

The FBAC Observer

Volume 18, Issue 9

September, 2004

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Astronomy's Varied Spectrum

By Wes Whiddon

You've arrived at your favorite observing spot in plenty of time. The scope is set up, laptop booted, and your favorite software launched. The bugs aren't too bad yet so it's time to sit back and enjoy the sky before you get down to some serious observing.

The heat of the day is subsiding. A distant cicada twangs the air with its raucous beat. You lean back in your observing chair and watch for the first few stars to begin poking through the lingering twilight. Life is good. You're at peace with the world.

Darkness has crept up on little cat's feet and stars are beginning to pepper the sky. The reverie is broken—it's time to observe.

Your mount slews effortlessly around to the first alignment star. You center the star in the eyepiece and press the alignment button on the hand paddle. You glance quickly back into the eyepiece and something strikes you. You think, "I see a star. I see its light, the



Electromagnetic radiation detector-Model HU-MAN

photons of which impinge on my retinas, causing my brain to believe there is an object in space. Light is electromagnetic radiation. My eyes can detect visible light but I know there are other types of radiation I can't see. I wonder what else is out there?" You begin to ponder the question and realize that there's more to the sky than meets the eye. And some of what we can't see is strange indeed.

Continued on page 5

Tinsel Town Telescopes-For-Telethon Tops Two Thousand

Many thanks to all who stood in the hot sun for hours and showed up for the second weekend(s) that ultimately never panned out.

As per Steve Goldberg, our intake from donations was as follows:

Tinsel Town Donations: \$767.66

Members and Friends:	\$2001.00
Corporate:	\$50.00
Total:	\$2818.66

All funds are given to the Muscular Dystrophy Association, a charity supporting research into a multitude of neuromuscular diseases. Please donate your time next year for this cause.

Astro Happenings In September 2004

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1 Venus and Saturn two degrees apart this morning. Sundials and clocks agree today.	2 Mercury rises 1 hour before the sun. Be the first on your block to spot it.	3 Venus and Saturn are paired. Check if they are closer together than Castor and Pollux.	4 Find M13 in Hercules with binocs 1 1/2 hours after sunset.
5 Mercury and Regulus at half as bright, near in the morning sky.	6 Last quarter Moon at 10:11 a.m. CDT.	7 Nothing happening on this day. But tomorrow brings a real surprise.	8 The sun's north pole reaches maximum tilt toward Earth today.	9 Mercury and Regulus 0.7 degrees apart in the morning sky.	10 Mercury and Regulus even closer today, 0.2 degrees apart.	11 Don't bother looking for evening planets. There are none. Wait until January.
12 Venus and the Beehive cluster near in the morning sky. What is the alternate name for the Beehive*?	13 Look for Zodiacal light in the morning eastern sky. Use the planets as a guide to establish the Zodiac. Good luck in the light pollution.	14 New Moon at 9:29 a.m. CDT. What is the record for the youngest moon ever spotted#?	15 Quick! Find Mercury. It'll be gone at months end.	16 Find Spica 2 degrees to the upper left of the Moon in the evening twilight.	17 Asteroid Vesta just past opposition. Find it between Omega 1 and 2 in Aquarius.	18 Scan between Altair and Vega with binocs to find the Coat Hanger asterism.
19 Red giant Antares, the heart of Scorpius, could go supernova tonight. But then again, maybe not.	20 Summer solstice on Mars as it's north pole is at maximum tilt toward the Sun.	21 First quarter Moon at 10:54 a.m. CDT.	22 Fall equinox at 11:30 a.m CDT. Day and night have equal length everywhere on Earth...except in France.	23 Arcturus in Bootes brightens the western sky. Repeat after me: boh OH teez.	24 Look for the bikini bottom shape of Capricornus near the bright Moon. If you can find the 4th mag stars in the moonlight that is.	25 Cassiopeia's companion, Cepheus, stands high over Polaris tonight.
26 Find the red supergiant "Garnet Star" in Cepheus.	27 Pegasus is square in the eastern sky at nightfall. See if you can spot the Andromeda galaxy with binocs	28 Shine on, shine on, Harvest Moon. And don't ask me to sing the rest of it.	29 Mercury is history. But Venus and Regulus are doing the Tango.	30 Get a preview of winter when you see Orion in the morning sky.	*The first person to personally tell this name to the editor at the September club meeting will win a nice prize.	#The first person to email the editor with the correct answer will win a trip to lovely downtown Rosenberg.

