



# Carpe Noctem



## The News of Central Texas Astronomical Society

July, August, September 2019

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### President's Letter July-Sept 2019

Greetings CTASers! I hope you are staying cool this summer while enjoying some of our clear night skies. This has been a season of public outreach for CTAS. We have done four library presentations, a Vacation Bible School, and a teen star party at the Mayborn Museum included in this newsletter. We have also had a tremendous turnout at our third Saturday public Open Houses. If you are thinking of volunteering, this would be a good time to come out and learn from Dan Doyle and Johnny Scarborough. The Meyer Observatory telescope is mechanically functional and we are using it for visual observing during member and public star parties. The images of Jupiter are spectacular. Dean Chandler is working diligently with Peter Mack to get ACE software reinstalled and operating. Encouraging progress is being made.



Mayborn Museum Star Party. CTAS was invited to support the Mayborn Museum (on the Baylor campus) Teen Science Night.

Thanks to Johnny Barton, Peggy De La Rosa, and Dave Eisfeldt for helping to support this event. Dave is shown lining up on the Moon, while Johnny and I showed Saturn and Jupiter. Over thirty teenagers learned about telescopes and astronomy, and got to see great images of the Moon and planets.

You can help promote astronomy by remembering to mention CTAS to teachers, libraries, and volunteer groups with which you are associated. CTAS conducts outreach presentations during the day time, as well as evening star parties.

*Dick Campbell*

*President*

### Newest Members

Mike Wright

Tammy Snow

Frank & Yvonne Schulze

Poet Reynolds

Rebecca & Mike & Millie Peikoff

Welcome, all, to CTAS.

### Factoid

On September 1, 1979 Pioneer 11 became the first spacecraft to visit Saturn.



## Jupiter and Saturn

Dave Eisfelt shot the two planets on July 25.



## Neutron Stars Merge Producing Gravitational Waves

On Aug. 17, LIGO and Virgo, both gravitational wave detectors, recorded a gravitational-wave signal possessing an extraordinary amount of energy. Kasliwal, one of

many scientists who took part in this discovery, said, "Its energy was enough to outshine the 100 billion stars in our galaxy by about a billion-fold for the 50 or so seconds it took place."

The gravitational wave detection was confirmed by both radio and visual telescopes.

So far the two detectors have witnessed four black hole mergers in addition to the neutron star merger.

The two instruments plus one commissioned in late 2017 in Italy are the latest telescopes to look at the stars, but in a new and exciting way.

You can read about them here:

<https://www.ligo.caltech.edu>

The Neutron star collision showered the universe with a wealth of discoveries including a burst of gamma rays, particle jets, and a glow from ejected material as shown in this artist's conception.



## Exoplanet News

Confirmed Exoplanets: 4044 in 3,004 planetary systems.

Is Earth an Odball?

Among the four-thousand planets confirmed many are rocky like Earth. But most are barren because they reside too close to their sun to harbor life. A few are too far. So, why have we not seen any like Earth?

First, one star would need to be viewed continuously for nearly a year to detect an Earth around it. Secondly, an Earth sized planet may not show up against a star the size of the Sun. However, they do show up well against small red stars.

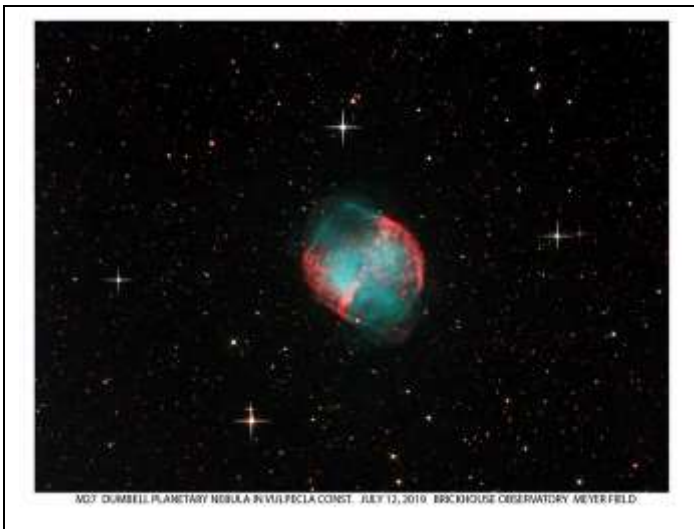
It will take a new generation of telescopes to capture an Earth-like planet orbiting a Sun-like star, so there could be billions. If the Milky Way has around 100 billion stars, then there are possibly 400 billion planets. And at least one should harbor life.

