

THE FLINT RIVER OBSERVER

NEWSLETTER OF THE FLINT
RIVER ASTRONOMY CLUB

An Affiliate of the Astronomical League

Vol. 18, No. 12 **February, 2015**

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Club mailing address: 1212 Everee Inn Rd., Griffin, GA 30224. FRAC web site: www.flintriverastronomy.org.

Please notify **Bill Warren** promptly if you have a change of home address, telephone no. or e-mail address, or if you fail to receive your monthly *Observer* or quarterly *Reflector* from the A. L.

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Club Calendar. Thurs., Feb. 12: FRAC meeting/lunar observing (7-10 p.m., The Garden in Griffin); **Fri.-Sat., Feb. 20-21:** JKWMA observings (at dark, Site #3); **Tues., Feb. 24:** sidewalk observing (or indoor presentation if the weather doesn't cooperate) at Southern Crescent Tech in Griffin (7 p.m.); **Fri., Feb. 27:** Civil Air Patrol observing (7 p.m., Candler Field airport [Williamson, Ga.]); **Sat., Feb. 28:** C.A.P. rainout date (same time, same place).

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President's Message. After a 3-year absence, FRAC's weekend star party, **GEORGIA SKY**

VIEW – A Stellar Experience – is back! **GSV 2015** will be held at the Rock Ranch near Barnesville on the weekend of **Fri.-Sat., Mar. 20th-21st**. We hope to make it an annual event again, the way it used to be.

The GSV committee – which also includes **Carlos Flores, Truman Boyle, Ron Yates, Joe Auriemma** and **Felix Luciano** – is still working on the arrangements with the Rock Ranch's **Adam Pugh**, but here's what we can tell you now:

*The park will not be open to the public on Fri., Mar. 20th. It will be open for business on Sat., Mar. 21st from 10 a.m. until 4 p.m. We'll use a security code to get in on Friday.

*We'll camp and observe at the covered wagons site, which is separate from the rest of the facility. I've visited it at night, and it's *very* dark!

*Tent camping will be permitted. RVs are welcome, but must be parked in the parking lot.

*Port-A-Potties will be available at the covered wagon site, and food and soft drinks can be purchased at the concession stand on Saturday.

*Our speakers on Saturday will include: **Dr. Richard Schmude**; **Felix Luciano** and **Ron Yates**; and **Truman Boyle**. **Stephen Ramsden** will have his solar 'scopes and filters during the day, and **Phil Sacco** will do an evening walkabout constellation talk.

We'll have more details regarding **GSV 2015** (including directions to the Rock Ranch) in next month's newsletter.

Meanwhile, I'm happy to welcome back to FRAC ex-member **Dan Pillatzki**. Dan lives in Hampton with his wife **Kathy** and daughter **Megan**.

-Dwight Harness

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Last Month's Meeting/Activities. Sub-freezing temperatures outside couldn't keep 17 FRACsters and a friend away from **Phil Sacco's** splendid mythology talk at our Jan. meeting. Phil talked about how and why mythology arose (i.e., as a way for pre-scientific humans dating back as far as 50-60,000 years b.c. to explain the world around them). Attendees included: **Jessie Dasher**; **Truman Boyle**; **Ron Yates**; **Aaron Calhoun**; **Tom Moore**; **Andy Hasluem**; **Joe Auriemma**; **David, Cherrie & Sarah O'Keeffe**; **Steven "Smitty" Smith**; **Carlos & Olga Flores**; **Erik Erikson**; **Dwight Harness**; **Phil** and his friend **Vicky Walters**; and **yr. editor**. Andy received his Basic Outreach certificate and pin; Dwight talked about

Ga. Sky View 2015; and after the meeting Aaron showed us **Comet Lovejoy (C/2014 Q2)** in his telescope. It had just passed its closest approach to Earth the day before, and it was a bright and lovely, soft greenish-gray glow in Aaron's 'scope.



