Newsletter of the Baton Rouge Astronomical Society

Next Meeting: Monday, May 9th at 7PM at HRPO

(2nd Mondays, Highland Road Park Observatory)

What's In This Issue?

President's Message

Secretary's Summary of April Meeting

Outreach Report
Past Events Summary
with Photos of"
Rockin' At The Swamp,
Zippety Zoo Fest,
Louisiana Earth Day

Recent BRAS Forum Entries

20/20 Vision Campaign

Geaux Green Committee Meeting Report

Message from the HRPO

International Astronomy Day

Observing Notes: Hydra, the Water Snake, by John Nagle

President's Message

We had a busy month with outreaches last month, and we have some major outreaches this month: The Transit of Mercury on Monday May 9th, from 6AM to 2PM at HRPO; International Astronomy Day (the 10th consecutive for us) on Saturday May 14th, 3PM to 11PM at HRPO; and Mars Closest Approach (to Earth) on Monday May 30th, 8PM to 12AM at HRPO. Volunteers are welcome.

There was a good turnout at the April BRAS meeting with Dr. Giaime, Observatory Head of LIGO Livingston, as our guest speaker. His talk was very informative about the history of the search for gravity waves, Einstein's theory on gravity waves, and what gravity waves are.

The May BRAS meeting's guest speaker will be Chris Johnson, of the LSU Astronomy Department, giving a presentation titled "Variability of Optical Counterparts to Selected X-ray Sources in the Galactic Bulge". This is part of his Ph.D. research and has something to do with variable stars and what we can learn from space and ground based telescopes.

BRAS still has a few openings/positions that need to be filled: Outreach Co-coordinator, and Public Information Officer. If anyone is interested in either of these positions, talk to Ben Toman.

Clear Skies,
John R. Nagle
President of BRAS

Imagine . . . . . if we didn't have light pollution!

"Starry Night" by Alex Ruiz, digital painting, circa 2011?

Secretary's Summary of April 2016 BRAS Meeting

- Meeting began with introduction of Dr. Joseph Giaime of LIGO. Dr. Giaime gave a presentation about LIGO, the recent detection of gravitational waves and future possibilities for the facility.

- Don Weinell gave a summary of the 2016 Hodges Gardens Star Party. The turnout was good and all expenses were recouped, but with only 3 BRAS members in attendance the question of whether or not BRAS would continue to front the star party was brought up. It was determined that we should make a bigger effort to increase club attendance at next year's event. (Although, the event may be in jeopardy due to state budget cuts that may temporarily close the park.)

- New members were welcomed.

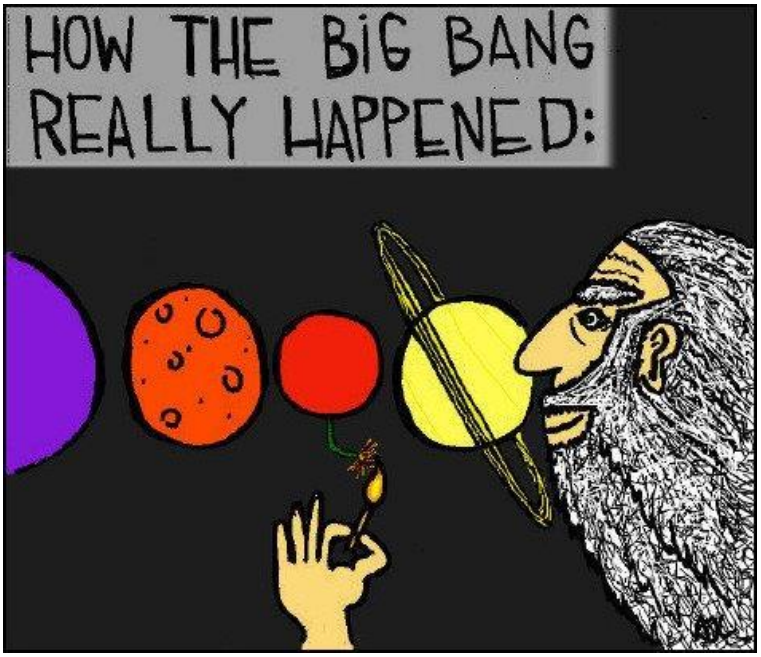
- Our regular raffle was not held. Instead, members were encouraged to purchase tickets for the raffle being held at the HRPO on International Astronomy Day.

- Michele Fry was recognized as the new editor of the monthly newsletter as of April 2016.

- Upcoming events were discussed including Earth Day, Transit of Mercury and IAD.

- Meeting ended.

Submitted by Ben Toman



Outreach Report

Upcoming Outreach Requests:

Monday, May 9th, **Transit of Mercury**
Highland Road Park Observatory, 6am-2pm
Various tasks (Info, solar scope, etc.)
Please email me (outreach@brastro.org) or Christopher Kersey (observatory@brec.org)

Thursday, May 12th, **Baton Rouge Lodging Association**
BREC Headquarters, 11:30am-1pm
Please email me (outreach@brastro.org)

Saturday, May 14th, **International Astronomy Day**
Highland Road Park Observatory, 3pm-11pm
Various tasks (Info, scopes, and many others.)
Please email me (outreach@brastro.org) or Christopher Kersey (observatory@brec.org)

Past Events Summary and Photos:

We participated in Rockin' at the Swamp, Zippity Zoo Fest and Louisiana Earth Day recently. Between all 3 events, we reached more than 1500 people, many of which had never heard of BRAS or the HRPO.

