

# The Spectrogram

Newsletter for the Society of Telescopy, Astronomy, and Radio

January 2005

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S\*T\*A\*R  
P.O. Box 863  
Red Bank, NJ 07701  
On the web at:  
<http://www.starastronomy.org>

## January's Meeting

The next meeting of S\*T\*A\*R will be Thursday, January 6th.

At the meeting the Telescope Committee will present their proposal for purchasing and operating a telescope to act as a 'portable observatory' for the club.

The meeting will begin promptly at 8:00pm at the King of Kings Lutheran Church, 250 Harmony Road, Middletown.

## Thanks to Contributors!

Thanks to all this month's contributors to the *Spectrogram* (Steve Walters, Ernie Rossi, Dennis O'Leary, Doug Berger, Greg Crinklaw). If you'd like to follow in their footsteps, **the deadline for the next edition of the *Spectrogram* is Friday January 28th.** Please email any contributions to [gwarnes1@comcast.net](mailto:gwarnes1@comcast.net).

## Calendar

**September 2, 2004**  
History of the Telescopes  
Ernie Rossi

**October 7, 2004**  
Constellation Myths  
Dr Hank Bartol, Newark Academy

**November 4, 2004**  
X-Raying the Hearts of  
Supernova Remnants  
Jeremy Carlo, Columbia University

**December 2, 2004**  
Eclipse!  
Ken Legal

**January 6, 2005**  
Business Meeting on Telescope Purchase

**February 3, 2005**  
Imaging by the S\*T\*A\*Rs

**March 3, 2005**  
ATM Group Presentation

**April 7, 2005**

**May 5, 2005**

**June 2, 2005**  
AGM

## President's Corner

*By Steve Walters*

I hope you all enjoyed the holiday season and got some time to be out observing. Certainly it was really cold but the views of Comet Machholz, even with the moon blazing, were spectacular. If you haven't been out to see it, you are missing a real treat. January promises to be its best month so don't miss it. It's easy to spot and exciting to see. It's not often that we have such a bright comet, don't miss this opportunity.

At this month's meeting on 1/6/2005, S\*T\*A\*R will consider purchasing a 25" Dobsonian telescope. On our discussion board you'll find a variety of opinions and ideas about this. I hope you will put aside some time to read these opinions, think for yourself about this decision and come to the meeting with your ideas, questions and an open mind. This is an important decision for our club, we need every member participating to make a good decision that represents the direction our members want.

My personal view this is that we should buy this telescope. It is a fine instrument at a good price and our committee has worked hard to prepare this proposal. A 25" telescope will give us views of the heavens that we cannot get on our own. This is one reason for having a club, to marshal our resources to acquire something most of us would never buy. While a scope like this will not provide its best views in our light polluted skies, it will still be a big improvement over our smaller scopes. And we will take it to darker observing locations as often as possible where it can perform at its best.

It's true that we must have a good plan for managing this telescope. As I write this column, the committee is completing its work on the management plan and most of the questions I see posted on the discussion board relate to managing the telescope. Our goal is to have a plan for getting this scope to all our meetings and events. We will make sure it is available at every possible opportunity for the use of club members. We will have enough members involved in the operation of the telescope so that it does not fall to a single person to do all the work.

At our meeting, the telescope will be available for you to see. The committee will present its results and their reasons for the specific proposed purchase. They will also present the management plan. I hope we will be able to answer all your questions but we will collect suggestions and ideas about how to manage the telescope. If needed, we will then revise the management plan.

For myself, I believe that it is entirely possible for S\*T\*A\*R to own and use this wonderful instrument. We have enough members to keep it busy and to share the workload of

bringing it to our meetings and events. This telescope will be a central part of S\*T\*A\*R activities, a truly portable observatory. I also believe that having a portable telescope like this is far better than owning and maintaining a permanent observatory.

Thanks to two generous donors, Marion Mogensen and the late Julius Christansen, the funds we need are at hand. All we have to do is move forward.

Clear Skies!

Steve...

## November Meeting Minutes

*By Dennis O'Leary*

The December meeting commenced at 8:00 with 32 members in attendance. Steve Walters mentioned that our club insurance policy was linked to our participation in the Astronomical League. Since at the June meeting we had voted to withdraw from the League the board was in the process of finding a different insurance company. A motion was made to rejoin the Astronomical League if necessary to maintain our insurance. The motion passed unanimously.

Steve announced that if members need permission letters for observing sites to see him.

The Imaging group will have a presentation at the February meeting which will include Web Cam and video imaging and displays of their work.