Cool Time at Late Arrival

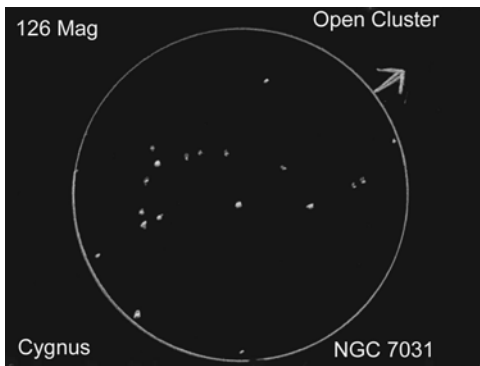
By Tracy Knauss

One day at the George Observatory while doing Building Manager duties with Keith Rivich I was talking to Keith about starting up observing at Late Arrival again. We wanted to get the spirit back into observing, so I chose a date in August which by chance just happened to coincide with a cool front that had come through the day before. So on August 7, 2004, during third quarter moon, numerous astronomers gathered at Late Arrival Parking Lot in Brazos Bend State Park to do some observing, check out new scopes, or just plain enjoy each others company. Astronomers started gathering around 7:00 PM to set up their scopes and prepare for the night sky. I am an astronomer, I have an obsession and I needed a star fix. TSP was my last observing session where I had gone to work on my lifetime project of drawing all the Herschels. Take a look at the drawing below that did on an open cluster in the constellation Cygnus. This is one of the Herschels that Sir William observed back in the 1700's. They're really not that bad; this one has a little over a dozen stars in it.

Randy and Dolly Brewer had brought their RV and their generators for power, in case anybody needed it. Thank you, Randy, for the electricity. I did not arrive until around 8:15 as I was working on



Steve and Amelia Goldberg setting up for the night



some late minute updates to my new 18" telescope. Got set up amid all the mosquitoes and finally got my mosquito repeller going: A fan. Then got down to business working on my Herschels in Sagittarius and Cygnus.

The night sky started out a little hazy but got better as it went on. Keith was set up next to me with his 25" telescope observing deep sky objects while Leonard Ferguson and Randy Brewer down the parking lot on the east side were doing CCD imaging. Take a look at Randy Brewer's GIF animation that he did of the Milky Way that night at <http://www.randybrewer.net/latearrival.htm>. Dolly, Judy, and Kim (the astrobabes) were

inside the RV watching movies. I could smell the popcorn popping and the generator winding up when the microwave kicked in. Steve showed me the upper tube he had painted metal-cast blue on his scope. It looked great! So what is metalcast? It's a paint that looks like anodized aluminum. In the meantime, Keith, better known as K2, was showing me the technique he uses to collimate his scope with a laser collimator and a barlow. But you must have a paper reinforcer for the center dot. I on the other hand have a plus sign etched into my mirror. Rats!!! We had observers from the Fort Bend Astronomy Club, Houston Astronomical Society, and Astronomical Society of South East Texas at Late Arrival. Everybody had a great time. I started packing around 1:00 AM and left around 2:00 AM with Steve and Amelia still packing their scopes up for the night. With everybody enjoying the wonders of the night skies, I would like to make this a monthly happening. Next observing session will be on Friday, September 3, 2004. So dust off those scopes and star charts and get ready to observe.



Late Arrival Parking Lot with George Stradley and Dana Lambert's telescope in the foreground

Beginners Corner Of The Universe Telescopes Part I By Jim Ellis

I'm changing the tone of this (and next) month's topic due to the topic--telescopes. This is a very serious matter that can cost quite a bit of money. These articles are by no means the be all and end all on scope advice; as with all big purchases you need to do your research. Therefore, I must start with this word of advice—before you go out and purchase a telescope, please talk to members of the club, ask for advice on netslyder and if at all possible come out to the George on a Saturday night to check out the different types of scopes. Be a light leech and look through as many scopes as possible. This can keep you from getting stuck with more scope than you can handle or too little scope to do what you want to do.

