

# THE FBAC OBSERVER

Fort Bend  
Astronomy Club  
P.O. Box 942  
Stafford, TX 77497-0942

## GOING DEEP BY KEITH RIVICH

It's all in the name. Many of the deep sky objects we like to observe have names given to them to honor the discoverer or, more likely, to describe what the object looks like. Many of these names originated in the observing logs of noted observers from years past while other names just seem to have popped up out of nowhere. Regardless of the origin it is fun to observe these objects just to see if the name fits!

With the Summer Triangle still high in our dark western skies I thought I might take a look around our geometrical beacon and see

what "named" objects may be lurking about.

Lets start our observing by looking at a few objects in the "neck" of the beautiful constellation Cygnus, the Swan. Located just 3° "down the neck" from 2<sup>nd</sup> magnitude Sadr NGC 6888, the **Crescent Nebula**, is a wonderful sight in any moderate to large telescope. Partially looping through a diamond shaped asterism of four moderately bright stars the Crescent seems to resemble the letter "C" with the northern end noticeably brighter than the southern. This wispy nebula is thought to

have been created by the enormous stellar wind from the bright Wolf-Rayet star near the center of the nebula crashing into the slower moving material released from the same star during an earlier red giant phase. If you have trouble seeing this object just thread on an OIII or UHC filter and it will pop right out for you.

Now, bump your scope just 49' due west and see if you can find the nice open cluster NGC 6874. Once located move another 44' west and look for a nice "ring" of 6 double star systems laid out in a neat circle resembling spokes on a



*Crescent  
Nebula*

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## THE CCD CHRONICLES PART V BY WES WHIDDON

As I ended my article last July, I wrote that I would have more on focusing. But rather than continue to ride that horse, I'm going off on a tangent and write this month about video observing.

A year or so ago I gave a talk at a club meeting about using video cameras as "electronic eyepieces". If you were there, you saw some of the images I've saved over the past 3 or 4 years. And, if not, I think you would be impressed with how deep you can go

with a small telescope and a modern, integrating camera. But first, lets examine what constitutes video astronomy.

The wide spread use of video cameras for observing has come into it's own only in the past ten years. I remember trying to jury rig a camcorder to my Celstar 8 sometime back in the 1990s. I fabricated a bracket that was supposed to attach the camera to the scope for afocal recording at the eyepiece but, compared to modern equip-

ment, my camcorder was a huge beast. No matter how I mounted the thing, it would screw up the scope balance and cause the mount to cough up hair balls. After a half dozen design changes, I gave up in frustration. My career in video imaging came to a screeching halt.

But late in the 20th century (can you remember that far back?) along came Super Circuits with their line of security cameras that supposedly could see in the dark. In fact, that was far

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### GOING DEEP CONTINUED

wheel given the impression of two concentric rings of stars. This fascinating little asterism is known as the "Fairy Ring". Take note of the different colors of the stars as well as a nice golden, widely spaced double, which makes up the center of the wheel. This stellar grouping can be seen in scopes as small as 5".

Adjust your gaze to the western tip of the Swans outstretched wing. Two stars make up the tip of the wing, Iota and Kappa Cyg. Spaced 2.5° apart these 4<sup>th</sup> mag stars point directly to NGC 6826, the **Blinking Planetary**. From Kappa, at the tip of the wing, imagine a line drawn directly through Iota the same distance, as the stars are apart. Point your telescope at that spot and look for a star with a fuzzy halo that seems to "blink" in and out. This interesting planetary really drives home the effects of averted vision. As you look directly at the planetary the central star stands out and the surrounding nebula disappears. Now avert your vision off to one side and the central star dims out and the surrounding nebula becomes brighter! This effect is brought on by the central star and the overall magnitude of the planetary being the nearly the same, 10.4 and 9.8, respectively. As you gaze directly at the planetary the bright star saturates your eye's cone cells but as you avert gaze your eye's rod cells, being more light sensitive readily pick up the nebula. Rapidly switching back and forth causes the planetary to "blink". Some galaxies with bright cores and dim halos can exhibit this same effect.