Above: Andy receiving his Basic Outreach pin and certificate from Dwight. (Photo by **Jessie Dasher.**)

Fifteen members attended our January club observings: **Brendon & David O'Keeffe** and **yr. editor** (both nights); **Ron Yates, Erik Erikson** and **Dwight Harness** (Fri. night); and **Cherrie & Sarah O'Keeffe; Aaron Calhoun; Alan Pryor; Felix Luciano;** and **Andy Hasluem** Sat. night. The star of the show on both nights was, of course, the comet, but we also visited a host of other celestial treats. Ron, Felix and Alan took astrophotos; Aaron, Brendon, David and Dwight looked for Messiers and other observing program targets; and all of us had a grand old time. It was great having Alan back with us after his recent family ordeal. (See below.)

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This 'n That. A reminder: *All FRAC members' annual dues are up for renewal in February.* Make your \$15 check payable to the **Flint River Astronomy Club**, and either give the check to Dwight at our Feb. meeting or mail it to him c/o: **Dwight Harness, 1770 Hollonville Rd., Brooks, GA 30205.** Please remit your payment promptly, because we need to notify the A. L. regarding our 2015 membership roster.

*Depending on how you look at it, Thanksgiving came either 1-1/2 months late or 10-1/2 months early for **Alan & Vicky Pryor.** Either way, mid-January brought them two very special reasons to be

thankful. First, their son **Gallagher** (who was hit by a pickup truck while jogging last October) came home from the Shepherd Rehabilitation Center in Atlanta on Jan. 13th. He is expected to be walking again in a month or so. And second, on Jan. 15th Gallagher's wife **Liz** gave birth to their 2nd child, 9-lb., 9-oz. **Madeline.**

How did 3-year-old **Natalie Pryor** react to Madeline? Alan reports that, after checking the baby's fingers and toes, hugging her and holding her (with adult assistance) and taking pictures of her, Natalie was very pleased with her new baby sister.

*On a sadder note, **Tim Nix**, owner of The Camera Bug in Atlanta, passed away from diabetic complications a few days before Christmas. Tim was a kind, generous, soft-spoken gentleman with a relaxed manner, an easy smile and a fondness for FRAC. He will be greatly missed by everyone who knew him.

Dwight recalls meeting Tim: "At a **Ga. Sky View** one year, I bought an eyepiece from Tim at his Camera Bug booth. Later that weekend, I won a very nice zoom eyepiece as a door prize. It was much better than the inexpensive eyepiece I had purchased from Tim. While I was walking up to claim my door prize, Tim called out from the back of the room, '*No refunds!*'

"I kept the eyepiece, although I knew Tim would gladly have taken it back if I had asked him to. I used it for several years at public observings until it got coated with ladies' eye makeup.

"We kidded each other about the 'No refund!' incident for years after that. It was the start of a nice friendship, and I still laugh whenever I think about it."

*On Jan. 12th, **Dwight** received a 10-in. Meade Dobsonian telescope that was given to FRAC by a donor who prefers to remain anonymous.

We now have two club telescopes, the other one being the 102mm Takahashi 'scope that was given to FRAC last year by another anonymous donor.

Now all we need is a club-owned plot of land and an observatory to store them in.

***Trivia Question** (from **Phil Sacco's** talk at our Jan. meeting): *What is the oldest constellation?* (Answer on p. 7.)

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Upcoming Meetings/Activities. Our FRAC meeting will be held at 7:30 p.m. on **Thurs., Feb. 12th** at The Garden in Griffin. We'll conduct our regular lunar observing from 7-7:30 p.m. before the meeting, but not afterward. We want to give our speaker, **Phil Sacco**, as much time as he wants to conduct his outdoor "Mythology of the Night Sky" walkabout, so we're postponing our officer elections until the March meeting.

Phil's outdoor talks are always a barrel of fun, and we hope you'll be able to attend. You'll have an "L" of a good time -- Listening, Laughing and Learning from astronomy's Master of Mythology. Phil is a walking Wikipedia when it comes to the mythology of the night sky. He is presently writing a book on the origins of celestial mythology.

We'll hold our JKWMA observings on **Fri.-Sat., Feb. 20th-21st** at Site #3.

At 7 p.m. on **Tues., Feb. 24th**, we'll conduct a sidewalk observing at Southern Crescent Technical College in Griffin. This will be a "rain or shine" event: if it's clear that evening, we'll set up our telescopes as described below -- but if it's cloudy on the 24th, we'll go indoors for a powerpoint presentation.

