

Carpe Noctem



The News of Central Texas Astronomical Society

Sept, Oct, Nov, Dec 2018

President: Dick Campbell

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From Your fellow CTAS Members

Eldorado Star Party & Photo

By: Dave Eisfeldt

The Eldorado Star Party was held this year in November with several CTAS members, Brad Walter, Willie Strickland, and me, present.

The skies were clear Monday and Tuesday night with a couple of hours on Wednesday. Thursday and Friday were light rain and clouds. I was told that Saturday night was good. I left Saturday morning. The attendance seemed to be about 50% of the normal crowd due to the rainfall accumulation over the previous weeks and weather

forecast. Field conditions were good. It was not muddy but the mosquitoes were annoying until the weather turned cold on Wednesday night.

I was able to capture images of 3 comets that were visible starting around 11:00pm on Monday and Tuesday night. Comet 64PSwift-Gehrels, 46PWirtanen, and 38PStephan-Oterma were out for photographing. I attach a 5 minute photo at 800 ISO binned 2x2 of Comet 46PWirtanen.



Current Comets

Three comets are currently zipping by Earth and are visible at various times and dates. Above, Dave wrote about 46PWirtanen.

C/2018 V1 (Machholz-Fujikawa-Iwamoto)

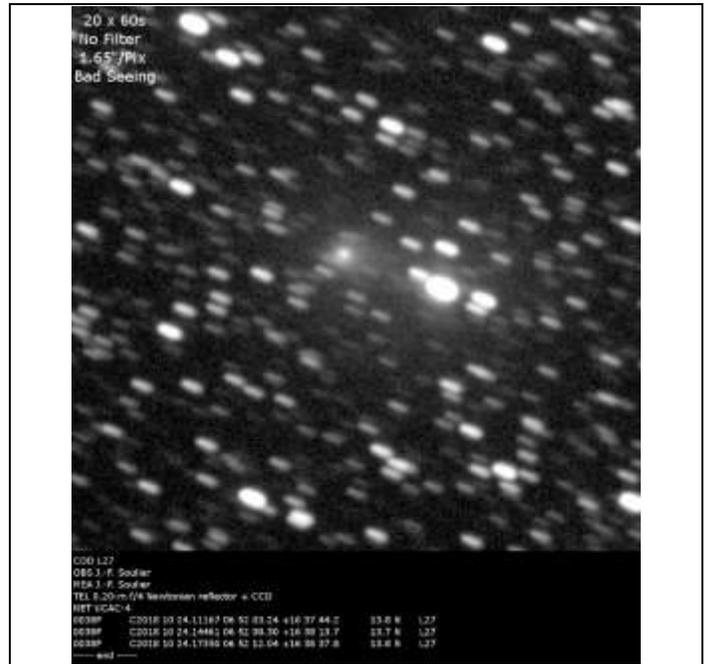
New bright comet discovered by three amateur comet hunters. It is 8.9 mag (Nov. 20). It brightened rapidly from 10 mag up to 8 mag just after the discovery. In the Northern Hemisphere, it can be observed in the extreme low sky in the evening at 5.5-7 mag from around Dec. 5 to around Dec. 15.



Comet Machholz-Fujikawa-Iwamoto

38P/Stephan-Oterma

Now it is bright as 9.8 mag (Nov. 18, Maik Meyer). It stays 9-10 mag until January. In the Northern Hemisphere, it stays observable in good condition for a long time until it fades out.



President's Letter

Happy Holidays CTASers. The weather has been interesting and the upgrade to the telescope has been interesting. I hope everyone is enjoying the cooler weather. We started the major upgrade to the 24-inch system in November. As with all complex systems, some additional parts and modification are required to complete the upgrade. Work is scheduled to begin again in mid-December, and (fingers crossed) we will be operational by the first of the year. We have some exciting projects coming up next year, and hope more folks will want to discover how to operate the new telescope. See the article about the TESS Project in this newsletter.

We will not have a Holiday Party this year. The Board discussed this, but there were too many conflicts to have a meaningful get together. However, I scheduled an exciting program from the National Park Service for our General Business Meeting in January, so hopefully, you can make that meeting. News about the observatory operations will be promulgated to the membership.

In the meantime, our public outreach goes on. CTAS supported a star party in November at the Waco Mammoth National Monument, and hosted about 200 visitors. Despite the work on the 24-inch, we still have Open Houses at PJMO, and star parties in Belton Hubbard and downtown Waco on the third Saturdays.

