and portable. The optics achieve a weight ratio of 15kg per square meter in comparison to the HST's 200kg per square meter. The JWST will be folded into a cuboid when it is launched in 2013 aboard an Ariane 5 rocket. After deployment it will unfold as it takes a 6-month journey to a location known as Lagrange point 2 (L2). This location is 1.5 million kilometers from Earth in the opposite direction of the Sun.

L2 has an ambient temperature of approximately 3°K above absolute zero, excellent for IR imaging. Imaging in IR is basically photographing heat. Stray heat is very bad, just as light pollution is bad for visible images. Heat from the Sun and Earth would be a major hindrance if not for the craft's shielding. The shield consists of 5 layers that unfold and separate as the rest of the craft opens. It will maintain a temperature of 30°K (-240° C) for the IR instrument.

Glass optics would have serious problems in this environment. For this reason the mirror is made of Beryllium (Be). Beryllium is a very strong and light metal that can maintain dimensional stability at extreme temperatures. Eighteen hexagonal plates make up the primary mirror. Each plate is bendable and movable. This can compensate for any temperature flux distortions.

The 3.5 billion dollar mission is a bargain if the James Webb Space Telescope delivers what it promises. After its launch in 2013 it will uncover things only guessed at and may discover that which is beyond guess.

More information:
www.jwst.nasa.gov
www.stsci.edu/jwst

Duane **Deal** RAC

Call for Observations

SCOTT REGENER

In what will become a regular feature here in the RAC newsletter, this column calls for observations of specific targets over the course of the next quarter. Included will be a list of targets, as well as detailed instructions on how to starhop to one of the objects, typically one visible in 50mm binoculars.

Individual observations that are given in response will appear in future editions of the newsletter, as well as a new list of targets to chase. In time, these observations will also become part of the permanent record on the web site, so that astronomers from the entire world can gain knowledge and understanding.

In order to be credited, all observations must include the following:

- Observer name
- Date and Time
- Location
- Aperture (in mm)
- Transparency
- Magnification
- Written description

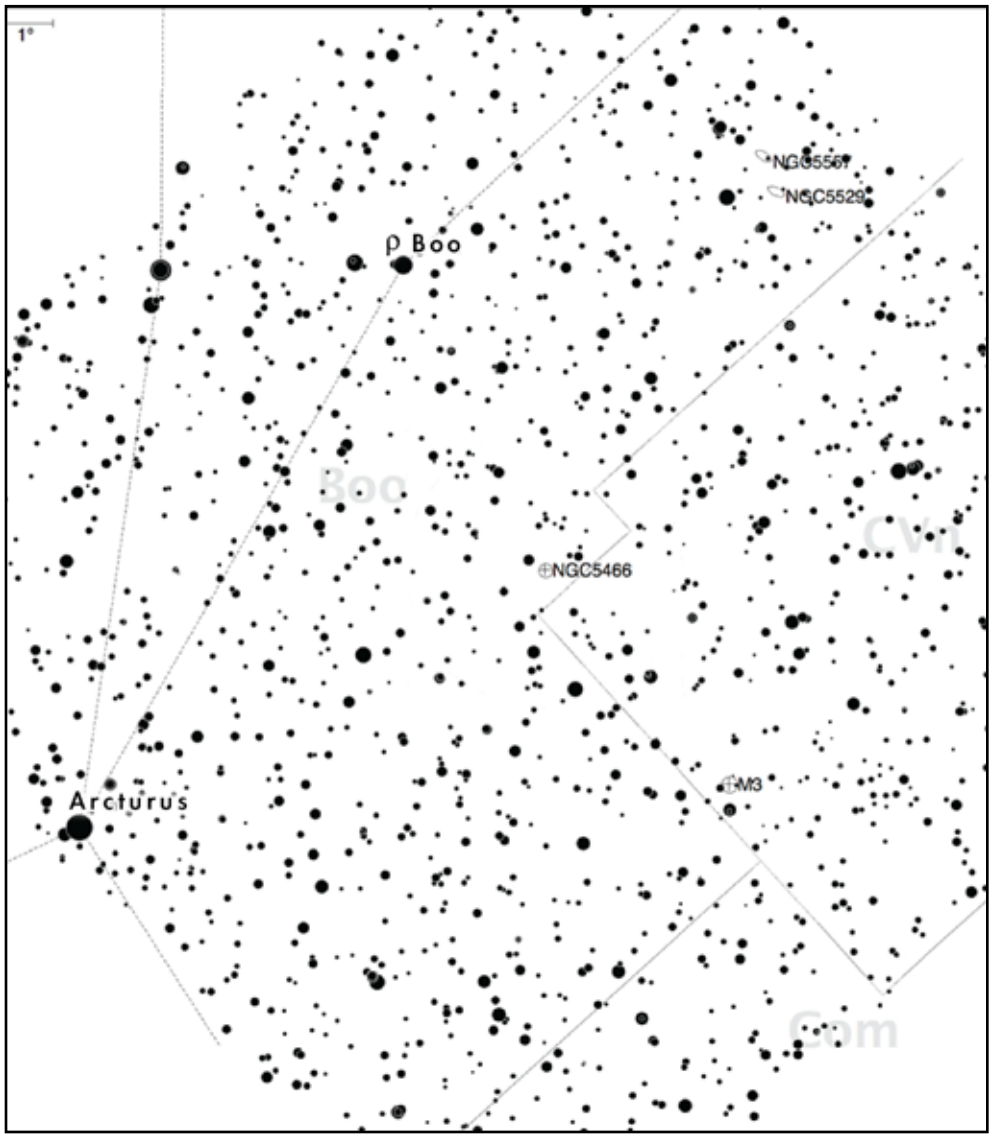
In addition, any sketches or photographs would be most welcome.

