

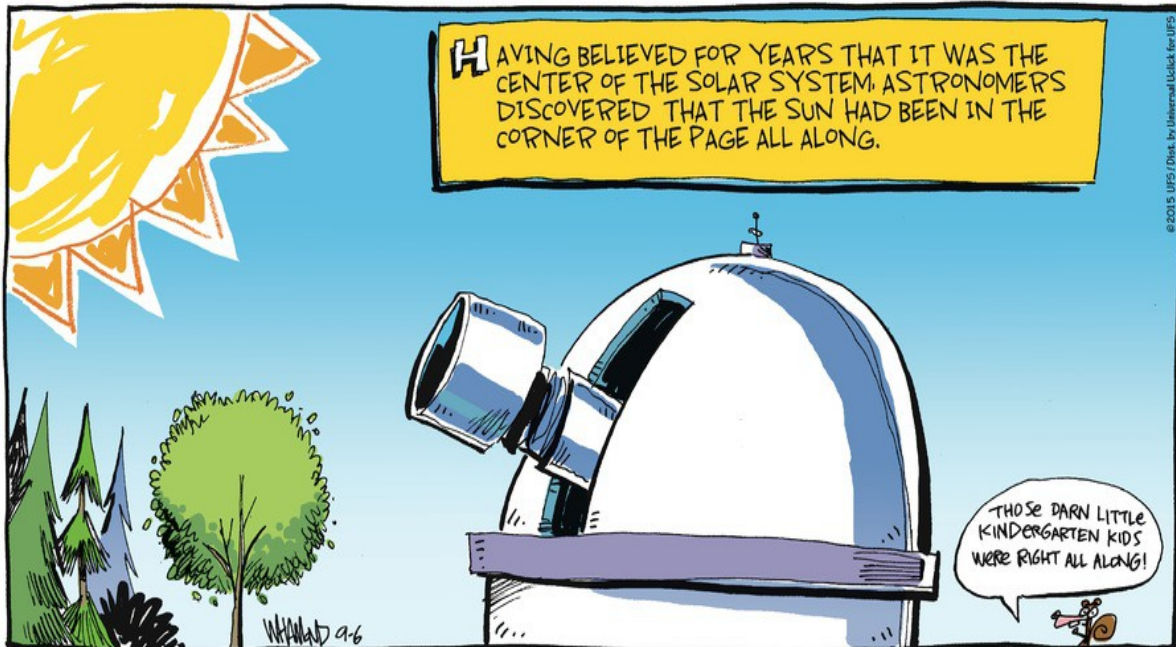
President's Message

Wow, what a month February has been! **LIGO** announced, on February 11th, that they had detected and measured gravity waves! What a breakthrough for physics and astrophysics. Dr. Amber Stuver, of LSU and LIGO Livingston, was the speaker at HRPO on Friday, Feb. 19th, during the public talk about this discovery. The guest speaker for the April 11th BRAS meeting will be Dr. Joseph Giaime, LSU professor of Physics and Astronomy, and the LIGO Livingston Observatory head.

On December 3, 2015, the European Space Agency (ESA) launched the LISA Pathfinder mission, a space experiment to test and work out the procedures to observe lower frequency gravitational waves (lower than the waves detected by LIGO) emitted by different astronomical sources, such as the merging of super-massive black holes at the center of large galaxies. LISA Pathfinder has started its science mode, testing methods that are to be used in the L3 mission of ESA (a gravitational observatory to measure distortions in the fabric of space-time on the inconceivably tiny scale of a few millionths of a meter over a distance of a million kilometers).

April 6th through April 10th is our annual Hodges Gardens Star Party. You can pre-register using the form on the BRAS website. If you have never attended this star party, make plans to attend this one.

