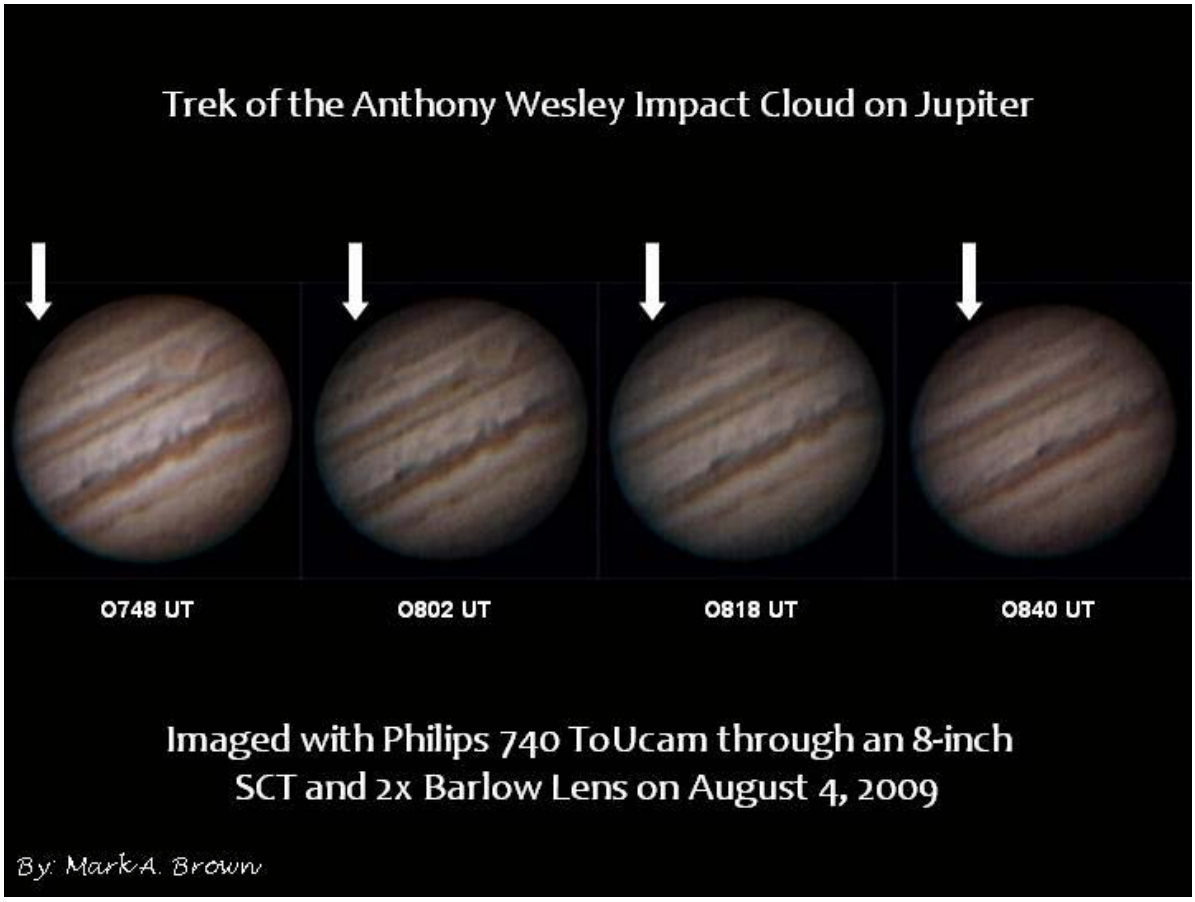
Current Astronomy
RIVER BEND ASTRONOMY CLUB NEWSLETTER
NOVEMBER/DECEMBER
2009



Anthony Wesley Impact Cloud on Jupiter
Photo by Mark A. Brown

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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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.