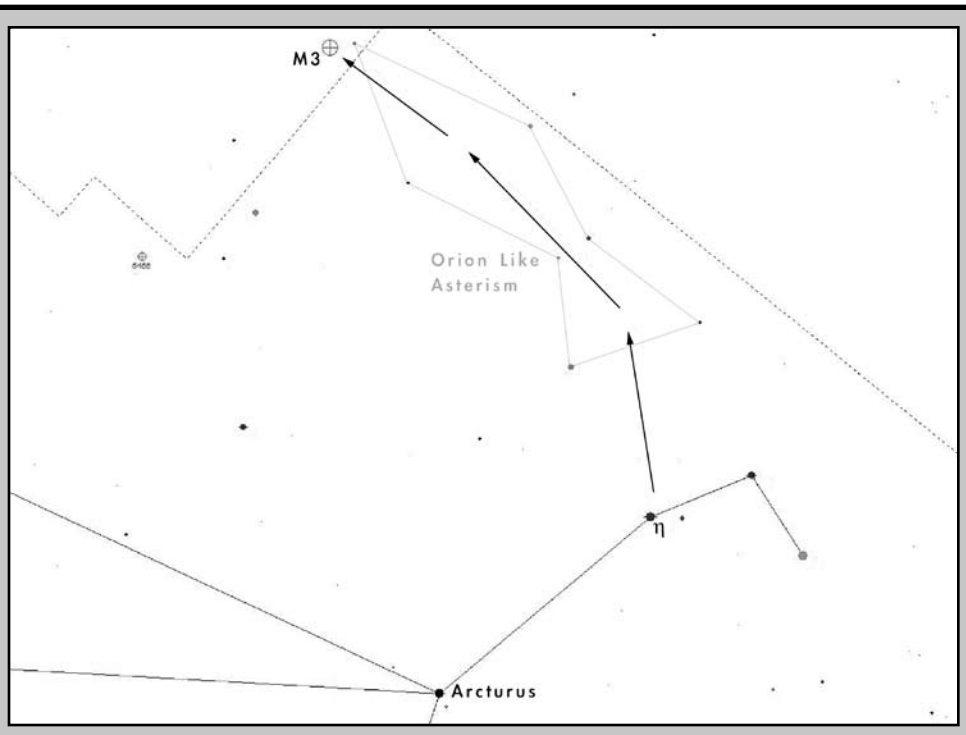
It will be assumed that nights of poor transparency will not be used for creating descriptions. Any level of experience is welcome, and all are called upon to submit their observations, even if only for one of the season's objects!