Clear Skies, and have a good March,
John Nagle, BRAS President



Canis Major – the Great Dog

Position: RA 06 n12.5 to 07 27.5, Dec. -11.03° to -33.25°

Named Stars:

Sirius (Alpha CMA), “scorching”, “the Dog Star”, mag. -1.46, 06 45 09.25 -16 42 47.3, is a blue-white binary star, and is also the brightest star in the night sky. The companion star, **Sirius B (the Pup)**, is a white dwarf star with a magnitude of 8.4, and has an orbital period of 50 years and a separation that varies – between 8.1 and 31.5 AU. **Sirius** is a part of the “Winter Hexagon” along with **Rigel, Aldebaran, Capella, Pollux/Castor, and Procyon.** **Sirius** is also a part of the “Winter Triangle” along with **Procyon and Betelgeuse.** Was **Sirius** a red star in ancient times? Testimony of Aratus, Cicero, Horace, Seneca, and Ptolemy – all of these ancient writers described **Sirius** with terms that can only be described as “ruddy”, “reddish”, “blazing as fire”, etc. Al Sufi, in the tenth century does not mention **Sirius** among stars which he classified as red. There are two possibilities for this description of **Sirius** being a red star; (1) **Sirius B** could have been its red giant star phase, although what we know of this phase moving to white dwarf phase says that it takes about 100,000 years instead of 2,000 years; (2) There is a suggestion that the color-sensitivity or color balance of the average human eye has changed or evolved somewhat in the last few thousand years, and that the ancient peoples did not see colors quite the same as we do today.

Murzim (Beta CMA), “The Announcer”, “The Herald”, mag. 1.98, 06 22 41.99 -17 57 21.3, is a pulsating blue-white giant star, whose pulsations are too slight to be noticed (7/100 mag. every 6 hours and 2.6 seconds) by the naked eye.

Muliphein (Gamma CMA), “dog’s ear”, mag. 4.12, 07 03 45.49 -15 37 59.7, is a blue-white bright giant (B type) star. **Gamma CMA** presents us with the interesting and unresolved problem of the supposed “Secular Vibrations” in the light of certain stars; the question of whether the star’s light has perceptibly changed over many hundreds of years. Although labeled **Gamma CMA** by Bayer, this star is much fainter than the stars designated **Delta CMA, Epsilon CMA, Zeta CMA, Eta CMA,** and even **Omicron CMA.** According to R.H. Allen, “Montanari said it entirely disappeared in 1679, and was not observed again for twenty-three years, when it re-appeared to Miraldi, and since has maintained a steady luster, although faint for its lettering”.

Wezen (Delta CMA), “al-wazn”, “the weight”, mag. 1.83, 07 08 23.49 -26 23 35.5, is a yellow-white supergiant star, expected to become a red supergiant star within the next 100,000 years, and eventually a supernova. **Delta CMA** marks the hind quarter of the dog.

Adhara (Epsilon CMA), “adara”, “virgins”, mag. 1.50, 06 58 37.55 -28 58 19.5, is a blue-white supergiant binary star, and is one of the brightest known extreme ultraviolet sources in the sky. The secondary star is at mag. 7.4 with a separation of 7.5”. The traditional name means “the virgins”, having been transferred from the group of stars (asterism “the virgins”) to **Epsilon CMA** alone. **Epsilon CMA** is the 22nd brightest star in the night sky.

Pharud (Zeta CMA), “al-furud”, “the solitary ones”, mag. 3.02, 06 20 18.79 -30 03 48.2, is a spectroscopic binary star. Primary star is a blue-white B type main sequence dwarf star, while the companion is an unseen star. Both stars orbit around a common center once every 675 days.

Aludra (Eta CMA), “al-odra”, “the Virgin”, mag. 2.45, 07 24 05.71 -29 18 11.2, is a variable blue supergiant star, expected to go supernova within the next few million years **Aludra** varies in brightness from mag. 2.38 to 2.48 over a period of 4.7 days. **Aludra,** along with **Adhara (Epsilon CMA), Wezen (Delta),** and **Omicron² CMA** form the asterism known as “the Virgins”. There is a distant companion of the 7th magnitude at 169” distance, but does not form a true physical pair.

Hushiba (Kappa CMA), mag. 3.50, 06 49 50.47 -32 30 30.6, is a **Gamma Cas** variable star.

Isida (Mu CMA), “Isis”, mag. 5.00, 06 56 06.65 -14 02 36.4, is a binary star, with the primary being a 5.3 magnitude yellow giant star, and the secondary is a 7.1 magnitude bluish main sequence star.

Menkelb Prior (Omicron CMA), mag. 3.89, 06 54 07.95 -24 11 03.2, is an orange super giant star.