How can you not visit the **Veil nebula** when observing within the bounds of Cygnus! Described in three parts, **NGC 6960, 6979** and **6992** this supernova remnant is one of the most beautiful objects in the sky. Spanning nearly 3° of sky the Veil is best seen from a dark location with a moderate to large scope though it can be seen in large binocs with OIII or UHC filters in the oculars. The easiest part to find is **NGC 6960**, which slices just east of the naked eye star **52 Cygni**. This part of the nebula is widest just south of 52 Cygni and tapers off to a point just north of the star thus resembling a slightly curved dagger. In my 25" scope with an OIII filter the dagger looks like twin rivers of light connected by a wispy lacing, quite extraordinary! Nudge your scope 3° east and you will run across the next brightest section of the Veil, **NGC 6992**. This very large section is not as well defined as **6960** but it still knocks your socks off when viewed under dark skies. Loosely resembling the side view of a small dog this section has lots to offer the patient observer. The last numbered section of the Veil is **NGC 6979**, which lies between the top ends of **6960** and **6992**. This section is a little bit harder to see but once found you are rewarded with a diffuse patch of nebulosity that roughly resembles a dumbbell with brighter lobes connected by a thin streak of light. One large section of the Veil has gone un-

numbered but is readily visible as a large patchwork of light in a triangular shaped pattern. This section is known as **Pickering's Triangle** after E.C. Pickering, supervisor of the actual discoverer of the nebula Williamina Fleming. In 1904 it was the custom that the supervisor of female astronomers received credit for their discoveries. In some circles this section is known as **Fleming's Wisp**.

Our last object is an interesting double star, actually a true binary, known as **Piazzi's Flying Star** (61 Cygni). This pair of ruddy red stars, mags 6.1 and 5.2, is separated by 15" so they are easily split in a small telescope or binoculars. Why the name Flying Star? It is because they have an annual proper motion across our sky of 5.4"! This is the 7<sup>th</sup> highest proper motion measured but it is the highest for a naked eye star. You can see this motion visually by sketching the field once per year and then comparing, or blinking your sketches. Truly amazing to see something in the universe actually move!



*Veil  
Nebula*

*Blinking  
Planetary*



## GOING DEEP CONTINUED

Object	Type	RA-Dec	Size	Magnitude
Fairy Ring	AST	20 04 06 38 10 00	N/A	N/A
Crescent Nebula	BN	20 12 01 38 23 00	50	12.7
Blinking Planetary	PN	19 44 48 50 31 31	38"	8.8
Veil Nebula (N6960)	SNR	20 51 29 31 03 20	60'x9'	N/A
Veil Nebula (N6992)	SNR	20 57 00 31 30 00	80'x26'	N/A
Veil Nebula (N6979)	SNR	20 50 50 31 58 00	28'x7'	N/A
Pickering's Triangle	SNR	20 48 22 31 35 00	38'x20'	N/A
Piazzzi's Flying Star	Star	21 06 55 38 44 45	N/A	4.8

## THE CCD CHRONICLES CONTINUED

from the truth but not too far. Innovative engineers were designing and building cameras using a new Sony CCD chip with fantastic low light characteristics.

It didn't take long for amateur astronomers to recognize the potential for these devices. But there was a problem. A typical security camera doesn't allow the user to adjust its gain and other parameters. Most off the shelf cameras have automatic gain control (agc) built in. This feature keeps the camera from saturating when it encounters bright light and, at the same time, increases gain in low light situations. But for most astronomical imaging this was self defeating. When attached to a telescope and pointed at an object like the Moon, the agc would saturate the chip unless a large part of the Moon was placed in the field

of view. Saturating the chip caused the object of interest to wash out and all you got was a white blob. The same held true for planets where image size in the field is small. Conversely, if you tried to image a deep sky object, bright stars in the field would shut the camera down decreasing sensitivity. Solving this problem produced the next generation of astronomical cameras.

Somewhere around 1999 or slightly earlier, the Astrovid CCD cameras appeared at Adirondack Video Astronomy. Using a 1/2" Sony HAD CCD chip, the StellaCam line included a camera designed especially for deep sky observing and imaging. Finally amateurs (and professionals, too, for that matter) had a camera with adjustable gain, shutter speed, and gamma that could internally stack

frames. It was an instant success in the world of electronic imaging. But success has its pitfalls and sometimes things are not perfect. The original StellaCam had internal problems, most noticeably a condition called amplifier glow that caused a light gradient across one corner of the image. The gradient wasn't a killer problem, though. Image processing software such as Maxim DL was able to remove the gradient for the most part. But the original StellaCam was only able to stack 128 frames and, in my opinion, the control box was clunky with its set of hard to press switches for changing parameters. But problems are made to be solved. Enter the StellaCam II, an updated version that solved most of the original problems but added some of its own.

