

# The FBAC Observer

Volume 19, Issue 5

May, 2005

## The CCD Chronicles

Wes Whiddon

## Part II

**CCD imaging**, like most everything else in life, works best when you have a set of rules. So as we get into part 2 of this article on the blind leading the blind, I will attempt to formulate some. In other words, I'm going to make 'em up as I go along.

As installment 1 ended last month, I said in my closing sentence, "...I slewed over to a bright one (star), cranked up the camera, made my first exposure...and saw absolutely nothing." Now there could be a lot of reasons why I saw nothing. I could have failed to properly boot my software or maybe the camera wasn't actually turned on or something wasn't plugged in, etc, etc, etc. Beginning CCDers who see nothing with their first shot usually have one of their biggest problems: focus. Focusing a CCD camera can be an exercise in frustration. Observers have been known to go—after a session of fruitless focusing—stark raving mad. If you hear a primal scream at a star party, think CCDer trying to focus his camera. (Well, I suppose it's possible he just dropped a 40 pound counterweight on his foot, too.)

But in my case, it wasn't focus that caused my first image to be a blank. It was a plain old cloud. The computer, the camera, the telescope had all been the center of my attention. I simply failed to look up and check the sky when I got ready to pull the trigger.

So, lets formulate CCD imaging rule #1: **Get your head out of the machines and look up at the sky.** There's lots of interesting things up there. Take an occasional peek. It might save you some frustration especially when you start guiding for long exposures. But that's a whole other can of worms that we'll visit later.

Clouds are itinerant but, alas, focusing is not. It will always be with us so lets see how it's done.

Here's the easy way. Go into your den, dig around under the couch cushions until you come up with \$44.95 plus tax, buy Ron Wodaski's book, **The New CCD Astronomy**, turn to page 31, chapter 2, Practical Focusing, and follow the directions. Your focusing problems will vanish in a flash.

Here's the hard way. Ask your significant other for \$44.95 plus tax, buy Ron Wodaski's book, **The New CCD Astronomy**, turn to page 31, chapter 2, Practical Focusing, and follow the directions. Your focusing problems will vanish in a flash. In a pig's eye. I've read that chapter a dozen times. I don't remember whether the money came from under the cushions or from groveling but it's still frustrating at times. But over the course of time, I've learned to do it and so can you.

So, lets' get back to my first time outside with the

camera. After I shoed away the cloud that was so maliciously blocking my focus star, I shot another image. This time I saw something: A very big, very dim something. It covered most of the frame I just shot. It was round with a black spot in the middle. The bright part had little wiggly lines all over it. I was ecstatic because I knew what this was. It was a big, fat out of focus image that I knew would, in seconds, be concentrated into the tiniest of dots on my screen. Was I ever the fool.

I started cranking on the focus knob. Inexplicably the image jumped off the screen. I turned the knob back the other direction. The image reappeared. Another crank, another jump. What the heck was happening? Then I realized that I was doing the SCT boogie—mirror shift. Schmidt Cassegrain telescopes focus by moving the primary mirror and sometimes the mirror does not move perpendicular to the alignment of the optics causing image shift. What was I to do? You can't focus if you can't see the object. I finally slewed the star slightly in the direction opposite the shift and was able to crank the focus knob without making the star disappear.

As I began moving the focus knob the bright blob got bigger and dimmer. I cranked in the opposite direction. It got smaller. I kept shooting 1 second images and kept cranking on the focus knob. The star gradually began to shrink, getting smaller with each image. Finally, I thought, I'm making some headway. That's when the icicle began to form.

On a non-anti blooming camera (I won't discuss that term right now), the CCD can saturate. When that happens, it causes bleed over from one pixel to another. As I got closer to focus, there was more light hitting the CCD chip and, since the ST-237 is NABG, it began to bleed over. As I continued focusing the icicle got fatter and longer, extending down in the image. In the vernacular of CCD imaging this is called blooming. And to make matters worse, another one was forming on top of the image. It might seem like this is bad but the fact is, blooming is a sign that you are near focus. Adjusting the focus knob for maximum bloom tells you that you're close...but of course that only counts in horseshoes.

So now what? Well, if digging around in the cushions (or groveling, whichever) paid off and you rushed out to buy Mr. Wodaski's book, he would tell you that you can never achieve perfect focus on a saturated star. So logic would tell us that the scope must be moved to a part of the sky that has dimmer stars. Or maybe you could just reduce your exposure time. Either one will work. In my case, I was already at 1 second exposure so the next move was another part of the sky. So I jiggled the scope a little to the north and started another round of images. And saw...absolutely nothing. (Continued next month)

# GOING DEEP

Keith Rivich

Usually this time of year our attention is drawn away from the rich sights of the winter Milky Way to the observationally sparse “realm of galaxies”. In most modest sized telescopes galaxies tend to become a bit, umm, boring as they all seem to look pretty much the same. That’s not completely true, of course, but it sure seems that way. So what to do? I’ll tell you...lets hunt down some really nice treasures right here in our very own galaxy!

