

The FBAC Observer

VOLUME 18, ISSUE 4

APRIL, 2004

Victory!

In the culmination of years of effort, on Tuesday, March 23, 2004, the Fort Bend County Commissioners Court voted into being what will turn out to be an historic first for the state of Texas: An outdoor light ordinance for a major metropolitan county.

The "Orders For Regulation Of Outdoor Lighting In The Unincorporated Areas Of Fort Bend County, Texas" were adopted by a vote of 4 to 1 in the court, with Sugar Land area commissioner, Andy Meyers casting the only dissenting vote.

Fort Bend Astronomy Club member, Phil Inderwiesen, spearheaded the effort to bring outdoor lighting control to this fast growing area of our state. Phil's tenacity, dedication, and efforts over the past two years have gone beyond what most mortals would endure.

Immediately after passage of the new ordinance, Barbara Wilson, the director of the George Observatory, summarized in this email the feelings most of us have about the achievement:

Please give a great round of applause to Dr. Philip Inderwiesen for his unflappable efforts, hundreds of hours of time (and to his wife Pat) in crafting an ordinance that became acceptable to the Ft Bend county Commissioners.

Phil has been such a leader, carrying the ball, handling objections, working with everyone to make sure that we ended up with an ordinance to be proud of, and that the commissioners can enforce.

I can't say enough about his polish, his congenial personality (especially when we were attacked with words that were unspeakable from the people who just did not understand) and he stood his ground with such calm, remaining cool-headed and working to make this a reality. The George Observatory, its staff, its volunteers, the young people of this area will be in his debt in what he has accomplished.

And in a letter to the Observer immediately before passage of the ordinance, Barbara expressed her gratitude to every FBAC member involved in this undertaking:

Dear FBAC members,

With all of your help by taking time off work to attend the meeting at Rosenberg Civic Center, the commissioner court meetings, countless phone calls to the court members, and your eloquent comments to the court in session, we are on the verge of enacting a lighting ordinance. This ordinance will make positive improvements in our community.

Once enacted we will gently continue to educate our neighbors and the residents of the county on the positive benefits of good lighting. As Betty Glass wrote to the museum employees:

In short, we are asking for shielded lighting, which simply means that the lights are aimed at the ground, rather than up in the sky. The state of Texas has already adopted the use of these lights because it saves money and energy and reduces greenhouse emissions. Keeping the stars at night, big and bright, deep in the heart of Texas, is an added benefit!

Please continue to educate people on the benefits of good night time lighting and we may see this spread to our local towns and communities.

I am proud to be affiliated with all of you,

Sincerely,

Barbara Wilson, George Observatory, The Houston Museum of Natural Science

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What's Happening This Month

April 1—Fool's Day around the universe as Mercury sinks below the horizon for a while.

April 2—Gibbous moon rests near Jupiter and Venus sits near the Pleiades cluster. Tomorrow night Venus will be within a degree of the Seven Sisters.

April 3—Saturn is sitting in the feet of Gemini, the twins.

April 4—Venus will pass the Pleiades cluster and head for Mars. Eight degrees will separate the pair until later in the month when Mars turns around and heads toward the sun.

April 5—Full moon at 6:03 am CDT. Spica, the brightest star in Virgo, can be seen 4 degrees to the right of Luna. The April full moon is sometimes called the Grass or Egg Moon.

April 6—Double shadow transit across Jupiter tonight. Io will begin its crossing at 10:55 pm CDT and Europa will join at 11:54 pm with both disks remaining visible until 1:10 am.

April 7—Arcturus, the prime star in Bootes, begins to appear at dusk. Arcturus' red hue indicates it is cooler than our yellow sun. Arcturus surface temperature is about 7000 degrees F, whereas our sun runs a feverish 10,000 degrees.

April 9—And speaking of cool stars, Antares, the heart of Scorpius, is visible for early risers. This red supergiant runs a frigid 6000 degrees F at its surface and is so big that, if substituted for Sol, would encompass the orbits of Mercury, Venus, Earth, and Mars.

April 10—Mars officially dims from mag 1 to mag 2 until mid-September when Earth begins to overtake the Red Planet and it will gradually brighten.

April 11—Last quarter moon rises at 10:46 pm CDT.

April 12—Stand outside on this fine Spring night. Point one index finger at Venus and the other at Jupiter. You will then be making a right angle. Stay that way for a while and see how long it takes the neighbors to call 911 and report a lunatic in their midst.

April 13—Venus passes 10 degrees north of Aldebaran. Later in the year, the planet will come within 1 degree of the "Eye Of Taurus".