Current Astronomy

EDITOR	Bill Breeden
EDITOR EMERITUS & GRAPHIC DESIGN	Eric Young

Monthly Meetings

Saturday, November 21, 2009 • 7:00 PM
Saturday, December 12, 2009 • 7:00 PM
Saturday, January 9, 2010 • 7:00 PM
***at* Menz Observatory**
13721 Kayser Rd, Highland, IL 62249

Looked Up Lately?

Join River Bend Astronomy Club

Want to learn more about astronomy? The members of RiverBend 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 Gary Kronk, 132 Jessica Drive, St. Jacob, IL 62281.
Email: fomalhautnights@yahoo.com

Great Skies Over Edwardsville!

By Bill Breeden

Beautiful, clear skies graced the astronomy event at the Edwardsville Children's Museum on Saturday, October 24, 2009. After what seemed like weeks of gray skies, cold temperatures, rain, fog, and wind, this Saturday brought a welcome sunny sky, mild winds and 60 degree temperatures. Members of our astronomy club brought their telescopes, NASA outreach kits, and enthusiasm to the museum to share their knowledge of space and the night sky during daylight hours. Although the Sun and Moon were the only celestial targets "up" during the day for telescope and binocular observation, Terry Menz and several high school students set up kits from the NASA Night Sky Network to demonstrate space science to eager children.

The "back yard" of the Children's Museum. Visitors can be seen at the Night Sky Network tables in the distance. Photo by Bill Breeden.

But it wasn't only the kids who enjoyed the Night Sky Network kits and the student-teachers demonstrating them: Many adults, myself included, meandered over to the tables to do some space learning. I learned many things, like how astronomers use the wobble of a faraway star to determine the size of an orbiting planet. I also learned the shadow-play of Sun, Moon, and Earth during the changing phases of the Moon and eclipses.

Rich Dietz and his 6" Celestron refractor on an EQ mount. Photo by Bill Breeden.

I set up my 8 inch Meade LX-90 SCT and attached my white light solar filter. I inserted a 32mm eyepiece with a red filter and took a look at the Sun. Holy Sunspots, Batman!! A small but interesting cluster of sunspots appeared near the center of the Sun's disk. Several kids and their parents stopped by to take a look. "Wow! That looks like the Sun!" said one young man. I told him that I had a red filter attached to the eyepiece to give it a reddish (orange) appearance. "Why?" he asked. "Because it looks cool," I responded. "Actually, it does have some value by adding contrast," I added.

Jeff Menz set up his 10 inch Meade SCT with a white light solar filter. He used a yellow eyepiece filter, which gave the sun a bright, happy familiar yellow color. The added aperture gave the sunspot cluster more detail, and Jeff cranked up the power.

It was a great day for astronomy outreach at the Edwardsville Children's Museum. We are planning a nighttime event in January. See more photos from this fun event on the next page! RBAC

Bill Breeden and his 8" LX-90 SCT with solar filter. Photo by Rich Dietz.

Donnie Reagan adjusts his 25x100 binoculars with 2 safe solar filters to get a good look at the Sun. Photo by Bill Breeden.

Jeff Menz and his 10" SCT with solar filter. Photo by Bill Breeden.

Rich Dietz describes the view of the Sun to his daughter. Photo by Bill Breeden.

Bruce Kryfka takes a look at the Sun in hydrogen-alpha (Hα) through one of the club's PST's. Photo by Bill Breeden.

Until the Moon rose, Rich Dietz had his 6" Celestron refractor aimed at the autumn leaves of this beautiful tree. Photo by Bill Breeden.