Menkelb Posterior (Omicron² CMA), “Thanih al Adzari”, mag. 3.02, 07 03 01.47 -23 49 59.9, is a massive super giant star that is now fusing Helium in its core.

Deep Sky:

M 41 (NGC 2287), mag. 4.5 (photo), 06 46.0 -20 44, 38' in size, is an open cluster of 100 stars; detached, weak concentration of stars; large range in brightness; very large, bright. **M 41** contains contrasting blue, yellow, and orange stars with a giant reddish star (**12 CMa**) at mag. 6.93 in its center and a lot of bright blue giant stars in the cluster. **M 41** is located 4° south and ½° east of **Sirius**. There are distinct curved arms radiating from the central star, toward the north and east.

Cr 121, mag. 2.6, 06 54.1 -24 11, 50' in size, is an open cluster of 20 stars; detached, no concentration of stars; large brightness range. The brightest star is **Omicrom¹** (mag. 3.9), located at the cluster's center.

Cr 140, mag. 3.5, 07 23.9 -32 00, 41' in size, sometimes called "the Tuft in the Tail of the Dog", is an open cluster of 30 stars; detached, no concentration of stars; large range in brightness; mag. of brightest star is 5.4.

Cr 132, mag. 3.6, 07 13.6 -30 50, 1.7° in size, is an open cluster of 25 stars; detached, no concentration of stars; large brightness range; mag. of brightest star is 5.3; a large cluster.

NGC 2362, C 64, Tau Canis Major Cluster, mag. 4.1, 07 18.8 -24 57, 7' in size, is an open cluster of 60 stars; detached, strong concentration of stars; large range in brightness; mag. of brightest star is 4.4. **NGC 2362** surrounds the 4th magnitude star **Tau CMa** or **30 Canis Majoris**, a blue supergiant star. **NGC 2362** is located around 3° northwest of **Wezen (Delta CMa)**.

NGC 2354, mag. 6.5, 07 14.3 -25 44, 19' in size, is an open cluster of 100 stars; detached, no concentration of stars; moderate range in brightness; mag. of brightest star is 9.1. **NGC 2354** lies 2° southwest of **NGC 2362**.

NGC 2360, "Caroline's Cluster", "Open Box Cluster", C58, mag. 7.2, 07 17.8 -15 37, 12' in size; is an open cluster of 80 stars; detached, weak concentration of stars; moderate range in brightness; very large; mag. of brightest star is 10.4. **NGC 2360** was discovered by Caroline Herschel, and is located 3.5° west of **Muliphein (Gamma CMa)**.

NGC 2384, mag. 7.4, 07 25.1 -21 02, 2.5' in size, is an open cluster of 15 stars; not well detached; large brightness range; mag. of brightest star is 8.6. Open cluster **NGC 2383** is directly to the northwest.

NGC 2345, mag. 7.7, 07 08.3 -13 10, 12' in size, is an open cluster of 70 stars; detached, strong concentration of stars; large range in brightness; mag. of brightest star is 9.9.

NGC 2367, mag. 7.9, 07 20.1 -21 56, 3.5' in size, is an open cluster of 30 stars; detached, moderately rich in bright and faint stars; mag. of brightest star is 9.4.

NGC 2374, mag. 8.0, 07 24.0 -13 16, 19' in size, is an open cluster of 25 stars; detached, weak concentration of stars; large range in brightness; very large cluster; mag. of brightest star is 10.8.

Bas 11A, mag. 8.2, 07 17.1 -13 58, 8' in size, is an open cluster of 30 stars; mag. of brightest star is 10.9.

NGC 2383, mag. 8.4, 07 24.8 -20 56, 6' in size, is an open cluster of 40 stars; detached, strong concentration of stars; large range in brightness; pretty small; mag. of brightest star is 9.8. Open cluster **NGC 2384** is directly to the southeast.

NGC 2204, mag. 8.6, 06 15.7 -18 39, 13' in size, is an open cluster of 80 stars; detached, no concentration of stars; mag. of brightest star is 12.2.

Haffner 6, mag. 9.2, 07 20.1 -13 08, is an open cluster.

NGC 2243, mag. 9.40, 06 29.80 -31 17, is a faint open cluster.