April 15—Pay your taxes! Or calibrate your sundial because today your watch and sundial will agree.

April 16—FBAC MEETING,

7:30 PM, FIRST COLONY CONFERENCE CENTER, 3232 AUSTIN PARKWAY, SUGAR LAND, TX.

April 17—Mercury narrowly misses a sun transit by only 2 degrees.

April 18—The mighty icon of winter, Orion, is sinking in the western twilight, giving way to spring stars Regulus, Arcturus, Spica, Vega, and Deneb.

April 19—New moon at 8:21 am CDT. Travel to Antarctica to view a partial solar eclipse. Be sure to take your long johns.

April 20—Luna makes a slender appearance in the west-northwest sky.

April 21—Lyrid meteor shower reaches maximum after midnight tonight. And the moon cooperates by setting before then.

April 23—The Big Dipper reaches its highest point in the sky.

April 24—National Astronomy Day. Show off your stuff to friends and neighbors.

April 25—Luna rests in the belly of the Gemini twins.

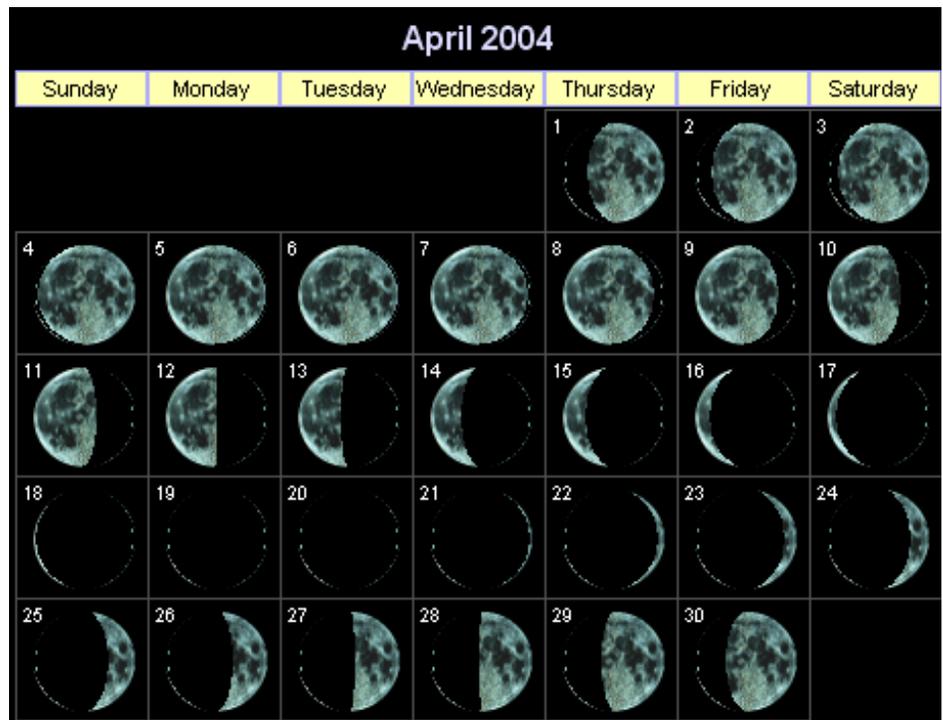
April 26—Venus and Mars are at maximum separation, just 6 degrees apart. Venus gradually falls toward the sun but Mars will continue its eastward trek along the zodiac, overtaking Saturn and pushing toward Jupiter within a month.

April 27—First quarter moon at 12:32 CDT. Blue-white Vega rises at sunset, bringing one corner of the summer triangle within view.

April 28—Venus' crescent shape is now clearly visible at 31% phase.

April 29—Luna and Jupiter rendezvous with only 3 degrees separating the pair.

April 30—Vega, Deneb, and Altair now hold central position in the morning sky, harbingers of Summer constellations to come.





Beyond The Oort Cloud

GOING DEEP

By

Paul Downing and Keith Rivich

For those that are new to the hobby of observational astronomy the most agonizing moment comes when he or she decides to purchase their first telescope: did I make the right choice?

The answer to that question comes only with time. People with no experience of telescopes expect to turn their newly purchased equipment towards the sky and immediately see the bright galaxies, spiral arms and other objects which the marketing literature would have us believe should immediately pop into view. So to begin this series of articles we are going to look at the different types of telescopes which are available, make suggestions as to which type is more suited to which activity, and then talk a bit about how to prepare yourself so that you have the best chance of enjoying your astronomical experience.

