Night Visions

Newsletter of the Baton Rouge Astronomical Society

www.brastro.org

January 2014
Next meeting Jan 13th 7:00PM at the HRPO
Dark Site Observing Dates:
Primary on Feb 1st

Moon taken with Orion SSSCI IV

What's in this issue:

PRESIDENT'S MESSAGE

Welcome to a new year!

This is your new BRAS president speaking. I am honored to represent your club. I hope I live up to and beyond your expectations.

Notice in that greeting I said, “YOUR club.”

That is because this IS your club. You are a member, participant, and owner of this club. The various officer’s roles are to organize things, act as leaders, representatives, and liaisons. However, you are the heart and soul of the club. You are the driver that keeps BRAS alive and thriving. You make it work! Aside from our talented past leaders, your member participation and support has brought the club to where it is.

So it is with all clubs. I have seen some clubs thrive and others flounder. It was always the result of the member’s level of enthusiasm, support, and involvement. The thriving clubs have all three of those elements in abundance. Even when the Observatory was a distant dream, other club leaders were impressed with the level of involvement of the BRAS members for a club its size. They wanted to know our secret. The answer is you – the quality of our members. You have an excitement level uncommon among clubs.

I hope you feel inclined to bring that excitement to our activities and events. One of our greatest needs where you can contribute is our club meetings. You willingness to help, even in setting up and taking down the meeting room, shows respect and gratitude, and for that I am grateful.

However, the greatest challenge is preparing for engaging meetings. I plead with you to help our new Vice President, Muralidar “Murali” Chakravarthi, with scheduling presenters or coming up with activities for our meetings. One of the best ways to keep our meetings interesting is to do a presentation yourself. I ask you to explore your interests. Pick a topic and develop a presentation around it. Don’t be nervous. This isn’t about critiquing the presenter, although we do want to make it engaging. If you are excited about a subject, it will show through your presentation.

OK, enough with the Rah! Rah! stuff. Our June BRAS meeting will coincide with a total lunar eclipse. However, first contact begins at 11:53 PM and totality begins at 2:00 AM. Two weeks later, will be an annular solar eclipse…in Antarctica…for the brave. On August 15th, Venus, Jupiter, and the Beehive Cluster (M44) will form a nice conjunction.

I look forward to this new year. Let’s make it a good one.

Clear skies,

Merrill Hess
President
BRAS President

NOTES FROM THE VICE PRESIDENT

Hello Everyone,

First I wanted to wish you all a happy new year. Hope 2014 brings you good fortune and lots of clear skies. Our meeting in December was great. The Attendance was around 40 members. There were some really cool raffle prizes as well. Thanks again to Ashley Toman for sharing her music. I am honored that you guys picked me to serve as the VP for our club. This is my first time around and I am going to do the best I can to keep things interesting. We are going to need all the help we can get to make our club grow even more.

We are working on getting a couple of good speakers lined up this year for our member meetings. This January meetings speaker will be Ahmed Jaber from New Orleans. He will be speaking about his experiences with amateur astronomy, astro photography and his facebook group "Telescope Addicts - Astronomy & Astro photography Community" which has really grown to over 1800 members. I can tell you that I have looked at some of his pictures taken with his setup and its nothing short of stellar.

I am going to request that us BRAS members do some presentations in our own members meetings, even if its a really short presentation. If you guys got some cool present this holiday season that has to do with our hobby, it would be a nice time to show it off.

Its also that time of the year for member dues to get paid. I am sure that our new treasurer Trey Anding can take care of that at the January meeting. I look forward to seeing you all there.

Regards,
Murali Chakravarthi

BRAS VP

MESSAGE FROM THE **HRPO**

FRIDAY NIGHT LECTURE SERIES
all start at 7:30pm
10 January: "2013—The Space Year in Review"
17 January: "GLOBE at Night 2014"
24 January: "An Introduction to Jupiter"
31 January: "Volcanoes!"