For the Summer season, let's turn our eyes toward the Boötes (pronounced boh-OH-teez) region. In early June, it is high overhead in the east, marked by the magnitude -0.05 star Arcturus. The first object of interest is the great globular cluster M3 (see page 7). M3 makes for an excellent target, as it is clearly visible even under Rochester's skies in the most modest of instruments. Nearby is another globular, NGC 5466. This magnitude 9.0 cluster has a much lower surface brightness, and may require darker skies to detect. Near gamma Boötes is a pair of 11th magnitude galaxies, NGC5529 and NGC5557. NGC5529 is a spiral galaxy, 6.4'x0.7' in size and has a surface brightness of 13.9. NGC5557 is an elliptical galaxy, just 3.6'x3.2' in size with a surface brightness of 12.5.

Now it's your turn. Go out and try to find one or more of these objects. Journal what you see. It doesn't have to be overly descriptive, just write what you think when observing the object. Most importantly, have fun!

RAC





Finding M3

SCOTT **REGENER**

M3 has been called one of the harder Messier objects to find, though it is unmistakable even in an 8x50 finder once located. The star-hop starts with Arcturus. Nearby is magnitude 2.7 η (Eta) Boötes. If we draw an imaginary line between Arcturus and eta Boötes, an asterism that appears similar to Orion guides the way. Three pairs of stars, the middle pair forming the "belt" get us close to M3. The final step is to form a right triangle with the top two stars, the left most (easternmost) star forming the right angle. The top star is almost right next to M3 and the dimly glowing patch is easily within a 1 degree field of view.

BINOS

DEAN **JOHNSON**

I have had a lifelong interest in astronomy and have always been a "telescope guy", that is, I've never paid much attention to using binoculars to study the night sky… until recently. I have looked at the sky through binoculars through the years, and my friend Fred Kroshus from Spring Grove has a killer pair of German made Steiner 20X80 binoculars, which I saw Comet NEAT through on the night of May 14th, 2004. The sight of that comet passing under Praesepe (M44, the Beehive Cluster in Cancer) was amazing.

Since then at our RAC star parties at Eagle Bluff, Brandon Wyman, Duane Deal and others have brought their binoculars and they generously let me do quite a bit of looking through them. The thing that struck me while using their binoculars was how much of the sky I could see and how open star clusters like M34 in Perseus and M41 in Canis Major stood out. I often had to lay flat on my back in the gravel parking lot to keep my arms steady, but no matter. I just had to get a pair of binoculars.

Have you ever heard the old saying—'If something is meant to be, it will happen?' It wasn't too long after that my old buddy Duane Deal had a pair of Celestron 15X70 binoculars he wasn't using and asked if I would be interested in trying them out? My response was a resounding YES! and I ended up getting another very good Duane "deal"!

I got a sturdy but simple tripod for them with a binocular adapter at Best Buy for a mere total of $50. I did a lot of observing through them last fall and winter, so much so that I

have retired my 4.5" Celestron Newtonian because the views are very similar and the binoculars are a lot more handy to haul around.

After finishing my Double Star search last October, I had started in on the Herschel 400 list, but that project is going to take some time and I wanted to use my binoculars in a more structured fashion. After checking the Astronomical League web site, I found that there are two binocular certificates for Northern observers, the Binocular Messier program and the Binocular Deep Sky list.

You only need to observe fifty of the Messier Objects through your binoculars to qualify for the award and pin, so in March of this year after the total eclipse of the Moon on March 3rd I started in on it. As I have with other viewing projects, I start out with the objects I am most familiar with—M42-43 the Great Orion Nebula, M45 the Pleiades and so forth.