We've been getting a lot of miles out of the Scale Model of the Solar System supplied by the Night Sky Network and it has been a big hit at each of these events. Solar viewing was available for Zippity Zoo Fest, but the other events were clouded out so just the table was available.

Our participation in community outreach is a large reason the club exists. Sharing your love of astronomy and the night sky with other people in the community can be very fun and rewarding. It doesn't matter if you are an expert or novice in the field of amateur astronomy, we can always use your help. Please consider signing up for some future events. They're always a good time!

Proportional Scale Model of the Solar System

More to come!

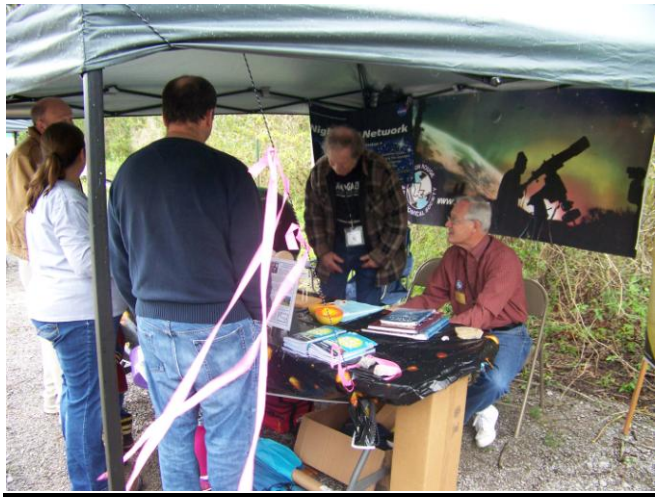
Ben Toman

Interim Outreach Coordinator

Photos submitted by Charles Edwards:

Rockin' at the Swamp

Wally Pursell, Craig Brenden, Charles Edwards, Scott Locque, Ben Toman, John Nagle, Christopher Kersey, Roslyn Readinger, Trey Anding, Barrow Leake and Krista Reed were all in attendance as volunteers.



Zippity Zoo Fest

Volunteers included Roslyn Readinger, Rick Wright, Ben Toman, Christopher Kersey and Trey Anding..

Got one or more BRAS event photos? Send them to newsletter@brastro.org, att'n Michele, with a caption, preferably by the 26th of the month for inclusion, (space permitting), in this newsletter. Cite photographer' credits too.

"One picture is worth a thousand words."

Louisiana Earth Day

Volunteers were Charles Edwards, John Nagle, Krista Reed, Ben Toman, Christopher Kersey and Steve Richard.






"Between all 3 events, we reached more than 1500 people."

Recent Entries in the Forum

Below are selected recent additions to the BRAS Forum.
There are also nine active polls.

Mercury Viewing Tips Posted
May Great Red Spot Viewing Times for Baton Rouge Generated
Moon Occults Aldebaran on 10 April
At Least Four Geomagnetic Storms in April
Observations Concerning Castor and Sirius
NanoDays a Success

20/20 Vision Campaign

GLOBE at Night: 29 April to 8 May
2016 GOAL: 200 Measurements. CURRENT: 35

OBSERVATIONS NEEDED FOR SCHOOL PROJECT

BRAS is in the process of assisting a student at St. Joseph's Academy acquire raw data. She needs descriptions of views of five Messier objects—Pleiades, Orion Nebula, Andromeda Galaxy, Beehive Cluster, Whirlpool Galaxy—together with date and time, and the observing location's GaN measurement and quality of view. Parameters have been set defining whether each observation yields a poor, good or excellent view. An alert will also be sent out describing this exercise. The student needs very much this information with at least three sky views (different limiting magnitudes). The observation parameters for this project are as follows…

M45 [Pleiades] *Aperture: binocular. Magnification: 10x – 25x.*
Poor View: fifteen stars or fewer seen.
Good View: sixteen to twenty-nine stars seen.
Excellent View: thirty or more stars seen.