This month we'll look at a few basic ideas and then we'll look at the main types of scopes in the next article.

Focuser Size

The first thing you should look for when purchasing a scope is the focuser size. This is an extremely critical part of your purchasing decision. There are three sizes of focusers--.965" inch, 1.25 inch, and 2 inch. When purchasing a scope, purchase one with at least a 1.25" or 2 inch focuser. The .965 should be avoided if at ALL possible.

Generally scopes with .965 focusers have poor quality optics and include poor quality eyepieces. (Eyepieces will be covered in another article.) Having owned scopes with .965 and 1.25" focusers, going to a scope with a 1.25" focuser was like opening a huge window.

Focal Length

Focal length is the length of the light path from where it enters the telescope to where the light reaches the focal point, which is usually where the eyepiece goes.

Focal Ratio

Focal ratio is the focal length divided by the aperture. For practical purposes, look at the number after the f. (ex. f 4.5 or f 6 or f10 or f15) The larger this number the smaller the field of view. Generally a reasonably small number (ideally f 5 –f 8 range to start with) is a little easier to get objects into your field for nice viewing. That doesn't mean that higher focal ratios are not good, it just means that as you start, you want to be able to find things. Having owned an f 15 scope and then

moving to an f 6, was like opening a HUGE window and reduced my frustration factor. That, I think, is the key here—frustration factor, in that you will find as you start learning to use a telescope you will occasionally (or more) get mad at the darn thing and want to pitch it over the back fence. Having a reasonable focal ratio (f 10 or so and below), reduces frustration to some extent.

Aperture

When looking through a telescope you are looking through a column of sky equal to how big the telescope is. Generally, the bigger the scope, the more faint an object you can see. Keep in mind, the bigger the scope the more it weighs and comparatively the more it costs. For instance, the Meade LX 200 Schmidt Cassegrain 8" scope is a LOT lighter than the 10" model.

This just touches the surface of all of the factors that can come into play when choosing a telescope. The best thing to do is show up at late arrival and be a light leech. In the next article we'll look at telescopes and mounts.

Keep in mind, the bigger the scope the more it weighs and comparatively the more it costs.

**FBAC Club Meeting, Friday, September 17,
2004, 7:30 p.m. at the First Colony
Conference Center, 3232 Austin Parkway,
Sugar Land, TX**

Astronomy's Varied Spectrum Continued from Page 1

During the course of evolution, the human eye adapted to receive radiation most found on the surface of our planet: visible light. And as amateur astronomers, we spend much of our time viewing objects that either reflect or manufacture visible light in one form or another. As discussed earlier, light is a type of electromagnetic radiation but there are many others in the spectrum that modern astronomers can use to clue them in on the universe.

The Longest Wave

Beginning in 1932 one of the first advances in alternative observing came in the form of radio astronomy when Bell Labs physicist, Karl Jansky, discovered emis-



Grote Reber's Radio Telescope

sions from the center of the Milky Way while investigating interference with transoceanic telephone service. Within a few years, an amateur radio operator, Grote Reber, W8GFZ, built the first radio telescope in his back yard. From this humble introduction, radio astronomy has grown into a major player for astronomers and astrophysicists. Radio waves possess the longest wave length of the electromagnetic spectrum and, as such, can penetrate the obscuring dust clouds of galaxies and other shrouded objects.

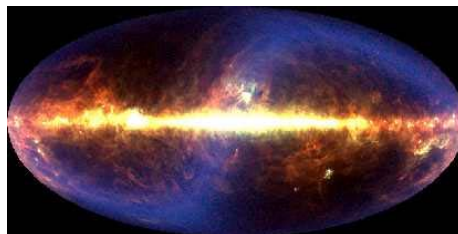
Beneath Infrared

The submillimeter region

lies between radio and infrared. Because of technological limitations, this area has remained unexplored until recently. Submillimeter waves are severely attenuated by the Earth's atmosphere but, as in the case of radio, they are well suited to observing dusty galaxies, star birth regions, quasars, and "cool" material such as comets in our solar system. Operational since late in the 20th century, the six dish Submillimeter Array on Mauna Kea is the in the forefront of this type of astronomy.

