

Night Visions



2018 May Issue

Newsletter of the Baton Rouge Astronomical Society

Monthly Meeting Monday, May 14th at 7PM at HRPO

(Monthly meetings are on 2nd Mondays, Highland Road Park Observatory).

Presenter: James Gutierrez and the topic will be 'A Star is Born'.

What's In This Issue?



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President's Message

We are well into spring now, most of the weekends in April have been cloud out for skywatchers. We had an excellent showing for International Astronomy Day and were able to show the public views of the Sun with a sunspot. The sunspot was some welcome lagniappe given the fact that the Sun is moving towards solar minimum and there have been fewer sunspots this year.

BRAS has been given 160 member pins. All members are asked to come to HRPO to receive and sign for their pin. Each member gets one pin for free. Pick yours up this May 14th 7 pm, HRPO, or at any monthly meeting.

Mars is now (May 1, 2018) at an apparent magnitude of -0.37 and will brighten to an apparent magnitude of -2.79 on July 26, 2018, the date of the 2018 Great Martian Opposition. The 2018 Great Martian Opposition is an opportunity to build BRAS membership.

International Asteroid Day. As I stated last month, Saturday, June 30, 2018, is the anniversary of the 1908 Siberian Tunguska event known as International Asteroid Day. This is a "global awareness campaign where people from around the world come together to learn about asteroids, the impact hazard they may pose..." I propose BRAS takes part in this day. If you are willing to help with Asteroid Day in Baton Rouge, let us know.



Astrophotography Group: Scott Louque is spearheading our new astrophotography group. See write-up on Page 5.

Please check with Ben Toman if you are willing to help with our Outreach Requests. Remember, Outreach to our community is a lot of what we do.

Clear Skies

Steven M. Tilley, President



May Happenings – Eta Aquariid's Meteor Shower, peaks May 7th in the vicinity of the Aquarius Constellation

This month's masthead image is Halley's Comet as seen from the Soviet spacecraft Vega in 1986.

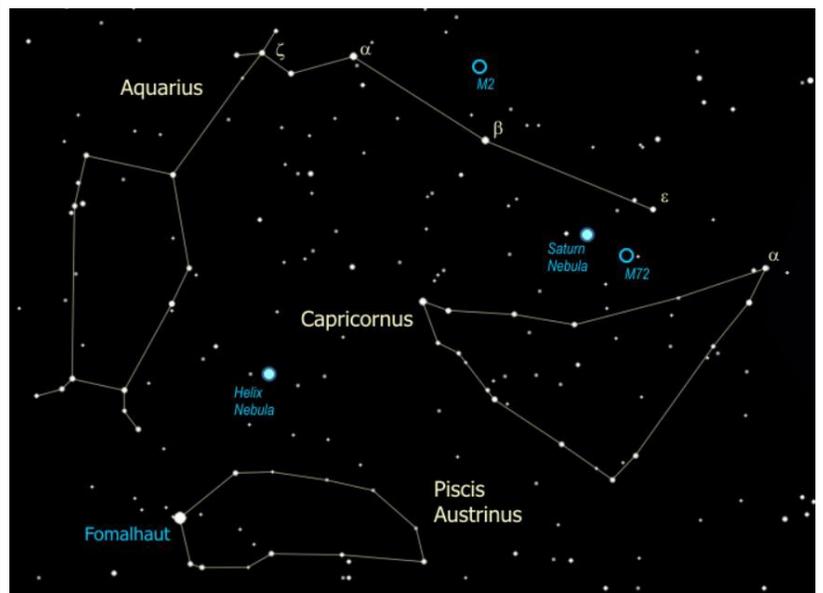
(courtesy of Getty Images)

While Halley's Comet isn't coming back until 2061, during the nights of May 6 and 7th small remnants of Haley (dust particles left along the path of the famed comet), will burn up as the Earth moves into them. This is known as the Eta Aquariids meteor shower.

While this shower isn't very spectacular, it is visible for about a week. So where is the Aquarius Constellation? See map.

Summary by Michele Fry, from information at

<http://bigthink.com/scotty-hendricks/10-astronomical-events-in-2018-and-how-to-see-them>



Secretary's Summary of March Meeting

- Vice-President Scott Louque called meeting to order at 7:05pm.
- Scott introduces the guest speaker, Tom Field (a contributing editor of *Sky and Telescope Magazine*), via a webinar from Oregon.
- Tom Field spoke about Spectroscopic Analysis and Spectroscopy, and the spectroscopic gratings from **RSPEC**. This webinar was also live on the NSN.
- Scott Louque spoke about the first meeting of the BRAS Astrophotography group, and it was agreed that the next meeting of the group will be on the Saturday before the May BRAS meeting (May 12th), weather permitting.
- John Nagle talked about the first use of the light meter for a request received by Ben Toman. John went to the residence to see and measure the light trespass complained about. Although the light was bright, it did not measure enough to qualify as actionable.
- Chris Kersey said that volunteer lists are on the table by the coffee pot.
- Chris Raby said that the *Zippity Zoo Fest* was a good event.
- Scott Louque closed the meeting and held a raffle.
- Meeting adjourns.



Krista Dison, Secretary
Notes submitted by John Nagle in Krista's absence.

2018 Officers:

President: Steven M. Tilley
Vice-President: Scott Louque
Secretary: Krista Dison
Treasurer: Trey Anding

BRAS Liaison for BREC:

Chris Kersey

BRAS Liaison for LSU:

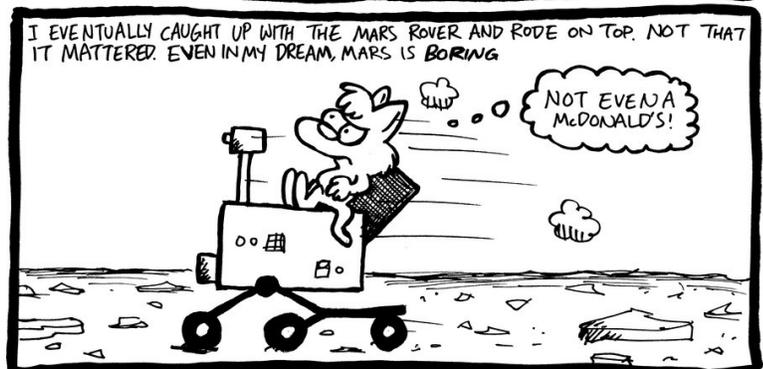
Greg Guzik

Committees/Coordinators:

Light Pollution: John Nagle
Newsletter: Michele Fry
Observing: John Nagle
Outreach: Ben Toman
Webmaster: Frederick Barnett

DEAR CAT,
HAVE YOU EVER HAD A RUN-IN WITH CURIOSITY?

Want to Ask a Cat?
Write to him at
goaskthecat@gmail.com
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BRAS Outreach Report

Hi Everyone,

I think we're all still a bit out of breath after this last month, and it's not quite done yet. I don't know if we've ever had so many outreach events in a single month before. I'm happy to say that we had volunteers for every event that sent us a request. It's been so busy, I haven't had time to get them all logged into the Night Sky Network, but that will be done within the next couple of days. (They are going to LOVE us!)

There were so many volunteers helping out this month, it would take a whole paragraph just to list them...and I will!! A million thanks to: **John Nagle, Roz Readinger, Scott Louque, Scott Cadwallader, Chris Kersey, Chris Raby, Ben Toman, James Ernest, Krista Dison, Charles Edwards, Steven Tilley, Craig Brenden, Trey Anding and Merrill Hess.** As always, if I missed someone, I sincerely apologize.

Some of the folks on this list helped out at multiple events throughout the month. We aren't always in such high demand, but it's times like these that we really could use more participation from our club members. If you've never helped out with outreach before, please consider giving it a try. I think you'll find that it is a great time and an awesome opportunity to learn more about the subject you love...astronomy! You will always have someone to help out with you because we never send anyone out alone to an outreach (unless that person has given the OK to do so.)