NGC 2359, "Thor's Helmet", "The Duck Nebula", mag. around 10.0, 07 18.6 -13 12, 7' x 6' in size, is a very faint, large, ring-shaped, filamentary emission nebula; southern half is brightest. **NGC 2359** is formed around a central star – **HD 56925**, a Wolf-Rayet star, which is a hot giant star that is about to become a supernova.

Sh2-301, 07 09.8 -18 29, 7' x 6' in size, is an elliptical shaped bright nebula.

vdB 96, 07 19.6 -23 58, 10' x 5' in size, is a nebulosity involving a chain of three 9th magnitude stars; brightest around the star to the northwest.

Canis Major Dwarf Galaxy is an irregular galaxy, roughly elliptical in shape, containing about 1 billion stars, among them a significant number of red giant stars. The galaxy was discovered in 2003, but is difficult to observe because it lies behind the plane of the **Milky Way**, obscured by stars, dust, and gas. **CMa Dwarf Galaxy** is the closest satellite galaxy to **Earth**.

Other Stars:

Nu² CMa, mag. 3.95, 06 36 41.00 -19 15 20.6, is an orange giant star with a companion star at mag. 8.1, and has one planet in orbit with a period of 763 days.

Tau CMa, mag. 4.37, 07 18 42.49 -24 57 15.8, is a multi-star system with the primary being a blue supergiant star that is a spectroscopic binary. There is a 5th component, a mag. 10.0 star at a separation of 13,000 AU (0.21 light year). **Tau CMa** is the brightest star of the open cluster **NGC 2362 (Caldwell 64)**, which is why the cluster is sometimes called the **Tau Canis Major Cluster**.

HD B47536, mag. 5.25, 06 37 47.54 -32 20 23.6, is an orange giant star with two planets in orbit.

NO CMa, mag. 5.40, 07 23 00.70 -31 55 25.6, is a Be star.

LS CMa, mag. 5.64, 07 01 05.95 -25 12 56.3, is an eclipsing binary star.

IY CMa, mag. 5.74, 06 28 39.24 -32 22 16.7, is an eclipsing binary and a Be star.

HD 58123 (HZ CMa), mag. 5.74, 06 50 23.35 -31 42 21.9, is a rotating ellipsoidal variable star.

HD 51411, mag. 6.36, 06 55 54.78 -31 47 24.7, is a Be star.

HD 45184, mag. 6.37, 06 24 43.99 -28 46 47.3, has one planet in orbit.

HD 42927 (IP CMa), mag. 6.49, 06 12 46.33 -17 45 47.6, is a rotating ellipsoidal variable star.

W CMa, mag. 6.56, 07 08 03.44 -11 55 23.8, is a red giant carbon star and a semi-regular variable star.

EZ CMa, mag. 6.91, 06 54 13.04 -23 55 42.0, is a Wolf-Rayet variable star.

HD 47186, mag. 7.8, 06 36 08.79 -27 37 20.3, has two planets in orbit, (b) has an orbital period of 4 days: (c) has an orbital period of 3.7 years.

VY CMa, mag. 7.95, 07 22 58.29 -25 46 03.5, is one of the largest stars known, a remote red supergiant, with a radius of 1420 +/- 120 solar radii and a mass of 9-25 solar masses.

HD 45364, mag. 8.07, 06 25 38.48 -31 28 51.4, has two planets in orbit, (b) has an orbital period of 228 days; (c) has an orbital period of 342 days.

HD 45677 (FS CMa), mag. 8.50, 06 28 17.42 -13 03 11.1, is a main sequence star that has absorbed material from a companion, and has infra-red emissions indicating a compact shell of dust.

Z CMa, mag. 8.80, 07 03 43.16 -11 33 06.2, has two pre-main sequence stars – a FU Orionis star and a Herbig Ae/Be star, which has brightened episodically by two magnitudes to mag. 8 in 1987, 2000, 2004, and 2008. The more massive Herbig Ae/Be star is enveloped in an irregular, roughly spheroid, cocoon of dust that has an inner diameter of 20 AU, and an outer diameter of 50 AU. Both stars are emitting jets of material.

HD 43197, mag. 8.95, 06 13 35.66 -29 53 50.2, has one planet in orbit.

RX J0720.4-3125, 07 20 24.96 -31 25 50.2, is a neutron star with a radius of around 5 Km. Its spectrum and temperature appears to mysteriously change over several years.