Clear Skies, Dick

Calendar of Events for 2019

The 2019 official events for CTAS was approved by the Board. See the detailed schedule below. Notice that the New Moon will give us 13 Member Star Parties in 2019, and we will continue the practice of public star parties and Open House on the third Saturday of each month. This practice has made it very easy to keep the public informed of our outreach activities. Also, put the July 27th Star-B-Q and Business Meeting on your Calendar. We are also thinking about a Star-B-Q at the June 29th member star party

New Moon	Member SP	Meetings	Open House
1/5/19	1/5/19	1/15/19*	1/19/19
2/4/19	2/2/19	2/19/19	2/16/19
3/6/19	3/2/19	3/19/19	3/16/19
4/5/19	4/6/19	4/16/19*	4/20/19
5/4/19	5/4/19	5/21/19	5/18/19
6/3/19	6/1/19	6/18/19	6/15/19
7/2/19	6/29/19		
7/31/19	7/27/19	7/27/19**	7/20/19
8/30/19	8/31/19	8/20/19	8/17/19
9/28/19	9/28/19	9/17/19	9/21/19
10/27/19	10/26/19	10/15/19*	10/19/19
11/26/19	11/23/19	11/19/19	11/16/19
12/25/19	12/28/19	12/17/19	12/21/19

*General Business Meeting

** Star-B-Q and General Business Meeting

Election of Officers for 2019

The Nominating Committee composed of Willie Strickland, John McClain and Johnny Barton presented the Slate of Officers at the October General Business Meeting. There were no nominations from the floor.

Your Officers and Board for 2019 are:

President	Dick Campbell
Vice President	Dan Doyle
Treasurer	Dave Eisfeldt
Secretary	Johnny Scarborough

Director 3 Forrest Marler (new 3 year term expiring 2021)

Director 2 Brad Walter (term expires 2019)

Director 1 Mike Gonzales (term expires 2020)

TESS Project Team

The Transiting Exoplanet Survey Satellite (TESS) Program is recruiting amateur astronomers to help analyze the tremendous amount of data being collected by this satellite. Participants must go through a qualification process to be accepted to the TESS Team. CTAS will support TESS observers with the 24-inch as part of this project. By the time you read this, Brad Walter will have conducted the first CTAS TESS workshop, to teach volunteers the process to obtain TESS certification. In addition to TESS qualification, volunteers will learn how to use the new operating system of the 24-inch telescope. If you have ever thought of wanting to learn how operate the 24-inch, or get started in doing some real science at PJMO, this is the perfect opportunity. Watch your email for future broadcasts on TESS and PJMO training activities. If you are interested in joining our TESS Team, please let Brad Walter or Dick Campbell know.

Dick Campbell

AL Awards for Outreach

by Johnny Barton

At the October 16th General Business Meeting, Johnny Barton, the Astronomical League Representative for CTAS, presented the AL award for Public Outreach to Johnny Scarborough, Dave Eisfeldt and himself.

The AL Outreach award has three levels of recognition. The first level is called the Outreach, which requires participating in five public events of a minimum of two hours each for a total of 10 hours. The second level is called the Stellar Outreach Award and requires an additional 50 hours. The top level is the Master Outreach Award, which requires an additional 100 hours and a written narrative of what you think works well for outreach programs. The Outreach level awards a pin along with a certificate, while the Stellar and Master Outreach awards just an additional certificate.

Johnny Scarborough received both the Outreach and Stellar awards, while Dave Eisfeldt and myself received the Outreach award.

I believe this award should be the most common of all of the AL awards that CTAS members receive. That is because we have many of our members who are involved in public outreach every month hosting star parties either at the PJMO open house, or at the Belton, Hubbard and Waco events. In addition, we have many members who volunteer for school and other public events.



left to right: Johnny Scarborough, Dave Eisfeldt and Johnny Barton

I would like thank all of those who volunteer for these events. It is the selfless giving of your time that supports our mission and brings awareness to our group, which helps us grow. I recommend you go to the AL site and download their Excel form, which is used to record and submit your time for these events.