The main speaker was our own Ken Legal whose presentation "In the Shadow of the Moon" was an in depth explanation of how and why solar eclipses occur and their "Saros" or recurrence every 18 years 10 and 1/3 days. Ken did a great job and included personal photos and videos taken during solar eclipses which he witnessed in Kenya, Mexico and Munich.

During the break Mike Sullivan demonstrated his 12" Harden Dob.

After the break Steve discussed the formation of an Observatory Fund Committee which will investigate the possible uses of the fund and asked that if members have constructive suggestions that they be given to the committee.

Gavin discussed the Object of the month, Comet Machholz, and it was mentioned that on December 7th the Moon will occult Jupiter at 4:00AM.

Announcements:

Randy has calendars Available from ASTRA and An Observers Handbook if anyone is interested.

Larry Campbell asked for help at a star party at the Village School in Holmdel on Feb. 15th at 7:00 PM. Larry also needs help with a star party in March in Cliffwood.

Ken Legal asked for volunteers for a star party in February or March. Details will follow.

ATM SIG meeting on Monday at 7:00 at Gordon's shop.

Observing SIG Tim announced that the November star party at Allaire State Park was a big success and the club will have an additional date for a private star party in the Allaire group camping area in April. Another public star party is being set up for the spring.

Imaging SIG The group met and is getting ready for the January presentation.

Beginners SIG Nancy reported three new members, Beth, Bob and Jeff. The group is open to all but is designed to help those who are new to astronomy. The SIG meets at 7:00 PM before every meeting.

Outreach SIG Gavin announced that upcoming events are Earth Day at the Manasquan Reservoir, Turkey Swamp Park and Cheesequake Park Public Star Party. More details will follow.

At the conclusion of the meeting several members went outside for an observing session.

## Ernie's Telescope Corner

*By Ernie Rossi*

### Criterion RV8 Renovation

Criterion Manufacturing Telescope Company made some of the best optical quality telescopes during the 1950s to late 1970s. One of the first telescopes they produced was the legendary RV6 6" f/8 and later on the RV8 8" f/7 Newtonian telescope. In the late 1960s and early 1970s this scope sold for approximately \$400, had excellent optics with an equatorial mount and clock drive system. Someone I knew had one, purchased it in 1974 and had it in his garage for many years and never used it for a long time. However, about a year ago he needed space in his garage put the telescope outside in his yard and never covered it. During all this time it was exposed to the elements and all the metal parts rusted. He had called me and told me if I wanted it to come get it since he was going to put it in the next large garbage pickup.

So I went to pick the telescope up and found it in terrible condition, but I told myself I would restore it if possible. When I got it home I had to take every component of the telescope apart such as the mirror cell, diagonal holder,

spider, focuser, finder, and check the condition of the mirror and diagonal and see if the mount works. Most of the bolts and screws were so rusted they just broke off when trying to unscrew even after trying a lubricant on them. The tube end on the mirror side was in such bad condition I had to cut 3" off. The mirror had at least 1/2 inch of leaves and other debris on top of it, and not only were the coatings gone but was etchings in the center and several other spots. The finder was not salvageable and the focuser didn't work it was rusted but I thought I could get it working again. The finder I decided to replace with something better than original. The tube rings were in fair shape and I was pretty sure I could restore them. The equatorial mount was frozen and rusted on the right ascension movement and just a little tap from a hammer the 1" steel shaft broke in two. Now the only thing I could do was build a new mount and it would be a Dobsonian type mount of my own design.

The first thing I decided before I went ahead with the project was to take the mirrors down to Gordon Waite, of Waite Research LLC who figures, polishes, and test and manufacturers custom mirrors for astronomical telescopes to run test on the mirrors for wave front accuracy and smoothness. Gordon found the mirror to have a wave accuracy of 1/6, which is a pretty decent mirror? I told Gordon to send the mirrors out to be coated with a layer of aluminum with a silicon monoxide overcoat. I now decided to start building and renovating a modified RV8.

With the tube cut down 3" I thought I would have to find another tube to replace the damaged one since it wasn't long enough anymore to achieve focus. The original length was 54", and the outside diameter was slightly less than 10" in diameter. Most Sonotubes don't come in lengths of over 48", and a custom aluminum tube is very expensive. Home Depot sells round tubes for concrete forms and they had a 10" diameter by 48" in length that fit tightly over the original tube. I decided to cut the original tube in half about 1/3 rd the distance from the back to the front. I then put the 10"x48" tube tightly over the original tube and pulled the original tube back 3" to give the original focal length of 54." I then screwed the 10"x48" to the original tube which fastened them tightly together. I finally got the focuser apart but found that the pinion gear was loose from the pinion shaft which was originally welded together. I happened to have a similar part but had to file down the side of the focuser where the shaft and pinion gear fits into for a correct fit, and it worked very well. The finder I replaced with a Roger Tuthill 8x50 right angle unit that I happen to have. I may eventually change to a straight through finder or Telrad. I then went down to Gordon's shop and picked up the new coated mirrors, and center dotted the primary, and put the mirror back into it's original cell and the same for the diagonal mirror.