Keep in mind that any type of telescope can be used for any type of astronomy, but each type is usually best suited for a particular task. The budding astronomer needs to ask:

- How much effort are they prepared to put into learning their way around the sky
- How heavy a scope are they prepared to/able to lift and assemble
- How big of a scope can they carry in their vehicle
- Do they really want to do astro-photography, and if so are they prepared to give up some deep sky capabilities for visual work
- How much money are they willing to spend

The reason for the first question is because the best value for money for visual astronomy is to buy as large a Dobsonian reflector as you can afford and haul around. Aperture is what makes it possible for us to see faint fuzzies at their best, and the bigger the mirror the brighter the image. Having said that, the bigger the aperture, the longer the focal length, and the longer the focal length the longer the telescope, and the longer the telescope the harder it is to carry around. Bigger scopes are also heavier and so it goes on. Ten inches to twelve inches is normally about as big as most people would want to mess with, and ten inches will give you super duper images of the moon and planets, plus reasonably bright images of the fainter stuff. You can buy them for as low as \$500. But beware! These things are not magic. People new to astronomy are usually disappointed at how faint and hard to see galaxies are. They never, ever look like the marketing images would have you believe.

The most versatile telescope on the market is the Schmidt-Cassegrain. These telescopes come in a wide range of apertures and mounts, thus they are well suited for photography and deep sky observing. The practical limit for portability is 10" as larger Schmidt-Casses tend to be heavy and a bit cumbersome for one person to put together. Most Schmidt-Casses come with some kind of "go-to" computerized mount, which will be able to find an object at the touch of a button. Expect to pay several thousand dollars for such a telescope.

Most "seasoned" deep sky observers would love to have a large aperture refracting telescope in which to hunt their quarry. Refractors tend to give one the best overall view with pinpoint stars and an inky black background. So why don't we use them? Money! For the cost of a quality 10" refractor one can buy a great 10" reflector and still have enough money left over to purchase eyepieces, charts, a new car, a new house...well, you get our point.

What we suggest is to come on out when the club is observing and look through the different types of scopes. Think of it as test-driving that new car!

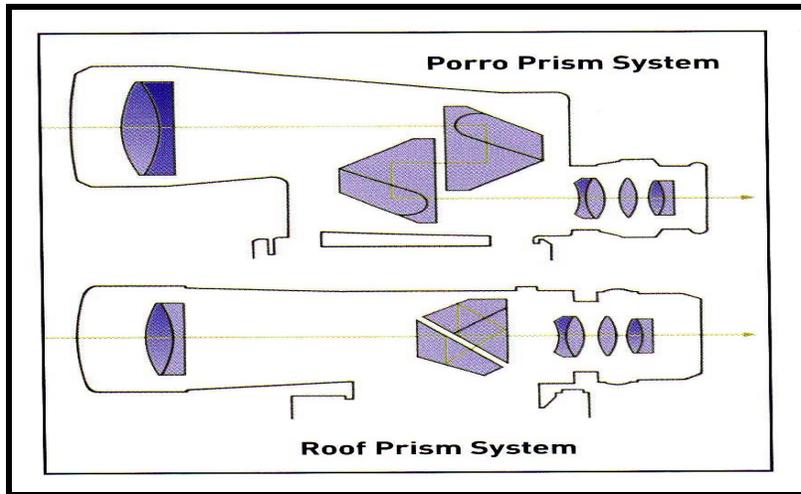
Next month we will take a look at preparing for your evening under the stars.

Beginner's Corner

by Jim Ellis

Hopefully, you've had the chance to get out and begin looking at the sky. I know the weather has been lousy for the last several months, but keep after that photon fix! Now, on to the next part of this series of columns—equipment, when you first start up this hobby, most beginners have that itch to buy that shiny telescope that they see in the stores but are hesitant to spend the money as they are not sure they're totally hooked into this hobby. Your best and most useful first piece of optical equipment is to buy a good pair of binoculars.

In selecting a pair of binoculars you need to know the construction of the binocular, exit pupil considerations, and factors regarding quality of binoculars.



The two types of binoculars are those that use the Porro Prism System and the Roof Prism System as illustrated on the left. The roof prism system is more compact, has straight tubes and is more expensive than comparable Porro prism models. When you get to the larger sizes of binoculars this compactness is lost. Generally, the Porro prism models are considered better mainly because one can get a higher quality at a cheaper price than a comparable roof prism model.