All About the NGC

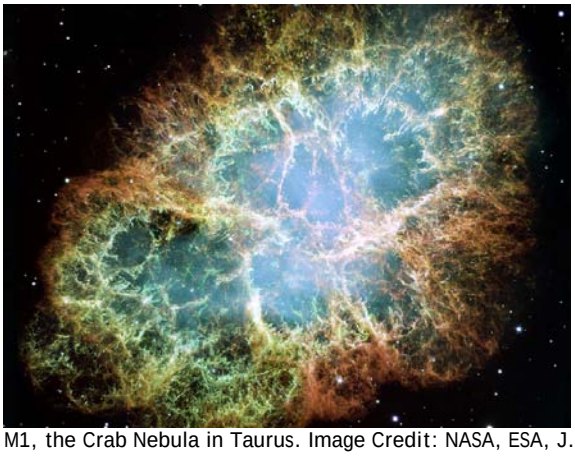
By Bill Breeden

Take a look at any good star chart, and you will see a myriad of strange letters and numbers next to all those dots on the page. Most amateur astronomers become very familiar with all of these labels as they progress in the hobby of stargazing or astrophotography. But what about the rest of us? You should not let all those letters and numbers give you a brain cramp. When I became serious about stargazing in 2004, I bought my first "real" star atlas, *The Cambridge Star Atlas* by Wil Tirion. I was hooked! I had always had a fascination with terrestrial maps anyway: I found that I could travel great distances (if only in my mind) just by studying and reading maps.

The same is true with star charts. The sky is a big place! Many new stargazers do not immediately grasp the immenseness of the sky at night, until they try to aim a telescope at something. Many times, it is at that precise moment that the scale of the sky becomes apparent. Trying to find something up there through the narrow view of even a low-powered telescope is frustrating without a good understanding of the sky and where things are up there.

I have been asked many times how to read a star chart, and more specifically, how I could "possibly understand" all the markings and designations on a star chart. Let me explain it to you the way I would explain it to someone that has just asked me that very question.

People tend to think of the sky as a moving jumble of dots, with only obvious patterns such as the Big Dipper and Orion's belt recognizable. That couldn't be further from the truth! The sky is mostly unchanging. Yes, it's true! And if the sky is mostly unchanging, it can be mapped and learned! As an example, look at a map of your city. Once you learn it, you will know how to get around your city for the rest of your life. The same is true for the sky! I like to take the "city map" analogy further and think of the brightest stars as big cities, constellations as countries, and dimmer stars as smaller towns. Just as with a road map, you can find your way around the sky by starting in one place and mapping out a route to your destination.



M1, the Crab Nebula in Taurus. Image Credit: NASA, ESA, J. Hester, A. Loll (ASU); Acknowledgement: Davide De Martin (Skyfactory).

On cloudy nights, I would spend entire evenings studying my star charts. I would map routes from easy-to-find bright stars to fainter objects, looking forward to the next clear night when I could actually try it with my telescope. If you have purchased a fancy computerized telescope that can find objects, be aware that knowing your way around the sky will still prove to be an invaluable skill. There is no greater pleasure than being outside at night and pointing out an object's location by rote, especially in front of a few amazed friends. "How do you know that?" they may ask. The same way you know what towns are west of here: You just know.

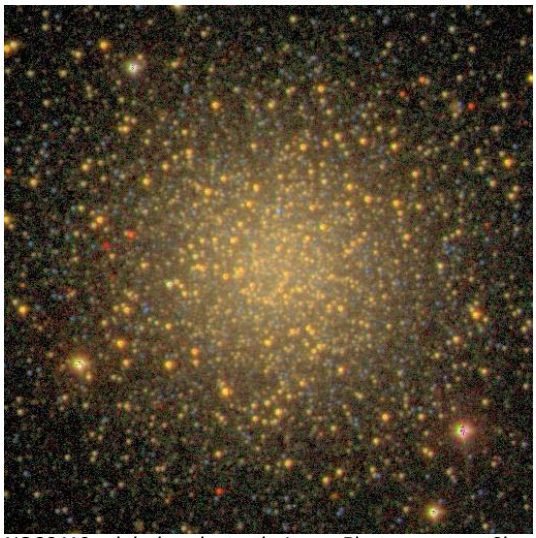
Now, what about those letters and numbers on your star chart? The sky is a big place, and in order to map it all out, many professional astronomers in history have put great effort into cataloging and numbering objects in the sky.