I now had to drill holes in the tube and line up the mirror cell correctly, put the spider back and line up the diagonal and focuser. This process of alignment of the spider, focuser,

diagonal is critical or else you will never have full mirror illumination. This is where a sight tube, ruler, and laser are needed. After the focuser was squared and lined up and centered properly and the same for the spider you now align the diagonal mirror by centering it properly with a sight tube and laser. The last of the alignment is the laser striking the center of the mirror, and then adjusting the mirror by using a laser or Cheshire eyepiece so both diagonal and mirror line up perfectly.

I wanted to use the original tube rings and made a cradle for the rings to sit on and bolt through. On the sides of the cradle I used 4" PVC toilet flanges as the altitude bearings. For the base I picked up 2 round 20" x 1" flat boards that were originally from old end tables I happen to find in an antique shop in Lancaster Pa. I drilled a hole in the center of the two round boards, applied a round ebony star laminate on one board and Teflon strips on the other board, had them facing each other and held them together with adhesive and a 1/2" lock bolt so they would revolve around each other. I also put 3 small blocks of wood under the bottom board that the mount and telescope would rest on to act as feet and keep the mount stable. The next thing was making side boards that were 32" high by 9" wide and 1/2" thickness. Each end of the side boards were cut and rounded out for the altitude bearings to fit into. Inside the cutouts I placed Teflon chair glides which the bearing sat on. On the side boards I added strong handles so I could lift the mount and telescope. When everything seemed to be in fine working order I took the scope apart and painted it white, and the rings flat black. I want to thank Gordon Waite for the Formica, Teflon strips, some wood, and for cutting out the half circle edges of each side board, testing the mirror, and sending them out for coatings.

Testing the scope was my next step. I knew I needed a 2" high quality focuser since the original focuser was old technology and not in the best condition. On the next two nights I was able to test the scope but not under very favorable conditions since the seeing on both nights were below average. When the seeing was steady for a split moment Saturn's Cassini division stood out clear and black around the entire disk. I could also see a band and patterns of color throughout the disk. Putting it up against my RV6 and Parks 6" f/8 reflectors, the RV8 showed more detail, the pin points of stars were extremely close. The Trapezium of the Orion nebula M42 on one of the nights 5 stars were visible and a 6<sup>th</sup> star intermittently popped out. I found out that after testing I really needed a better focuser so I ordered a Hardin 2", 1/14" focuser. The focuser is all aluminum and moves on 4 bearings, ultra smooth. I also moved the center of gravity 3" further down by changing the bearing height, this made a big difference in the declination movement and balance.

I finally got a decent night with better than average seeing and transparency. The scope up against slightly larger mass produced Chinese reflectors it had better contrast and a

sharper image. I also put it up against some top quality APO refractors 4 and 5" and the scope performed very well. The scope matched the refractors almost in every way and beat them on some. More resolution I believe gave it the edge even on Planets like Saturn, and far out distant the refractors on clusters and galaxies since it had more than twice the light gathering power.

Phil Harrington avid observer, writer, and tester on many types of telescopes still has his Criterion RV8 that was given to him by his parents while he was a student raves about the great optics and what a wonderful telescope. The telescope now is a lot more portable since the mount is a separate piece and only weighs about 20 pounds Vs the original mount at 45 pounds. For a telescope that was almost in the trash bin and saved in the nick of time, the work and money to restore it was well worth it. The cost was far less then buying a foreign mass produced scope, and the satisfaction I received from doing this can't be measured. This telescope not only looks good, but it's also a great performer, and a telescope I'm proud to own.



## My First Year – Part 2

*By Doug Berger*

This article is the second of two installments describing my first year of night sky observing. In the first installment (December 2004 Spectrogram), I discussed my observing history prior to joining S\*T\*A\*R, my strategies and preparation for observing, and what I liked the most during my first year of viewing. For this installment, I will describe some of objects that I enjoyed viewing the most, and I include some non-Messier objects that might not be as well known.