PSR B0628-28, 06 30 49.48 -31 25 50.2, is a pulsar star.

Asterisms: Epsilon CMa, Omicron² CMa, Delta CMa, and Eta Canis Majoris were called *Al Adzari*, “the Virgins” in medieval Arabic tradition.

Beyond magnitude 10 there are: 12 NGC items; 3 IC items, 8 other items, and there are two other stars of note.

Sky Happenings:

March 1st – **Last Quarter Moon** hangs between **Mars** and **Saturn**, to the left of **Beta Scorpii**, with the Last Quarter Moon occurring at 5:11 PM CST.

March 2nd – The **Moon** passes 4° north of **Saturn** at 1 AM CST.

March 3rd – **Asteroid Ceres** is in conjunction with the **Sun** at 4 PM CST.

March 6th – **Asteroid Juno** is stationary at 10 AM CST.

March 7th – The **Moon** passes 4° north of **Venus** at 5 AM CST,

Evening – A double shadow transit occurs on **Jupiter** from 6:29 PM to 7:59 PM CST.

March 8th – **Jupiter** reaches its 2016 peak magnitude today, shining at mag. -2.5, and appearing 44.4" across through a telescope,

Jupiter reaches opposition at 5 AM CST,

New Moon occurs at 7:54 PM CST.

March 10th – The **Moon** is at perigee (223,389 miles from **Earth**) at 1:04 AM CST,

The **Moon** passes 1.9° from **Uranus** at 7 PM CST.

March 13th – **Daylight Savings Time** starts at 2 AM Local time – move your clocks forward 1 hour.

March 14th - The **Moon** passes 0.3° north of **Alderbaran** at 9 AM CDT,

Night – A double shadow transit occurs on **Jupiter** from 9:22 PM to 11:34 PM CDT.

March 15th – **First Quarter Moon** occurs at 12:03 PM CDT,

Asteroid Hygiea is at opposition at 7 PM CDT,

Mars' disk reaches 10 arc seconds in diameter.

March 16th – **Mars** is 10 arc seconds north of **Beta Scorpii** in the morning sky.

March 19th – **Vernal Equinox** occurs at 11:30 PM CDT.

March 20th – **Venus** passes 0.5 south of **Neptune** at 9 AM CDT.

March 21st – A double shadow transit of **Io** and **Europa** occurs on **Jupiter** from 8:23 PM to 10:31 PM CDT,

The **Moon** passes 2° south of **Jupiter** at 11 PM CDT,

All Night – The waxing gibbous **Moon** forms a triangle with **Jupiter** and **Sigma Leonis**.

March 22nd – **Comet Catalina** is 20 arc minutes from the open cluster **NGC 1528** in **Perseus**.

March 23rd – **Full Moon** occurs at 7:01 AM CDT,

A penumbral lunar eclipse is visible for the western **North America** and **Asia**,

Mercury is in superior conjunction at 3 PM CDT.

March 24th/25th – All night – The **Moon**, just past full, beams 4° above or to the upper left of **Spica**.

March 25th – **Saturn** is stationary at 8 AM CDT,

The **Moon** is at apogee (252,355 miles from **Earth**) at 9:17 AM CDT.

March 28th – **Comet Catalina** is 8 arc minutes from the open cluster **NGC 1545** in **Perseus**,

The **Moon** passes 4° north of **Mars** at 2 PM CDT.

March 29th – Morning sky – The waning gibbous **Moon**, **Saturn**, **Mars**, and **Spica** form an uneven quadrangle,

The **Moon** passes 3° north of **Saturn** at 10 AM CDT.

March 31st – **Last Quarter Moon** occurs at 10:17 AM CDT.

Mercury – **Mercury** reaches superior conjunction on March 23rd, and is not observable this month.

Venus – **Venus** opens March rising in the east-southeast about 1 hour before the **Sun**, but does not gain altitude quickly. Even 30 minutes later, it appears only 5° high above the horizon. Still, it shines at mag. -3.9 and shows up in the bright twilight. A telescope reveals its 11" diameter disk, which appears 91% illuminated. **Venus** slips into the solar glare, to be hidden from our view in April.