CALL FOR VOLUNTEERS

- Saturday, 4 January from 3pm to 7pm. *Eight or nine volunteers.* **Learn Your Telescope**. Instructing registrants in the use of their personal telescopes. Previous telescope knowledge required.
- Saturday, 11 January from 3pm to 7pm. *Eight or nine volunteers.* **Learn Your Binocular**. Instructing registrants in the use of their personal binoculars. Previous binocular knowledge required.

20OGS OPERATING EQUIPMENT

LSU P&A has given BREC and BRAS permission to operate the 20OGS for the public while Physics personnel await the late arrival of new components.

LEARN YOUR SKY COURSE

HRPO is hosting a brand-new, hands-on introduction to the unaided-eye Baton Rouge sky. Included will be an overview of all major sky events for the next twelve months. If any BRAS members know friends who might be interested, by all means let them know. All attendees must be over eighteen; children are not allowed. Once again, this one-day course focuses specifically on the *unaided-eye Baton Rouge sky.*

Topics covered will include…

- major stars and constellations in Baton Rouge
- major lunar features and how to find them
- basic skygazing terminology
- how to distinguish planets from stars
- what meteors are, and how to see them
- major unaided-eye features of our Milky Way Galaxy
- solar viewing safety, and how to view the Sun without store-bought equipment
- how to help in the eradication of light pollution
- upcoming unaided-eye events (including eclipses and conjunctions)
- benefits of belonging to an astronomy club

The Learn Your Sky course will be available on three separate Saturdays—18 January, 25 January and 1 February. Each course runs 3pm to 7pm. The cost is $15 per in-parish registrant and $18 per out-of-parish registrant. Online registration is available at https://webtrac.brec.org/

20/20 VISION CAMPAIGN

DEADLINE: November 2017
SQM GOAL: 20.0 (back viewing pad at HRPO)

THE FOLLOWING TASKS NEED TO BE ACCOMPLISHED BEFORE THE RELEASE OF THE FEBRUARY *NIGHT VISIONS*.

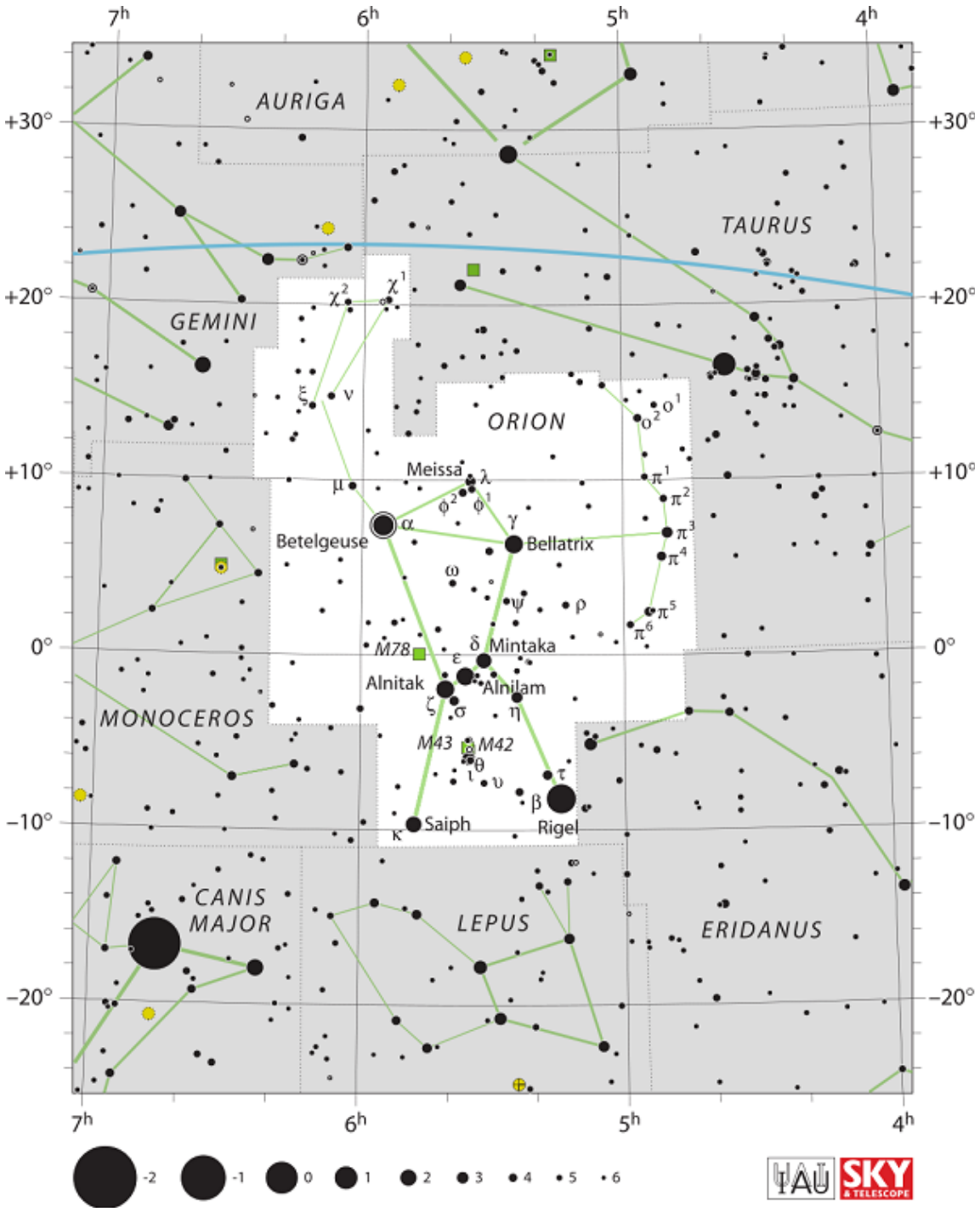
- making initial contact with spokespeople for certain LSU offices
- issuing press release announcing 20/20 Vision Campaign