Before describing particular instances of objects, a few words are in order of my impressions of the different classes of objects. Out of the approximately 500 unique objects that

I viewed in 2004 (and missing just 5 Messier objects – damn!), galaxies impressed me more than any other object type. Although a vast majority of the galaxies I viewed were little more than a barely discernible central region of brightness with a faint fuzz surrounding it (using my 10” Orion Dob), the knowledge that I’m seeing light from 10 million light years away, 50 million light years away, sometimes even greater than 100 million light years away made such views awe-inspiring. From a viewing conditions perspective, it seemed that galaxies were the most sensitive to the sky’s transparency and amount of light pollution. Their views also seemed to benefit the most when viewed with averted vision.

Galaxies were my most numerous viewed object type, but open clusters were not far behind. For me, the most impressive attributes to view about an open cluster are its denseness of stars and the shapes that the stars appear to take. The brightness of its stars and sheer size of an open cluster also impress me. Although sky conditions do affect the quality of their view, they were definitely more impervious to sky condition imperfections than galaxies. Globular clusters, although less numerous, are probably more spectacular to me than open clusters. Planetary and diffuse nebulae bring up the rear, relatively speaking.

I am very glad that by the springtime I made sure to start viewing stars, mostly double / multiple star systems. I typically chose 2 or 3 per constellation as I was putting together my observing lists. I very much enjoy viewing a binary system that has a good, noticeable color contrast, or even single stars of unusual color. A few doubles show well when both of the stars are approximately the same magnitude, especially when they stand out from the rest of the star field. Oh yes, it’s also clutch to be able to split a close double. I’m not sure where stars rank on my list of favorite object types; they seem to have their own distinct charm.

Of course, DSOs aren’t the only food for my eyes. I can stay “focused” on a planet for quite a while, especially on those rare nights when seeing is good. I saw Uranus, Neptune, and Mercury for the first time this year, and views of Jupiter and Saturn were far better than I had seen before joining the club. I missed the August 2003 opposition of Mars and thus look forward to the next one, in 2005. I was also excited to catch 3 comets this year, with better views of Machholz still pending. Anyway, on to my “short” list of favorite objects. At the end, I summarize all of the non-Messier instances of these objects in a table with coordinates and notes.

## Stars

Stars are not as often discussed in our club as other DSOs, but I have seen a few beauties in 2004. Of course, almost everyone is familiar with the color contrast of Albireo (Beta Cygni) and the brilliance of the double-double (Epsilon Lyrae), and everyone tries to see the E and F stars of the

Trapezium (Theta-1 Orionis). 61 Cygni is a beautiful pair of orangish stars close in magnitude and easily split. At low power, they stand out well against a rich star field of bluish-white and white stars. HR 2764 in Canis Major is a relatively wide pair of mag 5 and 6 stars, one orange / yellow / golden and the other deep blue. Iota-1 Cancri is a naked eye star that splits easily at low power. It is a deep yellow (with maybe a touch of orange) and blue (or bluish-white) pair. Phi-2 Cancri is an equal magnitude pair of close white stars. They look like twins and pop out nicely against the background star field. Miram (Eta Persei) is a naked eye multi-star system where the two brightest stars, easily separated, are yellow-golden and deep blue. Phi Tauri is a naked eye star (depending on the conditions) and shows well as an easily split yellow / off-white and blue pair. Low power seems to provide the better color contrast. The AB pair of Theta Serpentis is fairly close in magnitude, moderately separated, and shows as bluish-white. Of note, they stand out quite well from the background star field. Finally, Hind’s Crimson Star (R Leporis) is a variable carbon star that varies from approximately mag 5.5 to mag 11.5. It’s supposed to be more red / crimson at lower magnitudes; it loses its deep color near maximum. It was a fairly deep red (crimson, I guess) when I saw it in November; it appeared to be near the middle of its magnitude range (not confirmed).

## Nebulae

These DSOs are probably my least favorite because they have generally been the faintest objects to view. I’ve been frustrated numerous times not seeing nebulosity where it is supposed to be, and often an OIII filter does not help (enough). I was originally disappointed in the view of the Crab Nebula (M 1) I had early this year from New Jersey, wondering how this made it as a Messier object. One look from Cherry Springs changed all that. A few of my favorite Messier nebulae include the Orion Nebula (M 42), by far the most fabulous nebula I have seen, the Lagoon Nebula (M 8) in Sagittarius, for which an OIII filter improved the view, and the Swan Nebula (M 17) in Sagittarius, maybe the only nebula where I could make out the shape associated with its name (using an OIII filter and averted vision). The non-Messier nebulas I liked were Hubble’s Variable Nebula (NGC 2261) in Monoceros, a compact nebula which reminded me of a comet in the way the nebula fanned out in tail-like fashion (a short tail); Thor’s Helmet (NGC 2359) in Canis Major, which looked like a sideways ‘V’ (is that the shape of Thor’s helmet?) and improved with an OIII filter; and the Veil Nebula (NGC 6960) in Cygnus, specifically the smaller, western segment by 52 Cygni, which also benefited from an OIII filter.