Lets start our hunt near a very easy to find “wandering star” in Gemini. I am referring to Saturn, of course, now making a nice arc with Castor and Pollux high in our western sky. Center Saturn in your finder (its o.k. to take a peek in the main optics :o) and look for a 6<sup>th</sup> mag star slightly west of south, about 30’ away. Center this star and look nearly due SW about 1° and you should notice what looks like a nice double star. Center the southernmost of the pair and switch to your main optics. The cotton ball you see is **NGC2392**, the Eskimo Nebula. This 10<sup>th</sup> mag planetary spans nearly 50” and displays a wealth of detail in just about any scope. At low power you should see a slightly out of round nebula with a brighter outer fringe and a slightly dark interior with a modestly bright star at the center. Crank up the power and you will see why it is called the “Eskimo”. This outer fringe takes on a “wispy” appearance not unlike the fur around a parka while the interior becomes more mottled, like a face. Hence the “Eskimo”!

Now that we are warmed up lets take on a challenge. Astronomers are now learning that nearly all planetary nebulae have a similar shape: an hourglass. How the nebula is oriented with respect to our line of sight will determine how we will see it visually. Looking down the barrel of the hourglass will give us a ring, like M57, while an edge on view will give us an hourglass, like M27. Once thought to be two objects, NGC’s 2371/72 is a beautiful example of the edge on hourglass shape. To find **NGC2371** center Castor in your finder then move 3° due SW. This tiny nebula shares the field with a handful of 8<sup>th</sup> and 9<sup>th</sup> mag stars so a little “hunt and peck” may be in order. Once you find this oblong shaped object crank up the power to

see the hourglass effect. The central star is quite faint, hidden behind the dark torus of dust that bisects the waist of the hourglass.

Lets go from the very tiny to the very large. Midway and slightly E of a line drawn from Lambda Gem to Beta Procyon lies an enigma. Once thought to be a supernova remnant, then a Wolf-Rayet nebula and now generally accepted as a very old planetary nebula, **Abell 21** is a “C” shaped nebula spanning nearly 12’ of field. Seemingly easy to spot, at least according to its 10<sup>th</sup> magnitude brightness, the “Medusa” nebula is a real bugger. Low power, fairly dark skies and an OIII or UHC filter is required. TSP goers may want to give this one a try even though it can be done from the Houston area.

Moving on to other things, hold on...speaking of “moving” lets give **NGC 2419** a go! Known as the galactic wanderer this globular cluster has the highest known proper motion of any know globular zooming in our general direction at nearly 20km/sec. Don’t worry, at 300,000 light years away it will take a while to reach the earth! Visually NGC 2419 won’t take your breath away like M13 but it is fun to know that you are looking at the most remote Milky Way globular known.

Another large planetary can be found in the middle of a line drawn from Acubens (alpha cancri) to epsilon Hydra. **Abell 31** is a large, faint planetary nebula that is best viewed at low magnification. An OIII filter is required to see it in all but the largest scopes. Many observers report seeing a large, round glow. Look for a prominent parallelogram of four 10<sup>th</sup> magnitude stars. The brightest portion of the nebula envelopes the southeastern star, extending toward the star to the southwest. An 8” scope under dark skies is probably the minimum aperture for this elusive object.

We started this month’s journey with the chilly Eskimo nebula so why not end the tour with the aptly named “**Frosty Leo**”. Located 2° slightly W of due N from Omicron Leonis. This 10<sup>th</sup> mag “star” is actually a proto-planetary nebula with a spectral signature that does not fit any known nebulae. At high power a disk is readily discernable with a slight elongation in a NE to SW direction. Why is it called Frosty Leo? Because water ice has been discovered in the northern lobe of the nebula!

Object	Type	RA, Dec	Size	Magnitude
NGC2392	PN	07 29 11, 20 54 39	50”	9.0
NGC2371	PN	07 25 34, 29 29 22	55”	12.0
Abel 21	PN?	07 29 05, 13 14 55	11.7’	11.3
NGC2419	GLOB	07 38 08, 38 52 55	4.6’	10.3
Abel 31	PN	08 54 13, 08 53 59	16.2’	11.2
FROSTY LEO	PROTO-PN	09 39 53, 11 58 53	15x10”	9.8

# ANTLIA, The Air Pump APUS, The Bird of Paradise

## ANTLIA

### —The Air Pump—

Normally Antlia is considered a Southern Sky constellation. Its celestial position makes it visible from latitudes south of  $+50^\circ$  and invisible from latitudes north of  $+66^\circ$ .