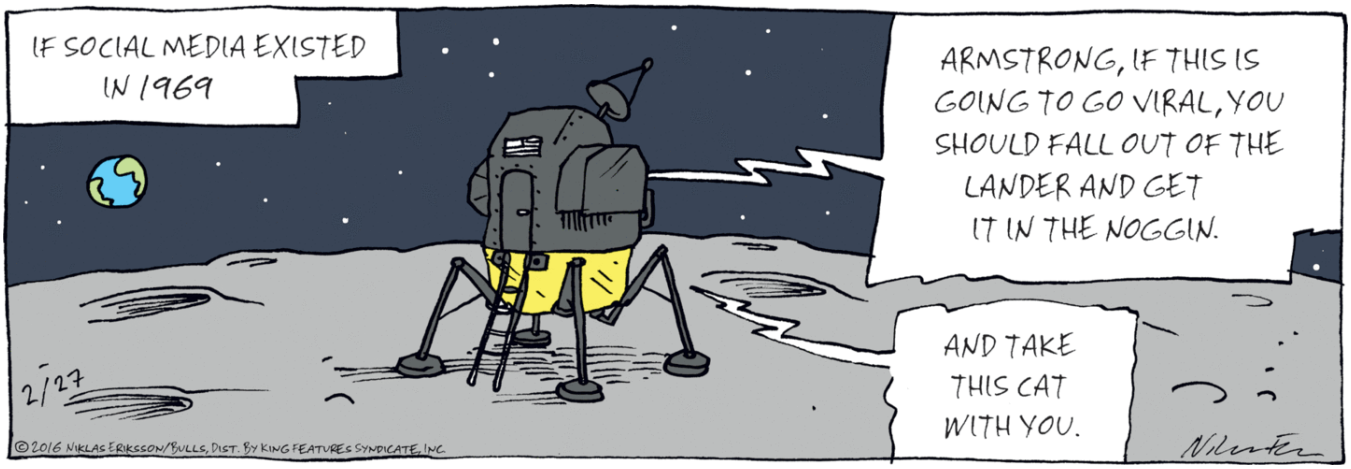
M44 [Beehive Cluster] *Aperture: 50mm – 70mm. Magnification: 10x – 25x.*
Poor View: indistinct blob seen.
Good View: at least ten distinct stars seen.
Excellent View: eleven or more distinct stars seen.

M31 [Andromeda Galaxy] *Aperture: at least 80mm. Magnification: 20x – 40x.*
Poor View: only core of the galaxy seen.
Good View: arms of the galaxy seen.
Excellent View: galaxy's companion (M32) seen.

M51 [Whirlpool Galaxy] *Aperture: at least 8". Magnification: 25x – 50x.*
Poor View: indistinct blob seen.
Good View: arms of the galaxy seen.
Excellent View: galaxy's companion (NGC 5195) seen.

M42 [Orion Nebula] *Aperture: at least 80mm. Magnification 60x – 100x.*

Poor View: only Trapezium (the four brightest stars) seen.
Good View: fifth star seen.
Excellent View: sixth star seen.
Observations should only be made when the Moon is below the horizon. Each observation should include the location's GLOBE at Night measurement or SQM measurement. Use all of these parameters to report your results to observatory@brec.org.



RESULTS OF VISIT TO GEAUX GREEN COMMITTEE MEETING

BRAS Co-Founder Wally Pursell assisted with a presentation Geaux Green Committee. The Geaux Green Committee "was created to help develop an Environmental Sustainability Policy and help BREC achieve its sustainability goals in the future. BREC's sustainability policy is centered on recycling, reducing waste and reusing resources". At the meeting (which took place on 6 April), BRAS made the request once more for BREC to adopt a policy mandating FCO lighting on all its property. A member of the Geaux Green Committee asked how much a change in the sky would be noticeable if BREC used only FCOs. The Observatory Manager responded that the change would be negligible if other owners of large numbers of outdoor lights (local municipalities, SU, BRCC) did not change as well, but that if others were expected to change the owners of HRPO (BREC and LSU) must first do so as an example. The Committee is currently deciding whether it will make the recommendation to BREC.

Message from HRPO

The Highland Road Park Observatory will be closed on 13 May.

FRIDAY NIGHT LECTURE SERIES

all start at 7:30pm

6 May: "The Crash of the Hindenburg" Over seventy-five years ago floating hotels adorned the skies over North America and Europe. This classy and leisurely mode of transportation effectively ended with a horrifying, flaming wreckage in New Jersey. What happened?
20 May: "The Amateur Radio Service" For over one hundred years the original "social medium" has allowed family and friends to keep in touch with no monthly fee! LSU physics professor Dana Browne provides a historical framework for understanding the communication modes that are, in their own way, more powerful than the internet!
27 May: "The Martian Mystique" The history, culture, imagination and science interwined with the Red Planet informs our society in a way no other celestial object does. This presentation is an overview of the place Mars holds in our lives.

SCIENCE ACADEMY

Saturdays from 10am to 12pm
For ages eight to twelve. $5/$6 per child.
7 May: "Dry Ice Time!"
21 May: "Mars"
28 May: "Expedition 7"

ONGOING CALL FOR VOLUNTEERS

HRPO personnel are currently revamping the look of the main floor. We have already added displays for close asteroid flybys and bright comet apparitions. We periodically need crafting (gluing, cutting, painting, etc.) performed for these tasks. We also have plenty of "grunt work" to go around in preparation for the three big special events this month. We are asking any BRAS volunteers with time to assist. Thank you.

ONE-TIME CALLS FOR VOLUNTEERS

*Monday, 9 May from 6am to 2pm. *Six volunteers familiar with at least one telescope.*
Transit of Mercury (see below). Solar viewing. Moderately difficult.
*Saturday, 14 May from 3pm to 11pm. *Fifteen to twenty volunteers.*
International Astronomy Day. Various tasks. Moderately difficult.
*Monday, 30 May from 8pm to 12am. *Two or three volunteers.*
Mars' Closest Approach. Telescope operation, front desk and other tasks. Easy to moderate difficulty.