As I said at the top, we're not done yet. With that in mind, take a look below at some upcoming outreach events. The one on Friday, May 4th is coming up quick and we need volunteers. Please let me know ASAP if you are willing and able to help out with any of these events.

Upcoming Outreach

Friday, May 4th

5pm-7:30pm

Mayfair Lab School (an EBR Magnet school K-8)

After-school Fair for students and families

demos/info/possible telescope?



Friday, May 11th

6pm-10pm

Mid City Makers Market (541 S. Eugene St)

telescope viewing/info

(They saw us at Perkins Rowe and invited us to participate at their market. There are many dates throughout the year. They said they typically have about 60 vendors of all ages.)

Saturday, May 12th

10am-12pm

Botanic Gardens (Independence Park between Lobdell and Airline)

New Facility Dedication

Solar Observing/Info



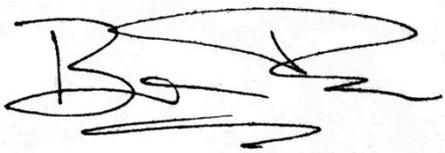
Tuesday, May 22nd

7pm-9pm

Sidewalk Astronomy Perkins Rowe

You know the drill.

Clear Skies,



Ben Toman,
Outreach Coordinator

Alas, only two Outreach Pictures submitted for April.

Please submit your pics (with captions) to Michele at newsletter@brastro.org



L to R: Chris R and Steven T at
Zippity Zoo Fest



L to R: Steven T, Roz R, Craig B, and John N at
Sidewalk Astronomy, Perkins Rowe



BRAS Astrophotography Group Meeting



The first meeting of the BRAS Astrophotography Group (BAG) met at Scott Louque’s house in Paulina, La. on the evening of April 8, 2018. John Nagle took notes.

Members in attendance: Chris DeSelles, John Nagle, Scott Cadwallader, Scott Louque, Trey Anding

We discussed:

- What we wanted to do with the group, and decided that each meeting would be devoted to one aspect.
- Various software programs, and watched a few tutorials. Programs mentioned and/or discussed were: Partha Gimp (for processing); Pixinsite; Fire Capture (for planetary work); Backyard EOS (for Cannon SLR); Sharp Capture; Registax; Auto Stacker 2; Virtual Dub 64 (for converting video to AVI); PIPP (also for conversion of movies); StarTrails.exe (processing); Photo Scape; Deep Sky Stacker.
- Cameras and types that could be used.
- You-Tube tutorials, specifically “Harry’s Astro Shed”, and those by Jason Brown.

We decided that weather permitting; the next meeting would be held at Scott Louque’s house again on May 12th, the Saturday before the May BRAS meeting. Let Scott know if you are interested: slouque@att.net





BRAS Light Pollution Committee Report

This committee meets at 5:45, same day as the 6:30 BRAS Business Meeting (which takes place on the Wednesday before the Monthly Meeting) Everyone is welcome to join in.

Meeting called to order by John Nagle
No new members, with 7 members in attendance
March minutes were published in the April newsletter

Old Business:

1. Reported progress on research of electronic signatures for petition and pledges
2. Reported progress of training material to be written
3. Reported on a list of Neighborhood Associations/Civic Associations

New Business:

1. Report on the first use of the light meter.
- Minutes of this meeting read and approved
Meeting adjourned.



John Nagle, Chairman

P.S. Every year BRAS presents a Good Lighting Award to a company that uses BEST outdoor lighting practices. If you notice a business in EBRP that uses Full Cutoff lighting fixtures, please jot down and send their Business name, address, date and description to me at jonagle@cox.net. This would be much appreciated.

The Progression from Bad to Best Lighting Fixtures that decrease Light Pollution

No Cutoff - BAD



Partial Cutoff - BETTER



Full Cutoff - BEST





Recent Entries in the BRAS Forum

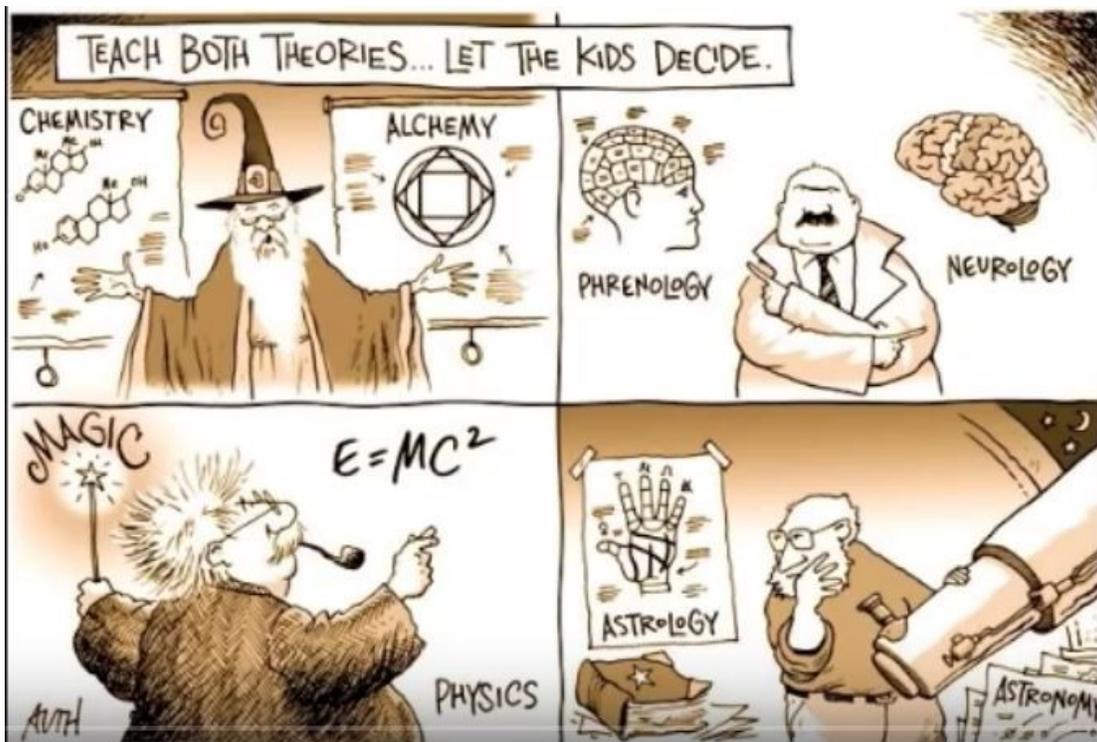
Below are selected additions to the BRAS Forum. There are also nine active polls. The Forum has reached 5200 posts.

- [Late-Night Radio Program](#) Discusses Asteroid Impacts and Operation Paperclip
- NASA Gets [New Administrator](#)
- [International Astronomy Day](#) a Success
- [Tiangong 1](#) Dies
- [Envisat](#) Spotted Tumbling in Baton Rouge Sky
- [TESS](#) Lifts Off
- [Post-CME Novelist](#) Promotes Prepping
- [History of Flight](#) Program Reviewed
- The [24 April APOD](#) is a Musical Instrument
- The [Time is Now for Mars](#)
- [G1 Conditions](#) on 20/21 April



20/20 Vision Campaign

This campaign's goal was to raise the SQM measurement at HRPO's back viewing pad to 20.0 by this past November. There is talk of keeping it perpetual until the goal is reached, but the Light Pollution Committee will have to decide.





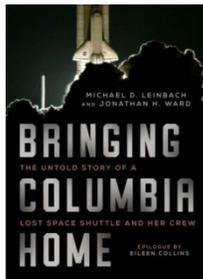
BRAS Members' Corner

Here's where BRAS members can submit articles and photos about their astronomy-related accomplishments and adventures outside of BRAS activities (as if there were any spare time for such things!) Send your contributions to Michele at newsletter@brastro.org

“Space Hipsters” Spring Trip, by John Nagle

On April 27th and 28th, I attended the Spring outing for the Facebook group **Space Hipsters**, of which I and Tom Northrop are members. I met the group in Slidell at 8 a.m. Friday morning, and we caravanned to NASA's Michoud Assembly Facility in New Orleans. We were given a tour through the facility (no pictures allowed – NASA provided a photographer), and once NASA reviews the pictures (for secret or proprietary equipment in them), we will get them. After, we went to the WW II Museum. After touring the museum, most returned to their hotel in Slidell. I returned home.

