Current Astronomy
RIVER BEND ASTRONOMY CLUB NEWSLETTER

JULY/AUGUST
2010

Make the perfect star party flashlight using an ordinary Maglite™!
Photo by Bill Breeden

INSIDE THIS ISSUE

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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Contacts

MAIL River Bend Astronomy Club
Bill Breeden
5340 Chippewa Street
St. Louis, MO 63109
WEB www.riverbendastro.org
EMAIL wmrbreeden@yahoo.com

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

Affiliated with 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, July 10, 2010 • 7:00 PM
***at* Dietz Observatory**
Saturday, August 7 • 7:00 PM
***at* Lopinot Observatory**
Saturday, September 4, 2010 • 7:00 PM
***at* Menz Observatory**

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) $20/year each (18 yrs. and up)
___Youth Membership(s) $15/year each (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.

The Star Party Maglite™

By Bill Breeden

I have searched endlessly for the "perfect" star party flashlight. You wouldn't think a simple, dim red flashlight would be that hard to come by. Unless of course, you are an amateur astronomer and you spend of lot of time in the dark under a pristine sky full of stars. Then, you understand exactly what I mean.

Some of the problems I encountered while shopping for the perfect star party flashlight:

- Too bright!
- Too dim!
- Red filter does not produce True Red in the dark
- Red/White/Green/Blue switch – may accidently shine the wrong color at a dark site
- Expensive! (Coleman LED flashlights cost $30 or more)
- No lanyard or easy way to carry it
- No way to connect a lanyard or other carrying device
- Obscure or Difficult-to-Remove batteries
- Plastic parts to break off or crack
- Too heavy or too big
- Too light or too small (easy to lose, like those little red keychain fob lights)
- No "cool factor" (an old flashlight covered with rubber bands and paper?)

We have all been told to simply take any old flashlight and cover it with paper from an old paper bag or red cellophane. Okay, that is great advice for a beginner, but how long do you want to be seen at star parties with a beat up old D-Cell flashlight, covered with old cellophane, held together with rubber bands or scotch tape? Another option is to simply buy one from an astronomy catalog or website. Back in 2004 when I first started out in this wonderful hobby, I chose the latter. I ordered the ubiquitous Red Beam II™ LED flashlight from Orion Telescopes and Binoculars. Actually I ordered two of them, and they have worked fine for me for six years. These are indeed great little star party flashlights, and if I had been completely satisfied with them, this article would end here. But you know there is more to this story, right?

Orion's RedBeam II™ LED star party flashlight.
Photo courtesy of Orion Telescopes and Binoculars.

This little workhorse gets *almost* everything right, so I used it faithfully for six years. I would still tell anyone that needs a star party flashlight without any fuss to just order one. They only cost around $20, and they emit truly dim red light, so you won't get yelled at when you use it at a dark sky site.

As I attended more and more star parties at dark sky sites, I found myself with a bad case of red flashlight envy. This is very much like the familiar afflictions of aperture envy and eyepiece envy, only it involves the envy of your neighbor's better, flashier, more durable, more convenient, and easier-to-use red star party flashlight.

So, what are the attributes that set apart different types of dim red star party flashlights? Simply put, they are: Brightness, True Redness, Convenience, Durability, Batteries, and the Cool Factor. I will elaborate. (Bet you didn't know flashlights could be so involved.)

Brightness
You need a star party flashlight that is just the right brightness. If it is too bright, you may be

politely escorted out of the dark sky field. Or more possibly, you will just annoy everyone around you. If it's too dim, you find yourself squinting to read your star charts, even though your eyes are fully dark adapted and dilated to the size of silver dollars.

True Redness

We have all known someone at a star party with a "dim red flashlight" that is outputting light that is more of a pale pink than red. Chances are that they have one of those camping flashlights with the little red plastic filter. The light is not True Red! That is probably not obvious in the store or at home, but it becomes painfully obvious at a dark sky site. If you cover an ordinary flashlight (not too bright) with Rubylith, you will get a True Red light.

You want a flashlight to give you True Red light, not a pale pink. And you want it bright enough to use, while still dim enough to preserve your dark-adapted vision.
Photo by Bill Breeden.