TRANSIT OF MERCURY

Monday, 9 May from 6am to 2pm

First one in ten years.

HPRO WILL BE OPEN FOR THE DURATION.

No admission fee. For all ages.

A "transit" is the phenomenon of viewing a smaller body crossing in front of a larger one. On 9 May, for the first time in ten years, the disk of Mercury will traverse the disk of the Sun. A Transit of Mercury is not visible to the unaided eye. At least 30x magnification is needed to easily see the phenomenon. Several telescopes (at least six) will be in operation on HRPO grounds. HRPO will be open for the duration of the event. The Sun will actually be rising here in Baton Rouge as the transit gets started!

PLEASE REMIND YOUR FAMILY, FRIENDS AND COWORKERS:

Viewing a Transit across the Sun can be dangerous for one's eyesight if not performed correctly. The BRAS Forum thread lists a number of safe ways to view the transit (and actually, to view the Sun in general). Do *not* use sunglasses, do *not* attempt to use your hand to cover a portion of the Sun, and do *not* attempt to "glance quickly" in the direction of the Sun. At any rate, a Transit of Mercury is not visible to the unaided eye. If a first-timer is in *any doubt* whether he will be performing the viewing safely, viewing of the Transit should be attempted only with someone with previous solar viewing experience.

MARS' CLOSEST APPROACH

Monday, 30 May from 8pm to 12am

No admission fee. For all ages.

During this close approach, Mars resides in the constellation Libra, with an apparent diameter of 18.6"—over *three times larger and over fifteen times brighter than it appeared in December 2015*! On this Close Approach night Jupiter and Saturn will also be visible.

PLEASE REMIND YOUR FAMILY, FRIENDS AND COWORKERS:

* Please do not use concrete for sitting or lying. *No white lights are allowed. *If a telescope is not in operation, please do not handle it in any way. *No glass containers are allowed. *Pets and animals must remain under control and on a leash at all times. *Alcohol, smoking and loud music are not allowed. *It is illegal for any person to be on BREC property after dark. HRPO grounds are the only BREC property on which the public is invited during this nighttime period. There will be no remaining on HRPO grounds after midnight.

INTERNATIONAL ASTRONOMY DAY

Saturday, 14 May from 3pm to 11pm
Tenth Consecutive Year!
Volunteers needed! HRPO will be calling!

RAFFLE TICKETS, $5 EACH
First Prize: Orion 40th Anniversary Skyquest XT8 Dobsonian Telescope
Value: $499.99
Over fifteen percent of the tickets have been sold.

SOME RETURNING EXHIBITORS…
Baton Rouge Amateur Radio Club
Baton Rouge Metropolitan Airport
Baton Rouge Zoo
Bluebonnet Swamp Nature Center
Civil Air Patrol
LIGO
Saint Joseph's Academy

NEW EXHIBITORS…
Baton Rouge Gallery * Baton Rouge Mosquito Abatement
MARS Van * Nintendo
American Institute of Aeronautics and Astronautics

RIDES…
18" Dry Slide
Spacewalk
Obstacle Course
Hamster Ball

OTHER…
Adventure Quest
Face Painting
Homemade Comet
Scope-on-a-Rope
Train Like an Astronaut

Early volunteer sign-up is needed. It is extremely difficult to schedule a volunteer if that person reveals his availability with only two or three days to go. Sign-up now, please!

Observing Notes:

by John Nagle

Hydra – the Water Snake

Position: RA 10.12 hours, Dec. -19.36°

Named Stars:

Alphard (Alpha Hya), "Al Fara al Shuja", "The Solitary One in the Serpent", mag. 1.99, 09 27 35.25 -08 39 31.3, is an orange giant star. Tycho Brahe called the star "Cor Hydrae" or "the Heart of the Dragon", and the Arabs knew it as the "backbone of the serpent". **Alpha Hydrae** has a large Barium content. The triple star **29 Hydrae** lies ½° to the south.

Dah nab al Shuja (Gamma Hya), "The Snake's Tail", mag. 2.99, 13 18 55.25 -23 10 17.1, is a yellow giant star. **Gamma Hydrae** has shut down its hydrogen fission factory, which means it might posses a dead helium core. Chances are **Gamma Hydrae** will grow larger and less luminous as the core shrinks – then it will fire up to fuse carbon and oxygen. **Gamma Hydrae** has an optical companion.

Lisaa al Shudja (Delta Hya), "The Tounge of the Snake", mag. 4.14, 08 37 39.14 +05 42 13.7, is a white dwarf binary star.

Min al Az'al (Epsilon Hya), "**Belonging to the Uninhabited Spot" (with Delta, Zeta, Eta, Rho, and Sigma Hya),** mag. 3.38, 08 46 46.65 +06 25 08.1, is a multiple star system. The primary is a yellow-white giant star with a white sub-giant star orbiting so close that it is considered a spectroscopic binary star. A little further away is another binary pair, and further away yet is a dwarf star. Component A mag. 3.8, B mag. 4.7, C mag. 7.8, D mag. 12.7; separation of components A and C is 2.7", AB orbital period of 15.05 years, component C has a period of 9.90 days.