Next day, the 28th, I met them again at 8 a.m. in Slidell (where most were staying – Hipsters had come from New York, New Jersey, Pennsylvania, Florida, Georgia, North Carolina, Alabama, Louisiana, Texas, and more), and we proceeded to the **Infinity Science Museum** close to Bay St. Louis, Mississippi. We were met by **Fred Haise, Apollo 13 Astronaut**, and his long haired Chihuahua, Tito. We then took a bus to the **Stennis Testing Facility** and were given a tour (we could not get off the bus except at a distance from an engine test stand). After the tour, we returned to **Infinity** for a luncheon, and enjoyed a presentation by Space Hipster Jonathan H. Ward, co-author with Michael



Hipsters Group Photo in front of the Saturn V first stage Rocket Engines

Leinbach (NASA's Launch Director for the Space Shuttle Columbia) of the book “**Bringing Columbia Home**”. The presentation included pictures, short videos, and short interviews. After the presentation, Mr. Ward signed copies of the book. I got one. After touring the museum, we went back to Slidell and gathered at **Leblanc's Creole Kitchen** for a farewell dinner with Fred Haise. Here I am posed with the astronaut! It was a grand weekend. Cost: \$50 for museum and banquet + gas and food.



Me with Astronaut Haise

I brought photos of Lou Tilley's tugboat (my wife Michele's father), pushing the 2nd stage Saturn V rocket fuel tank down the Industrial Canal back in the late 60's, which everyone appreciated, and a Space Hipsters' Admin wants the photos to put on their website.





Messages from HRPO

Highland Road Park Observatory



FRIDAY NIGHT LECTURE SERIES

all start at 7:30pm

18 May: “Our Birth Stars” No—not the ‘birth of stars’, but what exactly is a ‘birth star’? It is that star whose light produced around the time you were born is just reaching Earth. Of course, as we age the star changes. Introduce yourself to a lifetime of birth stars and learn how to see them!

25 May: “Commercial Space Exploration” As NASA breaks ground with people in orbit, living in space, travels to the Moon...and beyond...commercial companies have always been there, building the hardware to make it possible. Now some companies are tentatively following in NASA’s historic footsteps to begin the commercialization of low-Earth orbit. HRPO Center Supervisor Tom Northrop has all the details!

SCIENCE ACADEMY

Saturdays from 10am to 12pm

For ages eight to twelve. \$5/\$6 per child.

5 May: “Jupiter”

12 May: “Colonizing the Moon”

19 May: “Colonizing Mars”

26 May: “Colonizing ‘Beyond’”



ONE-TIME CALLS FOR VOLUNTEERS

***Wednesday 2 May, 8:30am to 10am.** *One or two volunteers.* **CRS-14 Release Party.** Telescope viewing, front desk duty. Low difficulty.

***Saturday 5 May, 5am to 8am.** *One or two volunteers.* **InSight Launch Party.** Telescope operation, front desk duty, information about Mars. Low to moderate difficulty.

***Saturday 5 May, 7pm to 10pm.** *Two or three volunteers.* **Evening Sky Viewing Plus.** Telescope operation, physical science demonstrations, front desk duty. Easy to moderate difficulty.

***Tuesday 8 May, 9:30pm to 11:30pm.** *One or two volunteers.* **Jovian Opposition.** Telescope operation, front desk duty, information about Jupiter. Low to moderate difficulty.

***Saturday 26 May, 12pm to 2pm.** *One or two volunteers.* **Solar Viewing.** Telescope operation, physical science demonstrations, front desk duty. Low to moderate difficulty.

***Saturday 23 June, 2pm to 10pm.** *Two or three volunteers.* **ARRL Field Day.** Solar and evening viewing, assistance with children’s activities, front desk. Low to moderate difficulty.

ONGOING CALL FOR VOLUNTEERS

HRPO periodically needs BRAS volunteers for crafting (gluing, cutting, painting, etc.); training is offered for these easy to moderate tasks. We also have plenty of “grunt work”. We are asking any members with the time to do so to assist. Thank you.



NASA Events

Live broadcasts open to the public at HRPO.
No admission fee. Subject to change.

Wed 2 May, 8:30am to 10am: CRS-14 Release

Sat 5 Apr, 5am to 8am: InSight Launch

Wed 16 May, 7am to 2pm: American Spacewalk #50



GLOBE at Night: 5 to 14 May [Boötes]

Instructions to participate in this project are at...

<http://www.braastro.org/phpBB3/viewtopic.php?f=29&t=2760>



American Radio Relay League Field Day

Saturday 23 June from 2pm to 10pm

No admission fee. For ages eight and older.

The Baton Rouge Amateur Radio Club will take part in an exciting nationwide emergency exercise. Temporary stations will be set up at HRPO as BRARC joins similar clubs across the continent in an exciting emergency exercise. Some clubs use strictly battery power and solar power. Some clubs use low power outputs (five watts or less) to make contact with other stations all over North America. Field Day is a twenty-four-hour endurance session of skill and suspense.

The Amateur Radio Service, founded decades ago, is the original “social medium!” Ten of thousands of licensed hams—including high schoolers, college kids, parents and grandparents—communicate day after day from coast to coast.

What can people do in the Amateur Radio Service?

- Talk around the world without the Internet or cell phones.
- Send a message to another country using less electricity than a nightlight.
- Transmit your communication in code—Morse code!
- Speak to astronauts on the International Space Station.



What can adults do in the Amateur Radio Service?

- Earn various awards.
- Have more peace of mind knowing that, unlike the internet, federal law mandates sending identifying information during any communication.
- Increase the chances of their families having contact with the outside world during an emergency, simply by connecting radio equipment to a car battery.
- Collect weather and flight data from a launched balloon.

What can kids do in the Amateur Radio Service?

- Work toward specialized merit badges and patches.
- Steer radio-controlled cars and airplanes, or control robots, using ham-only frequencies.
- Keep a hand-held remote transceiver during camping trips.

Come learn more about amateur (or “ham”) radio at this fantastic annual event. Remember, if you like what you see at Field Day, there will be plenty of friendly “hams” around to tell you exactly what you need to do to obtain your own amateur radio license and start transmitting!

NOTE: At these times telescope viewing will take place...

*2:30pm to 5:30pm, The Sun (with safety equipment)

*7pm to 10pm, the waxing gibbous Moon (in daytime and twilight)

*8:45pm to 10pm, Venus (mostly in twilight)

*9:15pm to 10pm, Jupiter (mostly in twilight)

*9:30pm to 10pm, Saturn (mostly in twilight)



*“Look, tried it on a whim.
The rest is obvious. Lift?”*



Observing Notes:

by John Nagle

Centaurus – The Centaur

Position: RA 13, Dec. -50°

Named Stars

Rigel Kentaurus (Alpha Cen A), “Al Riji al Kentaurus”, “the Centaur’s Foot”, “Toliman”, “al-zulman”, “the Ostriches”, mag. -0.01, 14 39 40.90 -60 50 06.5, is the primary star in a triple star system. **Alpha Cen A**, the third brightest star in our night sky, is a yellow-white main sequence dwarf star.

Alpha Cen B, mag. 1.35, 14 39 39.39 -60 50 22.1, is the 21st brightest star in our night sky, and is an orange main sequence dwarf star with one planet in orbit. The separation between **Alpha Cen A** and **B** is 11 to 35 au., with an orbital period of 80 years.

Alpha Cen C is known as **Proxima Centauri** – see below.

