

 **Current**
Astronomy
RIVER BEND ASTRONOMY CLUB NEWSLETTER

JANUARY/FEBRUARY
2011



Club member Joe Lopinot won this Orion SkyQuest XX12i Truss Tube Intelliscope Dobsonian telescope by entering the “Gear in Your Car contest.”

Photo by Joe Lopinot. Background image of M35 courtesy NASA.

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River Bend Astronomy club serves astronomy enthusiasts of the American Bottom region, the Mississippi River bluffs and beyond, fostering observation, education, and a spirit of camaraderie.

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Affiliated with the Astronomical League, dedicated to fostering astronomical education, providing incentives for astronomical observation and research, and assisting communication among amateur astronomical societies. www.astroleague.org



Check out our online calendar on the NASA Night Sky Network, a nationwide coalition of amateur astronomy clubs bringing the science, technology and inspiration of NASA's missions to the general public.

Monthly Meetings

Saturday, January 8, 2011 • 7:00 PM
Saturday, February 12, 2011 • 7:00 PM
Saturday, March 5, 2011 • 7:00 PM

For meeting locations, please see our calendar at www.riverbendastro.org.

Looked Up Lately?

Join River Bend Astronomy Club

Want to learn more about astronomy? The members of River Bend Astronomy Club invite you to join. You won't need expensive tools or special skills - just a passion for observing the natural world.

- Meetings offer learning, peeks through great telescopes, and fun under the stars.
You will receive the club newsletter, Current Astronomy, packed with news and photos.
Get connected with our member-only online discussion group.
Borrow from the club's multimedia library.
Borrow from the club's selection of solar telescopes.
And that's not all! Through club membership you also join the Astronomical League, with its special programs and colorful quarterly newsletter The Reflector to enrich your hobby.
We meet monthly, observe regularly, email news and quips constantly, and generally have a good time. Won't you join us?

Name
Address
City State Zip
Phone
Email address
Where did you hear of our club?

How long have you been interested in astronomy?
Do you have optical equipment?
Are you afraid of the dark? Yes No (just kidding)
I am submitted my application for:
Adult Membership(s) Youth Membership(s)
\$20/year each \$15/year each
(18 yrs. and up) (17 yrs. and under)
I enclose a check for \$ made out to:
Mike Veith, Treasurer, RBAC
Signature
Date

Mail to: River Bend Astronomy Club
c/o Mike Veith, 1121 St. Louis St., Edwardsville, IL 62025.

Club Member Joe Lopinot Wins New 12" Orion Dobsonian Telescope

By Joe Lopinot

After first noticing the ad on the Orion website for their Gear in Your Car photo contest, I knew I had to give it my best "shot". I had purchased my 10" Intelliscope in February, and Mary and I acquired our Canon Rebel XSi in April, so I was suffering from no rookie illusions as to my chances of winning. When the phone rang at a little after five on a Friday evening with the news from Debbie and Andrea at Orion that I had actually won the contest I was, to say the least, floored.

My 10" Dob - her name is Bertha - had reintroduced me to a love of astronomy dating back to the department store refractor my father had purchased for me in the wake of the Apollo 11 landing. As an adult with a reawakened interest and a bit more disposable income, my plans this time include astrophotography. As I save my pennies for some proper gear I have been practicing from the tripod on the moon, sunsets, conjunctions, etc., and built a Scotch mount to experiment with longer exposures. I am, as Mary points out from time to time, obsessed.

And so I made a deal with her. I would stage three or four shots with my gear and let her choose which to submit. To quote Sir Richard from Indiana Jones and the Last Crusade, she chose wisely. The photos were taken with our XSi and Sigma 20mm lens after aligning the Jeep, the flagpole and Polaris, under the light of a waxing gibbous moon and the help of a couple of strategically placed Maglites. After setting the remote timer to snap an exposure every 20 seconds, I took 460 exposures (15 sec, f/2.2, ISO 200) over a two and one half hour period and combined them with the freeware Star Trails. I also used Photoshop Essentials to adjust brightness, contrast and sharpness. I was torn between this photo and a shot from my dark site near Carlyle Lake in south central

Illinois featuring a well-placed Orion above the vehicle but, as I said, Mary had the last word.