Antlia is one of the 14 constellations invented by Nicholas Louis de Lacaille in 1752 during his stay at the Cape of Good Hope from 1751-1752. He called it "*Antlia Pneumatica*" on his map in 1763, and showed it as the type of pump invented by the French physicist Denis Papin. There are no legends associated with Antlia and it contains no bright stars of note. However, there are a number of galaxies, 500 to be exact, most of which are dimmer than dim and are real candidates for the "Elusive Dim Fuzzy Object." Antlia ranks 62 in the size department and occupies  $239^\circ$ .

## APUS, THE BIRD OF PARADISE

Apus is one of the southern sky constellations introduced by the Dutch navigators Pieter Dirkszoon Keyser and Frederick de Houtman at the end of the sixteenth century (1595-1597). Apus represents a bird of paradise, as found in New Guinea. Apus was depicted on the 1603 star map of the Jordan River under the name of Apis Indica, the Indian Bird. It has no legends associated with it and no named stars.

Apus ranks 67th in the constellation size department and occupies  $206^\circ$ . Also, there are no Messier objects in Apus and no meteor showers.

LEONARD PATTILLO, FBAC  
JANUARY, 2005

Friday, April 29, 2005

Left work early to begin loading stuff in the van. Didn't look like I had much until I started piling it inside. Finally got it all stuffed in. Ready to leave for Ft. Davis. Cold front predicted tonight.

Saturday, April 30

5:00 AM: Spring out of bed. Step outside to check the weather. Wind almost blows me down. It's howling out of the north at 30 mph. Ridiculous. TSP weather is supposed to be hot.

6:00 AM: Load suitcases and auxiliary stuff from house. Almost forget duffle bag of cold weather clothes. Van is now stuffed to the gills.

7:15 AM: Ignition and blast-off for TSP. Wind blowing even stronger now. Drive won't be pleasant broadside to this.

7:30 AM: First rest stop. Knew I shouldn't have drunk 4 cups of coffee.

8:00 AM: Rain. Between the north wind and the 18 wheelers, I'm having an interesting time keeping the van on road.

9:30 AM: Catch up to a red Ford pickup towing a white trailer. Could it be Dennis Borgman? It is. Wave hello and goodbye as we zoom past.

11:00 AM: Pit stop and lunch. Gasoline in Kerrville. Apply for second mortgage after filling tank. Getting into hill country now. A riot of wildflowers growing alongside I-10. Yellow, red, blue, a virtual coat of many colors on the ground.

12:00 PM: See first squashed porcupine. Begin dead porcupine watch.

1:00 PM: Miles and miles of nothing but miles and miles.

3:30 PM: Ft. Stockton at last. Gas up, transfer money received from second mortgage to Exxon/Mobile.

4:00 PM: Off I-10 toward Ft. Davis. Start climb up to and through Wild Rose Pass.

5:00 PM: Prude Ranch in site. Dennis and Tracy are here already. Guess we made too many pit stops. Check in, go to room and collapse for 15 seconds before remembering I have to stake out my spot on the observing field.

5:30 PM: Spread tarp on ground next to Derek Newton's spot. Receive verbal warning from Derek that I'm immediately downwind and he's not responsible for odiferous emissions. I recall that beans constitute large portion of TSP food. I'll just have to chance it, though.

6:00 PM: Dinner at Pop's. They said it was catfish...not sure about that though.

7:30 PM: Set up scope and attendant stuff. I'm ready to observe...if I can avoid Telescopus Giganticus, Larry Mitchell's 36". We sit around talking until midnight.

Sunday, May 1, 2005—Blackout Day

8:30 AM: Spring out of bed. Bright sunshine outside, a beautiful day. Make coffee, sit on porch, look at countryside, watch birds, listen to their songs, begin to unwind.

11:00 AM: Eat the last of our cold cuts for lunch. There's a 2 mile long line on the highway outside the ranch. I'd never get back in if I left the ranch for food.

12:00 PM: First in line to register for TSP. RVs, vans, campers, pickup trucks, cars, vehicles of all kind pouring in.

1:30 PM: Decide to start working on blackout early. Get paper and tape from Dennis. Find that working alone isn't easy. Finally get 7 rooms done by 4:00 o'clock.

5:30 PM: First meal at the ranch. Roast beef and it's good. The first one always is.