The most famous astronomer to map objects in the sky was Charles Messier. Messier was an 18th century French comet hunter, but it is not his comets that he is most famous for. To keep

future stargazers from getting confused, he began listing objects that looked like comets but weren't, so that they could be avoided. These 110 objects are listed on star charts with numbers from M1 to M110. So, if you see M42 on your star chart, this was Charles Messier's 42nd catalog entry. Simple, eh?

In addition to the well-known Messier list, by far the next most popular catalog is the NGC (New General Catalogue) list of deep-sky objects. Unlike Charles Messier's 18th century list of comet-like objects, the NGC's purpose was to map the entire sky in a systematic way. This list was compiled in the late 19th century, so of course we have discovered many more objects. But for the time period, the purpose of the NGC list was indeed to map the whole sky.

The NGC list contains 7,840 objects, and it is the most represented list on most star charts to this day. For that reason, most star charts show NGC objects with the NGC prefix omitted; only the number is listed. So if you see an object with the label *2419* beside it, the object's designation is actually NGC2419.



NGC2419, globular cluster in Lynx. Photo courtesy Sloan Digital Sky Survey.

Many objects on the NGC list can be observed by amateur stargazers with modest equipment. If your star chart shows an NGC object, chances are you will be able to see it with your telescope. Only the most comprehensive star charts, consisting of many *hundreds* of pages, will show all 7,840 NGC objects. If you have such a star chart, I envy you! However, you will need quite a telescope to see the fainter objects on the list.

NGC869 and NGC884, the Double Cluster in Perseus. Photo by Gary Kronk.

If you would like to try observing some of the brighter deep-sky objects on the NGC list, check out the observing list at the end of this newsletter. Happy stargazing! **RBAC**

Meeting Locations Update!

By Bill Breeden

Please note that the next three meetings of the River Bend Astronomy Club will be held at Menz Observatory in Highland. The address is 13721 Kayser Road, Highland, IL 62249. Please watch the online Yahoo! group for driving directions, or contact a club member.

The Menz's will host the meetings on November 21 (this was changed from the original Nov. 14 date), December 12, and January 9.

Locations for meetings after January will be announced in the newsletter and posted on our website (www.riverbendastro.org). **RBAC**

NASA Space Place

Staring at Lightning

There's something mesmerizing about watching a thunderstorm. You stare at the dark, dramatic clouds waiting for split-second bursts of brilliant light — intricate bolts of lightning spidering across the sky. Look away at the wrong time and (FLASH!) you miss it.
Lightning is much more than just a beautiful spectacle, though. It's a window into the heart of the storm, and it could even provide clues about climate change.earth_lightningThe

Strong vertical motions within a storm cloud help generate the electricity that powers lightning. These updrafts are caused when warm, moist air rises. Because warmth and lightning are inextricably connected, tracking long-term changes in lightning frequency could reveal the progress of climate change.

It's one of many reasons why scientists want to keep an unwavering eye on lightning. The best way to do that? With a satellite 35,800 km overhead.

At that altitude, satellites orbit at just the right speed to remain over one spot on the Earth's surface while the planet rotates around its axis — a "geostationary" orbit. NASA and NOAA scientists are working on an advanced lightning sensor called the Geostationary Lightning Mapper (GLM) that will fly onboard the next generation geostationary operational environmental satellite, called GOES-R, slated to launch around 2015.

"GLM will give us a constant, eye-in-the-sky view of lightning over a wide portion of the Earth," says Steven Goodman, NOAA chief scientist for GOES-R at NASA's Goddard Space Flight Center. Once GLM sensors are flying on GOES-R and its sister GOES-S, that view will extend 18,000 km from New Zealand, east across the Pacific Ocean, across the Americas, and to Africa's western coast.

With this hemisphere-scale view, scientists will gather an unprecedented amount of data on how lightning varies from place to place, year to year, and even decade to decade. Existing lightning sensors are either on the ground — which limits their geographic range — or on satellites that orbit much closer to Earth. These satellites circle the Earth every 90 minutes or so, quickly passing over any one area, which can leave some awkward gaps in the data.