Hydrobius (Zeta Hya), "the Water Dweller", mag. 3.11, 08 55 23.68 +03 56 43.9, is an evolved giant star in the class between a giant and a bright giant star.

Al Sharasil (Kappa Hya), mag. 5.07, 09 40 18.38 -14 19 56.1.

Minhar al Shija (Sigma Hya), "The Nostril of Hydra", mag. 4.45, 08 38 45.45 +03 20 29.3, is an orange giant star.

Ukdah (Tau Hya), mag. 3.90, 09 39 51.33 -01 08 33.6, is a triple star. **Tau²Hya**, mag. 4.54, 09 31 58.93 -01 11 04.8; **Tau²Hya**, mag. 4.59, 09 29 08.84 -02 46 08.2.

Deep Sky:

M 48, (NGC 2548), mag. 5.8, 08 13.8 -05 48, 50' in size, is an open cluster of 80 stars; detached, strong concentration of stars; moderate range in brightness; very large; brightest star is mag. 8.2. **M 48** is a perfect arrowhead of bright stars with a tight, off-axis core. Charles Messier listed the wrong position (off by more than 4° in declination) for this object, and thanks goes to Caroline Herschel for fixing his mistake.

M 68, (NGC 4590), mag. 8.2, 12 39.5 -26 45, 10' in size, is a globular cluster of over 100,000 stars having a low concentration of stars; large, very rich, and very well resolved telescopically. **M** 68 contains 42 variable stars, and over 250 giant stars. To find it, locate **Gamma Hydrae**, move west to **Beta Corvi.** Now drop down 3° to the brightest star in this region, a 5th magnitude star (it is a binary star B230, mag. 5.5 and 12.0, separation of 1.3"). **M 68** is about ½° to the northeast.

M 83, (NGC 5236), (sometimes called the 'Southern Pinwheel Galaxy'), mag. 7.6, 13 37.0 -29 52, 11.2 ' x 10.2' in size, is a very bright, large, and face on galaxy; two main arms; extremely bright nucleus. This nucleus is tiny; looking like a star trapped in a maelstrom of shimmering light (O'Mera). **M 83** is considered a delightful spiral galaxy for a small telescope. Six supernovas are known to have been in this galaxy – 1923A, 1945B, 1950B, 1957D, 1968L, and 1983N. To find **M 83,** locate **Gamma Hydrae**, then move 6½° south (the elliptical galaxy **NGC 5061** may be seen at 3½° south) and then 3¼° east. There is a 5.5 magnitude star about 40' to the northeast of the nebula.
NGC 3242, PK 67 261+32.1, Caldwell 59, "The Ghost of Jupiter Nebula", "The CBS Eye Nebula", mag. 7.8, 10 24.8 -18 38, 25" in size, is a planetary nebula that is very bright, slightly elongated, pale-green ring at photo mag. 8.6. It looks like a bluish egg. The central star is at mag. 12.3 and is located 2° south of **Mu Hya.**
NGC 3621, mag. 8.9, 11 18.3 -32 49, 10.0'is a quite bright, very large, and elongated galaxy; knotty arms; very small, bright nucleus. **NGC 3621** is located about 3° west-southwest of **Xi Hya.**
NGC 3923, mag. 9.6, 11 51.0 -28 48, 6.0' x 4.2' in size, is a bright, pretty large, and slightly elongated galaxy; small, bright, elongated nucleus.
NGC 3585, mag. 9.7, 11 13.3 -26 45, 2.9' x 1.6' in size, is a bright, pretty large, elongated galaxy.
NGC 3109, mag. 9.8, 10 03.1 -26 10, 14.5' x 3.5' in size, is a faint, very large, and extremely elongated galaxy; edge on; a long, spindle shaped galaxy whose ends appear squared off. **NGC 3109** is interacting with the **Antlia Dwarf,** the dwarf elliptical galaxy located in the **Antlia** constellation, and as a result, has a warped disk. **NGC 3109** is notable for containing a large number of planetary nebulae and a considerable amount of dark matter.

There are 87 more deep sky objects from magnitude 10 to magnitude 13.4 – see me if you want the info.