Assistance greatly appreciated.

MONTHLY OBSERVING NOTES

Constellation of the Month: Orion

Position: RA 5 hours, Dec. +5



Orion – The Hunter

According to myth, Orion was the son of Poseidon the sea god and Euryale, daughter of King Minos of Crete. Poseidon gave Orion the power to walk on water. Homer, in the Odyssey, describes Orion as a giant hunter, armed with an unbreakable club of solid bronze. In the sky, the hunter's dogs (the constellations Canis Major and Canis Minor) follow at his heels, in pursuit of the hare (the constellation (Lepus). On the island of Chios, Orion wooed Merope, daughter of the king, Oenopion, apparently without much success, for one night, while fortified with wine, he tried to ravish her. In punishment, Oenopion put out Orion's eyes and banished him from the island. Orion headed north to the island of Lemnos, where Hephaestus (the lame blacksmith/ artificer of the Gods, married to Venus, goddess of Love) had his forge. Hephaestus took pity on the blind Orion and offered one of his assistants, Cedalion, to act as his eyes. Hoisting the youth on his shoulders, Orion headed east toward the sunrise, which an oracle had told him would restore his sight. As the Sun's healing rays fell on his sightless eyes at dawn, Orion's vision was miraculously restored. Orion is linked in a stellar myth with the Pleiades star cluster in Taurus. The Pleiades were seven sisters, daughters of Atlas and Pleione. As the story is told, Orion fell in love with the Pleiades and pursued them with amorous intent. But, according to Hyginus, it was actually the mother Pleione he was after. Zeus snatched the group (mother, father, daughters) and planted them among the stars, where Orion still pursues them across the sky each night. There is a strange and persistent story about the birth of Orion, designed to account for the early version of his name, Urion. According to the story, there lived in Thebes an old farmer named Hyrieus. One day he offered hospitality to three passing strangers, who happened to be Zeus, Neptune, and Hermes. After they had eaten, the visitors asked Hyrieus if he had any wishes. The old man confessed that he would have liked a son, and the three gods promised to fulfill his wish. Standing together around the hide of the ox they had just consumed, the gods urinated on it and told Hyrieus to bury the hide. From it in due course was born a boy whom Hyrieus named Urion after the mode of his conception. Stories of the death of Orion are numerous and conflicting. Astronomical mythographers such as Aratus, Eratesthenes, and Hyginus were agreed that a scorpion was involved. In one version, told by Eratesthenes and Hyginus, Orion boasted that he was the greatest of hunters. He declared to Artemis, the goddess of hunting, and Leto, her mother, that he could kill any beast on Earth. The Earth shuddered indignantly and from a crack in the ground emerged a scorpion which stung the presumptuous giant to death. Aratus, though, says that Orion attempted to ravish the virgin Artemis, and it was she who caused the earth to open, bringing forth the scorpion. Ovid has still another account; he says that Orion was killed trying to save Leto from the scorpion. Very different story, also re4counted by Hyginus, is that Artemis loved Orion and was seriously considering giving up her vows of chastity to marry him. As the greatest male and female hunters they would have made a formidable couple. But Apollo, twin brother to Artemis, was against the match. One day, while Orion was swimming, Apollo challenged Artemis to demonstrate her skill at archery by hitting a small black object that he pointed out bobbing among the waves. Artemis pierced it with one shot – and was horrified to find that she had killed Orion. Grieving, she placed him among the constellations. In both of the scorpion versions, the outcome was that Orion and the scorpion (the constellation Scorpius) were placed on opposite sides of the sky, so that as Scorpius rises in the East, Orion flees below the western horizon. "Wretched Orion still fears being wounded by the poisonous sting of the scorpion." Noted Germanicus Ceaser.