To get to Southern Crescent from N or S of Griffin, get on 4-lane U.S. 19/41 and stay on it until you reach the Ga. 16 (Newnan-Griffin) exit. Turn east toward Griffin, go to the 2nd stoplight and turn left at Spalding Drive.

Go past the 4-way stop at Flynt St. and turn right at the next corner (Water Works St.). A large student parking lot will be on your left after you turn. Turn left into student parking, and make your way to the far right end of the parking lot beside a 3-story bldg. Unload your 'scope on the large sidewalk area at the NW end of the bldg., then go back and park in student parking.

The G.P.S. coordinates for Southern Crescent are: 33° 15' 15.75" N, 84° 17' 23.9" W.

Three days later, at 7 p.m. on **Fri., Feb. 27th**, we'll hold an observing for Civil Air Patrol teenagers at Candler Field (Williamson Airport) near Griffin. There are usually about 40-45 attendees, so we'll need a bunch of FRACsters and their telescopes that night.

To get to the airport from the intersection of U.S. 19/41 Bypass and Williamson Rd. (Ga. 392) in Griffin, go 6.3 mi. W on 392 and turn right onto Jonathon Roost Rd. Go 0.3 mi. to the 2nd paved road on the left where you'll see a large sign that

says "Candler Field Museum" and below it, "Barnstormers Grill." Turn left there, and drive around the hangar to the parking lot. We'll let you know closer to the event precisely where we'll set up our 'scopes.

The G.P.S. coordinates for Williamson airport are: 33.18037, -84.376098.

The rainout date for the C.A.P. observing will be **Sat., Feb. 28th**, at the same place and time.

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Ten Astronomy Myths and Misconceptions

article by Bill Warren

Introduction. This 2-part series is not a rehashing of the mythology of the night sky that **Phil** will show and tell us about at our Feb. meeting; it is, rather, an analysis and explanation of certain astronomy myths and misconceptions that have arisen in modern times and remain with us today.

A myth is a belief that is passed along from one person to another until it is accepted as true by a large portion of the population although it has little or no basis in fact. As an astronomer, you're probably aware of the following myths. (The misconceptions in next month's *Observer* may surprise you, though.) This article will tell you how to explain to others the difference between myth and fact.

Myth #1: *The dark side of the Moon never gets sunlight.*

Fact: This is actually two myths. First, the Moon has no "dark side," only a far side that we never see. And second, *all* of the Moon receives sunlight.

This myth exists because people who know nothing about astronomy often assume that, since we see the same side of the Moon all the time, the **Sun** does too. But that's not how it works.

We see 59% of the Moon's surface as it "wobbles" in its orbit. During the First Quarter Moon, the right half -- including that far side half -- is facing the Sun; at Last Quarter, the left side -- front and back -- is facing the Sun; and during the New Moon, the entire far side is facing the Sun.

The only time when the far side of the moon doesn't receive sunlight is during the Full Moon, when the Moon's near side is fully sunlit.

Myth #2: *The Full Moon influences human behavior.*

Fact: Humans have always associated human behavior with the Moon and planets; that's what astrology is all about. But despite lurid stories of werewolves – humans who turn into wolves during the Full Moon; archaic terms like *lunatic* that were used to describe people who supposedly went insane under the influence of the Full Moon; and the commonly held beliefs that birth rates and crime rates increase, and children become more prone to hyperactivity or misbehavior during the Full Moon – despite things like that, no studies have ever shown a connection between the Full Moon and human behavior.

So how and why did such notions arise? Probably because the Moon is at its brightest – and thus more noticeable – when it's full; as a result, people are more likely to remember behavior or circumstances that occur around the Full Moon.

Myth #3: *Mars is sometimes as large as the Full Moon in the night sky.*

Fact: The Moon is about 1/4th the size of the Earth; it appears large to us because it's only 240,000 mi. away. Mars is about twice as large as the Moon, but it never comes closer to the Earth than 34.5 million miles. At its largest, Mars is seen naked-eye as an orange dot in the night sky.