A Light Too Far

Our atmosphere not only attenuates submillimeter radiation but also the region known as "far-infrared". Because of this, only telescopes located in earth orbit can be used to detect this part of the spectrum. In far-infrared, the stars have all disappeared. Instead we see cold matter at temperatures of 140 Kelvins or less. Clouds of gas and dust in the Milky Way as well as other nearby galaxies glow in far-infrared light. In some of these clouds, stars are just beginning to form and far-infrared observations can detect these protostars even be-



The Galactic Center In Far-Infrared

fore they turn on. Stars imbedded in dense clouds in the center of our galaxy heat up the dust causing it to glow brightly in far-infrared. Launched in 2003, the Spitzer Space Telescope has obtained some of the most beautiful and useful images to date.

Above Visible

Detecting ultraviolet light in the region above what we can see is the purpose of the recently launched *Galex* (Galactic Evolution Explorer) satellite. The basic job of *Galex* is to "calibrate" observations

from Hubble and ground based telescopes. As the universe expands, light from distant galaxies is shifted down into the red region. In these cases Hubble is actually seeing redshifted light from the UV region. Sensitive only to ultraviolet, *Galex* compares light from nearby galaxies with less redshift allowing astronomers to compare galactic evolution over a period of about 10 billion years.

X Marks The Spot

We don't normally think of x-rays as light. And even though their wavelength is shorter than ultraviolet and they pack hundreds of times the energy of visible light, they still qualify. Earth's atmosphere again blocks most of this type of radiation from reaching the surface. So we again turn to orbiting spacecraft to observe in this region. The premier x-ray scope in orbit today is *Chandra*. Along with the European Union's *XMM-Newton* these telescopes provide us access to the x-ray sky where we can see the light of supernovae and black holes.

The Bad Boys Of The Universe

Gamma-rays are on the high-energy frontier. And the secretive forms of radiation known as gamma-ray bursts are just now being revealed for what they are: the offspring of a special kind of supernova in distant galaxies. Until now GRB detectors have observed with very fuzzy eyes. And unfortunately the Compton Gamma Ray Observatory was removed from orbit by Nasa in the year 2000. But stay tuned for the launch of the *Swift* gamma-ray burst satellite in September.

There's soft buzzing sound in your left ear and then a sting. You sit up, alert to the sudden mosquito attack. You realize your thoughts have drifted from the real reason you're here: to observe in that portion of the electromagnetic spectrum we can most often use: visible light. You reach for your eyepiece case...

August Meeting Minutes

By Joe Dellinger

At the request of our president I'm giving the minutes out of sequential order, with more important stuff listed first.

Club elections, led by Dennis Borgman, were held at the August 20, 2004 meeting for the 2004-2005 term.

Jim Ellis was elected secretary (nominated by Dennis Borgman, seconded by Cookie Adolphus, elected by acclamation).

Joe Dellinger was elected treasurer (nominated by Dennis Borgman, seconded by Don D'etremon-tet, elected by acclamation).

Terry Hiserodt was elected vice president (nominated by Dennis Borgman, seconded by Cookie Adolphus, elected by acclamation).

David Jenkins was re-elected president (nominated by Jack Mackay, seconded by Dan Harbinson, elected by acclamation), continuing the partial previous term he served after the previous president re-signed mid-term.

Joe Dellinger, your incoming treasurer and outgoing secretary, reminds you that new yearly dues are due in September, which is to say AT THE NEXT MEETING. Dues are \$30 for regular membership, \$15 for students, and \$5 for additional family members.

Wednesday night, August 25, is free IMAX night at the museum. Don't be late. Movie starts at 7PM and nobody will be allowed in late. Thanks to Betty Glass for organizing.

August 28 5PM-11PM will be the telescopes for telethon make-up night at the tinseltown West-chase movie theater. Contact Steve Goldberg for details or just show up at the theater at 5PM. Come prepared for heat and bugs and nothing to eat except movie food beyond what you bring yourself.

Friday Sept 3 there will be an FBAC star party at late arrival at the park. Tracy Knauss is organiz-ing.

The all-clubs meeting will be Friday, Oct 22 at St. Thomas University. Jay McNeil will be the fea-tured speaker. More details to come.