Convenience

Where do you put your dim red flashlight? You can put it in your pocket, around your neck on a lanyard, wear it on your head like a miner, or just set it down on your table. I have tried all four, and nothing compares with the convenience of a lanyard. It's always there, ready for your star charts or to make an adjustment to your telescope. It can even help you find the outhouse in the woods. The folks wearing them on their heads like miners come in a close second for convenience, but I have always found that when I engage in conversation with the miners, I get zapped in the face by their light when they look at me to talk. Even dim red lights should never be shined into someone's face at a dark sky site. I find the lanyard solves this problem.

Durability

I want a flashlight that can take getting used a lot, dropped, banged around, and used for years. One that can get soaked in the dew of summer as well as get dropped on the hard cold ground in winter.

Batteries

How about a flashlight that uses easy to find batteries, and one that doesn't require a physics degree to change them? The Orion RedBeam II™ does use one ordinary 9-volt battery, but getting to it means taking the whole flashlight apart. Not an easy task in the dark! Always have more than one dim red flashlight, in case you need to use one to work on the other one!

Cool Factor

Lastly, I want a star party flashlight that just looks cool, and feels great to hold and use. And it would really be cool if they came in different colors.

I found that the **Mini Maglite™ 2-Cell AA Krypton** meets all of the above conditions, with some minor modifications on my part. If you want to make the perfect star party flashlight, you will need these items:

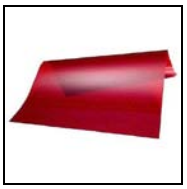
These are the items you will need. Photo by Bill Breeden.

1. Mini Maglite™ 2-Cell AA Krypton – be sure to get the one with the little eyelet at the bottom for connecting a lanyard! This Maglite™ is just under six inches long. (The LED version is just over six inches long and may not include an eyelet. It is also too bright at a dark sky site. You don't want that one!) Look at it in the package before you buy it! They cost around $10.
2. Lanyard – I bought one at a sporting goods store. Ask for the lanyards for coaches' whistles – they are perfect and come in different colors too. They cost about $2.

3. Small snap hooks. The eyelet in the Mini Maglite™ is TOO SMALL for the whistle lanyard hook, so you will have to thread a smaller snap hook through the flashlight eyelet and connect your whistle lanyard through that. You can get these at WalMart or in the sewing and kid's jewelry section of most department stores or art stores. As a substitute, a small ordinary key ring will work, as long as it fits through the Maglite™ eyelet. But if you find a bag of small key rings at the store, chances are it will also include some small snap hooks. These cost just a couple of dollars for a whole bag.

A small snap hook, a key ring, and a piece of Rubylith. Note that you will use either the small snap hook or the key ring (not both), because the eyelet in the Maglite™ is too small for the whistle lanyard's hook. Photo by Bill Breeden.

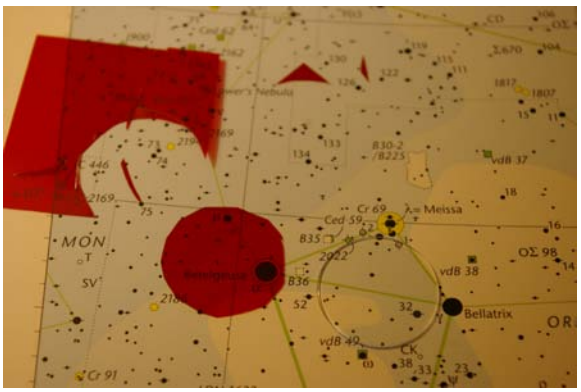
4. Rubylith – accept no substitutes here! This makes the flashlight True Red. Go to an art supply store and buy a sheet of Rubylith. A two-square-foot sheet costs about $8.



A sheet of Rubylith. Photo courtesy of OPT.

Now that you have all the parts, make your star party Maglite™. (Photos by Bill Breeden.)

1. Unscrew the very top bezel (where is says MAGLITE) and carefully remove the clear plastic shield.



2. Use the clear plastic shield as a template to cut out a piece of Rubylith. The Rubylith can be a little bigger, but not smaller!

3. Insert the clear plastic shield back into the upper bezel, then place the Rubylith inside the bezel. It's okay if it doesn't lay perfectly flat.