This myth originated in 2003 in a widely circulated anonymous e-mail entitled "Mars Spectacular," in which the author – obviously an astronomer, as you'll see – announced an upcoming celestial event of such importance that "NO ONE ALIVE TODAY WILL EVER SEE THIS AGAIN!"

Many myths contain seeds of truth within a forest of misinformation or wishful thinking, but this e-mail was different: virtually everything in it was true!

Basically, the e-mail stated that, on Aug. 27, 2003, Mars would be 34,649,589 mi. from Earth, the closest it had been in mankind's recorded history. (However, it was wrong in stating that "It may be as long as 60,000 years before it happens again"; the next time Mars will be as close as it was in 2003 will be on Aug. 28, 2287 a.d.)

"(Mars) will attain a magnitude of -2.9, and will appear 25.11 arc-seconds wide," the e-mail went on. "At a modest 75x magnification Mars will look as large as the full moon to the naked eye..."

And all of that was true, too. Mars enlarged 75 times in a telescope would indeed appear the same size as the Moon as seen without a telescope. But two unfortunate line breaks in the e-mail message focused readers' attention on *Mars will look as large as the full moon to the naked eye*, to the exclusion of everything else. So millions of readers who knew nothing about magnitudes, arc-seconds or 75x magnification went outside on Aug. 27, 2003, expecting to see two Moon-sized objects in the night sky. Obviously, they were disappointed: Mars was a star-like point of light to the naked eye; telescopically it was about the same size as **Jupiter**.

Things changed the following year, at which time a myth became a hoax (or at least a prank or a very big mistake). The same e-mail reappeared, but this time it was altered in two important respects: (1) images of Mars and the Full Moon, side-by-side and the same size, were added to the original message; and (2) the magnitude, width, magnification and other technical details were deleted. Those changes clearly were not accidental: if they were not intended to deceive, they likely were made by a non-astronomer who came across the 2003 "Mars Spectacular" e-mail and decided that it was important enough to send out again in 2004 in a simpler form that everyone would understand. (Call it the blind leading the blind.)

Whatever the case, that revised e-mail was mass-mailed every year between 2004-2010. Sometimes it announced a different Aug. date, and sometimes it kept the original Aug. 27th date. But all of them were wrong: since Mars was closer to the Earth in 2003 than it would be in the next 284 years, it couldn't happen again during each of the next seven years! In some of those years, Mars wasn't even visible on the date listed.

The e-mail disappeared after 2010 – only to reappear on Facebook in 2013. The message (which I have not edited) read as follows: "WARNING: Aug 27 at 00:30 Lift up your eyes and look up at the night sky. On this night, the planet Mars will pass just 34.65 million miles from the earth. To the naked eye it looks like two of the moon above the ground! Share the news with your friends, because no one living on this earth has ever seen!"

This message, at least, has been traced: it came from a Russian website called "Dream Worlds." Apparently, someone in Russia decided to resurrect the old e-mail message for Facebook. It worked,

too: by Aug. 27th, 600,000 people had received the message (which also included a doctored image of the Moon and an equally large Mars above Nilov Monastery in the Tver Region of Russia).

Myth #4: *There is no gravity in outer space.*

Fact: Gravity is everywhere. Without gravity, there would be no solar system or Milky Way.

Then why do we see astronauts floating around weightless inside and outside their space capsules?

While it's true that Earth's gravitational pull is reduced the farther you are from the ground, its influence is still powerful enough to keep the Moon in orbit from 240,000 miles away, the same way that the Moon's weaker gravitational attraction causes high and low tides on Earth.

Satellites are placed in orbit above the atmosphere in order to eliminate drag (friction) and conserve fuel, not to escape Earth's gravity. There's no air up there – but there *is* gravity. Many humans have experienced the sensation of weightlessness, but none has ever escaped Earth's gravity.

Aboard the International Space Station (ISS), for example, astronauts weigh 11% less than they do on Earth. But they aren't weightless, far from it. To be truly weightless, they would have to weigh 100% less than they do on Earth – and the only way to experience a sense of weightlessness is by *falling*.

As long as astronauts are accelerating *away* from the Earth, they feel the effects of its gravity. During liftoff, that force of acceleration (called *g-force*) makes them feel as if they weigh several times as much as they weigh on Earth.