Oct 23 will be astronomy day at the George. FBAC is in charge of deck activities (Jack Mackay volunteered to organize these) and traffic control (Wes Whiddon will organize these). Cynthia and K2 will be building managers. Cynthia is FBAC's representative for overall astronomy day planning. We need vol-unteers to lead Children's activities, deck activities, help with traffic control, and come out to do cleanup Sunday morning.

Dennis and K2 reminded folks that there are 4 club loaner scopes. They are loaned out for 3 weeks at a time. Scope #1 is an 8" F5 Dob built by Dennis Zwicky. Scope's #2 and #3 are Meade LX 200's, one 8" and one 10". The 10" requires two normal people (or one strong person) to transport. Scope #4 is a small televue refractor kitted out with a Hydrogen-alpha filter for viewing of the sun. Schedules for scopes 2-4 can be found on the FBAC web site. Contact K2 for more details.

The novice program was given by Don D'etremon-tet on the subject of "What's the big deal about the North Star?". The main program was given by Wes Whiddon on video astronomy. Randy Brewer showed his time-lapse movie taken at the last late-arrival star party.

Thanks to Calvin Embry for bringing refreshments. Jane Lambert volunteered to do them next month.

David Jenkins led the August 20, 2004 meeting.

Minutes compiled by Joe Dellinger, outgoing secretary.

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Dedicated to the acquisition and dissemination of information pertaining to the science of astronomy

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 281-468-8491

We're On The Web
[Http://www.fbac.org](http://www.fbac.org)



You are invited to submit your opinions for inclusion on this page. Please be thoughtful and respectful of others in your comments. Rants will not be published. All articles should be 450 words or less and are subject to editing for clarity and length before publication. Please submit in Word format to:
 stargazer411@earthlink.net

The Fort Bend Astronomy Club meets on the third Friday of every month except for those months when special meetings are called. The next regular meeting will be at 7:30 PM on September 17, 2004 at the First Colony Conference Center, 3232 Austin Parkway, Sugar Land, TX. Dues are \$30/year for the first member, \$5 per additional household member. Student dues are \$15/year.

The **Houston Astronomical Society** meets the first Friday of the month in room 117 of the University of Houston Research Building. The novice program begins at 7:00 PM and main meeting at 8:00 PM.

For the **Johnson Space Center Club**, refer to the JSCAS web site for meeting times and sites. There is a link on the FBAC web site.

North Houston Astronomy Club meets on the 4th Friday of the month at Kingwood College. The meeting starts at 6:45 PM, main meeting at 7:30 PM.

Starved For Starlight

As The Observer goes to press or is digitized for the web (could that be called prestawebadigitization?), the state of Florida is recovering from one major hurricane and looking down the maw of another. And we here in this part of the world have miraculously managed to avoid a major hit since early in the 1980s. But for the whole of this summer, we might as well have had a hurricane every day. And you're probably wondering what that statement means. Well, it means that hurricanes and clouds go together and clouds are what we've gotten a whole lot of the time this summer.

That's why I was glad to see that, at the urging of one club member with a new scope, we were able to pull off one of the largest impromptu club star parties I have ever seen. And we dodged the clouds...most of the night.

By now you've probably read Tracy Knaus' article on said star party. If not, turn immediately to page 3 and don't come back here until you've read the whole thing.

What was remarkable to me was how, with just a small amount of urging, so many members showed up to observe, light leech, eat popcorn, and fight mosquitoes. Yes, the pesky little blood-sucking vampires were out in full force but if you want to observe in these climes, you gotta develop a thick skin.

Anyway, it did my heart good to see everyone out there enjoying the sky together and chatting about everything under the sun...uh, stars.

So why the sudden rush to the countryside by so many people? Some might chalk it up as a primal urge to look for things in the sky that emit so few photons as to be virtually undetectable. Maybe. Or was it the need of a certain club member who just spent a good portion of her life piecing together a conglomeration of plywood and glass to point the thing she had spawned toward the sky. Could be. Maybe it was because some us just needed to get out of the house for a while. Possible. Whatever the reason, it was a good time for me and for many others, I would like to think. And if it takes building a new scope every once in a while to keep it up, well, lets get started.

—Wes Whiddon