Hey Sis, where are you out there?

## Dumbell Nebula

*Astrophotography by Aubrey Brickhouse*

The Dumbbell Nebula is the 2nd brightest planetary nebula in the sky, so I was able to get a lot of detail. It is about 1200 light years from us in the minor constellation of Vulpecula. Note that planetary Nebula are incorrectly named. The name was made up in the time when Astronomers did not know precisely what they were seeing. Later they found that this is the stage in a star's life when it can no longer convert Hydrogen to Helium in the core and so it blows up and exposes the core. The gas material that is blown into space. In this case the core neutron star is illuminating the gases.



## Bode's Galaxy

*Astrophotography by Aubrey Brickhouse*

German astronomer Johann Bode in 1774 discovered M81, one of the brightest galaxies in the night sky. It is located 11.6 million light-years from Earth in the constellation Ursa Major and has an apparent magnitude of 6.9.



## NASA on Pluto

After the discoveries about Pluto by the New Horizon spacecraft, and they are numerous, NASA officials said that Pluto should once again be given planetary status.

Among Pluto's fiercest defenders is Alan Stern, principal investigator of NASA's New Horizons mission, which sent a spacecraft to Pluto to study it in 2015. Stern calls the IAU decision "misguided," saying planetary status should be conferred on the basis of a celestial object's geophysical features. By that measure, he says, Pluto is clearly a planet.



## On Shakespeare and Astronomy

William Shakespeare (1564-1616) was England's greatest author. Amongst his voluminous works are numerous references to astronomical bodies, such as stars, planets, the moon or meteors. Below are a few.

**Sonnet 14:** "Not from the stars do I my judgement pluck, And yet methinks I have astronomy. But not to tell of good or evil luck, Of plagues, of dearths, or season's quality.

**Hamlet, Act 2, Scene 2:** "Doubt thou the stars are fire; Doubt that the sun doth move; Doubt truth to be a liar; But never doubt I love."

**Troilus and Cressida, Act 1, Scene 3:** "The heavens themselves, the planets, and this center. Observe degree, priority, and place, Insisture, course, proportion, season, form, Office, and custom, in all line of order."

**Julius Caesar, Act 3, Scene 1** "I am constant as the northern star, of whose true-fixed and resting quality. There is no fellow in the firmament."



**Henry IV, Part 1, Act 3:** “By being seldom seen, I could not stir. But like a comet I was wondered at.”

**Romeo And Juliet, Act 2, Scene 2:** “O, swear not by the moon, the fickle moon, the inconstant moon, that monthly changes in her circle orb, Lest that thy love prove likewise variable”.

## Custodians of Earth

*By: Kent Swarts, Ed*

People, we are the lifeblood of Earth. We are the planet’s major consumer of anything edible, anything that can be used for housing, goods and services. And we are the planet’s only species that throws more away than it consumes. So, what does it mean to be the lifeblood of Eath.

Perhaps we need to ask what it means to not be its lifeblood. CO2 is mounting, methane is increasing in the atmosphere, and trash—the stuff disoposed of by humanity—is increasing faster than any other polutant. Green house gasses pale in comparison to the build up of junk thrown away.

How does trash affect us? Nearly half of our trash is not biodegradable, so it exists in the environment for centures or even until the Sun consumes Earth when it goes nova. And that is a long time off. Much of our trash is winding up in places we do not want trash. The primary example is the oceans. Scientistes estimate that the oceans will contain more trash by 2050 than they will fish.

That is startling. A recent PBS documentary showed the trash washed up on the beaches of Midway Island, one of the most remote land forms in the world. Nine tons a year is washing up. That means that a comparable amount is being deposited in the coral reefs around the island.

Navigble rivers in third world countries are so clogged with primarily plastic that boats can no longer use the arteries to the ocean. And unfortunately the trash is washed out to sea.