## Planetary Nebulae

I can’t seem to pin down what I like most about planetaries – unique colors, shapes and patterns of visibility, or the blinking nature of many of them. In any case, who isn’t in

awe of the unique and easy to discern shapes of the Ring Nebula (M 57) in Lyra and the Dumbbell Nebula (M 27) in Vulpecula. For non-Messier planetaries, the ones that stand out for me are the Blinking Planetary (NGC 6826) in Cygnus, the Blue Snowball (NGC 7662) in Andromeda, and the Crystal Ball (NGC 1514) in Taurus. The Blinking Planetary appears to me to blink “on and off” with more consistency than many other planetaries, when using averted and then direct vision. The Blue Snowball’s blue color is a standout in its star field; no need for an OIII filter (and the filter didn’t seem to improve the view). The Crystal Ball’s nebulous shell did remind me of a glass shell that was more prominent on one side, giving the look of light bouncing off of that side.

### **Globular Clusters**

I can’t say that I met a non-Messier globular cluster that impressed me thus far. So I’ll just provide a list of my favorite Messier globulars. By far, M 13 in Hercules and M 22 in Sagittarius are the standout globulars accessible from New Jersey. I give the nod to M 13, but I’d like to see M 22 from a more southerly location to put it on an equal footing with M 13. Trying to keep the rest of the list short is a chore. I’ll list my next six, in no particular order, most of which showed many more resolved stars using averted vision and took high magnification fairly well: M 15 in Pegasus, M 2 in Aquarius, M 92 in Hercules, M 55 in Sagittarius, M 30 in Capricornus, and M 5 in Serpens Caput.

### **Open Clusters**

I viewed lots of open clusters this year. There are so many good Messiers and non-Messiers, I don’t know which to keep off the list. I guess the open clusters I enjoy the most have a number of bright stars, are reasonably dense, and fairly large. These characteristics usually lead to naked eye visibility, so the Messiers on top of my list include the Beehive (M 44) in Cancer (my clear favorite), M 41 in Canis Major, and M 47 in Puppis. My second tier of Messier open clusters includes the Butterfly (M 6) in Scorpius (though I didn’t see a butterfly), the Wild Duck (M 11) in Scutum (didn’t see a duck), M 23 and M 25 in Sagittarius, M 37 in Auriga, and of course the Pleiades (M 45) in Taurus. The Double Cluster (NGC 869 and 884) in Perseus is an obvious non-Messier favorite. Other non-Messiers that I like are the Lobster / ET (NGC 457) in Cassiopeia (lobster and ET shapes were obvious to me), the Alpha Persei Moving Group (Melotte 20) in Perseus (bright and large), NGC 1528 in Perseus (fairly dense), the Christmas Tree (NGC 2264) in Monoceros (the tree worked for me), NGC 6940 in Vulpecula (many stars and dense in center), and NGC 752 in Andromeda (large, spread out, and reasonably bright).

### **Galaxies**

I have a difficult time describing what makes for an impressive-looking galaxy. I think more than any other

object class, my mind fills in characteristics that may not visually be in the eyepiece. Another way of saying this is that for me, beauty is in the eye of the beholder more with galaxies than other DSOs. Sheer light quantity and detail don’t hurt, but shape, orientation, and other criteria weigh in for me in ways that I cannot quantify. That said, it wouldn’t be surprising to state that most of the Messier galaxies have shown better than the non-Messier ones. I would probably have a larger list of favorite Messier galaxies, except that I probably haven’t seen many of them enough times (and under good sky conditions) to have firm opinions, opting to sweep new areas of sky moreso than revisiting previously viewed ones.

With those disclaimers, the few Messiers I would like to single out are the Andromeda Galaxy (M 31) for its sheer brilliance and size, the Whirlpool Galaxy (M 51) in Canes Venatici for its face-on spiral view and interaction with its companion galaxy (NGC 5195), the Sunflower Galaxy (M 63) in Canes Venatici for its shape / visibility pattern, M 106 in Canes Venatici for its semi-elongated look, M 82 in Ursa Major (my favorite Messier galaxy) for its edge-on look and extent, and the Pinwheel Galaxy (M 33) in Triangulum for its size. The view I had of the Whirlpool in Ernie Rossi’s 25” Obsession with binoviewers at his Catskill property was the most impressive of any DSO I have seen to date. It looked like a child had finger painted it onto the sky.