4. Re-attach the bezel. From the outside, the clear plastic shield should cover the piece of Rubylith.

5. Connect a small snap hook (or small key ring) to the flashlight's eyelet.

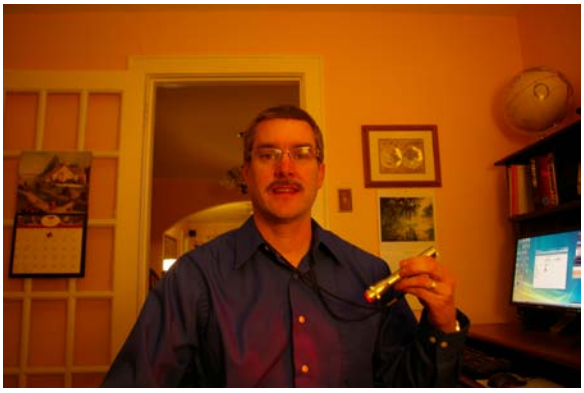
6. Connect the whistle lanyard to the small snap hook.

7. Insert batteries by unscrewing the bottom portion of the flashlight, then replace.

8. Turn the flashlight on and off by turning the top knurled portion of the flashlight head about 1/8 of a turn. And yes, this can be done with one hand in the dark! Don't turn it round and round – the head comes off for bulb replacement and candle mode.

9. Congratulations! You have made the star party Maglite™!

Two of my star party Maglites™. Photo by Bill Breeden.



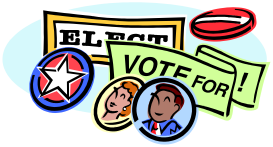
This is me with my new Mini Maglite™ Star Party flashlight. Photo by Bill Breeden.

This little flashlight does everything I need at a star party – and no annoying white light switch to accidentally turn on! It shines in True Red, is just the right brightness to be useful without being too bright, conveniently hangs around my neck, is totally durable, and did I mention the

Cool Factor? What could be cooler than a Maglite™? They are instantly recognizable, and I always get the response: "Gee, I didn't know Maglite™ made astronomy flashlights!" Well they do – with just a little help! RBAC

Election Results are In!

By Bill Breeden



First of all, congratulations to all the new and continuing officers of River Bend Astronomy Club. I am honored & humbled to serve as President of this fine and active club. This club really does make a difference in the community, and my gratitude extends to the club founders that had the vision to make RBAC what it is.

The newly elected officers and leaders are:

President: Bill Breeden
Vice President: Jeff Menz
Treasurer: Mike Veith
Newsletter Editor: Bill Breeden
League Correspondent (ALCor): Rich Dietz
Secretary: Mary Hebert
Outreach Coordinator: Terry Menz
Librarian: Rita Breeden

Rita is anxious to catalog the RBAC library and make it available to members. If you have any astronomy materials you would like to add to the library, please let Rita know!

Our club has always enjoyed an informal atmosphere, friendship and camaraderie among members. We have few formal "rules," which makes this club unique and a lot of fun for everyone.

RBAC has always been a fine club, and I look forward to serving it in my new capacity. If there is anything you need or if you have any questions, please let me know. As always, your articles and photos are welcomed and encouraged for this newletter! RBAC

Take a Trip to the Lagoon Nebula this Summer

By Bill Breeden

Sagittarius the Archer creeps above the southern horizon on short summer nights. Observers at our latitude of about 38° North never see Sagittarius rise very high, but during July and August it will get high enough to enjoy some the of sky's most spectacular deep-sky objects.

The Lagoon Nebula (M8) is one such object. It's located about 5,000 light-years away and covers a stunning 1.5° of sky. Aim your telescope at the topmost star of the "teapot" asterism, then move about 5° in the direction of Antares in Scorpius.

M8, the Lagoon Nebula. Photo credit www.wwu.edu, Western Washington University Planetarium.

Since this object is so large, use a low power eyepiece. Although the object is over a degree wide, the brightest part is about half that size. If you use an eyepiece giving you about 0.75° true field of view, you will have a spectacular view of the Lagoon Nebula.

Now move your telescope about 2.5° above M8 and enjoy a view of M20, the Trifid Nebula. See M8 and M20 in the August list of objects. RBAC

Great Evening at St. Jacob Park on June 19

By Bill Breeden

The club had not met at St. Jacob Park for quite some time, and we were hoping for mild weather and clear skies. After a big storm blew over just before our meeting, the clouds parted and we had mostly clear skies for the observing session.