Goodman explains: "Low-Earth orbit satellites observe a location such as Florida for only a minute at a time. Many of these storms occur in the late afternoon, and if the satellite's not overhead at that time, you're going to miss it."

GLM, on the other hand, won't miss a thing. Indeed, in just two weeks of observations, GLM is expected gather more data than NASA's two low-Earth orbiting research sensors did in 10+ years.

The Geostationary Lightning Mapper (GLM) on the next generation of GOES satellites will detect the very rapid and transient bursts of light produced by lightning at near-infrared wavelengths. This image was taken from the International Space Station and shows the Aurora Australis and lightning.

The new data will have many uses beyond understanding climate change. For example, wherever lightning flashes are abundant, scientists can warn aircraft pilots of strong turbulence. The data may also offer new insights into the evolution of storms and prompt improvements in severe weather forecasting. Staring at … (FLASH!) Did you miss another one? The time has come for GLM.

Want to know how to build a weather satellite? Check the "how to" booklet at scijinks.gov/weather/technology/build_satellite. RBAC

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

Call for Articles!

By Bill Breeden

Remember, *Current Astronomy* is the newsletter of *your* astronomy club. Help me liven it up by sending me your articles, photos, and ideas. Anything astronomy-related is welcome. Tell everyone about your last observing session, your new telescope, your new eyepiece, etc. Write up a review of a piece of astronomy hardware, or tell us about your last stargazing trip. E-mail your articles and photos to Bill Breeden (editor), at fomalhautnights@yahoo.com. RBAC

Highland Silver Lake Astronomy Event a Success!

By Jeff Menz and Rich Dietz

The City of Highland had their Silver Lake Night Hike on Friday, September 18, 2009. We were asked to supply telescopes and our knowledge of the night sky. The event began at 6pm at the Highland Silver Lake and ran until around 10pm.

Well, for everyone who was unable to attend I wanted you all to know that it was a very productive night! We had over 140+ visitors at the end of their 4.5 mile hike stop to rest and look through our telescopes!
The skies were partly cloudy, but our friend Jupiter astounded all as he pierced through the clouds! Towards the end of the night the skies cleared slightly more and Mike shared a double star with guests!

I really enjoyed all the kids looking through the scope and saying wow! Hey even some of the Moms and Dads were impressed! There is something very cool about showing someone the night sky through a telescope for the first time! RBAC

A child takes a look through Jeff Menz's SCT. Photo by Rich Dietz.

Terry Menz runs the Night Sky Network tables. Photo by Rich Dietz.

Observing at Highland Silver Lake. Photo by Rich Dietz.

Looked Up Lately?

Observing is what we are about, so here are deep-sky observing lists for November and December.

These lists include objects that transit around 10pm during November and December. 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.

November Observing List

Prepared by Bill Breeden

Double Stars

_____ 65 Piscium SAO 74295 Const. PSC Type DS RA 00 49.9 Decl. +27° 43' Mag. 6.3 6.3
_____ Eta Cassiopeiae SAO 21732 Achird Const. CAS Type DS RA 00 49.1 Decl. +57° 49' Mag. 3.4 7.5
_____ Gamma Arietis SAO 92680 Mesarthim Const. ARI Type DS RA 01 53.5 Decl. +19° 18' Mag. 4.8 4.8
_____ Lambda Arietis SAO 75051 Const. ARI Type DS RA 01 57.9 Decl. +23° 36' Mag. 4.9 7.7
_____ Psi 1 Piscium SAO 74482 Const. PSC Type DS RA 01 05.6 Decl. +21° 28' Mag. 5.6 5.8
_____ Zeta Piscium SAO 109739 Const. PSC Type DS RA 01 13.7 Decl. +07° 35' Mag. 5.6 6.5