By far the most impressive non-Messier galaxy I’ve observed is the Sculptor Galaxy (NGC 253). Its nearly edge-on orientation, brightness, extent, and detail rival M 82 as my favorite galaxy. I would think this would be even more impressive looking when viewed from a vantage point further south. Averted vision naturally helps the view of the Sculptor Galaxy, but I found the task of employing averted vision difficult due to its size; I had the best luck in the first few seconds of viewing it, apparently before my eyes had focused in on it. Other non-Messiers I like include NGC 7331 in Pegasus, the Silver Needle (NGC 4244) in Canes Venatici, Stephan’s Quintet (Hickson 92) in Pegasus, and the Siamese Twins (NGC 4567 and 4568) in Virgo. In fact, I was impressed with the entire Coma-Virgo Supercluster area. I was very excited to barely make out 2 of the galaxies comprising Stephan’s Quintet while viewing at Cherry Springs, an observation not possible with my scope on a few occasions in New Jersey.

*Continued on page 8*

## Non-Messier Object Summary

Object Designation	Alternate Name / Des	Constellation	RA	Dec	Notes
<b>Stars</b>					
61 Cygni	HR 8086	Cygnus	21h06m54.6s	+38° 44'31"	Orangish pair of similar mag
HR 2764	HD 56577	Canis Major	07h16m36.8s	-23° 18'56"	Yellow/golden and deep blue pair
Iota-1 Cancri	48 Cancri	Cancer	08h46m40.0s	+28° 45'54"	Deep yellow and blue pair
Phi-2 Cancri	23 Cancri	Cancer	08h26m47.1s	+26° 56'08"	White pair of equal mag
Eta Persei	Miram	Perseus	02h50m41.8s	+55° 53'44"	Yellow/golden and deep blue pair
Phi Tauri	52 Tauri	Taurus	04h20m21.2s	+27° 21'03"	Yellow and blue pair
Theta Serpentis	63 Serpentis	Serpens Cauda	18h56m13.2s	+04° 12'13"	Bluish-white pair of similar mag
R Leporis	Hind's Crimson Star	Lepus	04h59m36.3s	-14° 48'23"	Crimson-colored variable
<b>Nebulae</b>					
NGC 2261	Hubble's Variable Nebula	Monoceros	06h39m12.0s	+08° 45'00"	Small, comet-like look
NGC 2359	Thor's Helmet	Canis Major	07h18m30.0s	-13° 14'00"	Sideways 'V', benefits from OIII filter
NGC 6960	Veil Nebula - Western Segment	Cygnus	20h45m42.0s	+30° 43'00"	Streaky, benefits from OIII filter
<b>Planetary Nebulae</b>					
NGC 6826	Blinking Planetary	Cygnus	19h44m48.2s	+50° 31'30"	Obvious blinking
NGC 7662	Blue Snowball	Andromeda	23h25m53.9s	+42° 32'06"	Standout blue color
NGC 1514	Crystal Ball	Taurus	04h09m17.0s	+30° 46'33"	Glass shell appearance
<b>Open Clusters</b>					
NGC 869 and 884	Double Cluster	Perseus	02h19m01.8s	+57° 08'47"	Dense and proximate to each other
NGC 457	Lobster / ET	Cassiopeia	01h19m03.5s	+58° 19'45"	Shape matches names
Melotte 20	Alpha Persei Moving Group	Perseus	03h22m01.6s	+48° 36'43"	Bright and large
NGC 1528	Melotte 23	Perseus	04h15m23.9s	+51° 14'29"	Dense
NGC 2264	Christmas Tree	Monoceros	06h41m03.2s	+09° 53'07"	Shape matches names
NGC 6940	Melotte 232	Vulpecula	20h34m35.7s	+28° 18'22"	Many stars, dense center
NGC 752	Melotte 12	Andromeda	01h57m46.7s	+37° 40'36"	Large, spread out, bright
<b>Galaxies</b>					
NGC 253	Sculptor Galaxy	Sculptor	00h47m33.1s	-25° 17'18"	Nearly edge-on, bright, long
NGC 7331	PGC 69327	Pegasus	22h37m04.3s	+34° 24'59"	Intermediate orientation, streaky
NGC 4244	Silver Needle	Canes Venatici	12h17m29.5s	+37° 48'27"	Edge-on, thin
Hickson 92	Stephan's Quintet	Pegasus	22h36m00.5s	+33° 57'57"	Viewed only at CSSP ('c' and 'e' galaxies only)
NGC 4567 and 4568	Siamese Twins	Virgo	12h36m34.4s	+11° 14'18"	Close pair but faint