Joe's winning photo. Photo by Joe Lopinot.

I simply cannot thank the good people at Orion Telescopes and Binoculars enough for my beautiful 12" truss Dob - what a magnificent scope! The day after I received it I was lucky enough to have a crystal clear night and toured my fall / winter greatest hits. Jupiter was decidedly bigger, brighter and showing more detail than my beloved Bertha could muster and the Orion nebula with the 35mm Deep View eyepiece was simply stunning. I cannot wait to share the views at Carlyle with my friends in the River Bend Astronomy Club. As my astrophotography piggybank grows, I see your Atlas mount, 80mm CF apo and 8" imaging Newtonian in my future, but until then and beyond my new scope will keep me busy - thanks again!

What follows is Joe's happy announcement on the RBAC Yahoo! Group:

Greetings Fellow Club Members:

I have some really incredible news, I told a few of you the last time at Tamalco, but the official announcement is going out Sunday so I think I am OK to send the word out.

Believe it or not (still sinking in for me) yours truly won the grand prize in the Orion Telescopes "Gear In Your Car" contest. The idea was to show your vehicle with all your stuff loaded in it. I created a star trails image from my driveway, using the 3/4 moon to light up all my nicely arranged stuff (embellished a bit for dramatic style).



The Orion SkyQuest XX12i Truss Tube Intelliscope Dobsonian telescope. Joe Lopinot won this telescope from Orion Telescopes and Binoculars in November 2010. We're jealous, Joe! Photo courtesy Orion Telescopes & Binoculars.

Long and short of it is, I won a beautiful new 12" truss Dobsonian from Orion (a \$1,500 value)! They shipped it to me and I received it last Friday. They wanted a picture of me and Mary with the new scope. I included Mary because I actually staged four different shots (two from Tamalco) and let her pick which one to send in. I am still in a state of shock about this.

I got to take it out last Saturday, and it is an absolutely stunning telescope. I can't wait to bring it out to our meetings. The views through it are spectacular, noticeably brighter and larger than my 10".

My winning picture and the photo of Mary and I (see cover of this newsletter) with new the baby will be posted to the Orion Facebook page. It will also be posted to their website....they are sending me a link that I will send to the group.

Best of all, the pictures and a write up will be in their spring catalog...I believe it goes out in January. I have requested extra copies.....

It's Joe's 15 minutes of fame! **RBAC**

Solstice Lunar Eclipse Clouded Out over Midwest

By Bill Breeden

The last time a total Lunar eclipse occurred on the Winter Solstice was Dec. 21, 1638. It's too bad that the eclipse of Dec. 21, 2010 was totally clouded out for most of the United States.



Total Lunar eclipse of Dec. 21, 2010. Image courtesy NASA.

A Lunar eclipse occurs when the Moon passes through the Earth's shadow, and always happens at Full Moon. The red coloring is the result of all of Earth's sunrises and sunsets. The next Lunar eclipse visible from the US will be April 15, 2014. **RBAC**

Starry, Starry Night at Edwardsville Children's Museum on January 8, 2011

By Bill Breeden

We will meet at the Edwardsville Children's Museum for their annual *Starry, Starry Night* astronomy program on Saturday evening, January 8, 2011.

The public event begins at 6:30 pm, so if you would like to help with astronomy demonstrations, Night Sky Network tables, or a telescope set up, plan on arriving at 5:30 pm.



Starry, Starry Night

Saturday, Jan. 8th 6:30 - 8:30 pm

Join us under the stars to explore the night sky at the 10th annual *Starry, Starry Night*. The River Bend Astronomy Club will share their amazing telescopes and their knowledge of the night sky. There will be hot chocolate and space activities in the Museum.

Admission \$5 per person.

Members of the River Bend Astronomy club are invited to help out and share their knowledge of the night sky with kids and families visiting the museum.

