

Sky WAA tch



The Pinwheel Galaxy

Olivier Prache captured this image of M33 (the Pinwheel galaxy) in Triangulum. He employed a Hyperion 12.5 inch astrograph and a FLI ML16803 camera on the MI-250 Mount in Pleasantville. The M33 shot is a 7-hour combination of 7x15 minutes luminance and r,g,b subs. M33 is a member of the Local Group of galaxies. At about 50,000 light yrs. in diameter the Pinwheel is about one-half the size of our Milky Way but is far less massive. It lies at a distance of 2.3 million light yrs.

Events for December 2012

WAA Lectures

"A Sidewalk Astronomer"

Friday December 7th, 7:30pm

Miller Lecture Hall, Pace University

Pleasantville, NY

Producer and Director Jeffrey Jacobs will be showing his film "A Sidewalk Astronomer," followed by a Q&A session. The film follows renowned amateur astronomer John Dobson, inventor of the dobsonian telescope mount, as he tours the country from the sidewalks of San Francisco to colleges, astronomy clubs, star parties and Stellafane. It provides insight into a fascinating thinker, philosopher, teacher, and inventor who encourages one and all to think about the Universe. Free and open to the public. [Directions](#) and [Map](#).

More Upcoming Lectures

Miller Lecture Hall, Pace University

Pleasantville, NY

On January 11, 2013, our speaker will be Mr. Charlie Schaub. He will present on "Modern Telescope Mirror Manufacturing for Ground and Space Applications". On February 1st, our speaker will be Brother Robert Novak, Ph.d., who will present the latest results from Mars Curiosity. Lectures are free and open to the public.

Annual Meeting

Friday December 7th, 7:30pm

Miller Lecture Hall, Pace University

Pleasantville, NY

The Annual Meeting of the Westchester Amateur Astronomers, Inc. will take place on Friday, December 7, 2012 at 7:30 pm at Miller Hall, Pace University, Pleasantville, NY, preceding the regular monthly lecture presentation. All members are invited.

Agenda:

- Call to order
- President's report to the membership
- Election of new officers
- Vote on proposed Bylaws amendments
- New business
- Adjournment

Starway to Heaven

There will be no public *Starway to Heaven* in December, January or February. *Starway to Heaven* events will resume in March 2012.

Renewing Members. . .

James Frost - Rye Brook
 Lydia Maria Petrosino - Bronxville
 Daniel R. Poccia - Cortlandt Manor
 James Steck - Mahopac
 Olivier Prache - Pleasantville
 Susan Salant - Monsey
 Claudia & Kevin Parrington Family - Harrison
 Vince Quartararo - Katonah
 Sharon and Steve Gould - White Plains
 Peter Knipp - Bedford

Call: 1-877-456-5778 (toll free) for announcements, weather cancellations, or questions. Also, don't forget to periodically visit the [WAA website](#).



IC 405

Olivier Prache imaged the Flaming Star nebula (IC 405) in Auriga using his Hyperion 12.5 inch astrograph and a FLI ML16803 camera (5.75 hour combination of 5x10 minutes r,g,b each and 7x15 + 4x10 subs for luminance). The nebula is 1500 light yrs. distant.

Articles and Photos

Busman's Holiday by Larry Faltz

My sister Marianne had the good sense to marry an Englishman in 2000 (an amazing story in itself), and she now lives on a gorgeous property in the village of Charlwood in Surrey, south of London and close to Gatwick Airport. On a visit in 2011, she and her husband Robin took Elyse and me on a three-day car trip to Dorset, along the southern English coast. We stopped at Stonehenge and spent an afternoon in Salisbury, where we examined the best extant copy of the Magna Carta in the magnificent Salisbury Cathedral. We stayed in the lovely Saxon village of Wareham and then visited the coastal town of Lyme Regis, famed as the setting of John Fowles' novel, and subsequent movie with Meryl Streep, *The French Lieutenant's Woman*.



Stonehenge, in the rain in 2011 (LF)

For this excursion, the route from my sister's home, Russ Hill Farm, called for driving north on the M23 motorway (the British name for an interstate) and then west on the M25, a segment of the great beltway that circles London at a distance of about 17 miles from Big Ben, to the M3, which heads to the southwest. Before we started out, we learned of a massive traffic jam on the M25, so Robin plotted a route on local roads through the countryside, more interesting since this was *terra incognita* for me, to meet up with the M3 a dozen or so miles west of its origin on the beltway. This route took us through the charmingly-named town of Dorking, some 8 miles northwest of my sister's home.

There was some local mid-day traffic in town, and as we made our way through I got a good look at the commercial establishments on the main ("high")

street of this bustling suburb of London. Stopped at a traffic light, I looked to my left into the display window of...a telescope store! The shop was called "Astronomia" and my inner gearhead immediately resolved to visit next time I came across the pond.



Map of London and Surrey (Google Maps). Dorking, Charlwood and Greenwich are marked in red.

We were over again this October, for a two-week vacation in England and Belgium. One day at the beginning was devoted just to tooling around the local area with Marianne and Robin and their extremely cute and civilized West Highland terrier, Maisie. I convinced them to spend the afternoon in Dorking. And to answer the question you are all asking, yes, I tried to find a Dorking sweatshirt, but came up empty.