I could go on, but enough. What can each of us do?

1. Quit using plastic grocery and other shopping bags. Demand paper or take your own cloth bags.

2. Don’t use plastic straws. Take your own metal straw to the restaurant.

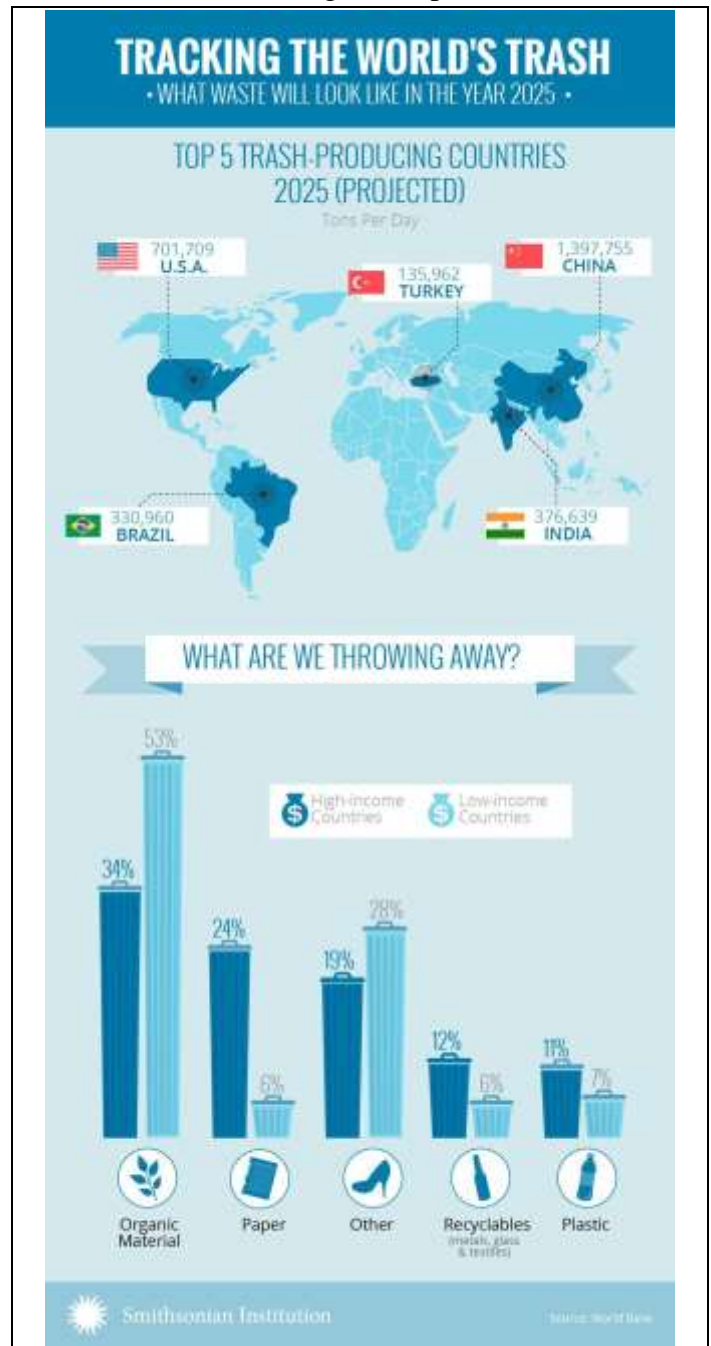
3. Quit using cling wrap and similar products to preserve food.

4. And the most obvious: Dispose of trash in the most envitonmental friedly way. Think before you throw.

Simple things reduce plastic’s footprint and save species from extinction. Midway atoll researchers found that most every Laysan Albatross, a fowl unique to the atoll, has injested plastic. It is the number one killer of the bird.

Let’s each do our part. It is simple stuff.

Notice in the graph that the smallest type of trash constitutes the greatest problem.



## **Factoid: Cosmic Microwave Background Radiation Number One Discovery in Astronomy**

With only very small variations, the Universe is filled with a uniform form of radiation known as cosmic microwave background radiation. The implications are profound, since the uniformity of the radiation seems to confirm the notion that the Universe originated in a single event from which everything else flows

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