New club leadership was anxious and ready to get the meeting started and get down to business. For this meeting, it was back to basics: Planning meeting dates and locations, and deciding whether St. Jacob Park would make a good regular meeting spot. After some discussion, the group decided that St. Jacob Park would be our meeting place in the event that we do not have a volunteer meeting host. *Furthermore, when we must meet at the park, it would be primarily for astronomy outreach and observing. In the event of bad weather, the meeting will be cancelled.* So, we will not depend on St. Jacob Park as a place to conduct meeting business. Of course, if we meet there on a nice night, we can conduct club business.

Several members have offered to host meetings, so we can rotate meeting places so as not to place the responsibility of hosting meetings on one member family. I think this will work out well. Ours has always been a flexible club, so we will give this a try for a while and see how it works out.

After the meeting under Pavilion #3 at St. Jacob Park, the remaining storm clouds moved out (yay!) and members set up their telescopes for some observing. First up was the First Quarter Moon, then Venus, Saturn, and Mars. After the Solar System objects, it was time to try some faint fuzzies. I pointed my LX-90 to some pretty double stars, while others pointed to some familiar Messier objects: M13, M57, M5, and M51.

What a great night! We finished up about 11:30PM and packed up our telescopes. I can't wait for the next meeting and observing! **RBAC**

Former President Gary Kronk (left) and new President Bill Breeden having a very presidential discussion. Photo by Rita Breeden.

Members in red shirts discuss future RBAC meeting dates and venues. Photo by Rita Breeden.

Joe Lopinot takes a look at Venus through Bill's LX-90. Photo by Bill Breeden.

Gary Eaton mounting a dew shield on his C925 SCT. Photo by Bill Breeden.

Jeff Menz displays his eyepiece case loaded with TeleVue Ethos eyepieces (sigh). Photo by Bill Breeden.

Mike Veith anxiously awaits a night of observing. Note the clear sky! Photo by Bill Breeden.

Rich Dietz aiming his Meade DS-2114 at the First Quarter Moon. Photo by Bill Breeden.

Bill Breeden and his LX-90. The sky was clearing nicely after the storms! Photo by Rita Breeden.

Mike Veith setting up his ETX Mak-Cass. Photo by Bill Breeden.

Ancient Supernova Riddle, Solved

By Dr. Tony Phillips

Australopithecus squinted at the blue African sky. He had never seen a star in broad daylight before, but he could see one today. Was it dangerous? He stared for a long time, puzzled, but nothing happened, and after a while he strode across the savanna unconcerned.

Millions of years later, we know better.

That star was a supernova, one of many that exploded in our corner of the Milky Way around the Pliocene era of pre-humans. Australopithecus left no records; we know the explosions happened because their debris is still around. The solar system and everything else within about 300 light-years is surrounded by supernova exhaust—a haze of million-degree gas that permeates all of local space.

Supernovas are dangerous things, and when one appears in the daytime sky, it is cause for alarm. How did Earth survive? Modern astronomers believe the blasts were too far away (albeit not by much) to zap our planet with lethal amounts of radiation. Also, the Sun's magnetic field has done a good job holding the hot gas at bay. In other words, we lucked out.

The debris from those old explosions has the compelling power of a train wreck; astronomers have trouble tearing their eyes away. Over the years, they've thoroughly surveyed the wreckage and therein found a mystery—clouds of hydrogen and helium apparently too fragile to have survived the blasts. One of them, whimsically called "the Local Fluff," is on the doorstep of the solar system.

"The observed temperature and density of the Fluff do not provide enough pressure to resist the crushing action of the hot supernova gas around it," says astronomer Merav Opher of George Mason University.

"It makes us wonder, how can such a cloud exist?"