Named Stars

Betelgeuse (Alpha Ori) (58 Ori), “The Arm of the Central One”, or “The Armpit of the Giant”, or “The Martial Star”, mag. 0.3 to 1.2, 05 55 10.29 +07 24 25.3. The 8th brightest star in the sky, a red Supergiant- one of the largest stars with an apparent diameter of 0.043 to 0.056 arc seconds. A weak radio source, part of the winter triangle (with Sirius and Procyon), and part of the winter hexagon (Rigel, Aldebaron, Capella, Pollux, and Castor).

Rigel (Beta Ori) (19 Ori), “Rigi Jauzah al Yusra”, “The Left Leg of the Giant”, mag. 0.18, 05 14 32.27 -08 12 05.9. The 6th brightest star in the sky, it is a triple system. It has a blue Supergiant companion at mag. 6.7 and a separation of 9”, and a spectroscopic binary with a period of 9.860 days. Illuminates IC 2118, The Witch head Nebula that is about 2.5° to the northwest.

Bellatrix (Gamma Ori), (240 Ori), “The Female Warrior” or “The Amazon Star”, mag. 1.64, 05 25 07.87 +06 20 59.0.It is an eruptive variable blue giant star.

Mintaka (Delta Ori), (34 Ori), “Al Mintaka”, “The Giant’s Belt”, mag. 2.25, 05 32 00.40 -00 17 56.7. A multiple star system, the primary is a large blue giant- a variable eclipsing binary, and the secondary is a white star, mag. 6.85, 05 32 00.50 -00 17 04.0, with an orbit of 5.63 days. The system also has a mag. 7 star separated by 52” from the primary, and a very faint mag. 14 star in-between the faintest and westernmost star of the three in Orion’s belt, and the northernmost. To the southwest lies the quadruple star Eta Ore.

Animal (Epsilon Ore), (46 Ore), “Al Nat bin”, “String of Pearls”, mag. 1.69, 05 36 12.81 -01 12 06.9. A blue Supergiant, the central star in Orion’s belt. Surrounded by the reflection nebula NGC 1990, a molecular cloud.

Alnitak (Zeta Ori), (50 Ori), “Al Nitak”, “The Girdle”, mag. 1.74, 05 40 45.52 -01 56 33.3. It is a blue Supergiant and the eastern star in Orion’s belt. A triple star system, a close binary with a blue Dwarf, mag. 4.21, 05 40 45.60 -01 56 34.0, a separation of 2.6” and an orbit of 1509 years. The system lies close to a bright emission nebula IC 434, from 3rd to 10th magnitude, 57.6” separation. NGC 2024 is 15’ to the east and slightly north. Directly south of Zeta Ori is IC 434 running over 1° southward – midway on its eastern edge is the Horse head Nebula B33. Just southwest is Sigma Ori, a multiple star system composed of 5 stars.