6:30 PM: Meet at Pandora's box for blackout. Take two volunteers back to cabins and finish up.

7:30 PM: Exhaustion sets in. I'm not getting any younger and the atmosphere is 5000 feet thinner here.

9:00 PM: At my scope ready to observe. Begin working on John Waggoner's list. John is an astronomical sadist. Spend 30 minutes looking for B228, no luck. Spend 45 minutes looking for the Blue Racquetball, NGC 6572, no luck. Finish off a dozen more objects. It's freezing cold and clouds are beginning to scoot across the sky. I quit and go to bed at 3:15 AM.

Monday, May 2, 2005

8:30 AM: Stagger out of bed. Doesn't look good outside. Cloudy, breezy, and cold. We have coffee on the porch anyway. A Mockingbird's song is carried away by the wind as it shushes the grass and trees. For the moment there is no other sound than nature. We sit in silence. This is a good place to be.

11:30 AM: Lunch. Hamburgers. Curly fries. Barbecue beans. I remember Derek's admonishment. He's south of me on the field so I'm glad the wind is out of the north. Two can play the same game.

3:30 PM: Solid overcast. The air is wet, a fine mist beginning to form. I put most of my stuff back in my van and cover the rest. Observing tonight looks iffy.

7:30 PM: Drizzle. No observing tonight. We dig out the DVDs

(continued next page)

Tuesday, May 3, 2005

6:30 AM: Out of bed. Crack open the door. Barely daylight outside. Clouds have descended and are right outside our cabin. Wind whipping hard out of the north. But I'm not deterred. I always drink my coffee on the porch at TSP.

8:30 AM: We head for Alpine.

11:30 AM: Lunch at Cuervo de Leon in Ft. Davis. Mexican food with more beans, a dangerous situation here.

1:30 PM: The vendor building is beckoning. I finally part with a princely sum and buy a 5mm Nagler eyepiece.

3:30 PM: Against all odds, the clouds part and skies clear.

5:30 PM: Dinner at the ranch. Mexican food. Two kinds of beans. Deadly.

7:00 PM: Attend evening lecture. Halton Arp is featured speaker. He outlines his theory of how quasars formed. Believes redshift is a function of age rather than distance and speed. Also seems to believe that matter can be created from energy. Convincing data but he admits himself that he's outside the mainstream.

9:30 PM: More clouds. We sit around shooting the breeze until the mist drives us back inside.

Wednesday, May 04, 2005

7:30 AM: Slept like a log. Take a quick look outside. About the same as yesterday morning. Fog covers the higher peaks, thick clouds. We take our coffee outside anyway.

11:15 AM: Lunch time. We're directed away from main entrance at dining hall. Maybe the strong skunk smell in that direction is the reason.

11:30 AM: Survive skunk scare. Lunch at the FBAC table in the cafeteria. Food has improved in past years. It's actually edible... most of the time.

1:30 PM: Clouds miraculously clear. We might get in some observing tonight.

6:30 PM: Try sleeping before heading for the observing field. No luck.

7:30 PM: Outside and head to the observing field. Most FBACers already there. I drag all my stuff out of the van and set up. Looks good for tonight.

9:00 PM: The few clouds left disappear. I begin to align my G-11 mount.

10:00 PM: Pick up a couple more objects on John Waggoner's list. Finally find the Blue Racquetball. Dew begins to form on the top of my table.

11:00 PM: Begin working on the open clusters in Vulpecula. Derek borrows my hair dryer to clear his corrector plate.

11:01 PM: Derek blows the main power circuit breaker for the first time.

11:03 PM: I reset circuit breaker on power pole.

11:05 PM: Derek blows circuit breaker again. He quickly slips hair dryer under my table to distract approaching lynch mob.

11:06 PM: We check breaker again. Find it's not properly seated in breaker panel. I push it back in place. Lynch mob retreats to their telescopes.

11:30 PM: Dew is streaming off the top of my observing table and camera case. Worst ever seen here.

12:00 PM: Clouds roll in from the east. Sky obscured for 30 minutes.

12:30 AM: Continue working on open clusters.

1:00 AM: More clouds. They stick around longer this time.

1:45 AM: Clouds disappear. I finish off the open clusters in Vulpecula.

2:00 AM: Another thick cloud bank rolls in from the east. Dew gets worse.

2:30 AM: I've had enough and pack it in.

Thursday, May 05, 2005

8:00 AM: Awake...barely. I toss and turn for a few minutes then drift back off.

10:00 AM: Awake—again. I drag my carcass out of bed. Death seems imminent.