The River Bend Astronomy Club is proud to help the Children's Museum with their astronomy programs. We have provided volunteers for Astronomy Day and *Starry, Starry Night* for 10 years now, and it continues to be a popular program. For the *Starry, Starry Night* program, we will set up several Night Sky Network kits at tables inside the museum. These activities will be available for the kids even in case of clouds or bad weather. If the sky is clear, we also set up telescopes in the baseball field in front of the museum. We will have a 4-day old moon, and Jupiter will be well-placed in the western sky. The Orion Nebula (M42) will be in the

southeastern sky, as well as the emission nebula M78 in Orion.

The Pleiades in Taurus (M45) will be high overhead by 8:00pm and make a wonderful low-power showpiece. Also known as the Seven Sisters, M45 looks fantastic in binoculars or even the finderscope on most telescopes.



The Pleiades (M45) in Taurus. Photo courtesy NASA.

The Double Cluster (NGC869 and NGC884) in Perseus will also be quite high in the sky and makes a great low power showpiece. A true field of view of 1° or more will show both clusters! If you have a smaller field, you can show one cluster at a time. Either way, this is a great object!



The Children's Museum is located at 722 Holyoake Road, Edwardsville, IL 62025. Phone 618-692-2094. Won't you join us? 

Find the Crab Nebula (M1) this Winter

By Bill Breeden

The first object on Charles Messier's list of deep-sky objects, the Crab Nebula (M1) can be found in the constellation Taurus. It is a supernova remnant, the only object of this type in the Messier catalog. It shines at magnitude 8.2, but it is a relatively large object so its light is spread out over 7 arcminutes of sky. This makes it much more difficult to see than its magnitude would lead you to believe.

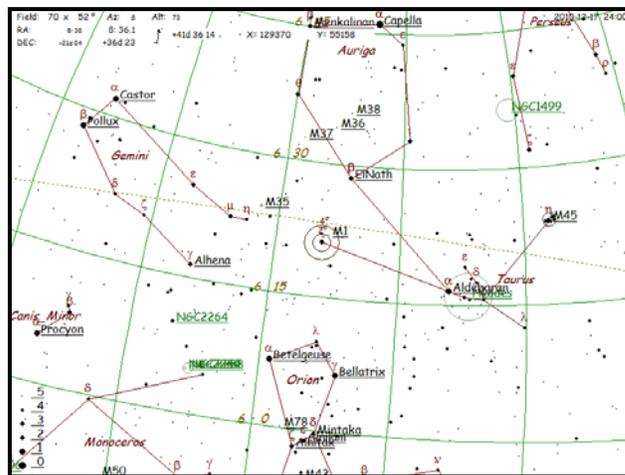
A telescope with a 10" or larger aperture will help you see this object better, but you can see it in a smaller instrument if you take your time and know what to expect. Don't look for something nearly as bright as the Orion Nebula (M42) or the Lagoon Nebula (M8). It will help if you use a low-power eyepiece so that you have plenty of empty sky around the object. This will give you more contrast so that M1 "pops" out easier.



The Crab Nebula (M1) is an interesting and challenging telescope object. Photo by Gary Kronk.

I was able to find M1 in my 8" telescope using a wide-field low power eyepiece. M1 appeared as a dim gray oval "smudge" with very undefined edges. It was much fainter than I expected, but once I found it and took some time to observe it, I was able to see more detail.

M1's general location in the sky can be found by forming a triangle with the star Betelgeuse in Orion and Aldebaran in Taurus (see finder chart). There is a 4.7 magnitude star about 5° to M1's southwest. It can be a difficult object to find if you are starhopping because it is quite a distance from anything obvious, and its low surface brightness doesn't help either!



Finder chart for The Crab Nebula (M1). Image from HNSKY planetary software by Han Kleijn.

M1 sits all by itself in a region of the sky surrounded by spectacular constellations and deep-sky objects. Magnificent Orion is to its south, Gemini to the east, Auriga to the north, and Taurus to the west. Your telescope will certainly be pointed in this general direction, so try to find M1 if you would like a bit of a challenge.