Saiph (Eta Ori), “ Algiebbah” and “Ensis”, “Sword” in Latin, mag. 3.35, 05 24 28.62 -02 23 49.7. An eclipsing binary, both are blue stars, are a Beta Lyrae variable, with a separation of 1.4” or 400 AU, and an orbital period of 7.98922 days.

Hatysa (Iota Ori) (44 Ori), “Na’ir al Saif”, “The Bright One of the Sword”, mag. 2.75, 05 35 25.98 -05 54 35.6.It is a blue Giant star that marks the tip of Orion’s sword, and is a quadruple star system. The primary is a spectroscopic binary with a 29 day orbit, and is a strong X-ray source. The Orion Nebula is about 0.5° north. The secondary star is a blue star, mag. 6.9, with 11” separation. Tertiary star is 11th magnitude wi9th a 50” separation.

Saiph (Kappa Ori), (53 Ori), “Saif al jabbar”, “The Sword of the Giant”, mag. 2.07, 05 47 45.39 -09 40 10.6. This star serve3s as Orion’s right foot, and is a blue Supergiant – its hot surface temperature

(46,000 ° F) causes it to emit most of its light in the ultra-violet region.

Meissa (Lambda Ori), (39Ori), “Al Maisan”, “The Shining One”; or Heka, Al Hakah, “A White Spot”, mag. 3.39, 05 35 08.28 +09 56 03.0. It is a blue Giant double star – its companion is a hot blue-white dwarf star, mag. 5.61, 05 35 08.50 +09 56 06.0, with a separation of 4.4” or about 2400 AU. This star marks the apex of Orion’s head, and forms a triangle with Phi 1 Ori and Phi 2 Ori for Orion’s head.

Tabit (Pi-3 Ori), (1 Ori), Hassaleh, Al-Tabit, “The Endurer”, (Pi 3) mag. 3.19, 04 49 50.14 +06 57 40.5. The Pi system is a relatively loose group of stars that constitute Orion’s shield.

Pi-1(7 ORI), mag. 4.64, 04 54 53.70 +10 09 04.1, is a white dwarf star.

Pi-2 (2 Ori), mag. 4.35, 04 50 36.72 +08 54 00.9 is a dwarf star. Pi-4 (3 Ori), mag. 3.68, 04 51 12.37 +05 36 18.4, is a spectroscopic binary – a Giant and a sub-Giant that cannot be resolved because they are so close with an orbital period of 9.5191 days. Pi-5 (8 Ori), mag. 3.71, 04 54 15.10 +02 26 26.4.

Pi-6 (10 Ori), mag. 4.47, 04 58 32.90 +01 42 50.5, it is an orange Giant variable star.

Thabit (Upsilon Ori), “Thabit”, mag. 4.62, 05 31 55.86 -07 18 05.5.

Deep sky

M42 (NGC 1976) “The Orion Nebula”, LBN 974, Sharpless 281, mag. 4.0, 05 35 17.3 -05 23 28, is an emission nebula with a size of 65’ x 60’, and is 12 LY in radius. It is also called “The Great Orion Nebula”, and appears as a slightly blurry central “star”, to the naked eye, in Orion’s sword. It is part of the Orion Molecular Cloud Cluster. The (Theta Ori) Trapezium cluster is located in the center of the nebula. M42 was the first nebula to be photographed (astrophotography) in history, on Sept. 30, 1880 by Henry Draper (a 51 minute exposure). The Trapezium was named by Trumpler in 1931. The Hubble telescope has discovered more than 150 protoplanetary discs within the Orion Nebula. The entirety of the Orion Nebula extends across a 1° region of the sky, and is part of a much larger nebula known as The Orion Molecular Cloud Complex. Various features in the Orion Nebula have been named by observers. A dark lane of gas that separates M42 from M43, although the two are actually part of the same vast cloud. This dark lane forms a feature generally nicknamed “The Fish’s Mouth, with the bright regions to both sides called “The Wings”, and while at the end of “The Fish’s Mouth” is the “Trapezium Cluster”. The wing extension to the south is called “The Sword”, the bright nebulosity below the “Trapezium” is “The Thrust”, and the fainter western extension is called “The Sail”.