It is required that you journal your observations. You must record the object viewed, the date and time, the conditions of the sky, and the type of binocular that you are observing with. I also draw a rough sketch of what I see and include a personal comment or two. The last two items are not necessary, but I like doing that because it gives more depth to my journalizing.

What a wonderful way to go back through the Messier Objects

What a wonderful way to go back through the Messier Objects again! M51, the Whirlpool Galaxy in Canes Venatici looks like a soft patch of nebulous light in the sky below the end of the Big Dippers handle. It shows no stars or any hint that it is a massive galaxy many millions of light years from Earth, but yet it is there.

I really enjoyed the "double" Messier Objects a person can see, like M46 and M47, open star clusters in Puppis. M46 appears as a misty patch of light, compared to the brighter stars of M47. M36 and M38 in Auriga is another easy pair to catch. One of the best sights in the heavens is M8, the Lagoon Nebula, M20 the Trifid Nebula and open star cluster M21. A Binocular Messier triple! I bagged my fiftieth by June 5th, so the project did not take long at all.

I dearly love my binoculars. I will continue to observe the Messier objects and I plan on starting the Binocular Deep Sky list during July's dark sky. I hope that the 1st magnitude stars are on that list because one of my favorite things to do is to look at them and their surrounding star fields and draw them. I used to look at them a lot when I was a kid with my little Jason refractor, but they are so much more interesting surrounded by their attendant stars.

Grab your binoculars (and get a tripod if you don't have one) and go have some fun! It's a great way to go.

RAC

Journaling

By Dean Johnson

Astronomy is a wonderful thing. It beckons to our intellect 365 days a year and can be pursued in so many ways. If you don't like to leave the comfort of your home, you can read about it or learn astronomy on the Internet.

There are even (gasp!) TV programs about it every once in a while! If you are more adventurous, you probably will find yourself outside gazing on the heavens with your naked eye, binoculars or a telescope. That is where you really connect with the universe, when light traverses vast distances to meet your eye, your brain, your very being.

If you value your time spent outside under the stars, you might want to record your experiences by journaling them. Astronomy is my favorite pastime ever since I was a kid of 13. I used to drag out my little Jason refractor, look at the stars and planets, and write down what I saw.

We didn't have a sidewalk and had too many trees in our yard for good viewing, so I would set up my scope on the neighbor's sidewalk across the street. That was the spot in Spring Grove. There was one streetlight I had to work around, but back in those days, I liked to look at the Moon, the planets and 1st magnitude stars. I knew where the great globular in Hercules was, but didn't know that it was a Messier object. The Perseus Double Cluster, the An-

dromeda Galaxy, the Pleiades and the Orion Nebula rounded out my list of "Deep Sky Objects".

But I would still bring my little notebook along and write down what I was looking at. Neighbors, people out for a walk, and even older teenagers out driving around would stop and take a peek. I didn't know it at the time, but I was practicing "sidewalk astronomy".

I would write down what I looked at and who stopped by. I met one of my best friends by the name of Miles Schulte. He and I would spend many years together planting trees down south, he was in Betty's and my wedding and we still team up on forestry projects to this day.

As I've gotten older (and I'm making good progress in that direction!) I have gotten more and more serious about my passion for astronomy. I still journal and ever since I acquired my Celestron G8 almost four years ago, my journaling and my observing skills have gotten better. Those skills are vital in my quest to achieve more observing certificates, because you can't get them without being able to prove you have done the work.

Good journaling is not difficult. All you have to do is record the date and time of your observations, your location, the object you are viewing and the equipment that you use for your observations. Some certificates require sketches of what you look at, but that's not hard either. I certainly am no art major, but my sketches of the top 100 double stars in the sky were good enough to get that award from the Astronomical League. Looking back over my journals, I can tell that my artwork is much better than the crude drawings I started with. Like almost everything, the more effort you put in, the better you will get.