Hadar (Beta Cen), “ground”, “Agena”, “knee”, mag. 0.61, 14 03 49.44 -60 22 22.7, is a triple star system with the primary star (**Hadar A**), the 11th brightest star in our night sky, being a blue-hued giant star that is a double-lined spectroscopic binary star with an orbital period of 357 days. The close binary is an X-ray source, with a separation varying from 0.53 au. to 55 au. **Hadar B**, at mag. 4.0, has an orbital period of 225 years, and a separation of 0.4 arc seconds (120 au.).

Muhlifain (Gamma Cen), “Two Things”, mag. 2.20, 12 41 31.20 -48 57 35.6, is a binary star. Both stars are blue-white sub-giants at mag. 2.9 (combined magnitude is 2.2), and have an orbital period of 89.3 years, with a separation of 0.20 arc seconds max (8 au to 67 au).

Alnair (Zeta Cen), “Al Nā’ir al Batn al Kentaurus”, “the Bright One in the Centaur’s Belly”, “Nayyir Badan Qantūris”, mag. 2.55, 13 55 32.43 -47 17 17.8, is a spectroscopic binary star with an orbital period of 8.0233 days.

Menkent (Theta Cen), “shoulder of the Centaur”, sometimes known as “H’ārātan”, mag. 2.06, 14 06 41.32 -36 22 07.3, is an orange giant star.

Przybylski’s Star (HD 101065), mag. 8.02, 11 37 37.04 -46 42 34.88, is a chemically peculiar star (a Delta Scuti type).

Proxima Centauri (Alpha Cen C), mag. 11.05, 14 29 42.95 -62 40 46.1, is the third star in the **Alpha Centauri** system, and is a red dwarf flare star that forms a visual double star with the **Alpha Centauri A** and **B**, with a separation of 13,000 au (0.2 ly or 2.2°) from the binary stars, and an orbital period of about one million years. **Proxima Centauri** is either a small main sequence star, or a sub-dwarf star with an estimated mass of only 12.3% of a solar mass. **Proxima Centauri** is the nearest star to our solar system and has one planet in orbit with a period of 11.2 days.

Krzeminski’s Star, mag. 13.25, 11 21 15.78 -60 37 22.7, is the optical component of the X-ray binary star **Centaurus X-3**, and an eclipsing binary star.

Deep Sky:

There are no Messier objects in the Centaurus constellation.

NGC 5139, **Omega Centauri**, **C 80**, mag. 3.9, 13 26 47.2 -47 28 46.1, 55’ in size, is a globular cluster that is extremely large, bright, and rich; easily visible to the naked eye. **NGC 5139** contains over ten

million Population II stars, the oldest stars to be observed, and the stars in the center of the cluster appear so close to each other that the distance (separation) between them is believed to be only 0.1 ly. This cluster was listed by **Ptolemy** in his *Almagest* (at around 150 AD) as a star, and **Bayer** listed it as the **Omega** star of the constellation in his *Uranometria* of 1603. **Omega Centauri** is suspected to be a dwarf spheroidal galaxy that encountered our galaxy, the **Milky Way**, and is the surviving nucleus. **Omega Centauri** has many unusual traits – it is chemically inhomogeneous; a trait that points to it being a remnant dwarf galaxy – it is composed of multiple stellar populations composed of metal-poor, metal-intermediate including a teeming population of extremely oxygen-poor and helium-rich second generation stars, and metal-rich which exhibits a sodium to oxygen correlation (metal-rich globular clusters exhibit a sodium/oxygen anti-correlation), which clearly sets it apart from the normal population of globular clusters. Scientists, from observations, have determined that an intermediate mass black hole (**IMBH**) of 40,000 solar masses should be present at the center of the cluster. Other observations have not confirmed this finding. **Chandra** observations detected between 45 and 70 sources inherent to the cluster, including active or accreting binary stars, cataclysmic variable stars, and at least one quiescent neutron star – but failed to find the expected X-ray point source of an **IMBH**. While findings do not rule out the presence of a black hole, they do put an upper limit on its mass to less than 18,000 solar masses.

IC 2994/2948, C 100, Running Chicken Nebula, Lambda Centauri Cluster, mag. 4.5, 11 36.6 -63 02, 80'x50' in size, contains an open cluster with 30 stars; detached, weak concentration of stars; small brightness range; magnitude of brightest star is 6.4. **IC 2944** (a diffuse nebulosity) surrounds **Lambda Cen** and the globular cluster, **IC 2948**, lies 40' to the southeast of **Lambda Cen**.

CR 249, mag. 4.0, 11 37 46 -63 10 41, 65'x65' in size, is an open cluster of 25 stars.

NGC 3766, C97, the Pearl Cluster, mag. 5.3, 11 36.1 -61 37, 12' in size, is an open cluster of 100 stars; detached, strong concentration of stars; small range in brightness; magnitude of brightest star is 7.2; pretty large. This cluster is visible to the unaided eye.

NGC 5662, mag. 5.5, 14 35.2 -56 33, 12' in size, is an open cluster of 280 stars; detached, weak concentration of stars; large range in brightness; magnitude of brightest star is 7.0; located 4° due north of **NGC 5617**.

NGC 5460, mag. 5.6, 14 07.6 -48 19, 25' in size, is an open cluster of 46 stars; detached, weak concentration of stars; large range in brightness; magnitude of brightest star is 8.0; very large. The ESO galaxy **E 221-25** (mag. 13.7) is located approximately 0.5° to the north. The brightest star, **HD 123201**, forms the centerpiece of a delicate arch of stars lying near the cluster's center.

NGC 5281, mag. 5.9, 13 46.6 -62 54, 5' in size, is an open cluster of 40 stars; detached, strong concentration of stars; small range in brightness; magnitude of brightest star is 6.6; irregular round shape; small and bright.

NGC 5316, mag. 6.0, 13 53.9 -61 52, 14' in size, is an open cluster of 80 stars; detached, no concentration of stars; small range in brightness; magnitude of brightest star is 7.8; pretty large.

NGC 5617, mag. 6.3, 19 29 44 -57 60 42.7, 10' in size, is an open cluster of 80 stars; detached, strong concentration of stars; large range in brightness; magnitude of brightest star is 8.8; large. Contains at least 5 blue stragglers as well as two red giant stars. A photometric survey for variable stars detected 35 slowly pulsing **B-type** stars, 30 **Delta Scuti** type and 20 **Gamma Doradus** candidates, as well as 40 eclipsing and 15 ellipsoidal binary stars.

St 14, mag. 6.3, 11 44.0 -62 30, 4' in size, is an open cluster of 10 stars; detached, weak concentration of stars; small brightness range; magnitude of brightest star is 8.4.

Ly 2, mag. 6.4, 14 24.5 -61 20, 12' in size, is an open cluster of 30 stars; not well detached, moderate brightness range; magnitude of brightest star is 7.7.

NGC 5128, C 77, ESO 270-9, Centaurus A, mag. 6.8, 13 25 27.6 -43 01 08.8, 25.7'x20.0' in size, is a radio galaxy. Very bright, very large, and very elongated; dark central band; might be a pair of colliding galaxies; a radio source. Located 4½° north of the **Omega Centauri Cluster**. **NGC 5128** is the third brightest visual galaxy in the **Southern Hemisphere**, the fifth brightest in our night sky, the nearest radio galaxy, and the nearest galaxy with an active nucleus. **Centaurus A** is the second double-lobed

radio source discovered, the brightest in the **Southern Hemisphere**, and the largest extra-galactic radio source in the sky. **NGC 5128** is the optical component of **Centaurus A**. There are 607 known globular clusters in **NGC 5128**, with a further 800 candidates. The overall radio footprint on the sky is $8^\circ \times 4^\circ$. The black hole at the center of **NGC 5128** is $5.5 \pm 3.0 \times 10$ to the 7th power masses of the **Sun**.

Arp 153, mag. 6.8, is **NGC 5128**.