What will 2005 hold for me with respect to my favorite DSO class? Besides checking out the more popular galaxies more frequently, I noticed that there are many galaxies in Ursa Major and Leo that I have yet to view that are readily observable with a 10" mirror. I'm sure I'll find more in Virgo and other constellations as well. A larger aperture scope sounds like a good means to this end. As for other object classes, I'd like to view nebulae under darker sky conditions in order to see more of them, and I'd like to put more DSO object locations into memory. I still have a few constellations at the New Jersey latitude that I have missed for the most part, such as Hydra, Sextans, Crater, and Corvus (partly thanks to the weather), plus a few really low on the horizon. Maybe I'll have an opportunity to view from further south this year. I have many years of this hobby ahead of me, so it will all come eventually.

## Messier Objects - January

By Greg Cantrell (reproduced from a prior edition)

M1 (NGC 1952) – Known as the Crab Nebula, this 8.1 magnitude supernova remnant in Taurus is a difficult binocular object, and requires a large aperture telescope to resolve some detail.

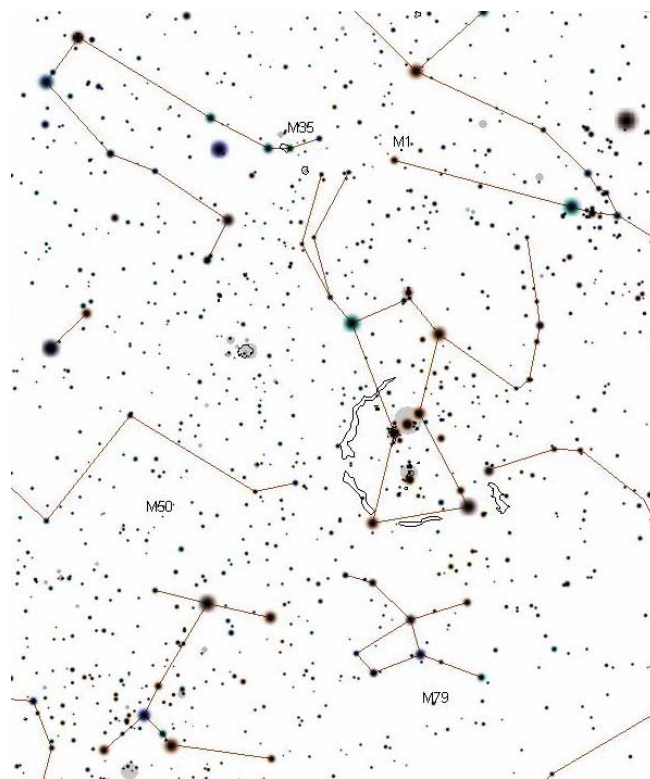
M35 (NGC 2168) – This wonderful open cluster, found in Gemini, is easily visible to the naked eye from a dark location. Binoculars reveal a line of fuzzy patches, while low power telescopes resolve a rich open cluster.

M45 (Mel 22) – Known since ancient times, the Pleiades, a 1.2 magnitude open cluster in Taurus, are easily visible to the naked eye under moderately light polluted skies. Best viewed through binoculars or a telescope at low power.

M50 (NGC 2323) – This 5.9 magnitude open cluster in Monoceros appears as a hazy patch in binoculars. Due to the richness of the surrounding area, this cluster can be challenging to locate telescopically.

M79 (NGC 1904) – A small, dim globular cluster in Lepus, this 8.4 magnitude object is a difficult binocular object and is best viewed telescopically.

## Moon Phases



## Are you a S\*T\*A\*R Member?

S\*T\*A\*R is a member of United Astronomy Clubs of New Jersey (UACNJ) and the International Dark Sky Association (IDA). Meetings are the first Thursday of each month, except July and August, at 8:00 PM at the King of Kings Lutheran Church, 250 Harmony Rd. in Middletown. Meeting generally consist of lectures and discussion by members or guest speakers on a variety of interesting astronomical topics.

Memberships: ( ) Individual...\$25  
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## In the Eyepiece

If you are not worn out by all of November's Messier objects, here is a list of more objects for this month. This is reproduced from [www.skyhound.com](http://www.skyhound.com) with the kind permission of its creator and author of SkyTools Greg Crinklaw.