And what a wonderful record of what a person sees! On my 52d birthday, June 29th of this year, I saw a shadow transit of one of Jupiter's moons! When was the last time I saw one? That's easy; I just looked in my journals and found out that it's been a while—May 14th, 2004!

One night (May 29th 2005) Duane and I were trying to polar align our scopes at Eagle Bluff and Duane spotted a very cool looking double star near Ursa Minor. Two tight, equally bright stars with a beautiful light blue hue to them both. What were they? I found out almost exactly a year later (May 28th 2006) during my double star search. It was the double 32 Camelopardalis.

And just who was at that very rare January star party at Eagle Bluff? None other than our club president Randy Hemann, Bob McDonald, Duane Deal, Mike Currie, Kirk Severson, George Gorman, Don and Jan Schlosnagle and myself gathered for a night under the stars in 35 to 40 degree weather.

I've just witnessed the conjunction of Saturn and Venus. It was wonderful. The last conjunction I witnessed was the conjunction of Jupiter and Venus on September 1st, 2005. All this history is right at my fingertips in my journals.

There are downsides to journaling, make no mistake. You spend money buying notebooks, pens and batteries for your red lights. You spend lots of valuable time poring over your notes. You miss tons of meteors and might hurt your neck when you hear someone say "WOW!! There goes another one!"

But on the whole, if you are a serious observer, journaling is a must. It has helped me become a more skilled observer of the night sky. The memories of what I have seen are priceless to me and they are recorded for posterity in my journals.

RAC

What have we done for Astronomy lately?

Astronomy Day at Bamber

RAC group at NCRAL

Outreach at Longfellow

Outreach at Longfellow

4th of July Outreach

Plus: Meetings, Star Parties, Quarry Hill, Community Ed, Scouts, ...

Saturn and Venus

June 30th '07

Top: D. Deal Wide Angle, Canon Digital Rebel on Tripod

Left: Scott Regener, Canon EOS D60 on Tripod 300mm

Right: D. Deal Canon Digital Rebel Afocal Wide

Inset Right: D. Deal Venus Canon Digital Rebel Afocal Zoomed

For image details visit:
http://rochesterskies.org/forums
Topic: Newsletter

Astro-Fun

It's a Little Known Fact

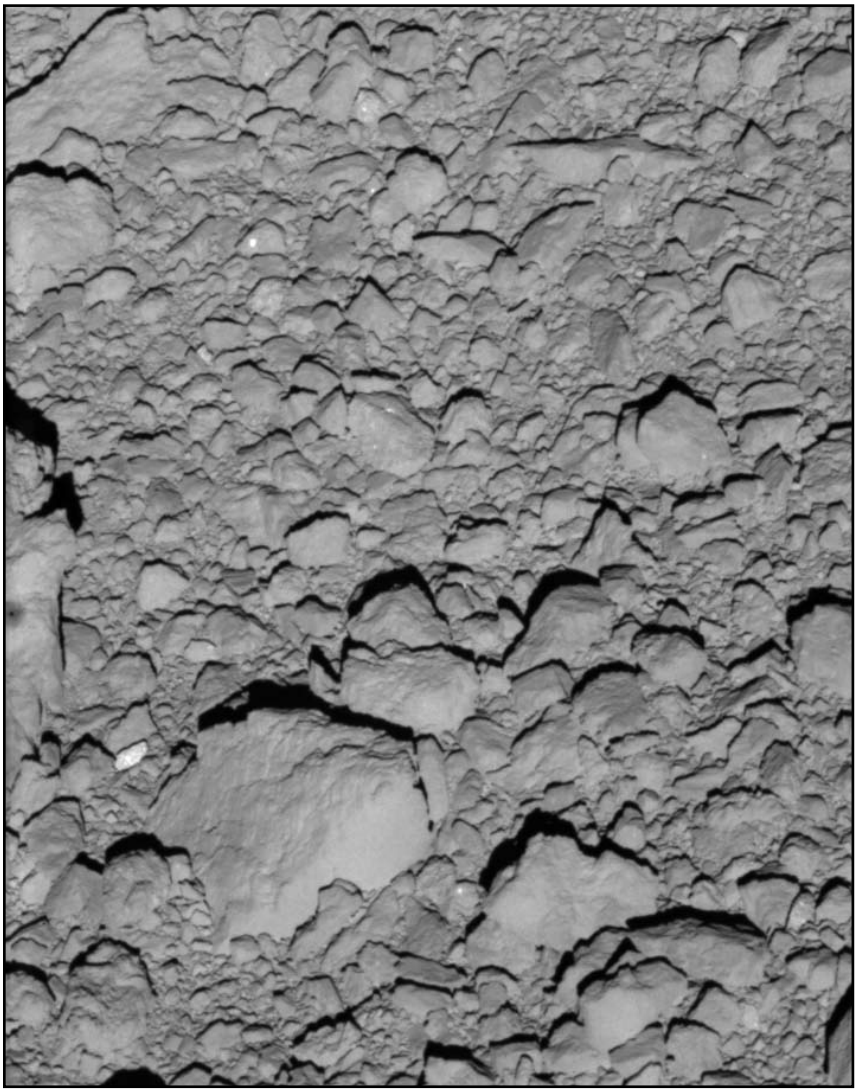
If the Solar System were the size of a quarter, the Milky Way would be the size of North America.