<https://www.astroleague.org/al/obsclubs/outreach/outreach.html>

Dave Eisfeldt's Photo of Jupiter



Astrophotos in a New Light

By: Aubrey Brickhouse

I made a new flat lamp sheet for my observatory named W1 made from EV glow sheet (12"x12") and it did a great job. I did all new calibration flats and shot this image of M13 in Hercules. It also includes NGC6207 Galaxy that is about 30 MLY away from us.



I calibrated the image with eXcalibrator V4 so it is supposed to be this color. There are about 50 other galaxies in this frame. Some are 19th magnitude. You can find 4 since they are face on or edge on.

If anyone is interested, an electroluminescent panel from Glow Hut with 12VDC Power Supply and inverter with shipping was \$104.00.

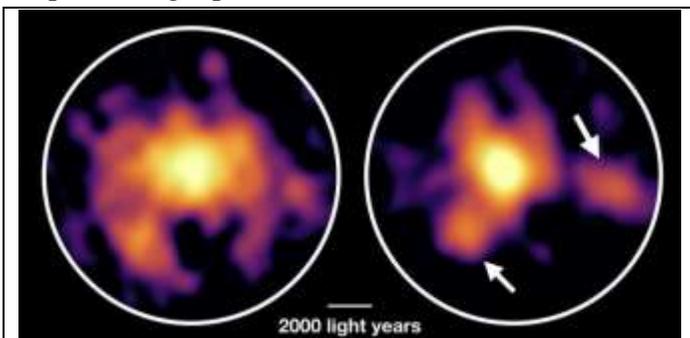


EV Panel is used to smooth the image obtaining high resolution.

Starburst Galaxy

By: Kent Swarts

Astronomers made the sharpest and clearest map yet of a distant starburst galaxy, where stars form 1,000 times faster than in our Milky Way. They're now calling this galaxy an "unstoppable monster." A starburst galaxy is a galaxy experiencing a period of intense star formation.



Monster galaxy COSMOS-AzTEC-1 observed with the ALMA radio telescope in Chile.

A newly mapped starburst galaxy labeled COSMOS-AzTEC-1 – located 12.4 billion light-years away, near the earliest time galaxies formed—is forming stars 1,000 times faster than our Milky Way. It's also been found to have star-forming regions not in its galactic center, but in vast clouds located several thousand light-years away from its center. This makes the galaxy a dynamic and mysterious monster.

Jeffrey McClure Image of the Jellyfish Nebula



Goodnight Kepler

By: Kent Swarts

On the evening of Thursday, Nov. 15, NASA's Kepler space telescope received its final set of commands to disconnect communications with Earth. The "goodnight" commands finalize the spacecraft's transition into retirement after a decade of discovery.

The Kepler Space Telescope has had a profound impact on our understanding of the number of worlds that exist beyond our solar system. From it, we now know there are more planets than stars in the Milky Way. The data Kepler collected over the course of more than nine years will be mined for exciting discoveries for many years to come.

Converting My Telescope To a "GO TO"

By Johnny Barton

As a longtime member of CTAS, many of you have seen me with my 350 pound homemade 12.5" Newtonian telescope as I trailered it out to TRS on star party nights, or to schools and public events over the past years. However, after over 40 years of dragging that beast out for an evening of viewing, or leaving it out overnight for an early morning glimpse of a comet, I finally got around to building a permanent observatory home for it a couple of years ago. That proved to have been a very rewarding decision. No more backbreaking struggles with the 80 lb. tube assembly. And the best part, it's always ready to go, polar aligned, leveled and weather protected.

When I built the scope in 1986, I was seeking more aperture and something that would track fairly well. Although the drive system was a little crude, it functioned well enough for visual sighting. However, in the past few years I have been dabbling into astrophotography. Nothing very serious; I just wanted to capture an occasional passing comet. However, my non-sidereal rate tracking didn't cooperate. It produced dramatic periodic errors, and limited exposure times to 30 seconds most of the time.

Another area that occupies a lot of my astronomy time is doing asteroid occultations. Many of these events involve stars in the 11 to 13-magnitude range, which is no problem for my 12.5", and Watec 902H camera. But, sometimes it can be

a big challenge even for a star-hopper like myself, to first find the faint target star visually, then insert the camera, and then find it again on the computer screen with no remote slewing available. Plus, there's usually a bright Moon, and sometimes you just have a few minutes before the start of the event to find the target star, because it hasn't cleared that big Cottonwood tree to the East. My frustrations got me to thinking, "It'd sure be nice to have a "GO TO" right now." Well, after a lot of serious thinking, the obvious question was, "Can an old, homemade, German equatorial mounted scope be converted to a "GO-TO?" And, the answer was, "I think it can!" But, not without some major modifications, and cash.