Ru 108, mag. 7.5, 13 32.2 -58 29, 12' in size, is an open cluster of 15 stars; detached, no concentration of stars; moderate brightness range; magnitude of brightest star is 8.5.

NGC 5286, C 84, mag. 7.6, 13 46 26.8 -51 22 27.3, 10' in size, is a globular cluster with a medium concentration of stars; pretty large, very bright, round, very well resolved. **NGC 5286** may be one of the oldest globular clusters in the **Milky Way**, with an age estimated to be 12.4 billion years. Located 5° south-southeast of **Omega Centauri**. An intermediate mass black hole (**IMBH**) is suspected at the center of the cluster.

NGC 3680, mag. 7.6, 11 25.7 -43 15, 12' in size, is an open cluster of 30 stars; detached, strong concentration of stars; moderate range in brightness; magnitude of brightest star is 10.1.

Cr 272, mag. 7.7, 13 30.6 -61 16, 8' in size, is an open cluster of 40 stars; detached, no concentration of stars; small brightness range; magnitude of brightest star is 10.5. A very young cluster, only 2 million years old.

NGC 5606, mag. 7.7, 14 27.8 -59 38, 3' in size, is an open cluster of 15 stars; detached, strong concentration of stars; large brightness range; magnitude of brightest star is 8.9.

Tr 21, mag. 7.7, 13 32.2 -62 47, 4' in size, is an open cluster of 20 stars; detached, strong concentration of stars; moderate range in brightness; magnitude of brightest star is 8.9.

NGC 5138, mag. 7.8, 13 27.3 -59 01, 7' in size, is an open cluster of 40 stars; detached, weak concentration of stars; moderate range in brightness; magnitude of brightest star is 10.3.

Tr 22, mag. 7.9, 14 31.2 -61 10, 7' in size, is an open cluster of 50 stars; detached, weak concentration of stars; moderate brightness range; magnitude of brightest star is 10.1; probably not a true cluster.

Ru 111, mag. 8.0, 14 35.8 -59 56, is an open cluster.

NGC 3918, PK 294+04, ESO 170-13, Blue Planetary Nebula, sometimes called The Southerner, mag. 8.1, 11 50 17.7 -57 10 56.9, 23" in size, is a small, round planetary nebulas, with a disk of uniformed brightness; bluish color; photo magnitude of 8.4; central star is magnitude 13.2. **NGC 3918** is the brightest planetary nebula in the southern skies.

Bas 18, mag. 8.2, 13 28.3 -62 22, 4' in size, is an open cluster of 20 stars; mag. of brightest star is 8.2.

Ho 17, mag. 8.3, 14 33.7 -61 23, 7' in size, is an open cluster of 10 stars; detached, weak concentration of stars; large brightness range; magnitude of brightest star is 9.6, age of about 180 million years.

Located about 1° southwest of **Alpha Centauri (Rigil Kentaurus)**.

NGC 3960, mag. 8.3, 11 50.9 -55 42, 7' in size, is an open cluster of 45 stars; detached, strong concentration of stars; moderate range in brightness; magnitude of brightest star is 11.5; pretty large.

Ho 16, mag. 8.4, 14 33.7 -61 12, 4' in size, is an open cluster of 10 stars; detached, weak concentration of stars; large brightness range; magnitude of brightest star is 11.0; age of about 160 million years.

Adjacent to open cluster **Cr 272**.

NGC 4696, mag. 8.4, 12 48 49.2 -41 18 40, $4.5' \times 3.2'$ in size, is a pretty bright, large, and round galaxy; small, very bright nucleus. Brightest galaxy in the **Centaurus Galaxy Cluster**. Images reveal an almost diaphanous halo, surrounding an amorphous nucleus. A system of dusty **Ha** filaments swirl out of the center in a spiral pattern around a black hole of about 1 billion solar masses.

CR 271, mag. 8.7, 13 29 54.0 -64 12 00, 5' in size, is an open cluster of 16 stars.

NGC 4945, C 83, mag. 8.8, 13 05 27.2 -49 28 04.4, $19.8' \times 4.0'$ in size, is a **Seyfert 2 Galaxy**, bright, very large, and extremely elongated; nearly edge on; has an active galactic nuclei (**AGN**). Member of the **Centaurus A Group** of galaxies. The galaxy is bracketed by the visual pair **Xi 1** and **Xi 2 Centauri** (magnitudes 4.8 and 4.3), which are only 40 arc minutes apart. **NGC 4976** is 0.5° to the east; **NGC 4945A** is 17.2 arc minutes to the south-southeast (it is not a companion to **NGC 4945**). This is the third brightest galaxy in the **IRAS Point Source Catalog**, earning it yet another designation: an **Ultraluminous Galaxy** – more than $\frac{1}{2}$ of its total luminosity is radiated in the far infra-red. There is a



radio source centered on the nucleus. **Water Maser** emission was detected in 1970, which was later (1997) found to define a nearly edge-on thin annular disk surrounding the nucleus, with a velocity pattern suggesting the presence of a black hole of 1.4 million solar masses. **NGC 4945** is the second brightest galaxy in the **Centaurus A** sub-group.

NGC 5102, ESO 382-50, mag. 8.8, 13 21 57.6 -36 37 48.7, 8.6'x2.7' in size, is a bright galaxy; very bright nucleus. Located 17.4 arcminutes east-northeast of magnitude 2.7 **Iota Centauri**. **NGC 5102** has a blue hued bulge, indicating recent star formation in the central region.

NGC 4230, mag. 9.0, 12 18 10 -55 23 27, is an open cluster.

NGC 4852, mag. 9.0, 13 01 14 -59 42 36, is an open cluster.

NGC 5168, mag. 9.1, 13 32 21 -61 02 04, 4'x4' in size, is an open cluster.

NGC 5367, IC 4347, mag. Unknown, 13 58 52 -40 04 07, 4'x4' in size, is a reflection nebula.

Abell 3526, the Centaurus Cluster of galaxies, is one of the nearest super clusters, containing hundreds of galaxies, with **NGC 4696** being the dominate member. Within 15' east of **NGC 4696** is the second brightest member **NGC 4709**, and **NGC 4706**. Some 17' to the west-northwest is **NGC 4696B**, and 22.3' southwest of **NGC 4696** is a trio of galaxies – **NGC 4683, NGC 4696A, and NGC 4677**. Out of the brightest galaxies in **Abell 3526**, there are 7 **ESO** objects, 1 **Leda** object, and 28 **NGC** objects.

SCL 124, the Shapley Supercluster of Galaxies, has its center on the **Centaurus/Hydra** border. The **Centaurus Abell Clusters** in the **Shapely Supercluster** consists of about 18 **Abell Clusters** which are composed of about 1,326 galaxies.

There are many more objects below magnitude 10, the above is a sample. There are also many objects below magnitude 10. Objects not listed are as follows: 112 NGC, 31 IC, 18 MCG, 9 PGC, 2 UGCA, 237 ESO, 6 AGCS, 8 AGC, 7 SDC, 4 IRAS, 14 Cr, 1 PKS, 7 Ru, 1 HCG, 2 ASCG, 8 He, 7 Sa, 14 Lo, 2 Gum, 1 Be, 1 Ced, 3 RCW, and 33 other objects.

Other Stars:

3 Cen A (K Cen, HD 120709), mag. 4.32, 13 51 49.63 -32 59 38.5, is a blue-white hued double star, possibly an eclipsing binary.

340 G Cen (HD 125628), mag. 4.76, 14 22 37.12 -58 27 33.0, is a quadruple star.

185 G Cen (HD 114613), mag. 4.85, 13 12 03.47 -37 48 11.3, has one planet in orbit.

HR 4523, (66 G Cen, HD 102365), mag. 4.89, 11 46 32.25 -40 30 04.8, has one planet in orbit.

HD 120987, mag. 5.53, 13 53 32.82 -35 39 51.1, is a quintuple star system.