Messier Objects

_____ M31 NGC224 Andromeda Galaxy Const. AND Type GAL RA 00 42.7 Decl. +41 16 Mag. 4.8
_____ M32 NGC221 Companion of And Galaxy Const. AND Type GAL RA 00 42.7 Decl. +40 52 Mag. 8.7
_____ M33 NGC598 Const. TRI Type GAL RA 01 33.9 Decl. +30 39 Mag. 6.7
_____ M74 NGC628 Const. PSC Type GAL RA 01 36.7 Decl. +15 47 Mag. 10.2
_____ M76 NGC650 Little Dumbbell Nebula Const. PER Type PN RA 01 42.4 Decl. +51 34 Mag. 10.1
_____ M103 NGC581 Const. CAS Type OC RA 01 33.2 Decl. +60 42 Mag. 7.4
_____ M110 NGC205 Const. AND Type GAL RA 00 40.4 Decl. +41 41 Mag. 9.4

Caldwell Objects

_____ C001 NGC188 Const. CEP Type OC RA 00 44 24.00 Decl. +85 20 00.0 Mag. 8.1
_____ C002 NGC40 Const. CEP Type PN RA 00 13 00.00 Decl. +72 32 00.0 Mag. 11.6
_____ C008 NGC559 Const. CAS Type OC RA 01 29 30.00 Decl. +63 18 00.0 Mag. 9.5
_____ C010 NGC663 Const. CAS Type OC RA 01 46 00.00 Decl. +61 15 00.0 Mag. 7.1
_____ C013 NGC457 ET Cluster Const. CAS Type OC RA 01 19 06.00 Decl. +58 20 00.0 Mag. 6.4
_____ C017 NGC147 Const. CAS Type EG RA 00 33 12.00 Decl. +48 30 00.0 Mag. 9.3
_____ C018 NGC185 Const. CAS Type EG RA 00 39 00.00 Decl. +48 20 00.0 Mag. 9.2
_____ C028 NGC752 Const. AND Type OC RA 01 57 48.00 Decl. +37 41 00.0 Mag. 5.7
_____ C043 NGC7814 Const. PEG Type SG RA 00 03 18.00 Decl. +16 09 00.0 Mag. 10.5
_____ C051 IC1613 Const. CET Type IG RA 01 04 48.00 Decl. +02 07 00.0 Mag. 9
_____ C056 NGC246 Const. CET Type PN RA 00 47 00.00 Decl. -11 53 00.0 Mag. 8
_____ C062 NGC247 Const. CET Type SG RA 00 47 06.00 Decl. -20 46 00.0 Mag. 8.9
_____ C065 NGC253 Sculptor Galaxy Const. SCL Type SG RA 00 47 36.00 Decl. -25 17 00.0 Mag. 7.1
_____ C070 NGC300 Const. SCL Type SG RA 00 54 54.00 Decl. -37 41 00.0 Mag. 8.1
_____ C072 NGC55 Const. SCL Type SG RA 00 14 54.00 Decl. -39 11 00.0 Mag. 8.2
_____ C104 NGC362 Const. TUC Type GC RA 01 03 12.00 Decl. -70 51 00.0 Mag. 6.6
_____ C106 NGC104 47 Tucana Const. TUC Type GC RA 00 24 06.00 Decl. -72 05 00.0 Mag. 4

Royal Astronomical Society of Canada Objects

_____ RASC110 NGC40 Const. CEP Type PN RA 00 13.0 Decl. +72 32 Mag. 10.2
_____ RASC13 NGC253 Const. SCL Type G-Scp RA 00 47.6 Decl. -25 17 Mag. 7.1