If you are new to the Messier objects, don't make the common mistake of starting your journey at the "beginning" with M1. This is one of the more difficult objects, but certainly easier than the spring-time galaxies of Virgo and Coma Berenices! This time of year it would certainly be easier to begin with nearby M35 in Gemini or M42 in Orion before trying to find M1. But once you do find it, take the time to observe it for a while. Your efforts will be rewarded! **RBAC**



Astronomers Stumble onto Huge Space Molecules

By Trudy E. Bell and Tony Phillips

Deep in interstellar space, in a the swirling gaseous envelope of a planetary nebula, hosts of carbon atoms have joined together to form large three-dimensional molecules of a special type previously seen only on Earth. Astronomers discovered them almost accidentally using NASA's Spitzer Space Telescope.

"They are the largest molecules known in space," declared Jan Cami of the University of Western Ontario, lead author of a paper with three colleagues published in Science online on July 22, 2010, and in print on September 3.

Not only are the molecules big: they are of a special class of carbon molecules known as "fullerenes" because their structure resembles the geodesic domes popularized by architect Buckminster Fuller. Spitzer found evidence of two types of fullerenes. The smaller type, nicknamed the "buckyball," is chemical formula C_{60} , made of 60 carbon atoms joined in a series of hexagons and pentagons to form a spherical closed cage exactly like a black-and-white soccer ball. Spitzer also found a larger fullerene, chemical formula C_{70} , consisting of 70 carbon atoms in an elongated closed cage more resembling an oval rugby ball.

Neither type of fullerene is rigid; instead, their carbon atoms vibrate in and out, rather like the surface of a large soap bubble changes shape as it floats through the air. "Those vibrations correspond to wavelengths of infrared light emitted or absorbed—and that infrared emission is what Spitzer recorded," Cami explained.

Although fullerenes have been sought in space for the last 25 years, ever since they were first identified in the laboratory, the astronomers practically stumbled into the discovery. Co-author Jeronimo Bernard-Salas of Cornell University, an expert in gas and dust in planetary nebulae, was doing routine research with Spitzer's infrared

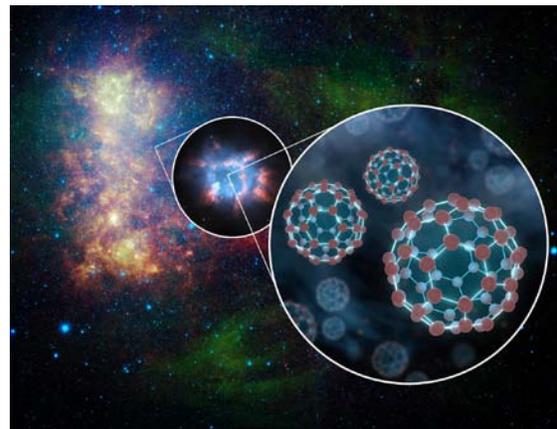
observations of planetary nebulae with its spectroscopy instrument. When he studied the spectrum (infrared signature) of a dim planetary nebula called Tc 1 in the southern-hemisphere constellation of Ara, he noticed several clear peaks he had not seen before in the spectra of other planetary nebulae.

"When he came to me," recounted Cami, an astrophysicist who specializes in molecular chemistry, "I immediately and intuitively knew it I was looking at buckyballs in space. I've never been that excited!" The authors confirmed his hunch by carefully comparing the Tc 1 spectrum to laboratory experiments described in the literature.

"This discovery shows that it is possible—even easy—for complex carbonaceous molecules to form spontaneously in space," Cami said. "Now that we know fullerenes are out there, we can figure out their roles in the physics and chemistry of deep space. Who knows what other complex chemical compounds exist—maybe even some relevant to the formation of life in the universe!"

Stay tuned!

Learn more about this discovery at <http://www.spitzer.caltech.edu>. For kids, there are lots of beautiful Spitzer images to match up in the Spitzer Concentration game at <http://spaceplace.nasa.gov/en/kids/spitzer/concentration>.