Mars – **Mars** continues to rise around midnight, beginning March in eastern **Libra** and crosses into the narrow northern section of **Scorpius** on the 13th. Three mornings later, it passes 0.2° northeast of the fine double star **Beta Scorpii**. **Mars** changes magnitude beginning March at +0.3, and ending March at -0.5. **Mars** comes within 1 AU of **Earth** on March 8th. **Mars'** disk enlarges from 8.7" to 11.8" wide during March.

Jupiter – **Jupiter** arrives at opposition on March 8th, at mag. -2.5 all night long. **Jupiter** will be under the hind legs of **Leo**, the **Lion**, retrograding slightly west. **Jupiter** rises at sunset and sets at dawn. **Jupiter** spends March in southern **Leo** and within 1° of 4th magnitude **Sigma Leonis** during the first 10 days of March. **Jupiter's** disk spans 44" during March. On March 7th, observers in the eastern half of **North America** will see **Europa** and its shadow transit **Jupiter's** disk for nearly three hours starting around 5:10 PM CST. Innermost **Io** and its shadow

follows shortly after, crossing the cloud tops from 6:28 PM to 8:43 PM CST. These two repeat their transits on the night of March 14/15, but as an added twist, **Io** will overtake **Europa** as the transit nears its end. **Europa** begins to transit at 8:27 PM CST, and its shadow arrives on the disk 19 minutes later. **Io's** transit starts at 9:12 PM CST, with its shadow following 9 minutes after. During the next two hours, **Io** catches up to its neighbor. At around 10:15 PM CST, the dark shadows appear about halfway across the planet with **Io** itself midway between them, and **Europa** further to the west. **Io** passes **Europa's** shadow shortly before 11 PM CST when the inner moon and the two shadows form a tight triangle. **Europa's** transit ends at 11:13 PM CST followed 14 minutes later by **Io's**.

Saturn – Saturn is in southern **Ophiuchus**, spending March watching **Mars** draw closer and closer. The gap between the two shrinks from 17° to 9° during the month, with **Saturn** beginning retrograde motion on March 25th. **Saturn** starts the month at magnitude +0.5, and ends the month at mag. +0.3. **Saturn's** equatorial diameter appears about 17" in the telescope, with the rings tilted at 26° from edge on, with a 38" span. **Titan**, 8th magnitude, lies due north of **Saturn** on March 2nd and 18th, and due south of the planet on March 10th and 26th.

Uranus – On March 1st, the ice giant world stands nearly 20° above the horizon as the last hints of twilight fade away, shining at magnitude 5.9 among the background stars of **Pisces**. To find **Uranus**, first locate 2nd magnitude **Alpha Andromedae**, the star marking the top corner of the **Great Square of Pegasus**. Then scan 25° to the left and pick up 4th magnitude **Epsilon Piscium**. The planet lies 2° to **Epsilon's** left. On March 10th, **Uranus** will appear 2° due north of a slender crescent **Moon**. After mid-month, **Uranus** disappears into the **Sun's** glare.

Neptune – Neptune is poorly placed for observation this month.

Pluto – Pluto is also poorly placed for observation this month.

Sun – The **Sun** crosses the **Equinox** on March 20th at 11:30 PM CDT.

Moon – The waning gibbous **Moon** hangs between **Mars** and **Saturn** on the morning of March 1st and much closer to **Saturn** the next dawn. The nearly full **Moon** rises to the right of **Jupiter** on the evening of March 21st. On the morning of March 23rd, a penumbral eclipse is visible across the western **North**

America and **Hawaii**. The **Moon** is to the upper right of **Mars** at dawn on March 28th, and to the upper right of **Saturn** on March 29th.

Asteroids – Asteroid **5 Astraea**, in the southeastern sky after nightfall, floats in front of **Leo's** face. To find this asteroid, locate 5.7 magnitude **8 Leonis** – which is located 9° northwest of **Regulus**. **5 Astraea** remains within 1.5° of **8 Leonis** throughout March. At mag. 9.3, **5 Astraea** will glow brighter than most of the stars in this field. On March 2nd, the asteroid masquerades as the faint companion to an 8th magnitude double star just to its north. On March 10th, this 75 mile wide world will pass 0.1° north of * **Leonis**.