3 Cen B (K Cen, HD 120710), mag. 6.06, 13 51 50.10 -32 59 41.0, is a part of the **3 Cen** system.

HD 108063, mag. 6.10, 12 25 08.62 -42 30 51.3, is an extremely metal-rich star.

HD 121056, mag. 6.17, 13 53 52.0 -35 18 52, has two planets in orbit.

R Cen (HD 124601), mag. 6.39, 14 16 34.20 -59 54 50.0, is a long period (**Mira** type) variable red star with a period of 18 months with magnitude varying from 11.8 to 5.3, with the light curve showing double maxima and minima.

HD 120457, mag. 6.43, 13 50 19.39 -39 54 03.0, has one planet in orbit.

HD 114729, mag. 6.69, 13 12 44.26 -31 52 24.1, has one planet in orbit.

HD 117253, mag. 6.75, 13 30 25.0 -58 39 52, has one planet in orbit.

HD 116434, mag. 7.01, 13 24 36.0 -51 30 16, has one planet in orbit.

HD 117618, mag. 7.18, 13 32 25.0 -47 16 16, has two planets in orbit.

HD 117207, mag. 7.26, 13 29 21.11 -35 34 15.6, has one planet in orbit.

HD 102117, mag. 7.47, 11 44 50.46 -58 42 13.4, has one planet in orbit.

HD 121504, mag. 7.54, 13 57 17.24 -56 02 24.5, has one planet in orbit.

HD 109749, mag. 8.10, 12 37 16.3 -40 48 43.6, has one planet in orbit.

HD 101930, mag. 8.21, 11 43 30.11 -58 00 24.8, has one planet in orbit.

HD 114386, mag. 8.73, 13 10 39.82 -35 03 17.2, has two planets in orbit.

HD 113538, mag. 9.02, 13 04 57 -52 26 35, has two planets in orbit.

HD 125595, mag. 9.03, 14 21 23 -40 23 39, has one planet in orbit.

HD 103197, mag. 9.41, 11 52 52.96 -50 17 34.2, has one planet in orbit.



PSR B1259-63, mag. 10.08, 13 02 47.66 -63 50 08.07, is a pulsar in a binary system.

Of Special note beyond magnitude 10 -

1A 1118-61, mag. 12.12, 11 20 57.18 -61 55 00.2, is a high mass X-ray binary star.

BPM 37093, mag. 13.96, 12 38 49.93 -49 48 01.2, is a variable white dwarf star nicknamed “**Lucy**”, after the song “*Lucy In the Sky With Diamonds*”. The star’s carbon atoms are believed to have formed a crystalline lattice, similar to that of a diamond, which is how it got its nickname.

Beyond magnitude 10 there are 7 WASP stars that have a transiting planet, and 1 WASP star that has two transiting planets.

Sky Happenings: May 2018

(what follows pertains ONLY to the current month. Material above is good year after year.)

- May 2nd** - Dusk: **Aldebaran** and **Venus**, separated by little more than 6°, set together in the west-northwest.
- May 3rd** - **Venus** passes 7° north of **Saturn** at 3 PM CDT.
- May 4th** - Early Morning: The waning gibbous **Moon**, **Saturn**, and **Lambda Sagittarii** (the top star of the **Tea Pot** asterism) form a triangle; **Mars** trails them as they travel from east to west, The **Moon** passes 1.7° north of **Saturn** at 3 PM CDT.
- May 5th** - The **Moon** is at apogee (251,318 miles, or 404,457 km from **Earth**) at 7:35 PM CDT.
- May 6th** - The **Moon** passes 3° north of **Mars** at 2 AM CDT,
Pre-dawn: A waning gibbous **Moon** shares the sky with the **Eta Aquarid Meteor Shower** at its peak before dawn. Look toward the eastern horizon.
- May 7th** - **Last Quarter Moon** occurs at 9:09 PM CDT.
- May 8th** - Asteroid **Vesta** is stationary at 5 AM CDT,
Jupiter is at opposition at 8 PM CDT.
- May 10th** - The **Moon** passes 2° south of **Neptune** at 4 AM CDT.
- May 12th** - **Mercury** passes 2° south of **Uranus** at 4 PM CDT.
- May 13th** - The **Moon** passes 5° south of **Uranus** at 10 AM CDT,
The **Moon** passes 2° south of **Mercury** at 12 Noon CDT.
- May 15th** - **New Moon** occurs at 6:48 AM CDT.
- May 16th** - The **Moon** passes 1.2° north of **Aldebaran** at 8 AM CDT.
- May 17th** - The **Moon** passes 5° south of **Venus** at 1 PM CDT,
The **Moon** is at perigee (226,040 miles, or 363,776 km from **Earth**) at 4:05 PM CDT,
Dusk: The thin waxing crescent **Moon** joins **Venus** as they set with 6° separating them.
- May 19th** - Evening: The **Moon**, in **Cancer**, hangs 6° below the **Beehive Cluster (M 44)**.
- May 20th** - Morning: The **Moon** is 1.7° south of the **Beehive Cluster (M 44)** at 7 AM CDT,
Dusk: **Venus** hovers less than 1° to the right of open star cluster **M 35** in **Gemini**.
- May 21st** - Evening: The nearly first quarter **Moon** and **Regulus** form a tight pair with less than 1° separation,
First Quarter Moon occurs at 10:49 PM CDT.
- May 23rd** - **Spring** begins in the **Martian** southern hemisphere, now tilted toward **Earth**.
- May 25th** - All night: Watch as **Spica** and the waxing gibbous **Moon** cross the sky in tandem a little more than 6° apart.
- May 26th** - All night: The **Moon** has moved closer to **Jupiter**; the pair form a long triangle with **Spica**.
- May 27th** - The **Moon** passes 4° north of **Jupiter** at 1 PM CDT,
Evening: The waxing gibbous **Moon** is 5° east of **Jupiter** in the evening sky.
- May 29th** - **Full Moon** occurs at 9:20 AM CDT.
- May 31st** - All night: The waning gibbous **Moon** and **Saturn** rise 2° apart; watch as the separation grows to 4° before sunrise,
The **Moon** passes 1.6° north of **Saturn** at 8 PM CDT.



Planets:

Mercury – **Mercury** reached greatest western elongation on April 29th, and it remains low in the east



before dawn in early May. On the 1st, it stands 4° high 30 minutes before sunrise, shining at magnitude 0.3 above the eastern horizon. On the 15th, it appears 3° high 30 minutes before sunup, and shines at magnitude -0.3.

Venus – Shortly after sunrise on May 1st, **Venus**, shining at magnitude -3.9 and appearing against the backdrop of **Taurus**, lies about 5° north of the **Hyades** star cluster and 10° east of the **Pleiades (M 45)**. On May 2nd, **Aldebaran** hangs a minimum of 6.4° below the planet. On the 13th, **Venus** will, in its eastward trek, be at a point mid-way between the horns of **Taurus (Beta and Zeta Taurii)**. On the 17th, a wafer-thin crescent **Moon** stands 6° to the left of **Venus**, where a telescope would reveal a 12” diameter disk that is 84% lit. On the 19th, the planet crosses into **Gemini** and passes less than 1° north of 5th magnitude star cluster **M 35** on the 20th. By month’s end, **Venus** will reside in central **Gemini**.

Mars – **Mars** improves dramatically during May on its way toward a late July opposition that will bring it closer to **Earth** than it has been in 15 years. **Mars** rises shortly before 1:30 AM local daylight time as May opens. It then lies in eastern **Sagittarius**, 15° east of **Saturn**. **Mars** moves quickly eastward, passing 0.3° south of 9th magnitude globular cluster **M 75** on the 14th; by the next morning, it has crossed into **Capricornus**, where it will remain until late August. During May, **Mars** grows in magnitude from -0.4 to -1.2, with its apparent diameter swelling from 11” to 15”, beginning the season for seeing multiple **Martian** surface features with telescopes as small as 6-inches. For observers in **North America**, on May’s first few mornings, a dark wedge-shaped feature known as **Syrtris Major** stands at the center of the **Martian** disk. A week later, the dark, finger-like **Mare Cimmerium** takes center stage. The volcanic **Tharsis** region rotates into view on mornings in mid-May. **Solis Lacus** appears quite prominent. On May 22nd, **Spring** begins for the southern hemisphere of **Mars**. The south polar cap, now shrinking, will be tilting into slightly better views in the months ahead.