M43 (NGC 1982), “DeMairan’s Nebula”, mag. 9.0, 05 35.6 -05 16, 19’ x 15’, 9 LY in diameter. M43 is a small, 8th magnitude star surrounded by the nebulosity of “The Orion Nebula” (M42). It extends 8 LY, and is illuminated by a 6.9 magnitude star. Located about 7 arc minutes north of the “Trapezium”.

M78 (NGC 2068), a reflection nebula, mag. 8.0, 05 46.7 +00 03, 7’ x 6’, and extends 3 LY. A bright, large, wispy nebula containing two 10thy magnitude stars separated by about 53”. M 78 contains 45 T Tauri type variable stars. The variable star V351 Orionis is associated with this NGC. Located about 2.3° northeast of Zeta Ori (Alnitak). This is the brightest diffuse reflection nebula in the Orion Complex. NOTE: The vast majority of the rest of the deep sky objects have no magnitude.

Collinder 70, mag. 0.6, 05 35 36.0 -01 05 00. Called Orion's Belt Cluster, it is a cluster of 125 stars with a size of 140'.

Collinder 69, mag. 2.8 (photo), 05 35 28.8. +09 56 28. A nebula called "The Lambda Orion Cluster"; it has 25 stars and is 70' in size, centered on Lambda Ori (Messa).

Collinder 72 (NGC 1980), mag. 2.5, 05 35.4 -05 54, an open cluster, 14' x 14' in size, 5 LY in diameter.

vdB 49, mag. 4.50, 05 39 +04 07, 6' in size, illuminated by Omega Ori.

NGC 1981, mag. 4.6, 05 35.2 -04 26, 25' in size, an open cluster of 20 stars with the brightest star of mag. 6.3.

vdB38, mag. 5.77, 05 22 +08 26, 30' x 25' in size, located north-northeast of Bellatrix (Gamma Ori).

Collinder 83 (NGC 2169), also called the 37 Cluster, mag. 5.9, 06 08 24.3 +13 57 53, 6' in size. The stars resemble the number 37, has 30 stars, the brightest being mag. 6.94.

Collinder 55 (NGC 1662), mag. 6.4, 04 48 28.9 +10 55 49, 20' in size. An open cluster of 35 stars, the brightest being mag. 8.3.

Collinder 84 (NGC 2175), mag. 6.8, 06 09.8 +20 19, 40' x 30' in size. An open cluster of 60 stars, the brightest being of mag. 7.6. Involved with NGC 2174. vdB 37, mag. 8.2, 05 18 +13 25, 7' x 4' in size.

NGC 2194, mag. 8.5, 06 13.8 +12 48, 10' in size. An open cluster of 80 stars with the brightest being 12.1 mag.

Collinder 85 (NGC 2186), mag. 8.7, 06 12 07.1 +05 27 31, 4' in size, contains 10 stars.

Collinder 76 (NGC 2112), mag. 9.1, 05 53 45.2 +00 24 39, 11' in size, contains 45 stars.

Collinder 79 (NGC 2141), mag. 9.4, 06 02 55.1 +10 26 47, 10' in size, contains 100 stars.

NGC 1684, mag. 11.7, 04 52.5 -03 06, 2.9' x 1.9' in size, it is a faint, small, roundish galaxy.

NGC 2022 (PK 196-10.1), mag. 11.9, 05 42.1 +09 05, 19' in size. A planetary nebula that is pretty bright, very small, and roundish.

J320 (PK 190-17.1), mag.12.0, 05 05.6 +10 42, 6" in size. A smooth disc involved in a larger, fainted halo of nebulosity.

NGC 1691, mag. 12.0, 04 54.6 +03 16, 1.7' x 1.5 in size. A faint, small, barred spiral galaxy.

PK 198-61 (Abell 12), mag. 12.0, 06 02.4 09 39, 37" in size.

B30, 05 30 16 +12 46, a large dark area with few stars, 3° northwest of Lambda Ori (Meissa).