The next factor, exit pupil, deals with the size the pupil in your eye can expand to in order to take in light as well as the numbers you see on the binoculars. The pupil of the dark-adapted eye can open to around 7 millimeters depending on the person and the person's age. Where this affects binoculars, and telescopes for that matter, is when the light comes out of the binocular and into your eyes. This is where the numbers on your binoculars come into play. Most binoculars have numbers stamped on the body, such as 10 X 21 or 7 X 50, somewhere near the eyepiece end. The first number is the magnification of the binoculars. The second number is the diameter of the front lens in millimeters. Thus in our 10 X 21 binoculars have a 10 times magnification with a 21 millimeter end lens and our 7 X 50 binoculars have a 7 times magnification with a 50 millimeter end lens. To get the exit pupil for a pair of binoculars you take the second number and divide by the first number. Thus with our 10 X 21 binoculars you take 21 and divide by ten and you get 2.1, which is the exit pupil for these binoculars in millimeters. On a 7 X 50 pair of binoculars, 50 divided by 7 is a little more than 7 millimeters. This exit pupil is important as it determines how much light is allowed to get to your eyes.

Where exit pupil influences your purchase of a pair of binoculars is a question of some debate. Some books (such as the Dickinson book listed in the resources) recommend 2.5—4.0 millimeters of exit pupil as the ideal while other sources will say go for the 7-millimeter exit pupil because you are getting more light to your eyes. From my personal experience, owning pairs of binoculars with 2.1 mm and 7.14 mm exit pupils, I find that the image in the 7.14-millimeter is much brighter. The choice is yours.

In purchasing a pair of binoculars be aware that you get what you pay for. The cheaper the binocular, the less quality control in the manufacturing process. At a presentation given at an FBAC meeting regarding binoculars, the presenter recommended that you be prepared to spend at least \$150.00 for a pair as the quality of the prisms for binoculars priced above that range is drastically better. It would also be a good idea to check if the binoculars can be mounted to a regular camera tripod using an add-on bracket. This vastly improves the stability of your observing.

Probably the best way to check all of this out is to come to a late arrival session or up on the deck at the George and look through any binoculars that are out there. Be sure to ask questions, we are a very helpful bunch.

Clear skies!

Resources

Dickinson, T. and Dyer, A. (2002) *The Backyard Astronomer's Guide* (revised edition). Firefly Books. Buffalo. (p. 22)

Catch Some Photons On Your Way To and From TSP...



Spent a Night at the X Bar Ranch!

Home of Eldorado Star Party

The X-Bar Ranch is just 3 1/2 hours from Ft. Davis/TSP and makes a convenient stopping point on the trek to West Texas.

- Observing facilities second to none
- Includes camping, cabins, and RVs
- Permanent bathhouse facilities
- Light-barrier fence
- Reservations required

For more information, contact:

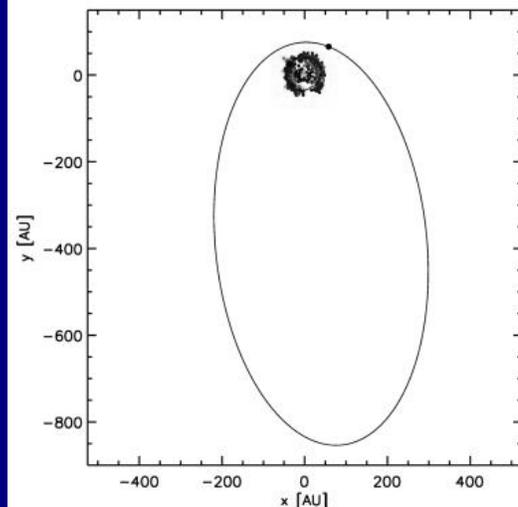
X Bar Ranch

Toll Free 888-853-2688

www.XBarRanch.com

Minor Planets And Other Such Things

Astronomers have discovered another weird thingy way out past the Kuiper belt in what may be the long hypothesized Oort Cloud. Designated 2003 VB12 and named after the Inuit goddess Sedna, this planetesimal appears to have a diameter of 800-1100 miles and is in an elliptical orbit (see below) that takes it around the sun once every



10, 500 years. But you'll have to drag out the big dob or CCD camera to see this one. It's currently at magnitude 20.5 and will only get dimmer.

Did You Know

That the Oort cloud was named after Jan H. Oort, a Dutch astronomer who, in 1950 inferred the existence of this area from physical evidence of long-period comets entering our planetary system. His interpretation of comet orbital distribution was made using only 19 well-measured orbits. Oort also determined the rotation of the Milky Way galaxy in the 1920's.