In orbit, however, they are no longer accelerating away from the Earth, but around it. As a result, they and their spacecraft are *falling*, the same way that you or I would if we fell from the top of a tall building. But since their orbital speed is 17,500 mph, they aren't falling *down* to Earth, but *around* it as it curves away beneath them. So they never get any closer to Earth while they are falling. The result is a feeling of weightlessness.

If that doesn't make sense, consider: Have you ever been in a car traveling so fast that, when you crested a steep hill, you were momentarily lifted out of your seat? While you were airborne, you experienced a brief feeling of weightlessness until you (and possibly the car as well) landed, at which time you probably felt relieved but certainly not weightless.

Astronauts aboard the ISS remain in constant free-fall throughout their flight because its speed is hundreds of times faster than your airborne car was traveling. The ISS and other satellites maintain a specific orbital velocity that ensures that they neither fall to Earth nor fly off into space. As a result, the ISS and everything aboard it experiences the illusion of weightlessness.

Since the Moon's gravity is considerably weaker than Earth's, our Apollo astronauts weighed only 1/6th as much on the lunar surface as they weighed on Earth. A 180-lb. astronaut weighed only 30 lbs. on the Moon. That's why they hopped around the surface rather than walking normally. Their "moon walks" were more like "moon hops."

(Incidentally, acceleration is one of the factors – *lift* is the other – that permit airplanes that are heavier than the air around them to appear lighter than air and leave the ground for extended periods. But since the cruising speed of a jetliner in flight is only 1/29th that of the ISS, passengers don't feel weightless unless the plane makes a sudden, unexpected dip, bump or dive. Constant acceleration is necessary to keep the plane aloft, and when velocity decreases the plane loses altitude.

Myth #5: *The seasons are caused by Earth's changing orbital distance from the Sun.*

Fact: The seasons are caused by the tilt of Earth's axis relative to its orbital plane. In summer, the north pole is tilted 23.5° toward the Sun, causing the Sun to rise high in the sky in the northern hemisphere as it passes overhead. The result is longer days and more direct solar rays to warm the air around us. In winter, however, the north pole is tilted 23.5° *away* from the Sun, causing it (the Sun) to rise lower in the sky. Days become shorter in winter, and the Sun's rays have to pass through more of Earth's atmosphere in order to reach us, making it harder to get a tan or stay warm.

That explains why northernmost Alaska above the Arctic Circle – the "Land of the Midnight Sun" – has as much as 3 months of continual darkness during the winter and an equal period of uninterrupted sunlight during the summer. It also explains why Christmas in Australia comes in midsummer down there. (Think: **Santa Claus** wearing a tank top and flip-flops.)

Myth #6: *You can see the Great Wall of China from the Moon or the International Space Station.*

Fact: Regarding the Moon, Apollo 12 astronaut **Alan Bean** said, “The only thing you can see from the Moon is a beautiful sphere, mostly white, some blue and patches of yellow, and once in a while some green vegetation. No man-made object is visible at that distance.”

To see a man-made object naked-eye from the Moon, it would have to be about 70 mi. wide. The Great Wall is 5,500 miles long, but it’s only 30 ft. wide.

The ISS orbits the Earth at an altitude of 220 mi. You can see the Great Wall from there with a telephoto lens, but no one has ever reported seeing it naked-eye.

(Part Two of this article will appear in the March Observer.)

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Above: Comet Lovejoy (C2014 Q2). Photo by **Andy Hasluem**. This is a brighter and more concentrated version of what we saw in **Aaron Calhoun’s** telescope on Jan. 8th.

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Above Right: M78, an emission and reflection nebula in *Orion*. North is at the top of **Alan Pryor’s** photo.

Pierre Mechain discovered **M78** in 1780. This pretty little gas cloud could serve as a model for all of the Messiers, since it does indeed resemble a tail-less comet (although it contains two mag. 10 stars).

To find M78, imagine a line between golden **Betelgeuse (Alpha Orionis)**, the bright star that forms the Hunter’s easternmost shoulder, and **Alnitak (Zeta Orionis)**, the bright star on the left in Orion’s belt. Go ¼ of the way from Alnitak to

Betelgeuse, move about 1/2° E and start your scanning there. Look for two “headlights in fog.”