Comets – In March, two perfectly good comets appear in the evening sky – **Comet Catalina (C/2013 US10)** and **Ikeya-Murakami (P/2010V1)**. Both should glow at a modest 8th or 9th magnitude. On March 24th, **Ikeya-Murakami's** tail will appear as a slash of light as it turns edge-on to us.

Coincidentally, **Catalina** strikes the same pose two nights later. On March 25th, **Ikeya-Murakami** will lie within 15' of the bright spiral galaxy **NGC 2903** in **Leo**. At the same time **Catalina** perches halfway between clusters **NGC 1528** and **NGC 1545** in the arms of **Perseus**.

Meteor Showers – March finds us in the meteor calendar's longest gap. None happen this month.

When to View the Planets:

Evening Sky

Mercury (west)
Jupiter (east)
Uranus (west)

Midnight

Jupiter (south)

Morning Sky

Venus (east)
Mars (south)
Jupiter (west)
Saturn (south)
Neptune (east)

Dark Sky Viewing

Primary – March 5th

Secondary – March 12th

Canis Major – The Great Dog

Canis Major is dominated by the star Sirius, popularly called the Dog Star, the most brilliant star in the entire night sky; almost certainly the constellation originated with the star alone. Aratus referred to Canis Major as the guard dog of Orion, following on the heels of its master, and standing on its hind legs with Sirius carried in its jaws. Manilius called it ‘the dog with the blazing face’. Canis Major seems to cross the sky in pursuit of the hare, represented by the constellation Lepus, under Orion’s feet.

Mythologists such as Eratosthenes and Hyginus said that the constellation represented Laelaps, a dog so swift that no prey could escape it. This dog had a long list of owners, one of them being Procris, daughter of King Erechtheus of Athens and wife of Cephalus, but accounts differ as to how she came by the dog. In one version the dog was given to her by Artemis, goddess of hunting; but a more likely account says that it is the dog given by Zeus to Europa, whose son Minos, King of Crete, passed it on to Procris. The dog was presented to her along with a javelin that could never miss; this turned out to be an unlucky gift, for her husband Cephalus accidentally killed her with it while out hunting.

Cephalus inherited the dog, and took it with him to Thebes (not Thebes in Egypt, but a town in Boeotia, north of Athens) where a vicious fox was ravaging the countryside. The fox was so swift of foot that it was destined never to be caught – yet Laelaps

The hound was destined to catch whatever it pursued. Off they went, almost faster than the eye could follow the inescapable dog in pursuit of the uncatchable fox. At one moment the dog would seem to have its prey within grasp, but could only close its jaws on thin air as the fox raced ahead of it again. There could be no resolution of such a paradox, so Zeus turned them both into stone, and the dog he placed in the sky as Canis Major, without the fox.

The name of the star Sirius comes from the Greek word *seirius*, meaning ‘searing’ or ‘scorching’, highly appropriate for something so brilliant. In Greek times its rising at dawn just before the Sun marked the start of the hottest part of the summer, a time that hence became known as ‘the dog days of summer’. ‘It barks forth flame and doubles the burning heat of the Sun’ said Manilius, expressing a belief held by the Greeks and Romans that the star had a heating effect. The ancient Greek writer Hesiod wrote of ‘heads and limbs drained dry by Sirius’, and Virgil in the *Georgias* said that ‘the torrid Dog Star cracks the fields’.

Germanicus Caesar outlined clearly the effects that the rising of Sirius with the Sun was supposed to have.

'Healthy crops it strengthens, but those with shriveled leaves or feeble roots it kills. There is no star the farmer likes more or hates more ' according to Germanicus.

'Hardly is it inferior to the Sun, save that its abode is far away' wrote Manilius, anticipating the modern view that the stars are bodies like the Sun, only vastly more distant. Yet, in contradiction of the supposed heating effects of Sirius Manilius continued: 'The beams it launches from its sky blue face are cold.' That description of the color of Sirius is in contrast to Ptolemy's surprising reference to it as reddish, which has caused all manner of arguments.

In fact, Manilius was nearly correct, for Sirius is a blue-white star, even larger and brighter than the Sun. It lies 8.7 light-years away, making it one of the Sun's closest neighbors. It has a white dwarf companion star, visible only in telescopes, that orbits it every 50 years.

THE BUCKETS

BY GREG CRAVENS