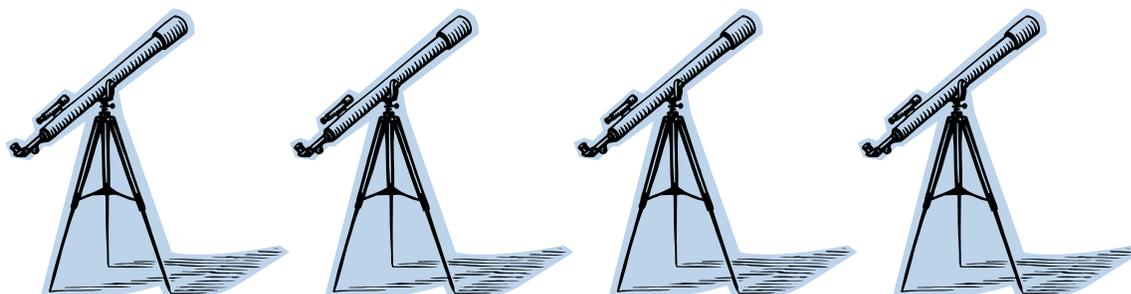


Superimposed on a Spitzer infrared photo of the Small Magellanic Cloud is an artist's illustration depicting a magnified view of a planetary nebula and an even further magnified view of buckyballs, which consist of 60 carbon atoms arranged like soccer balls.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

RBAC's Monthly Observing Lists

These lists include brighter deep-sky objects that transit near 10:00 PM each month.



January Observing List

Prepared by Bill Breedon

Double Stars

- _____ 1 Camelopardalis SAO 24672 Const. CAM Type DS RA 04 32.0 Decl. +53° 55' Mag. 5.7 6.8
- _____ 118 Tauri SAO 77201 Const. TAU Type DS RA 05 29.3 Decl. +25° 09' Mag. 5.8 6.6
- _____ 55 Eridani SAO 131442 Const. ERI Type DS RA 04 43.6 Decl. -08° 48' Mag. 6.7 6.8
- _____ Beta Orionis SAO 131907 Rigel Const. ORI Type DS RA 05 14.5 Decl. -08° 12' Mag. 0.1 6.8
- _____ Chi Tauri SAO 76573 Const. TAU Type DS RA 04 22.6 Decl. +25° 38' Mag. 5.5 7.6
- _____ Delta Orionis SAO 132220 Mintaka Const. ORI Type DS RA 05 32.0 Decl. -00° 18' Mag. 2.2 6.3
- _____ Gamma Leporis SAO 170759 - Const. LEO Type DS RA 05 44.5 Decl. -22° 27' Mag. 3.7 6.3
- _____ Iota Orionis SAO 132323 Nair al Saif Const. ORI Type DS RA 05 35.4 Decl. -05° 55' Mag. 2.8 6.9
- _____ Lambda Orionis SAO 112921 Meissa Const. ORI Type DS RA 05 35.1 Decl. +09° 56' Mag. 3.6 5.5
- _____ Sigma Orionis SAO 132406 Const. ORI Type DS RA 05 38.7 Decl. -02° 36' Mag. 4.0 7.5 6.5
- _____ Struve 747 SAO 132298 - Const. Type DS RA 05 35.0 Decl. -06° 00' Mag. 4.8 5.7
- _____ Theta 1 Orionis Trapezium Const. ORI Type DS RA 05 35.3 Decl. -05° 23' Mag. 6.7 7.9 5.1 6.7
- _____ Theta 2 Orionis SAO 132322 Const. ORI Type DS RA 05 35.4 Decl. -05° 25' Mag. 5.2 6.5
- _____ Theta Aurigae SAO 58636 - Const. AUR Type DS RA 05 59.7 Decl. +37° 13' Mag. 2.6 7.1
- _____ Zeta Orionis SAO 132444 Alnitak Const. ORI Type DS RA 05 40.8 Decl. -01° 57' Mag. 1.9 4.0 9.9