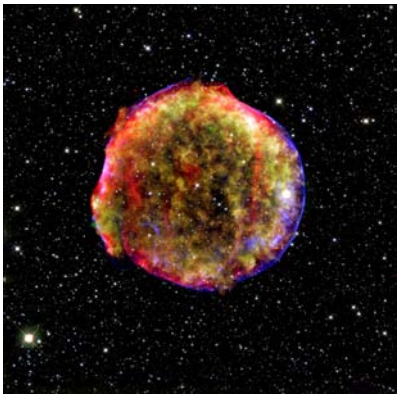
NASA's Voyager spacecraft may have found the answer. NASA's two Voyager probes have been racing out of the solar system for more than 30 years. They are now beyond the orbit of Pluto and on the verge of entering interstellar space. "The Voyagers are not actually inside the Local Fluff," explains Opher. "But they are getting close and can sense what the cloud is like as they approach it."
And the answer is …

"Magnetism," says Opher. "Voyager data show that the Fluff is strongly magnetized with a field strength between 4 and 5 microgauss. This magnetic field can provide the pressure required to resist destruction."

If fluffy clouds of hydrogen can survive a supernova blast, maybe it's not so surprising that we did, too. "Indeed, this is helping us understand how supernovas interact with their environment—and how destructive the blasts actually are," says Opher.

Maybe Australopithecus was on to something after all.

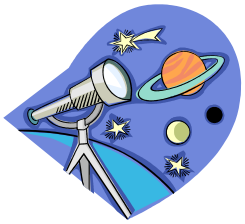
Opher's original research describing Voyager's discovery of the magnetic field in the Local Fluff may be found in Nature, 462, 1036-1038 (24 December 2009). The Space Place has a new Amazing Fact page about the Voyagers' Golden Records, with sample images and sounds of Earth. Just in case one of the Voyager's ever meets up with ET, we will want to introduce ourselves. Visit http://spaceplace.nasa.gov/en/kids/voyager.



Left-over cloud from the Tycho supernova, witnessed by Tycho Brahe and other astronomers over 400 years ago. This image combines infrared light captured by the Spitzer Space Telescope with x-rays captured by the Chandra X-ray Observatory, plus visible light from the Calar Also Observatory in Spain.

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

Looked Up Lately?



Observing is what we are about, so here are deep-sky observing lists for July and August for objects that transit around 10pm. Your observing sessions will be more fun if you are prepared with an observing plan. Prepare a list of your own, or print these and bring 'em to our next meeting/observing session.

July Observing List
Prepared by Bill Breeden

Double Stars
_____ 16 / 17 Draconis SAO 30012 Const. DRA Type DS RA 16 36.2 Decl. +52° 55' Mag. 5.4 6.4 5.5
_____ 36 Ophiuchi SAO 185199 - Const. OPH Type DS RA 17 15.3 Decl. -26° 36' Mag. 5.1 5.1
_____ Alpha Herculis SAO 102680 Rasalgethi Const. HER Type DS RA 17 14.6 Decl. +14° 23' Mag. 3.5 5.4
_____ Beta Scorpii SAO 159682 Graffias Const. SCO Type DS RA 16 05.4 Decl. -19° 48' Mag. 2.6 4.9
_____ Delta Herculis SAO 84951 Sarin Const. HER Type DS RA 17 15.0 Decl. +24° 50' Mag. 3.1 8.2
_____ Kappa Herculis SAO 101951 Const. HER Type DS RA 16 08.1 Decl. +17° 03' Mag. 5.3 6.5
_____ Mu Draconis SAO 30239 - Const. DRA Type DS RA 17 05.3 Decl. +54° 28' Mag. 5.7 5.7
_____ Nu Draconis SAO 30447 Kuma Const. DRA Type DS RA 17 32.2 Decl. +55° 11' Mag. 4.9 4.9
_____ Nu Scorpii SAO 159763 Const. SCO Type DS RA 16 12.0 Decl. -19° 28' Mag. 4.3 6.4
_____ Omicron Ophiuchi SAO 122387 - Const. OPH Type DS RA 17 18.0 Decl. -24° 17' Mag. 5.4 6.9
_____ Psi Draconis SAO 8890 - Const. DRA Type DS RA 17 41.9 Decl. +72° 09' Mag. 4.9 6.1
_____ Rho Herculis SAO 66000 Const. HER Type DS RA 17 23.7 Decl. +37° 09' Mag. 4.6 5.6
_____ Sigma Coronae Borealis SAO 65165 Const. COB Type DS RA 16 14.7 Decl. +33° 52' Mag. 5.6 6.6
_____ Struve 1999 SAO 159670 - Const. Type DS RA 16 04.4 Decl. -11° 27' Mag. 7.4 8.1
_____ Xi Scorpii SAO 159665 - Const. SCO Type DS RA 16 04.4 Decl. -11° 22' Mag. 4.8 7.3