After a lot of Internet searching, I began calling a few people to see if I could make this happen. The first order of business was to find a "GO-TO" system that would work with my German Equatorial Mount. My search led me to Sideral Technology that can be found at <http://www.siderealtechnology.com/>

Dan Gray is the owner and engineer behind the technology. His system can convert any type of telescope mount to a "GO-TO". In fact, SiTech was the only add-on-system that I found that could execute the meridian flip with German equatorial mount. Dan's a nice guy and is always willing to talk with anyone, and answer any questions.

The next issue was to get my old RA drive system replaced. I wanted a more precise worm gear that would track smoothly, but wouldn't cost an arm and a leg. I found a person on-line in Dallas who advertised worm gears at a reasonable price. However, he no longer was in business, but he pointed me to Aeroquest Machining in Palmer, Alaska, <http://www.aeroquest-machining.com/>

Owner Jim Egger prides himself in being second-to-none with his precision worm gears. I sent Jim my specs and, after a few weeks, Jim, who personally makes each gear to order, shipped me a beautiful 8.7" aluminum-alloy worm gear machined to snugly fit onto my RA shaft.



The final step was to retrofit the old worm gear to be relocated to the Declination shaft. I had a local machine shop make some modifications to the gear and clutch plate. Then a stage had to be made for the servo-motor and worm gear.

Swivel mounts were used for each servo-motor to allow for easy adjustments to the belt tension on the timing pulleys that I used for both the RA and Dec. drives. They work smoothly and precisely, and they don't have the slop that creates periodic errors, like spur gears do.

Now, with the hardware installed, it was just a matter of configuring the controller (See top photo) to the servo-motors using the SiTech Servo-Config program. The Si-Tech operating systems works with Ascom software that in turn allows a planetary program to talk to the controller of the telescope. Cartes du Ciel is a free planetary program that works with most telescope GO-TO systems. After downloading and "integrating" the programs, my telescope was ready to use.



By executing a two or three star sync, the scope will slew to any object in the sky with amazing accuracy. The accuracy is 5-6 arc minutes putting the object within a medium power eyepiece. I found this amazing considering what I had before. In addition, the telescope can be slewed using a hand pad. Of course, the best test for my upgraded scope would be to take a picture of a passing comet. And right on queue, Comet 21P/Giacobini Zinner, a periodic comet that comes around every 6.6 years, past by Earth making its brightest apparition (closest approach) since 1946, that occurred Sept. 10 at an estimated 6.5 magnitude.



The photo of Comet 21P G-Z was a single 60 second exposure taken at 05:30 am CDT on Sept. 1st when the comet was 7.3 magnitude. There was a

70% Moon high in the sky, but I was eager to test the accuracy of my polar adjustment and tracking.

I'm still tweaking the polar alignment to improve the tracking and pointing accuracy, but overall I'm very pleased with the conversion of my telescope to a "GO-TO".

I guess you might say that the moral of this story could be, "You CAN teach an old telescope new tricks." You just have to put out a little work and cash.

If anyone is thinking about doing something similar to their scope, please feel free to contact me with your questions.

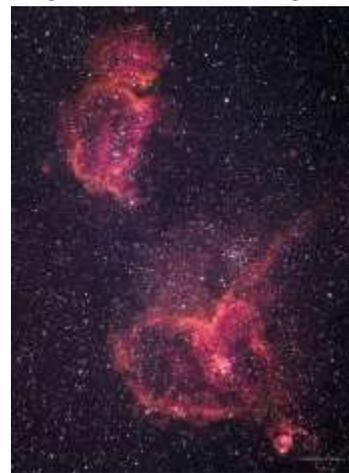
Astrophotography

Jeffrey McClure

Heart and Sole of Cassiopeia.



The green image is HST (SIII=red, Ha=green, Oiii=blue)



the red image is mapped H-S-O.

CENTRAL TEXAS ASTRONOMICAL SOCIETY
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UPCOMING EVENTS

Observatory Open House	Dec 15
Hubbard, Belton, Waco Star Party	Dec 15
Member Star Party	Dec 8 @ 5:00 p.m.
Observatory Open House	Dec 15
General Business & Program	Jan 15