B31, 05 32 01 +12 45, the east and darkest part of B30, extending northeast and southwest.

B32, 05 32 08 +12 25, a dark projection from the south end of B31 to the east.

Sky Happenings

Jan. 1st New Moon occurs at 6:14 AM CST. Pluto is in conjunction with the Sun at 1:00 PM CST. The Moon is at perigee (221,781 miles from Earth) 2:59 PM CST.
Jan. 2nd Dusk – the thin crescent Moon will be to the upper left of Venus 45 minutes after sunset. Mars is at aphelion (154.9 million miles from the Sun) at 6:00 PM CST. Jan. 3rd Quadranid Meteor Shower peaks.

Jan. 4th Earth at perihelion (91.4 million miles from the Sun) at 6:00 AM CST. The Moon passes 5° north of Neptune at 8:00 PM CST.

Jan. 5th Jupiter is at opposition at 3:00 PM CST – Jupiter reaches its 2014 peak today, shining at mag. -2.7 and has a disc of 46.8" across through a telescope.

Jan. 7th The Moon passes 3° north of Uranus at 7:00 AM CST. First Quarter Moon will occur at 9:39 PM CST.

Jan. 8th Asteroid Pallas is stationary at 3:00 AM CST. Jan. n11thy Venus is in inferior conjunction at 6:00 AM CST, passing 5° north of the Sun.

Jan. 14th Jupiter shines to the left of the Full Moon.

Jan. 15th The Moon passes 5° south of Jupiter at 12:00 midnight CSWT. The Moon is at apogee (252,607 miles from Earth) at 7:53 PM CST. Full Moon occurs at 10:52 PM CST.

Jan. 22nd/23rd A waning gibbous Moon is to the lower right of Mars on the 22nd, and on the 23rd, it is to Mar's lower left and very close to Spica.

Jan. 23rd Last Quarter Moon occurs at 11:19 PM CST.

Jan. 25th The Moon passes 0.6° south of Saturn at 8:00 AM CST. Jan. 28th Asteroid Melpomene is at opposition at 2:00 AM CST. Mars passes 5° north of Spica at 2:00 PM CST. The Moon passes 2° south of Venus at 9:00 PM CST.

Jan. 30th The Moon is at perigee (221,879 miles from Earth) at 3:59 AM CST. New Moon occurs at 3:39 PM CST.

Jan. 31st Mercury is at its greatest elongation (18°) at 4:00 AM CST. Venus is stationary at 1:00 PM CST. The very thin crescent Moon shines to the lower right of Mercury in the west southwest.

Special Note: Jan. 20th to 27th - The Moon's libation will allow observation of the eastern edge of Mare Orientale. To see the dark center floor, the mornings of Jan. 23rd to 25th are best, when the

libation maxes out.

Mercury Not in view until mid-January, when it starts one of its two best evening appearances of 2014. It climbs into view after sunset, shining at mag. -1.0, and through a telescope, it shows a nearly full disc that spans 5". Mercury will reach its greatest elongation on Jan. 31st, when it lies 18° east of the Sun. Then it appears 11Σ high in the west-southwest 30 minutes after sunset. Mercury will be at mag. -0.7, and will reveal a 7" diameter disc appearing slightly over half lit through a telescope. On Jan.31st, Mercury will be 5° to the upper left of the Moon, where the Sun then illuminates 2% of the Moon, making Mercury a challenge to spot without binoculars.

Venus Shortly after the Sun sets on Jan. 1st, Venus will shine at mag. -4.4 at nearly 10° above the southwestern horizon 30 minutes after sunset. To the lower right of Venus and just above the horizon, the Moon is just 15 hours past new phase and is only 0.6% lit. By Jan. 5th, just 6 days before Venus passes between the Sun and Earth, Venus stands 4° high a half hour after sunset. A telescope reveals Venus's 62" diameter disc, which appears a mere 1% lit. After passing 5° north of the Sun at inferior conjunction on Jan. 11th, Venus switches to the morning sky. By the 17th, the planet comes up in the east-southeast a full hour before the Sun, and by the 31st, 2 hours earlier. On Jan. 31st, Venus shines at mag. -4.8, with a telescope showing a disc that spans 52" and appearing 12% lit. Mars Mars rises just 10 minutes or so after midnight in Virgo on Jan. 1st, and nearly 2 hours earlier by month's end. On Jan. 1st it glows at mag. 0.8 and 1.4° southeast of 3rd magnitude Gamma Virginis.