Jupiter – As twilight deepens, **Jupiter** appears low in the east. On May 1st, it rises by 8:30 PM local daylight time. **Jupiter** resides in **Libra**, beginning May at 4° east of **Alpha Librae (Zubenelgenubi)** – a wide double star – and ending the month 0.9° northeast of this 3rd magnitude double star. **Jupiter** reaches opposition on May 8th, and all month long will shine at magnitude -2.5, appearing more than 44” across the equator. On May 7th, the moon **Io**’s shadow touches the cloud tops of **Jupiter** at 9:56 PM CDT – just two minutes before **Io** itself. Both moon and shadow leave the planet’s disk at 12:06 AM CDT. On May 30th, **Io** transits starting at 9:37 PM CDT, but the shadow doesn’t hit the planet until 30 minutes later. On the May 8th opposition, **Europa** will appear the smallest, with a diameter of 1.0”, **Io** will show 1.1”, **Callisto** at 1.5”, and **Ganymede** will boast a whopping 1.7” diameter.

Saturn – **Saturn** rises shortly after midnight local daylight time in early May, and two hours earlier by month’s end. For best viewing, wait until it climbs higher in the south an hour or two before morning twilight. **Saturn** resides among the background stars of **Sagittarius**, just north of the **Teapot** asterism. On May 1st, the planet stands less than 4° northeast of 3rd magnitude **Lambda Sagittarii**, the star marking the top of the **Teapot**’s lid, and 1.7° north of the 5th magnitude globular star cluster **M 22**. **Saturn** moves slowly westward during May, ending the month 1.8° northwest of **M 22**. **Saturn** brightens from magnitude +0.3 to +0.2 in May, with the apparent diameter growing slightly this month up to over 18” wide by late May. In mid-May, the planet’s disk measures 18” across, while the rings span 40” and tilt 26° to our line of sight.

Uranus – **Uranus** pops into view at the end of May, now residing in **Aries** after spending 5 years among the background stars of **Pisces**. You can find it with binoculars 10° due south of 3rd magnitude **Beta Arietis** and 3° northeast of 4th magnitude **Omicron Piscium**. **Uranus** shines at magnitude 5.9. On the morning of May 13th, **Uranus** is 2.2° to the upper left of **Mercury**.

Neptune – **Neptune** rises at the break of dawn in early May, but it will become a much easier target late in the month. On the 31st, it rises around 2 AM local daylight time and climbs 20° high in the east-southeast as twilight commences. Glowing at magnitude 7.9 against the backdrop of **Aquarius**. Look for it 1.0° west of 4th magnitude **Phi Aquarii**.

Pluto – On May 15th, **Pluto** will be at RA 19 30.3 Dec. -21 33, glowing at magnitude 14.2, and showing an angular size of 0.1”.

Moon – The waning gibbous **Moon** is slightly more than 3½° to the upper right of **Saturn** at dawn on the 4th of May, and slightly more than 6½° to the left of **Saturn** (almost half-way between **Saturn** and **Mars**) at dawn on May 5th. The **Moon** is just around 2° to the upper left of **Mars** in the hours leading up to dawn on the 6th. The waxing crescent **Moon** is about 6° to the left of **Venus** at nightfall on Mat 17th. The **Moon** is



exactly at **First Quarter** when it passes less than 1° above **Regulus** on the evening of May 21st. The almost full **Moon** is just over 5° to the left of **Jupiter** on the evening of May 27th, and a waning gibbous **Moon** is a little more than 2° to the left of **Saturn** four days later.

Asteroids – On May 18th, asteroid **Ceres** slides past magnitude 4.5 **Kappa Leonis**. Point your telescope at **Kappa Leonis** and then look for a magnitude 6.8 star half the full moon’s diameter to the south-southwest. Magnitude 8.5 **Ceres** lies between the two stars. **Ceres** will fade from magnitude 8.4 to 8.7 during May.

Asteroid occultations – In the early morning hours of May 11th, the asteroid **472 Roma** will occult a magnitude 10.8 star in **Serpens Caput**. Observers along a path that stretches from the **West Coast** to the **South Atlantic** region will see the star’s brightness drop 2.4 magnitudes for up to 4.2 seconds. At about a week before the event, a more precise prediction and path map will be available from Steve Preston’s minor-planet occultation website (asteroidoccultation.com),

Comets – Comet **PANSTARRS (C/2016 R2)**, a cometary messenger from the **Oort Cloud**, should glow at 10th or 11th magnitude this month. **PANSTARRS** reaches perihelion, its closest approach to the **Sun**, on May 9th. Even then, it lies within the midst of the asteroid belt some 2.6 times further from the **Sun** as **Earth** is. At that distance, the **Sun** cannot warm the comet’s nucleus enough to make it glow brightly, but the great distance also means that the comet moves slowly against the background stars and will remain a tempting target in the northwest after darkness falls. In early May, the comet lies just 2° south of magnitude 0.1 **Capella (in Auriga)**. And shortly after mid-month, the comet passes a similar distance north of magnitude 1.9 **Beta Aurigae**. A 4-inch telescope, under a dark sky, should be enough to capture the comet’s fuzzy glow, but an 8-inch scope will allow you to pick out some structure – you will want to use high power to get the best views.

Meteor Showers – The **Eta Aquariid** shower, resulting from earth plowing through the dust particles shed by comet **1P/Halley** over millennia, peaks on the morning of May 6th. Unfortunately, a waning gibbous **Moon** shares the sky and will drown out fainter meteors. For best views, find an otherwise dark site and place yourself where the **Moon**’s direct light is blocked. With clear weather, up to 10 meteors might be seen in the hour before dawn.

A minor meteor shower, the **Eta Lyrids**, peak on May 10th, with a rate of at least 3 meteors at maximum activity.

There are three minor meteor showers associated with the **Centaurus** constellation. The **Alpha Centaurids** is active during most of February, the peak usually occurs on the 6th/7th of the month. Observers in the southern hemisphere usually get better views, with maximums rarely exceeding 20 late January to early February, with the peak on February 14th, with 5 to 10 meteors per hour. The **Theta Centaurids** occurs around January 23rd to March 12th, with a peak on February 14th – the shower is only visible in the southern hemisphere. Its meteors are usually fast, at around 60 km/sec, with maximum rates reaching as few as 2 to 4 meteors per hour.