Messier Objects
_____ M4 NGC6121 Const. SCO Type GC RA 16 23.6 Decl. -26 32 Mag. 6.4
_____ M6 NGC6405 Const. SCO Type OC RA 17 40.1 Decl. -32 13 Mag. 5.3
_____ M7 NGC6475 Const. SCO Type OC RA 17 53.9 Decl. -34 49 Mag. 4.1
_____ M9 NGC6333 Const. OPH Type GC RA 17 19.2 Decl. -18 31 Mag. 7.3
_____ M10 NGC6254 Const. OPH Type GC RA 16 57.1 Decl. -04 06 Mag. 6.7
_____ M12 NGC6218 Const. OPH Type GC RA 16 47.2 Decl. -01 57 Mag. 6.6
_____ M13 NGC6205 Great Hercules Cluster Const. HER Type GC RA 16 41.7 Decl. +36 28 Mag. 5.7
_____ M14 NGC6402 Const. OPH Type GC RA 17 37.6 Decl. -03 15 Mag. 7.7
_____ M19 NGC6273 Const. OPH Type GC RA 17 02.6 Decl. -26 16 Mag. 6.6
_____ M23 NGC6494 Const. SGR Type OC RA 17 56.8 Decl. -19 01 Mag. 6.9
_____ M62 NGC6266 Const. OPH Type GC RA 17 01.2 Decl. -30 07 Mag. 6.6
_____ M80 NGC6093 Const. SCO Type GC RA 16 17.0 Decl. -22 59 Mag. 7.7
_____ M92 NGC6341 Const. HER Type GC RA 17 17.1 Decl. +43 08 Mag. 6.5
_____ M107 NGC6171 Const. OPH Type GC RA 16 32.5 Decl. -13 03 Mag. 9.2

Caldwell Objects
_____ C006 NGC6543 Cat's Eye Nebula Const. DRA Type PN RA 17 58 36.00 Decl. +66 38 00.0 Mag. 8.8
_____ C069 NGC6302 Bug Nebula Const. SCO Type PN RA 17 13 42.00 Decl. -37 06 00.0 Mag. 12.8
_____ C075 NGC6124 Const. SCO Type OC RA 16 25 36.00 Decl. -40 40 00.0 Mag. 5.8
_____ C076 NGC6231 Const. SCO Type OC RA 16 54 00.00 Decl. -41 48 00.0 Mag. 2.6
_____ C081 NGC6352 Const. ARA Type GC RA 17 25 30.00 Decl. -48 25 00.0 Mag. 8.1
_____ C082 NGC6193 Const. ARA Type OC RA 16 41 18.00 Decl. -48 46 00.0 Mag. 5.2
_____ C086 NGC6397 Const. ARA Type GC RA 17 40 42.00 Decl. -53 40 00.0 Mag. 5.6
_____ C089 NGC6067 S Norma Cluster Const. NOR Type OC RA 16 18 54.00 Decl. -57 54 00.0 Mag. 5.4

_____ C095 NGC6025 Const. TRA Type OC RA 16 03 42.00 Decl. -60 30 00.0 Mag. 5.1
_____ C107 NGC6101 Const. APS Type GC RA 16 25 48.00 Decl. -72 12 00.0 Mag. 9.3
Royal Astronomical Society of Canada Objects
_____ RASC88 NGC6503 Const. DRA Type G-Sb RA 17 49.4 Decl. +70 09 Mag. 10.2
_____ RASC89 NGC6543 Cat's Eye Nebula Const. DRA Type PN RA 17 58.6 Decl. +66 38 Mag. 8.8
_____ RASC90 NGC6210 Const. HER Type PN RA 16 44.5 Decl. +23 49 Mag. 9.3
_____ RASC91 NGC6369 Const. OPH Type PN RA 17 29.3 Decl. -23 46 Mag. 10.4
_____ RASC102 NGC6445 Const. SGR Type PN RA 17 49.2 Decl. -20 01 Mag. 11.8