Messier Objects

- _____ M1 NGC1952 Crab Nebula Const. TAU Type EN RA 05 34.5 Decl. +22 01 Mag. 8.2
- _____ M36 NGC1960 Const. AUR Type OC RA 05 36.1 Decl. +34 08 Mag. 6.3
- _____ M37 NGC2099 Const. AUR Type OC RA 05 52.4 Decl. +32 33 Mag. 6.2
- _____ M38 NGC1922 Const. AUR Type OC RA 05 28.4 Decl. +35 50 Mag. 7.4
- _____ M42 NGC1976 Orion Nebula Const. ORI Type EN RA 05 35.4 Decl. -05 27 Mag. 4
- _____ M43 NGC1982 Orion Nebula Const. ORI Type EN RA 05 35.6 Decl. -05 16 Mag. 9.1
- _____ M78 NGC2068 Const. ORI Type EN RA 05 46.7 Decl. +00 03 Mag. 10.3
- _____ M79 NGC1904 Const. LEP Type GC RA 05 24.5 Decl. -24 33 Mag. 8.4

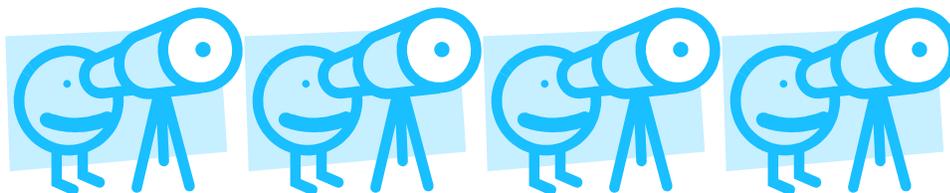
Caldwell Objects

- _____ C031 IC405 Flaming Star Nebula Const. AUR Type BN RA 05 16 12.00 Decl. +34 16 00.0 Mag. 6
- _____ C041 Mel 25 Hyades Const. TAU Type OC RA 04 27 00.00 Decl. +16 00 00.0 Mag. 1
- _____ C073 NGC1851 Const. COL Type GC RA 05 14 06.00 Decl. -40 03 00.0 Mag. 7.3

Royal Astronomical Society of Canada Objects

- _____ RASC19 NGC1491 Const. PER Type EN RA 04 03.4 Decl. +51 19 Mag. -
- _____ RASC20 NGC1501 Const. CAM Type PN RA 04 07.0 Decl. +60 55 Mag. 12
- _____ RASC22 NGC1535 Const. ERI Type PN RA 04 14.2 Decl. -12 44 Mag. 10.4
- _____ RASC23 NGC1514 Const. TAU Type PN RA 04 09.2 Decl. +30 47 Mag. 10.8
- _____ RASC24 NGC1931 Const. AUR Type E/RN RA 05 31.4 Decl. +34 15 Mag.

- _____ RASC25 NGC1788 Const. ORI Type RN RA 05 06.9 Decl. -03 21 Mag.
- _____ RASC26 NGC1973+ Const. ORI Type E/RN RA 05 35.1 Decl. -04 44 Mag.
- _____ RASC27 NGC2022 Const. ORI Type PN RA 05 42.1 Decl. +09 05 Mag. 12.4
- _____ RASC28 NGC2024 Const. ORI Type EN RA 05 40.7 Decl. -02 27 Mag.



February Observing List

Prepared by Bill Breeden

Double Stars

- _____ 12 Lyncis SAO 25939 - Const. LYN Type DS RA 06 46.2 Decl. +59° 27' Mag. 5.4 7.3
- _____ 19 Lyncis SAO 26311 Const. LYN Type DS RA 07 22.9 Decl. +55° 17' Mag. 5.6 6.5
- _____ Alpha Geminorum SAO 60198 Castor Const. GEM Type DS RA 07 34.6 Decl. +31° 53' Mag. 1.9 2.9
- _____ Beta Monocerotis SAO 133316 Const. MON Type DS RA 06 28.8 Decl. -07° 02' Mag. 4.7 5.2
- _____ Delta Geminorum SAO 79294 Wasat Const. GEM Type DS RA 07 20.1 Decl. +21° 59' Mag. 3.5 8.2
- _____ Epsilon Canis Majoris SAO 172676 Adhara Const. CMA Type DS RA 06 58.6 Decl. -28° 58' Mag. 1.5 7.4
- _____ Epsilon Monocerotis SAO 113810 Const. MON Type DS RA 06 23.8 Decl. +04° 36' Mag. 4.5 6.5
- _____ Kappa Puppis SAO 174198 Const. PUP Type DS RA 07 38.8 Decl. -26° 48' Mag. 4.5 4.7