10:30 AM: I'm now fairly coherent. Coffee helps.

1:30 PM: Sit on porch. Stay there most of the afternoon. Try to sleep but birds keep interrupting my soliloquy.

6:15 PM: Sky cloudy all day but looks like it will clear for tonight. I try to sleep.

7:30 PM: Caught an hour or so and I'm ready to observe.

8:00 PM: On observing field. There's a huge thunderhead northwest of our site. It's moving toward us.

9:00 PM: Look at NWS radar. Thunderstorm with strong imbedded cells headed directly for us. There's a scramble on the field to cover everything.

10:50 PM: Many lightning bolts in the northwestern quadrant. No rain but it appears to be imminent.

11:00 PM: Rain. Water blowing on the porch. I evacuate inside to watch DVDs.

Friday, May 06, 2005

12:30 AM: Still raining. The bed beckons.

6:15 AM: Awake. The birds are singing. Quick glance outside. Clear sky and brightening behind the mountain to the east. Looks like it cleared overnight and I'm aggravated that I didn't stay up.

7:00 AM: Morning coffee. It's cold here on the porch. Purple backed rays project up from behind the mountain. Beads of sunlight peek through the live oaks. Warmth floods the valley. Silence. Stillness. My soul is at rest.

Friday continued

11:15 AM: I'm told that the observing was great after 1:30. It's always like that when I turn in early.

6:30 PM: Tonight may be only good night of observing. Sleep until 8:00 PM.

8:30 PM: On field ready to go. Few clouds around but sky looks OK.

9:30 PM: Set up deep sky video camera and begin imaging Arp galaxies on Larry's list. Over next 4 hours, I image 38 objects including a dozen Arps. Not bad for a 4" refractor.

Saturday, May 07, 2005

1:30 AM: Clouds obscure the western sky.

1:45 AM: Clouds obscure the eastern sky. Transparency worsens.

1:45-4:00 AM: I'm determined to stick with it as long as possible. Clouds finally cover everything except Ursa Major and Cepheus. I keep pecking away at small galaxies.

4:30 AM: The observing field is mostly deserted. I finally put everything away and go to bed.

9:30 AM: Awake. Lethargy rules for the rest of the morning. I know I won't be observing tonight even if it's clear so, after lunch I pack up everything.

5:30 PM: Farewell dinner. It's steak as usual. You can cut it with a fork but I'm not sure steak should be cut with a fork. The meat has a strange taste kind of like it's been left in a pot of vinegar overnight.

7:30 PM: Talk by featured speaker and big prize give away. Astronomy magazine's, Dennis Eicher gives us a tour of some of the more esoteric objects in the sky. He's a good speaker but we didn't learn anything earthshaking. Win nothing at give away—as usual. Sky is cloudy as we trek back to the cabin.

Sunday, May 08, 2005

5:00 AM: Absolutely clear. Could have been the best night of the week for all I know. We finish packing and wait for daylight.

6:50 AM: On the road headed for Sugar Land.

11:30 AM: Eat lunch in van. Clouds have been getting thicker and now it's raining.

12:30 PM: Thunderstorms.

1:30 PM: Fatality accident causes major traffic jam in Boerne, near San Antonio. I'm not surprised, people drive like lunatics on wet highways.

3:30 PM: Pit stop at rest area just west of Columbus. Traffic backed up in front of us.

3:45 PM: Traffic completely stopped.

4:45 PM: Clear Columbus. Fourteen miles in one hour.

5:45 PM: Stop, creep forward. Stop, creep forward. Wind and storms in front of us, clear sky behind.

6:45 PM: Home at last. Three hours to go last 60 miles. Worst drive I can ever remember. TSP is officially done. A bad year for observing but good, as usual, for renewing friendships and hanging out with people who share my passion for the night sky.

—Wes Whiddon



**FBAC Club Meeting**  
**Friday, May 20, 2005**  
**7:30 PM**  
**First Colony Conference Center**  
**3232 Austin Parkway**  
**Sugar Land, TX**  
**For more info visit [www.fbac.org](http://www.fbac.org)**

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

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[stargazer411@earthlink.net](mailto: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 May 20, 2005 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.

We all go through times when life threatens to get the best of us and that's been my predicament lately. Of course, when you throw in a little procrastination, that doesn't help matters either. Keith and Leonard had their articles to me in plenty of time and I thought I would be able to publish in the week before leaving for TSP. But it didn't happen. A lot of personal stuff and work piled up so, two weeks later, here we are.

I apologize sincerely for being this late with the newsletter. I ask that contributors be on time and I should be also.

I'll try to keep it on schedule in the future.

Wes Whiddon