Beta Hya, mag. 4.29, 11 52 54.56 -33 34 29.3, is a binary star with the primary being a giant star, a chemically peculiar class B star with a strong magnetic field. The secondary star is at mag. 5.5, and has a separation of 0.7".
Upsilon^{1}Hya, mag. 4.11, 09 51 28.68 -14 50 47.6, has a brown dwarf companion.
Upsilon^{2}Hya, mag. 4.60, 10 05 07.49 -13 03 52.8 is a star in the **Upsilon Hydrae** system.
27 Hya, mag. 4.80, 09 20 29.03 -09 33 20.3, is an evolved yellow giant star in a triple star system, and has a suspected planet in orbit with a period of 9.3 years. The secondary star, a binary, is at magnitude 7.0, with its companion at magnitude 11.0.
U Hya, mag. 4.89, 10 37 33.25 -13 23 04.0, is a red, variable carbon star, with its magnitude varying from 4.2 to 6.6 over a period of 115 days.
54 Hya, mag. 5.15, 14 46 00.16 -25 26 34.5, is a binary star with the primary a yellow star at mag. 5.3, and the secondary star is a purple star at mag. 7.4.
HD 122430, mag. 5.47, 14 02 22.80 -27 25 47.1, has one planet in orbit.
R Hya, mag. 5.80, 13 29 42.82 -23 16 52.9, is a binary system with a pulsating red giant variable star as the primary. Magnitude varies from 3.5 to 10.9 over a period of 389 days. This was the third Mira type variable star, discovered in 1704. Component B is at mag. 5.90, with a separation of 9.2", or 245 AU. There is a helium shell building up around the exterior of the primary star. When the helium shell reaches critical mass, it will ignite, creating more carbon and oxygen. This is called a "helium shell flash" and signals the end of life for the giant star – it will end up as a white dwarf star.
HD 96700, mag. 6.50, 11 07 54 -30 10 28, has two planets in orbit.
HD 82943, mag. 6.54, 09 34 30.74 -12 07 46.4, has three planets in orbit.
HD 90156, mag. 6.95, 10 23 55.27 -29 38 43.9, is a variable star with one planet in orbit.
V Hya, mag. 7.0, 10 51 37.26 -21 15 00.0, is a carbon star, and one of the reddest stars in the night sky. Classified as a semi-regular variable star, its visual magnitude varies from 7.0 to 11.5 over a period of 18 years, with a sub-period of 530 days.

HD 86264, mag. 7.42, 09 56 57.84 -15 53 42.4, has one planet in orbit.
HD 72659, mag. 7.48, 08 34 03.19 -01 34 05.6, has one planet in orbit.
HD 74156, mag. 7.62, 08 42 25.12 +04 34 41.2, has 3 confirmed and 1 unconfirmed planets in orbit.
HD 86226, mag. 7.93, 09 56 29.84 -24 05 57.8, has one planet in orbit.
V 478 Hya, mag. 8.70, 08 22 49.95 +01 51 33.6, has one planet in orbit.
Gliese 433, mag. 10.1, 11 35 26.95 -32 32 23.9, has one planet in orbit.
There are seven more stars below mag. 10 that have planets in orbit.

The Hydra Cluster – The Hydra Cluster is a galaxy cluster in the constellation **Hydra**, spanning 10 million light years and contains 157 bright galaxies, the largest of which are the elliptical galaxies **NGC 3309** (mag. 11, 10 36.6 -27 31, 2.5' x 2.1' in size), **NGC 3311** (mag. 10.9, 10 36.7 -27 32, 3.6' in size), and the spiral galaxy **NGC 3312** (mag. 11.8, 10 37.0 -27 34, 3.2' x 1.2' in size). The cluster is notable for having a high proportion of dark matter. **The Hydra Cluster** is part of the larger **Hydra-Centaurus Supercluster**, which is approximately 158 million light years distant from the **Sun**.

There are two meteor showers associated with **Hydra –** the **Sigma Hydrids** meteor shower peaks on Dec. 6th, and are a very active shower with an unknown parent body; and the **Alpha Hydrids** are a minor shower that peaks between Jan. 1st and 7th.

Sky Happenings:

May 2nd - The **Moon** passes 1.7° north of **Neptune** at 6 AM CDT.
May 4th- The **Moon** passes 2° south of **Uranus** at 10 PM CDT.
May 5th- Pre-dawn – The **Eta Aquariid** meteor shower peaks before dawn under a moon-free sky,
The **Moon** is at perigee (222,344 miles from **Earth**) at 11:13 PM CDT.
May 6th - **New Moon** occurs at 2:30 PM CDT,
Night – a double shadow transit occurs on **Jupiter** from 7:39 to 8:42 PM CDT.
May 7th - Evening – as twilight deepens, the waxing crescent moon sets,
Alderbaran gleams about 6° to the upper left of the **Moon.**
May 8th - The **Moon** passes 0.5° north of **Alderbaran** at 4AM CDT – possible occultation.
May 9th - **Mercury** transits the **Sun,**
Mercury is in inferior conjunction at 10 AM CDT,
Jupiter is stationary at 6 PM CDT.
May 13th - **First Quarter Moon** occurs at 12:02 AM CDT,
Evening – spot **Regulus** 3-4° above the **First Quarter Moon ,**
Jupiter blazes some 15° to their upper left.
May 14th - Evening **– Jupiter** is in **Leo,** and will be about 4° to the upper left of the waxing gibbous moon.
May 15th - The **Moon** passes 2° south of **Jupiter** at 5 AM CDT.
May 18th - The **Moon** is at apogee (252,255 miles from **Earth**) at 5:06 PM CDT.
May 21st - The **Moon** passes 6° north of **Mars** at 3 PM CDT,
Full Moon occurs at 4:14 PM CDT,
Mercury is stationary at 5 PM CDT,
Night – the **Full Moon** beams about 7° to the upper left of **Mars.**
May 22nd - **Mars** is at opposition in **Scorpius** at 6 AM CDT,
The **Moon** passes 3° north of **Saturn** at 5 PM CDT,
The **Moon** rises in twilight, with **Saturn** about 4° to its right.
May 23rd - Asteroid **Vesta** is in conjunction with the **Sun at 2 PM CDT.**
May 29th - **Last Quarter Moon** occurs at 7:12 AM CDT,
Asteroid **Iris** is at opposition at 1 PM CDT,
The **Moon** passes 1.4° north of **Neptune** at 2 PM CDT.