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*StellaCam II*

#### How An Integrating Camera Works

A video signal is composed of 2 frames, each 1/60 of a second in length. As each frame is shot, the camera does an internal stacking routine, adding as many as 256 frames before producing the final image. In the camera seen above, the number of frames for each output is adjustable from 0 to 256. Internal stacking has the same effect as manual stacking, increasing signal to noise ratio and bringing out dim objects in the final image. 256 frame stack time: 8.5 seconds.

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## Definitions

**Frame Accumulation:** Internal stacking performed by special video cameras.

**Gain:** Amplifier sensitivity.

**Gamma:** Same as contrast...almost.

**HAD:** Hole Accumulation Diode.

**Integration:** In a camera, same as frame accumulation.

**Lumen:** Unit of measure for light.

**Lux:** Lumens per meter squared.

**Resolution:** # of video lines or pixels.

**Shutter:** A device for keeping Hurricane Rita out of your front room.

## THE CCD CHRONICLES CONTINUED

The light gradient problem with the original StellaCam was mostly a product of the Sony chip called the HAD EX. I suppose the EX part meant EXtra something or another but amplifier glow from the chip was the problem. Or maybe the EXtra part was the amplifier glow itself. But now the new camera (StellaCam II) used the plain vanilla HAD chip, solving the light gradient problem. The control box for the II was also redesigned for (in theory) easier adjustment of gain and integration time. Additionally, the II version had no shutter speed control. In fact there was no shutter; the iris was wide open all the time. The control box had two knobs, one for frame stacking (0-256) and one for amplifier gain. It also had a switch for gamma control. All this new stuff was designed to overcome the original camera's problems and, in addition, offer more integration time.

So, does it work? Is the EX better than the plain vanilla StellaCam EX. After using one for a couple of years, I give it an unqualified yes.

Video observing opens up a whole new world, especially for those who live in severely light polluted areas. From my back yard in Sugar Land using a 10" telescope I'm able to consistently image magnitude 11-12 galaxies. Bright nebula are amazing even in a small scope. If you are interested in CCD but don't want the hassle, try video observing. You might like it.

## Prized Possessions by Ricky Carvajal

Hurricane Rita was storming its way thru the warm waters of the Gulf of Mexico. Slowly edging its way back and forth, to the right, and a little bit to the left before moving here and there and then in this direction!

The closer it got this way the more serious, not to mention "anxious", we got. Not only did I watch the news with vigilance, by now (Thursday morning) I was actually watching the news while I moved furniture to the center of the rooms at the same time. This was getting hairy (I was thinking) while Rita had just been upgraded to category 5. I mean category 4 is "disaster". Category 5 is, well – you remember reading about Hiroshima?

By Friday every piece of furniture in every bedroom was standing in the center of the room, away from windows. In the upper floor, every bedroom had mattresses pasted on the windows. How can a mattress withstand a 100mph gust of wind? Well that goes without saying; I rather do something than regret it later and say "I wish I had done this and that" - One can never be too cautious.

By Friday all was hidden away, moved to the centers, windows taped, the entire patio furniture was shoved in my bedroom, the garage was packed to the roof and my cars were loaded etc. - Then the kids and I (the wife was out of the country on a business trip) sat down and organized a list. It consisted of 3 categories. One was what to pack (clothes for one week), two was what to do to the house before we leave (turn off appliances, shut off water, etc) and three was what to take as prized possession not easily replaced or highly valued sentimentally.

One by one we checked off the list of things to take and do. The kids packed for a week, I packed for a week. They walked the second floor and turned off anything that was plugged to the wall. I did the same downstairs. Now all we had left to do was identify, grab, and take any items considered "irreplaceable prized possessions of high sentimental values".

My older kid grabbed her trophies, her photo albums, some jewelry and some school items. My younger kid grabbed her trophies, her photo albums, some school items and papers and of course a few of her favorite dolls. There were lots of sentimental value items here. And then it was my turn....

What do you think I grabbed... the house papers, documents, guns, lap tops, or my favorite jeans? Not..... When I realized what I was holding in my hands which I had painstakingly considered as my most (materialistically speaking) valuable item in my house, I giggled..... What was it?

Well my telescope of course.....  
Only an Astronomer.....