_____ RASC14 NGC772 Const. ARI Type G-Sb RA 01 59.3 Decl. +19 01 Mag. 10.3
_____ RASC15 NGC246 Const. CET Type PN RA 00 47.0 Decl. -11 53 Mag. 8
_____ RASC6 NGC185 Const. CAS Type G-E0 RA 00 39.0 Decl. +48 20 Mag. 11.7
_____ RASC7 NGC281 Const. CAS Type EN RA 00 52.8 Decl. +56 36 Mag. -
_____ RASC8 NGC457 ET Cluster Const. CAS Type OC RA 01 19.1 Decl. +58 20 Mag. 6.4
_____ RASC9 NGC663 Const. CAS Type OC RA 01 46.0 Decl. +61 15 Mag. 7.1

December Observing List

Prepared by Bill Breeden

Double Stars
_____ 32 Eridani SAO 130805 Const. ERI Type DS RA 03 54.3 Decl. -02° 57' Mag. 4.8 6.1
_____ Alpha Piscium SAO 110291 Al Rischa Const. PSC Type DS RA 02 02.0 Decl. +02° 46' Mag. 4.2 5.1
_____ Alpha Ursae Minoris SAO 15384 Polaris Const. UMI Type DS RA 02 31.8 Decl. +89° 16' Mag. 2.0 9.0
_____ Eta Persei SAO 23655 Miram Const. PER Type DS RA 02 50.7 Decl. +55° 54' Mag. 3.8 8.5
_____ Gamma Andromedae SAO 37734 Almach Const. AND Type DS RA 02 03.9 Decl. +42° 20' Mag. 2.3 5.5
_____ Gamma Ceti SAO 110707 Kaffaljidhma Const. CET Type DS RA 02 43.3 Decl. +03° 14' Mag. 3.5 7.3
_____ Iota Trianguli SAO 55347 Const. TRI Type DS RA 02 12.4 Decl. +30° 18' Mag. 5.3 6.9
_____ Struve 331 SAO 23763 Const. Type DS RA 03 00.9 Decl. +52° 21' Mag. 5.3 6.7
Messier Objects
_____ M34 NGC1039 Const. PER Type OC RA 02 42.0 Decl. +42 47 Mag. 5.5
_____ M45 Pleiades Const. TAU Type OC RA 03 47.0 Decl. +24 07 Mag. 1.6
_____ M77 NGC1068 Const. CET Type GAL RA 02 42.7 Decl. -00 01 Mag. 8.9
Caldwell Objects
_____ C005 IC342 Const. CAM Type SG RA 03 46 48.00 Decl. +68 06 00.0 Mag. 9.2
_____ C014 NGC869/884 Double Cluster Const. PER Type OC RA 02 20 00.00 Decl. +57 08 00.0 Mag. 4.3
_____ C023 NGC891 Const. AND Type SG RA 02 22 36.00 Decl. +42 21 00.0 Mag. 9.9
_____ C024 NGC1275 Per A Radio Source Const. PER Type IG RA 03 19 48.00 Decl. +41 31 00.0 Mag. 11.6
_____ C067 NGC1097 Const. FOR Type SG RA 02 46 18.00 Decl. -30 17 00.0 Mag. 9.2
_____ C087 NGC1261 Const. HOR Type GC RA 03 12 18.00 Decl. -55 13 00.0 Mag. 8.4
Royal Astronomical Society of Canada Objects
_____ RASC10 IC 289 Const. CAS Type PN RA 03 10.3 Decl. +61 19 Mag. 12.3
_____ RASC12 NGC891 Const. AND Type G-Sb RA 02 22.6 Decl. +42 21 Mag. 10
_____ RASC16 NGC936 Const. CET Type G-SBa RA 02 27.6 Decl. -01 09 Mag. 10.1
_____ RASC17 NGC869/884 Double Cluster Const. PER Type OC RA 02 20.0 Decl. +57 08 Mag. ~4.4
_____ RASC18 NGC1023 Const. PER Type G-E7p RA 02 40.4 Decl. +39 04 Mag. 9.5
_____ RASC21 NGC1232 Const. ERI Type G-Sc RA 03 09.8 Decl. -20 35 Mag. 9.9

M31, the Andromeda Galaxy, is an autumn favorite.
Photo credit www.skyoptics.net.