May 30th - **Mars** comes closest to **Earth** (46.8 million miles away – 0.503 AU), and has a disk of 18.6" across, at 5 PM CDT.

Planets:

Mercury – Mercury transits the **Sun** on May 9th – a 7.5 hour transit – with a 12" diameter black disk. See "Transit" at the end of this column. Following the transit, **Mercury** moves into the morning sky. By late May, **Mercury** has climbed into view low in the east before dawn. On May 31st, **Mercury** lies 23° to the west of the **Sun**, but stands just 4° above the horizon a half hour before sunrise. **Mercury** shines at magnitude 0.9.

Venus – Venus is headed for superior conjunction will return to view after sunset in July. with the **Sun** on June 6th, and is not visible in May. **Venus** will return to view after sunset in July.

Mars – On may 1st, **Mars** rises about 10 PM local daylight time along with the background stars of northern **Scorpius the Scorpion**, shining at mag. -1.5 and a disk of 16". Joining **Mars** within the next hour is its ancient rival, 1st magnitude **Antares** in **Scorpius**, and a magnitude 0.2 **Saturn** in the southeastern horizon. **Mars** lies 5° north-northwest of **Antares**, and 8° west of **Saturn**. **Mars** treks westward (retrograde) relative to the starry backdrop in May. **Mars** will slide 1.2° north of the 7th magnitude globular cluster **M 80 (NGC 6093)** on May 6th, and 1.0° north of the 2nd magnitude double star **Delta Scorpii** on the 19th. On May 22nd, **Mars** lies opposite the **Sun** in our sky, so it rises near sunset and remains visible all night, at mag. -2.1. **Mars** spends the month retrograding across the narrow, northward-extending strip of western **Scorpius. Mars** begins May some 5° north of **Antares** and then threads the gap between **Beta** and **Delta Scorpii** on the 19th. On May 30th, two days after **Mars** crosses the border into **Libra the Scales, Mars** comes closest to **Earth**. The centers of the two planets then lie just 46.8 million miles apart, with **Mars** presenting a peak diameter of 18.6".

Jupiter – In early May, as twilight fades, Jupiter rides about 60° above the southern horizon, gleaming at magnitude -2.3 among the background stars of southern Leo the Lion. By month's end, Jupiter fades 0.2 magnitudes to a -2.1 magnitude. Jupiter's apparent diameter shrinks nearly 10% during May, dropping from 41" to 37". On the night of May 6th/7th, Callisto's shadow treks across Jupiter's north polar region from 10:18 PM to 12:42 AM CDT. Don't confuse Callisto's shadow with that of Io, which begins its own transit much closer to Jupiter's equator at 11:39 PM CDT. Giant Ganymede casts the larger, and thus, the most distant shadow. It's best timed shadow transit of the month occurs between 10:40 PM and 1:51 AM CDT on the night of May 12th/13th.

Saturn – Saturn will reach opposition in the first few days of June, and the view during May is hardly less impressive. **Saturn** brightens from mag. 0.2 to 0.0 this month. **Saturn** spends the entire month edging westward across the feet of **Ophiuchus the Serpent Bearer. Saturn**'s disk measures 18.3" across the equator in mid-May, with the rings spanning 41.6" at midmonth and up to 26° tilt to our line of sight. **Saturn**'s largest moon, **Titan** (8th magnitude), passes due north on the mornings of May 5th and 21st, and due south on May 13th and 29th. **Saturn**'s smaller moons glow more dimly. **Tethys, Dione,** and **Rhea** shine at 10th magnitude, and appear no more than 1' from the edge of the rings. **Iapetas** will be some 2' due south of **Saturn** on the night of May 31st/June 1st – and will require a 6" or larger telescope to sight it. **Saturn** forms a triangle with **Mars** and **Antares** all month. May begins with **Mars** and **Saturn** 8 apart, and ends with them separated by 15°. Meanwhile, slow, distant **Saturn** stays nearly on station with fixed **Antares**.

Uranus – Uranus remains too close to the **Sun** this month to see easily. Twilight interferes until May's last week, and even then, the 6th magnitude planet appears only a few degrees above the eastern horizon. **Uranus** and its host constellation, **Pisces the Fish,** will come into better view next month.

Neptune – Neptune, at 8th magnitude, is in the backdrop of **Aquarius the Water Bearer. Neptune** remains within 0.5° - the diameter of a **Full Moon** – of 4th magnitude **Lambda Aquarii** all month, appearing due south of the star during May's first week. On May 2nd, a waning crescent **Moon** passes less than 1° north of **Neptune,** with **Lambda Aquarii** residing between the two.