August Observing List
Prepared by Bill Breeden

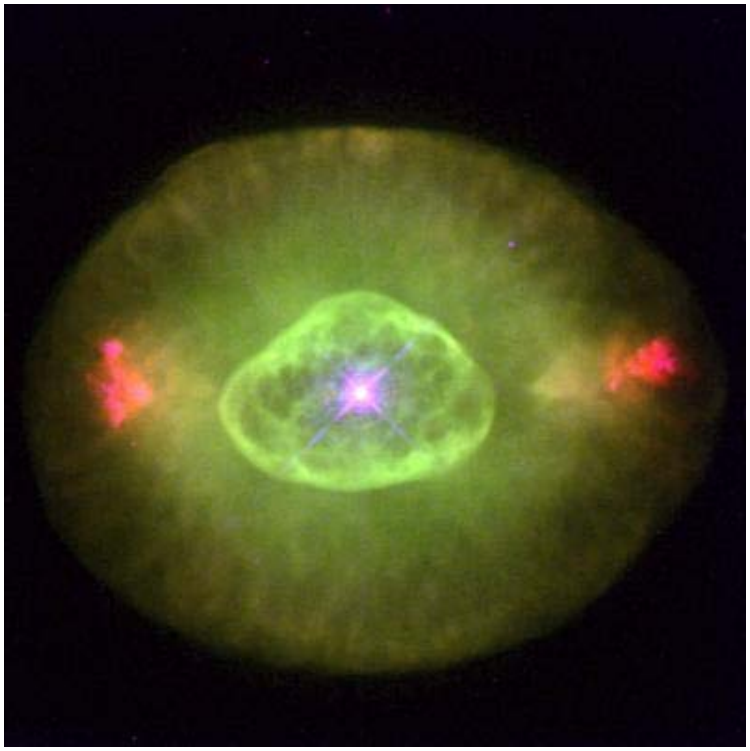
Double Stars
_____ 40 / 41 Draconis SAO 8994 Const. DRA Type DS RA 18 00.2 Decl. +80° 00' Mag. 5.7 6.1
_____ 57 Aquilae SAO 143898 - Const. AQL Type DS RA 19 54.6 Decl. -08° 14' Mag. 5.8 6.5
_____ 70 Ophiuchi SAO 123107 Const. OPH Type DS RA 18 05.5 Decl. +02° 30' Mag. 4.2 6.0
_____ 95 Herculis SAO 85647 Const. HER Type DS RA 18 01.5 Decl. +21° 36' Mag. 5.0 5.1
_____ Beta Cygni SAO 87301 Albireo Const. CYG Type DS RA 19 30.7 Decl. +27° 58' Mag. 3.1 5.1
_____ Beta Lyrae SAO 67451 Sheliak Const. LYR Type DS RA 18 50.1 Decl. +33° 22' Mag. 3.4 8.6
_____ Epsilon Lyrae SAO 67310 Double Double Const. LYR Type DS RA 18 44.3 Decl. +39° 40' Mag. 5.0 6.1
5.2 5.5
_____ Otto Struve 525 SAO 67566 Const. Type DS RA 18 54.9 Decl. +33° 58' Mag. 6.0 7.7
_____ Struve 2404 SAO 104170 - Const. Type DS RA 18 50.8 Decl. +10° 59' Mag. 6.9 8.1
_____ Theta Serpentis SAO 124068 Alya Const. SER Type DS RA 18 56.2 Decl. +04° 12' Mag. 4.5 5.4
_____ Zeta Lyrae SAO 67321 Const. LYR Type DS RA 18 44.8 Decl. +37° 36' Mag. 4.3 5.9
Messier Objects
_____ M8 NGC6523 Lagoon Nebula Const. SGR Type EN RA 18 03.8 Decl. -24 23 Mag. 6
_____ M11 NGC6705 Wild Duck Cluster Const. SCT Type OC RA 18 51.1 Decl. -06 16 Mag. 6.3
_____ M16 NGC6611 Eagle Nebula Const. SER Type OC RA 18 18.8 Decl. -13 47 Mag. 6.4
_____ M17 NGC6618 Swan Nebula Const. SGR Type EN RA 18 20.8 Decl. -16 11 Mag. 7.5
_____ M18 NGC6613 Const. SGR Type OC RA 18 19.9 Decl. -17 08 Mag. 7.5
_____ M20 NGC6514 Trifid Nebula Const. SGR Type EN RA 18 02.6 Decl. -23 02 Mag. 9
_____ M21 NGC6531 Const. SGR Type OC RA 18 04.6 Decl. -22 30 Mag. 6.5
_____ M22 NGC6656 Const. SGR Type GC RA 18 36.4 Decl. -23 54 Mag. 5.9
_____ M24 NGC>6603 Sagittarius Star Cloud Const. SGR Type RA 18 16.9 Decl. -18 29 Mag. 4.6
_____ M25 IC4725 Const. SGR Type OC RA 18 31.6 Decl. -19 15 Mag. 6.5
_____ M26 NGC6694 Const. SCT Type OC RA 18 45.2 Decl. -09 24 Mag. 9.3
_____ M27 NGC6853 Dumbbell Nebula Const. VUL Type PN RA 19 59.6 Decl. +22 43 Mag. 7.4
_____ M28 NGC6626 Const. SGR Type GC RA 18 24.5 Decl. -24 52 Mag. 7.3
_____ M54 NGC6715 Const. SGR Type GC RA 18 55.1 Decl. -30 29 Mag. 8
_____ M55 NGC6809 Const. SGR Type GC RA 19 40.0 Decl. -30 58 Mag. 5
_____ M56 NGC6779 Const. LYR Type GC RA 19 16.6 Decl. +30 11 Mag. 8.2
_____ M57 NGC6720 Ring Nebula Const. LYR Type PN RA 18 53.6 Decl. +33 02 Mag. 8.8
_____ M69 NGC6637 Const. SGR Type GC RA 18 31.4 Decl. -32 21 Mag. 8.9
_____ M70 NGC6681 Const. SGR Type GC RA 18 43.2 Decl. -32 18 Mag. 9.6
_____ M71 NGC6838 Const. SGE Type GC RA 19 53.8 Decl. +18 47 Mag. 9