Mars moves eastward during January and closes the month (Jan. 28th) 5° north of 1st magnitude Spica. During January, Mars brightens by ½ magnitude. By the end of January, mar's apparent diameter reaches 9". Best views will come in the two hours before twilight starts to paint the sky, when nit appears at least 40° above the horizon. Jupiter The first few nights of January, Jupiter makes a squat isosceles triangle with Delta and Zeta Gemininorium. On the 27th, it is halfway between Epsilon and Zeta Geminorium. Jupiter reaches opposition and peak visibility on Jan. 5th with an apparent diameter of 46.8" among the background stars of central Gemimi. Jupiter rises at sunset and passes nearly overhead around midnight local time. Jupiter shines at mag. -2.7. Around opposition, Jupiter remains above the horizon for at least 12 hours – two hours longer than its own rotation period, and shows a disc of 47" diameter. On Jan. 5th, the night of opposition, all four bright moons appear as points of light on either side of the planet, and appear in order of their distance from Jupiter – Io closest, followed by Europa, Ganymede, and Callisto. There will be several moon transits occurring in January.

Europa starts at 5:48 PM CST on Jan. 8th, followed by its shadow 10 minutes later, and the moon clears Jupiter's disc at 8:29 CST with the shadow leaving at 8:40 PM CST. Io does a similar trick on Jan. 13th, crossing Jupiter between 5:22 PM CST and 7:38 PM CST, and its shadow following 33 minutes later.

Saturn The best time to view is an hour or so before twilight begins. Look to the southeast against the backdrop of Libra the Balance. Saturn shines at mag. 0.6, 2 magnitudes brighter than any star in Libra. The planet measures 16" across its equator while the rings span 37" with a tilt of 22° to our own line of sight.

Uranus Sets near midnight local time in early January and around 10:00 PM at month's end. At mag. 5.9, the planet wanders slowly to the east-northeast in southern Pisces, some 6° southwest of 4th magnitude Delta Piscium. A telescope at medium magnification reveals a 3.5" diameter disc and a blue-

green color.

Neptune Appears 25° high after twilight has faded away in early January. On Jan.4th, the waxing crescent Moon lies 1.9° north of 4th magnitude Theta Aquarii, while Neptune resides 3.4° south-southeast of the same star. The planet looks like a double star through binoculars from Jan. 1th to 15th when it passes within 5” of a mag. 7.7 background star. Neptune slides 2.8’ due south of this star on Jan. 12th.

Best Time To View The Planets Evening Sky – Mercury (West), Venus (Southwest), Jupiter (East), Uranus (Southwest), Neptune (Southwest) Midnight – Mars (East), Jupiter (Southwest) Morning Sky – Venus (Southeast), Mars (South), Jupiter (Northwest), Saturn (South) Asteroid 7 Iris pierces the circlet asterism in Pisces the Fish this month. Look to the southwest after darkness falls, below the Great Square of Pegasus. At 10th magnitude, the surest way to confirm a sighting is to detect its motion relative to the background stars over a period of a few nights.

RIP Comet ISON

MINUTES FROM OCTOBER MEETING

- Members participated in a potluck dinner. Harp music for the occasion was provided by Ashley Toman.

- Trevor gave a positive report on outreach for 2013.

- Brad Shaefer was recognized for a Caldwell certificate from the Astronomical League.

- Chris discussed the 20/20 Vision Campaign.

- Nominations for new officers became permanent by acclamation as there were no new nominees for any of the positions:
    - Merrill Hess – President
    - Murali Chakravarthi – Vice President
    - Roslyn Readinger– Secretary
    - Trey Anding – Treasurer

- A raffle was held, and the meeting adjourned.