Pluto – Pluto is in northern **Sagittarius**, reaching the meridian before dawn begins.

Moon – At dusk on May 7th, the thin crescent **Moon** appears very low with **Alderbaran** above it. The waxing gibbous **Moon** shines near **Regulus** on the evening of May 13th, and near **Jupiter** on the 14th. On the night of May 21st, the **Full Moon** forms a near rectangle 10° long with **Mars, Saturn, and Antares.** The next evening, the **Moon** rises to the left of **Saturn.** On the morning of May 25th, the **Moon** passes

above the "teapot" of **Sagittarius.**

Asteroids

Asteroid **6 Hebe** and **comet 9P/Tempel** (11th magnitude) share the same field of view at the start of May. On May 1st, **Hebe** will be less than ½° west of **NGC 3801** (mag. 12.01 in **Leo the Lion**). On May 11th, **Hebe** will be about ½° south and slightly east of **NGC 3801**.

Comets **– Comet PANSTARRS (C/2013X1)** will need a clear, flat eastern horizon for you to spot it, just about ½° north of **Chi Aquarii**, and on the 17th it will be about ½° east of **Chi Aquarii**. **Comet 9P/Tempel**, lying in **Leo the Lion**'s hindquarters, is not far from 2nd magnitude **Denebola**. Around May 6th, the comet will be traveling about 10' apart from 12th magnitude **NGC 3801**. On May 20th, the comet will be about 1° due east of **Denebola.**

Meteor Showers **–** The **Eta Aquarid** meteor shower comes from the debris of **Halley's Comet** (not due back on its 75 year orbit until 2061). The **Eta Aquarids** peak in **North America** the afternoon of May 5th, so equally good views should come before dawn on May 5th and 6th. This coincides with the **New Moon**. From a dark site, you should notice 10 to 20 meteors per hour emanating from **Aquarius.**

Transit of Mercury **– The Transit of Mercury** across the face of the **Sun** will occur on May 9th. The transit starts (first contact) at about 6:12 AM CDT. Second contact comes 3 minutes and 12 seconds later – watch for any sign of the ***Black Drop Effect***. The transit mid-point will be about 9:58 AM CDT, with the transit ending at about 1:42 PM CDT. **Mercury** will appear at the limb of the **Sun** barely south of due east. The entire transit takes about 7½ hours. The next transit will occur on November 11, 2019.

When to View the Planets:

Evening Sky
Mars (southeast)
Jupiter (south)

Midnight
Mars (southeast)
Jupiter (west)
Saturn (southeast)

Morning Sky
Mars (southwest)
Mercury (east)
Saturn (southwest)
Uranus (east)
Neptune (southeast)

DARK SKY VIEWING - PRIMARY ON MAY 7TH, SECONDARY ON MAY 14TH

Mythology:

Hydra – The Water Snake

Hydra is the largest of the 88 constellations, winding a quarter of the way around the sky. Its head is south of the constellation of **Cancer the Crab**, while the tip of its tail lies between **Libra the Scales** and **Centaurus the Centaur.**

The Water Snake features in two legends. First, and most familiar, the **Hydra** was the creature that Heracles fought and killed as the second of his famous labors. The **Hydra** was a multi-headed creature; the offspring of the monster Typhon and the half-woman, half serpent called Echidna. **Hydra** was thus the brother of the dragon that guarded the golden apples, commemorated in the constellation **Draco, the Dragon. Hydra** reputedly had nine heads, the middle one of which was immortal. **Hydra** lived in a swamp near the town of Lerna, from where it sallied forth over the surrounding plain, eating cattle and ravaging the countryside. Its breath and even the smell of its tracks were said to be so poisonous that anyone who breathed them died in agony.

Heracles rode up to the **Hydra**'s lair in his chariot and fired flaming arrows into the swamp to force the creature into the open, where he grappled with it. The **Hydra** wrapped itself around one of his legs; Heracles smashed at its heads with his club, but no sooner had one head been destroyed than two grew in its place. To add to Heracles worries, a huge crab scuttled out of the swamp (sent by Hera) and attacked his other foot, but Heracles stamped on the crab and crushed it. The crab is commemorated in the constellation **Cancer the Crab.** Heracles called for help to his charioteer Iolaus, who burned the stump of each head as soon as it was struck off to prevent others from growing in its place. Finally, Heracles cut off the immortal head of the **Hydra** and buried it under a heavy rock by the roadside. Heracles slit open the body of the **Hydra** and dipped his arrows in its poisonous gall.

A second legend associates the water-snake with the constellations of **Corvus the Crow** and **Crater the Cup** that lie on its back. In this story, the crow was sent by Apollo to fetch water in the bowl, but the crow loitered to eat figs from a tree. When the crow eventually returned to Apollo, it blamed the water-snake for blocking the stream. But Apollo knew that the crow was lying, and punished him by placing him in the sky, where the water-snake eternally prevents him from drinking out of the bowl.