Caldwell Objects

_____ C015 NGC6826 Blinking Planetary Const. CYG Type PN RA 19 44 48.00 Decl. +50 31 00.0 Mag. 9.8
_____ C057 NGC6822 Barnard's Galaxy Const. SGR Type IG RA 19 44 54.00 Decl. -14 48 00.0 Mag. 9.3
_____ C068 NGC6729 R CrA Nebula Const. CRA Type BN RA 19 01 54.00 Decl. -36 57 00.0 Mag. 9.7
_____ C078 NGC6541 Const. CRA Type GC RA 18 08 00.00 Decl. -43 42 00.0 Mag. 6.6
_____ C093 NGC6752 Const. PAV Type GC RA 19 10 54.00 Decl. -59 59 00.0 Mag. 5.4
_____ C101 NGC6744 Const. PAV Type SG RA 19 09 48.00 Decl. -63 51 00.0 Mag. 9

Royal Astronomical Society of Canada Objects

_____ RASC92 NGC6572 Const. OPH Type PN RA 18 12.1 Decl. +06 51 Mag. 9
_____ RASC93 NGC6633 Const. OPH Type OC RA 18 27.7 Decl. +06 34 Mag. 4.6
_____ RASC94 NGC6712 Const. SCT Type GC RA 18 53.1 Decl. -08 42 Mag. 8.2
_____ RASC95 NGC6781 Const. AQL Type PN RA 19 18.4 Decl. +06 33 Mag. 11.8
_____ RASC96 NGC6819 Const. CYG Type OC RA 19 41.3 Decl. +40 11 Mag. 7.3
_____ RASC97 NGC6826 Const. CYG Type PN RA 19 44.8 Decl. +50 31 Mag. 9.8
_____ RASC103 NGC6520 Const. SGR Type OC RA 18 03.4 Decl. -27 54 Mag. 8.1
_____ RASC104 NGC6818 Const. SGR Type PN RA 19 44.0 Decl. -14 09 Mag. 9.9
_____ RASC105 NGC6802 Const. VUL Type OC RA 19 30.6 Decl. +20 16 Mag. 8.8



NGC6826 (Caldwell 15), the Blinking Planetary in Cygnus.

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