Messier Objects

- _____ M35 NGC2168 Const. GEM Type OC RA 06 08.9 Decl. +24 20 Mag. 5.3
- _____ M41 NGC2287 Const. CMA Type OC RA 06 46.0 Decl. -20 44 Mag. 4.6
- _____ M46 NGC2437 Const. PUP Type OC RA 07 41.8 Decl. -14 49 Mag. 6
- _____ M47 NGC2422 Const. PUP Type OC RA 07 36.6 Decl. -14 30 Mag. 4.5
- _____ M50 NGC2323 Const. MON Type OC RA 07 03.2 Decl. -08 20 Mag. 6.3
- _____ M93 NGC2447 Const. PUP Type OC RA 07 44.6 Decl. -23 52 Mag. 6

Caldwell Objects

- _____ C007 NGC2403 Const. CAM Type SG RA 07 36 54.00 Decl. +65 36 00.0 Mag. 8.9
- _____ C025 NGC2419 Intergalactic Tramp Const. LYN Type GC RA 07 38 06.00 Decl. +38 53 00.0 Mag. 10.4
- _____ C039 NGC2392 Eskimo Nebula Const. GEM Type PN RA 07 29 12.00 Decl. +20 55 00.0 Mag. 9.9
- _____ C046 NGC2261 Hubble's Variable Neb. Const. MON Type BN RA 06 39 12.00 Decl. +08 44 00.0 Mag. 10
- _____ C049 NGC2237-9 Rosette Nebula Const. MON Type BN RA 06 32 18.00 Decl. +05 03 00.0 Mag.
- _____ C050 NGC2244 Const. MON Type OC RA 06 32 24.00 Decl. +04 52 00.0 Mag. 4.8
- _____ C058 NGC2360 Const. CMA Type OC RA 07 17 48.00 Decl. -15 37 00.0 Mag. 7.2
- _____ C064 NGC2362 Tau Cma Cluster Const. CMA Type OC RA 07 18 48.00 Decl. -24 57 00.0 Mag. 4.1
- _____ C071 NGC2477 Const. PUP Type OC RA 07 52 18.00 Decl. -38 33 00.0 Mag. 5.8
- _____ C096 NGC2516 Const. CAR Type OC RA 07 58 18.00 Decl. -60 52 00.0 Mag. 3.8

Royal Astronomical Society of Canada Objects

- _____ RASC29 NGC2194 Const. ORI Type OC RA 06 13.8 Decl. +12 48 Mag. 8.5
- _____ RASC30 NGC2371/2 Const. GEM Type PN RA 07 25.6 Decl. +29 29 Mag. 13
- _____ RASC31 NGC2392 Eskimo Nebula Const. GEM Type PN RA 07 29.2 Decl. +20 55 Mag. 8.3
- _____ RASC32 NGC2237+ Const. MON Type EN RA 06 32.3 Decl. +05 03 Mag.
- _____ RASC33 NGC2261 Hubble's Variable Nebula Const. MON Type E/RN RA 06 39.2 Decl. +08 44 Mag. var
- _____ RASC34 NGC2359 Const. CMA Type EN RA 07 18.6 Decl. -13 12 Mag.
- _____ RASC35 NGC2440 Const. PUP Type PN RA 07 41.9 Decl. -18 13 Mag. 10.3
- _____ RASC37 NGC2403 Const. CAM Type G-Sc RA 07 36.9 Decl. +65 36 Mag. 8.4