When to View the Planets:

Evening Sky

Venus (west)
Jupiter (southeast)

Midnight

Jupiter (south)
Saturn (southeast)

Morning Sky

Mercury (east)
Mars (south)
Jupiter (southwest)
Saturn (south)
Uranus (east)
Neptune (southeast)



DARK SKY VIEWING - PRIMARY ON MAY 12TH, SECONDARY ON MAY 19TH

Mythology

Centaurus – the Centaur

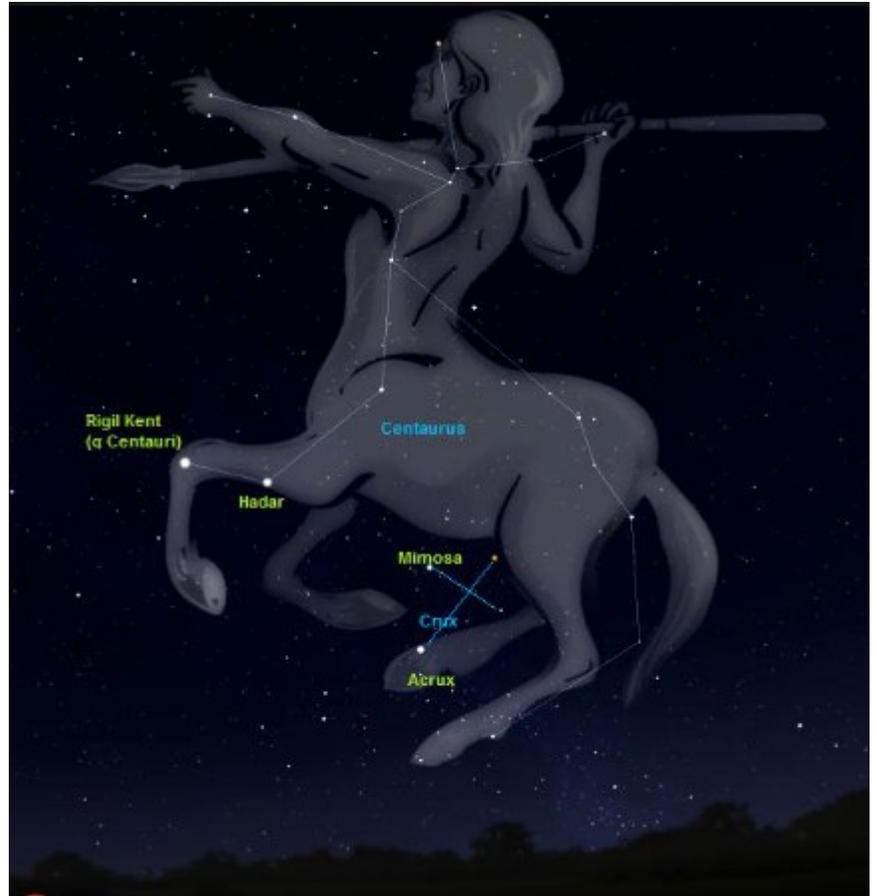
Centaurs were mythical beasts, half-man, half horse. They were a wild and ill-behaved race, particularly when the wine bottle was opened. But one centaur, Chiron, stood out from the rest as being wise and scholarly, and he is the one who is represented by the constellation Centaurus.

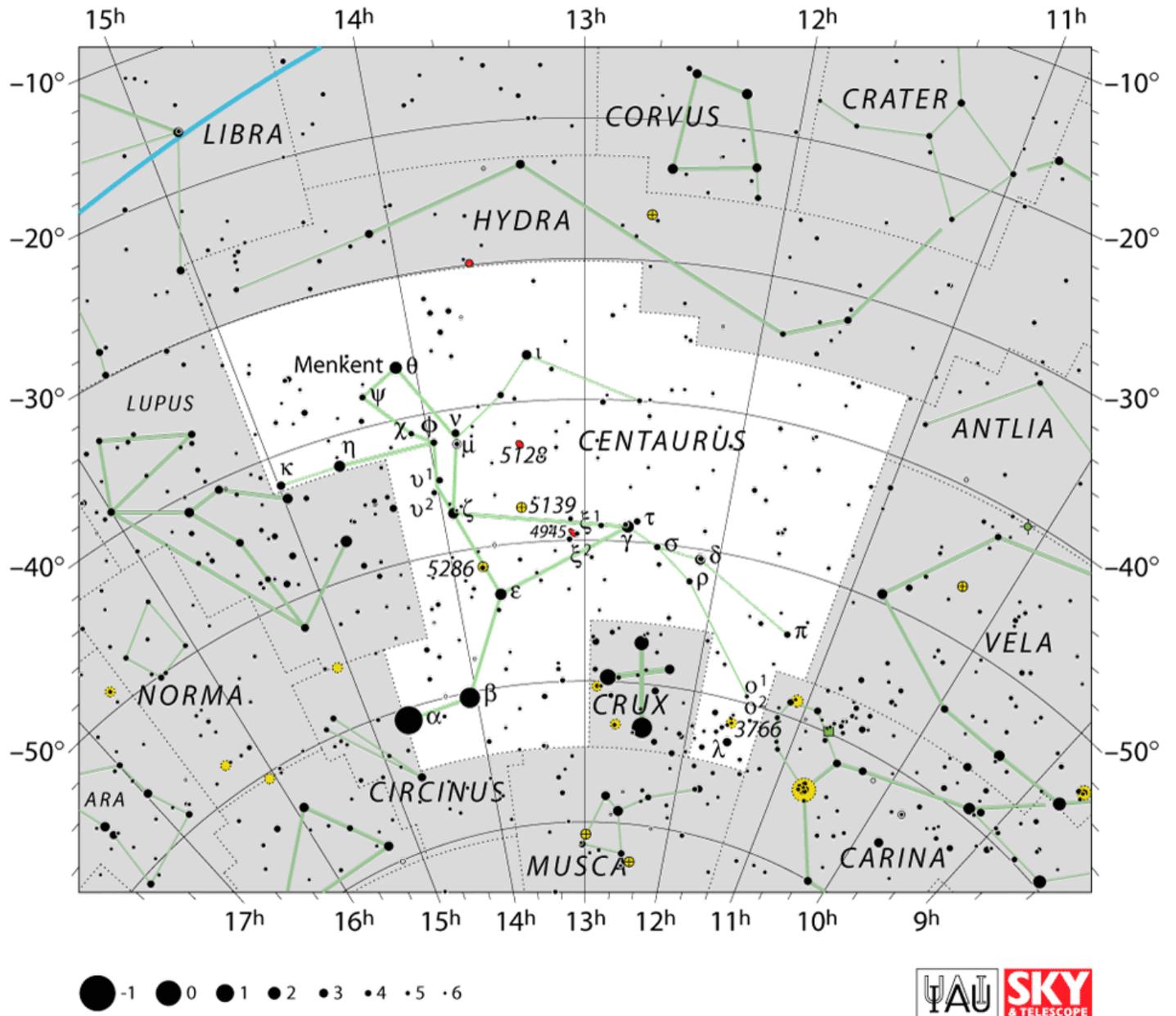
Chiron was born of different parents from the other centaurs, which accounts for his difference in character. His father was Chronus, king of the Titans, who one day caught and seduced the sea nymph Philry. Surprised in the act by his wife Rhea, Chronus turned himself into a horse and galloped away, leaving Philry to bear a hybrid son.

Chiron grew up to be a skillful teacher of hunting, medicine, and music; his cave on Mount Pelion became a veritable academy for young princes in search of a good education. Chiron was so trusted by the gods and heroes of ancient Greece that he was made foster-father to Jason and Achilles; but perhaps his most successful pupil was Asclepius, son of Apollo, who became the greatest of all healers and is commemorated in the constellation Ophiuchus.

For a creature who did so much good during his lifetime, Chiron suffered a tragic death. It arose from a visit paid by Heracles to the centaur Pholus, who entertained him to dinner and offered him wine from the centaur's communal jar. When the other centaurs realized their wine was being drunk, they burst angrily into the cave armed with roots and trees. Heracles repulsed them with a volley of arrows. Some of the centaurs took refuge with Chiron, who had been innocent of the attack, and an arrow of Heracles accidentally struck Chiron in the knee. Heracles, concerned for the good centaur, pulled out the arrow, apologizing profusely, but he already knew that Chiron was doomed. Even Chiron's best medicine was no match for the poison of the Hydra's blood in which Heracles had dipped his arrows.

Aching with pain, but unable to die because he was the immortal son of Chronus, Chiron retreated to his cave. Rather than let him suffer endlessly, Zeus agreed that Chiron should transfer his immortality to Prometheus. Thus released, Chiron died and was placed among the stars. Another version of the story simply says that Heracles visited Chiron and that while the two were examining his arrows, one accidentally dropped on the centaur's foot. In the sky, the centaur is represented as about to sacrifice an animal (the constellation Lupus) on the alter (the constellation Ara). Eratosthenes says that this is a sign of Chiron's virtue.





The End