The Strange Case Of 3752 Cruithne

Near Earth asteroids are our closest solar system companions, some of them known to pass between us and the Moon. These objects can range from a few meters to 40 km in size and are important because they help us understand the past and present impact rates on Earth. But asteroid 3752 Cruithne is the strangest of the bunch. This rock shares Earth's orbit in a "choreographed" motion in such a way that keeps its orbit stable and keeps it from colliding with our planet. The orbit is known in celestial mechanics as co-orbital, meaning it shares the Earth's orbit. Additionally, it is in a type of orbit known as a "horseshoe". Horseshoe orbits are thusly named because of their shape in a reference frame which co-rotates with its accompanying planet. This co-rotating frame means only that it is one in which the viewer orbits along with the planet, in this case Earth and is analogous to floating above the north pole and watching the path of the asteroid from this point. The orbits of Earth and 3752 Cruithne combine to contribute to this bizarre situation.

More Strange Stuff To Contemplate

Asteroids at the LaGrange point would also avoid collision with Earth because they stay in place. There are 5 LaGrange points where objects could maintain Earth synchronicity but because of perturbations from other objects, only L4 and L5 work. Any objects in Earth Lagrange points are hypothetical but Trojan asteroids are known to exist in these same points around the planet Jupiter.

—Wes Whiddon

EAST DOME SCHEDULING KEITH RIVICH

The FBAC owns and operates an 18" fork mounted newtonian telescope which is housed at the George Observatory in Brazos Bend State Park. As part of our agreement with the Observatory we are responsible for providing volunteers during nights of public use, which includes all Saturday nights and some Fridays. In return we are allowed full access to the scope for personal use. Included with the scope are a full set of Televue eyepieces and filters, several sets of star-charts and reference books, a computer with charting programs and a CCD camera. To have access to this equipment you **MUST** go through a short training program **AND** volunteer at least once each quarter. The training can take place on the same night that you volunteer.

During the **dark-moon period**, which runs from several days prior to third-quarter moon to several days past new-moon, use of the scope is scheduled due to demand. At all other times the scope is available on a first come basis. If you volunteer for a public night, even during the dark-moon period, then the scope is yours for the remainder of the night. To schedule a **dark moon night** I must be contacted no later than the full-moon prior to the next observing runs. Each month I will publish the current East-dome volunteer schedule, observing schedule, and research team schedule.

APRIL SATURDAY NIGHT SCHEDULE

APR 3	OPEN / OPEN / OPEN
APR 10	MACKAY / OPEN / OPEN
APR 17	HISERODT / OPEN / OPEN
APR 24	OPEN / OPEN / OPEN

Visit www.rivich.com/astronomy/eastdome/calender.html for updates

NON-SATURDAY NIGHT OBSERVING SCHEDULE

This part of the schedule will be continually updated and posted at <http://www.rivich.com/astronomy/eastdome/calender.html> for more information on how to schedule dark-moon nights call me at any of the numbers posted below.

Available are the clubs 8" dobsonian reflector and the Solaris scope (for viewing sun w/ H Alpha filter).

The Meade 8" and 10" LX-200 loaner scopes are available for use. For an update on availability please call me or go to: <http://www.rivich.com/astronomy/eastdome/page3.html>

For more information or to sign up as a volunteer please contact me at: HM 281-468-8491 or e-mail at icgalaxies@cs.com

MOTHER'S HELPFUL HINTS

One arc second is about the size of a pin hole in a piece of paper held at arms length.

It is estimated there are between 20,000 and 30,000 craters on the Moon. No one has actually counted them yet, maybe Dennis has.

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

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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 April 16, 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.

E Pluribus Unum Redux

An expression of editorial opinion

We have seen, in recent weeks, the power of positive thinking. Or more accurately described, the power of positive action. FBAC members and other amateur astronomers in this area combined their effort and their time to succeed in one of the greatest moves (in my opinion) for light pollution reduction in the country.

Fort Bend County is part of the larger metro area of Houston and is the fastest growing county in the state, maybe in the nation. To have a light ordinance that will give at least a modicum of relief for our fast disappearing night sky is a major accomplishment.

And there is one individual who had the nerve, the stamina, the patience, and plain old gumption to drive this thing through to completion: Dr. Phil Inderwiesen. I do not believe it would have succeeded without his influence.

That's not to denigrate the efforts of others. Barbara Wilson and the staff at the George were working just as hard. FBAC members took time off work to attend hearings and town hall meetings, endured the sadistic barbs of uninformed local bubbas, wrote letters and emails, and called county commissioners to make it known that this is good for the county. Editorial comments from some Fort Bend County newspapers didn't help the effort but in the long haul, the commissioners recognized that we meant business. To their credit, they took the one small step.

I saw during this time, a cadre of people with a common goal of protecting what's left of our night sky. I also saw how FBAC can merge it's effort into something that gives all of us pride in accomplishment. We are indeed E Pluribus Unum—Out Of Many, One.

Well done, Bendonites.

—Wes Whiddon