The constellation Ophiuchus is pronounced: oh-fyŪ-cuss

The difference between Type I and II supernovas is the presence of Hydrogen in their spectra. Type I supernovas don't have Hydrogen, meaning they burned it all away before exploding.

What in the Universe Is THAT?

Can you name the object in this image?



Be the first to post your answer at
http://rochesterskies.org/forums/
under the topic **Newsletter / Fun**

A Test of Direction

When you look up at the night sky, figuring N,S,E and W from a star overhead is easy. However, when it's near the horizon it gets a little trickier. To a star on the Eastern Horizon, west is up, east is down, south is to the right (as you face it) and north is left. From a star in between the horizon and zenith, the cardinal directions are on an arcing diagonal. Stars near the poles have very little to their east and west—just a circle around the pole they reside by. Polaris has nothing to its east and west. It hardly has an east and west. Keep this in mind while you travel the sky: north is always the shortest path to Polaris, east is from the direction it rose from, and west is the direction it travels, while south is directly away from Polaris. Here is a puzzle. Grab your favorite star atlas and see if you can follow: Find Cygnus the Swan (also the Northern Cross). Now look at the constellation that Cygnus' west wing is pointing at. From that creatures head, locate the constellation to the south. From here, jump to the smallest of the constellations to the west. Now jump over a serpiginous constellation and land on the one just south of it. Travel one constellation to the east. What constellation are you on? Check your answer: **http://rochesterskies.org/forums under the topic Newsletter / Fun**. Now go out and try it on the sky!

Rochester Skies

Newsletter of the Rochester Astronomy Club

Upcoming Events

Teacher Outreach *Teacher Outreach—Larry Mascotti*	**July**	**25**	
Star Party at Eagle Bluff	**Aug**	**10**	*
Club Meeting *The Hybrid Eclipse—Randy Shekeruk*	**Aug**	**14**	
Club Meeting *TBA*	**Sep**	**11**	
Neighborhood Outreach—*Randy Hemann*	**TBA**		
Star Party at Eagle Bluff	**Sep**	**14**	*
Club Meeting *Cassini Update—Jack Wiltsie*	**Oct**	**9**	
Star Party at Eagle Bluff	**Oct**	**12**	*
Club Meeting *New Planetarium—Larry Mascotti*	**Nov**	**13**	

*Events subject to change due to weather. Please check up-to-date resources for details.

Page 12

Rochester Astronomy Club
C/O R Bomgaars, Treasurer
820 10 1/2 St SW
Rochester, MN 55902