Ricky C



StellaCam II image of M57

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1 Mars begins retrograde motion today.
2 Check out the hair-line thing crescent moon in the west.	3 New Moon this morning at 5:28 a.m. CDT.	4 Beginning of Ramadan for many Muslims.	5 Luna 2 1/2 days past New. See if you can find the tiny crescent.	6 Luna perches near Venus tonight.	7 One month away from opposition with Mars. Earth gaining at 200K miles per day	8 Mars highest and due south around 3 a.m. local time.
9 Luna almost at "half full", resting in Sagittarius.	10 First quarter moon at 2:01 CDT.	11 Moon passing through a "star starved" section of the sky.	12 Saturn now in the morning sky, rising around 1 o'clock in the a.m.	13 Beehive cluster about 3 degrees away from Saturn. Check it out with binocs.	14 Cygnus directly overhead at the end of evening twilight. <sup>1</sup>	15 Venus passes Antares over the next few nights.
16 Full Moon tomorrow morning at 7:14 a.m. CDT.	17 Partial lunar eclipse—only 7%.	18 Mars and the Moon sit 6 degrees apart in the evening sky.	19 Pleiades and Luna rendezvous tonight.	20 Orionid meteor shower. Don't expect much in the way of shooters.	21 Check out much neglected Formalhaut in the southern sky.	22 Jupiter in conjunction with the Sun today.
23 Gemini, the twins, and Luna a few degrees apart tonight.	24 Last quarter Moon at 8:17 p.m. CDT.	25 Tomorrow Neptune ends retrograde motion.	26 Check the waning crescent Moon perched near Regulus tomorrow morning.	27 Catch a glimpse of elusive Mercury only 3 degrees off the western horizon.	28 Go to a dark location; find M31 naked eye.	29 Mars and Earth closest today—about 43 million miles.
30 Mars and Earth at opposition in one week.	31 		<sup>1</sup> The so called summer triangle lingers until well into November.			

# FBAC BULLETIN BOARD



Attention FBACers: The October meeting will be held in conjunction with the "All Clubs Meeting" that precedes Astronomy Day. We will meet at the Houston Community College downtown, 3100 Main at Elgin. The meeting begins at 7:30 p.m. with registration. Please see the Astronomy Day web site at <http://spacibm.rice.edu/~has/ADayMeeting05.htm> for more information.



The 50th Anniversary Picnic of the Houston Astronomical Society has now been re-scheduled for July 21st. (It was canceled with the approaching Hurricane Rita).

Gates open at 10am on Saturday. Later in the afternoon we will dig up the 20 year old time capsule, have a dinner of burgers and hot dogs, and then observing. Gates will close at Noon on Sunday.

Watch our web page for more information.  
<http://spacibm.rice.edu/~has/AnniversaryPicnic.htm>



Astronomy Day, 2005  
Saturday, October 22  
3-11 P.M.

George Observatory  
Brazos Bend State Park

See <http://spacibm.rice.edu/~has/Aday05Intro.htm> for more information.

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P.O. Box 942  
Stafford, TX 77497-0942

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

FBAC Officers and Phone Numbers  
President: Dennis Borgman 281-495-1590  
Vice-Pres: Leonard Ferguson 281-762-4465  
Secretary: Rachel Stout 281-988-6665  
Treasurer: Joe Dellinger 281-531-5417  
Alcor: Tracy Knauss 409-798-7917  
Astronomy On Wheels:  
Leonard Pattillo 281-980-1175  
East Dome Coordinator:  
Keith Rivich 281-468-8491  
NL Editor: Wes Whiddon 281-265-7614  
Librarian: Alex Cruz 713-702-9064  
George Observatory: 281-242-3055  
Loaner Scopes-Keith Rivich:  
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 October 21, 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. **SEE NOTICE ON PAGE 6 FOR INFO ON THIS MONTH'S MEETING.**

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.

## From The Vice-President

Well, so far it's been an exiting and informative year at FBAC. Thanks again to John Harrison for his outstanding talk on meteorites at the September meeting, and thanks to those who volunteered for the Speaker Committee: Melvyn Abels, Tera Wills, David Jenkins, Keith Rivich, & Justin McCollum.

This month, we'll take a break for the All Clubs meeting, but in November, Tammi Rapp will join us with presentation on Flight Control Software. After that, it's the FBAC Christmas Party, and then we say goodbye to 2005.

Programs we're working on for next year will cover a variety of subjects, including Variable Stars, Image Processing, Archaeoastronomy, and possibly even a workshop or two. Of course, we'll also have a couple of "surprise" speakers, but there's plenty of time – so suggestions are welcome and encouraged. Ideas can be emailed to [fbac\\_speakers@yahoo.com](mailto:fbac_speakers@yahoo.com) and we'll get to work on it.

—Leonard Ferguson