Incidentally, lying unseen just below the little orange star at the bottom of Alan’s photo is **NGC 2071**, an M78 look-alike. Smaller and fainter than M78, 2071 is a Herschel II Observing Program target and a reflection nebula surrounding a mag. 10 star and its faint companion.

You might think that, lying a scant 3 thumb-widths NNW of M78 in a low-power field of view (fov), 2071 would be easy to see once you have centered M78 in your fov. But the nebulosity is very faint, and best seen on a clear, dark evening using a narrowband (nebula) filter. **Yr. editor** has seen it a few times, and failed to see it on other occasions. (We looked for it but didn’t see it at JKWMA in January.)



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Next Page, Left: Comet Lovejoy. Photo by **Alan Pryor**. And this is what we didn’t see that night: *the comet’s faint but lovely little tail*. Says Alan: “I couldn’t see the tail, but I assumed it would be going diagonally through the photo I was taking. I was wrong.” Hey, Alan, your photo is lovely, and shows us what we wanted to see.

Anyway, the professional astronomers were wrong, too: they predicted that Lovejoy would peak at about mag. 8 brightness, but it was forty times brighter than they expected it to be. (Why? Because, while it’s easy for them to accurately determine a comet’s path and speed months in advance, there’s no way to predict how much gas and dust will be released by the “dirty snowball”

as it moves silently closer to the **Sun** and its surface warms.



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Opposite: The Pleiades (a.k.a., **M45** or **The Seven Sisters**), an open cluster in *Taurus*. North is toward the left edge of **Ron Yates's** lovely photo.

Often mistaken for the **Little Dipper** by non-astronomers due to its shape, the **Pleiades** cluster is one of the brightest and most noticeable objects in the winter sky. It lies to the W of **Aldebaran** (**Alpha Tauri**), the bright yellow star that highlights the V-shaped face of *Taurus the Bull*.

In Greek mythology, the Seven Sisters were the beautiful daughters of **Atlas**, the Titan who carried the world on his shoulders. After being chased for a year or more by **Orion** (the Hunter), the sisters appealed to **Zeus** for relief. He responded by turning them into doves, and they flew away into the sky. Unfortunately for them, Zeus – who liked to play tricks -- placed Orion in the sky behind them to the E, and Orion has continued to chase the Sisters ever since. (They must be very tired.)

Seven sisters. Most people, however, see only five stars in the Pleiades – and one of them is actually Atlas, their father.

If you see the Pleiades as a little dipper, Atlas forms the “handle” to the east of the bowl (and out of view below the bottom of Ron’s close-up view of the Sisters. **Pleiione**, their mother, is also unseen, forming a wide telescopic double star with Atlas.)

All of the Seven Sisters appear in the photo. **Alcyone** is the bright star at the bottom. **Merope** is the bright star to the upper right of Alcyone. **Electra** is at the top center, **Taygeta** is the brightest star near the upper left corner, and **Celaeno** lies

above and midway between them. **Maia** is the bright star to the lower right of Taygeta, and **Asterope** is the brighter of the two stars to the lower left of Taygeta.

In the 1950s-‘60s when light pollution was not the widespread problem that it is now, observers commonly saw many more than five stars in the Pleiades. *Sky & Telescope's* legendary deep-sky observing writer **Walter “Scotty” Houston** once counted 18 stars in the Pleiades one evening at a dark site in New Mexico.

The Pleiades is an active star-forming region: its youngest stars are less than 100,000 years old. At 2° in dia., the cluster is too large to fit inside a normal low-power telescopic field of view, but is stunning in binoculars or a rich-field telescope. The stars are encased in nebulosity that shows up blue in photos and gray in ‘scopes. Merope has the most nebulosity, and it shows up best in a narrowband filter.



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Answer to Trivia Question on p. 3: The oldest constellation, which dates back to when humans were living in caves, is *Draco, the Dragon*.

Why was Draco identified by early man so long ago? Because it was associated with mankind’s earliest fear, i.e., fear of the dark and whatever beasts lurked beyond the glow of their campfires.

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