Object(s)	Class	Con	RA	Dec	Mag
<a href="#">M35 &amp; NGC 2158</a>	Open Cluster	Gemini	06h08m51.9s	+24°20'28"	5.6
<a href="#">M 38</a>	Open Cluster	Auriga	05h28m39.4s	+35°50'24"	6.8
<a href="#">Sigma Ori</a>	Multiple Star	Orion	05h38m44.8s	-02°36'00"	3.8
<a href="#">M37</a>	Open Cluster	Auriga	05h52m22.3s	+32°32'40"	6.2
<a href="#">The Trapezium</a>	Multiple Star	Orion	05h35m16.5s	-05°23'23"	5.1
<a href="#">NGC 2017/HR 1944</a>	Multiple Star	Lepus	05h39m16.2s	-17°50'58"	6.4
<a href="#">Beta Mon</a>	Multiple Star	Monoceros	06h28m49.1s	-07°01'59"	3.8
<a href="#">NGC 2112</a>	Open Cluster	Orion	05h53m52.2s	+00°23'32"	9.1
<a href="#">IC 418</a>	Planetary Nebula	Lepus	05h27m28.2s	-12°41'50"	10.7
<a href="#">NGC 1931</a>	Open Cluster	Auriga	05h31m24.8s	+34°15'12"	10.1
<a href="#">IC 2149</a>	Planetary Nebula	Auriga	05h56m23.9s	+46°06'17"	11.2
<a href="#">NGC 1893 &amp; IC 410</a>	Open Cluster in Nebula	Auriga	05h22m41.1s	+33°23'49"	7.8
<a href="#">M 50</a>	Open Cluster	Monoceros	07h03m12.3s	-08°19'28"	7.2
<a href="#">Crab</a>	Diffuse Nebula	Taurus	05h34m30.0s	+22°01'00"	8.4
<a href="#">NGC 2022</a>	Planetary Nebula	Orion	05h42m06.2s	+09°05'10"	12.4
<a href="#">Hubble's Variable Nebula</a>	Diffuse Nebula	Monoceros	06h39m12.0s	+08°44'00"	--
<a href="#">H 3-75</a>	Planetary Nebula	Orion	05h40m44.8s	+12°21'16"	13.9
<a href="#">IC 421</a>	Galaxy	Orion	05h32m14.8s	-07°55'01"	12.3
<a href="#">NGC 1999</a>	Diffuse Nebula	Orion	05h36m24.0s	-06°43'00"	--
<a href="#">Focus on The Horsehead</a>	Diffuse/Dark Nebula	Orion	05h41m00.0s	-02°27'00"	--
<a href="#">Abell 12</a>	Planetary Nebula	Orion	06h02m21.4s	+09°39'07"	13.9
<a href="#">IC 443</a>	Diffuse Nebula	Gemini	06h17m48.0s	+22°49'00"	12.0
<a href="#">Focus on the Cone Nebula</a>	Open Cluster	Monoceros	06h41m03.2s	+09°53'07"	4.1
<a href="#">NGC 2242</a>	Planetary Nebula	Auriga	06h34m07.4s	+44°46'37"	15.2
<a href="#">K 2-2</a>	Planetary Nebula	Monoceros	06h52m28.4s	+09°58'17"	12.5

## January Celestial Events

Day	Date	Time (EST)	Event
Sat	1	00:35	Jupiter Rises
		04:37	Mars Rises
		05:42	Mercury Rises
		05:50	Venus Rises
		07:22	Sunrise
		16:46	Sunset
		17:45	Saturn Rises
		22:36	Moon Rise
Mon	3	07:00	Quadrantid meteors peak
		11:43	Moon Set
		12:46	Last Quarter Moon
Mon	10	05:00	Moon closest until 2008
		07:03	New Moon
		07:21	Sunrise
		07:54	Moon Rise
		17:03	Saturn Rises
Wed	12	00:01	Jupiter Rises
Thu	13	06:08	Venus Rises
		06:11	Mercury Rises
		07:00	Mercury 0.4 deg. S of Venus
		07:20	Sunrise
		18:00	Saturn at opposition
Mon	17	00:25	Moon Set
		01:57	First Quarter Moon
Wed	19	06:15	Venus Rises
		06:25	Mercury Rises
		07:05	Saturn Sets
		12:23	Moon Rise
		17:00	Moon 1.4 deg. S of Pleiades (M45)
		17:04	Sunset
		23:35	Jupiter Rises
Tue	25	04:24	Mars Rises
		05:32	Full Moon
		06:24	Venus Rises
		06:37	Mercury Rises
		06:40	Saturn Sets
		07:14	Sunrise
Mon	31	05:00	Jupiter 1.5 deg. N of Moon
		10:08	Moon Set