Aerial view of Dorking, looking northeast

My brother-in-law is fond of reminding me whenever we're on a straight stretch of English country road that it was built by the Romans two millennia ago.

Dorking was originally a way station on the Roman road between London and the Channel. It's mentioned in the Domesday Book of 1086, when it was under the control of William the Conqueror. It's known as a "market town", and a walk down High Street confirms its bustling commercial character, with many shops (including a large number of fine antique stores), banks, pubs and restaurants. With a population of 17,000, it's really a bedroom community of London, which is only 20 miles to the north, kind of a New York equivalent of Scarsdale or Larchmont in terms of distance from the city center. It's separated from the megalopolis by a long forested ridge that rises 300 feet above the town a mile to the north. This is a western section of the North Downs, a chalk ridge that runs through Surrey and Kent to the east, ending at the White Cliffs of Dover. Dorking was the birthplace of the great actor Laurence Olivier (1907-1989), and was the home of composer Ralph Vaughan Williams (1872-1958) during his most productive years.



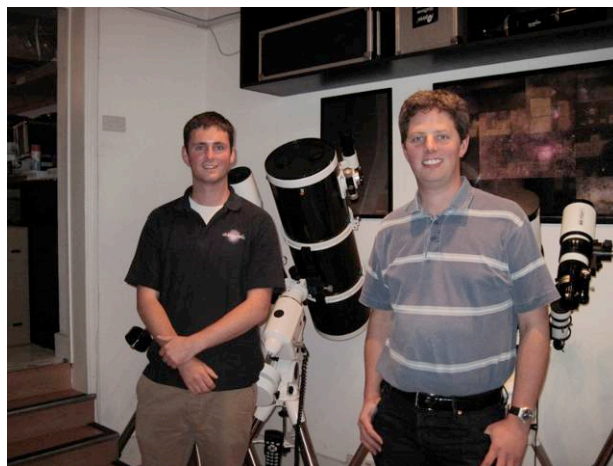
Astronomia, 246 High Street, Dorking, Surrey RH4 1QR
(Photo supplied by Astronomia)

We arrived on a rainy afternoon, parked at one end of High Street and ambled over to Astronomia.

Dropping in out of the blue (or rather, out of the grey rain), I announced myself as an American amateur astronomer and erstwhile WAA newsletter journalist who happened by and wanted to know about the amateur astronomy world in England. I was warmly greeted by Tom Imrie and Neil Phillipson, two young and well-informed astronomy enthusiasts who manned the shop. Neil is one of the founders of the business, which started in 2008. They were most cordial and informative hosts for my one hour visit.

The store is small but packed with excellent optical equipment, mostly small and mid-size refractors, catadioptric scopes and Newtonians up to 12 inches, on a variety of mounts. There was also a fine

selection of binoculars. British bird watchers are drawn to the Surrey woods where, as one birder web site notes, they can find the Dartford Warbler, Woodlark, Tree Pipit and Hobby and can "listen for Woodcocks roding over the treetops and Nightjars churring in the furze." There was a small selection of books and accessories, including eyepieces and imaging devices.



Tom Imrie (L) and Neil Phillipson (R) (LF)



Some of the Astronomia inventory (LF)

Astronomia doesn't just sell gear. They recognize that there is a substantial learning curve in astronomy, and they've addressed many of the barriers that newcomers encounter. For example, they offer "collimation for life" for any Newtonian or SCT that they sell. They'll provide loaner scopes if an instrument needs to go back for repair. Most interesting is their upgrade policy: they'll credit the full price of any telescope within one year of

purchase when applied to an upgraded model. This encourages beginners to start with something tractable and upgrade as they get experienced in the hobby.

They even sponsor a “Newbies Night” periodically in Dorking, where for a very small fee (£12 per telescope, “to cover cost of the curry we buy for all our volunteers at the end of the night”) they guide novices in telescope set-up, eyepiece selection and observing techniques. Service is clearly the driving ethos. The staff stays in contact with customers, helping their skills and interest grow. The goal is to get the scopes they sell out under the stars, not retired to the closet after some unaided, misguided, frustrating newbie attempt to find the Crab Nebula under Bortle 7 skies or view surface features of Mars in a 60 mm refractor, or the disappointment when the view isn’t the same as a Hubble image.

In addition to sales and support, Astronomia staff and scopes go to the many amateur events throughout England. Dark skies are somewhat hard to come by in southern England, given the compressed nature of the geography and the enormous spread of London. Local light pollution in Dorking is equivalent to southern Westchester, but there are darker skies within a couple of hours’ drive.

The most popular of the dark sky star parties in southern England are at Kelling Heath (spring and fall), on the Norfolk coast 110 miles northeast of London, on the Isle of Wight (March), 75 miles southwest of the city, and at Herstmonceux (early September), in the East Sussex countryside some 50 miles southeast of the capital.



Observatory Science Center at Herstmonceux

Herstmonceux was once a unit of the Royal Greenwich Observatory, but was abandoned in 1990. Five years later, it was reincarnated as The

[Observatory Science Centre](#), with its 6 original equatorially mounted scopes in copper domes on brick bases fully restored and operational. The scopes include 36” and 30” reflectors and a 26” refractor, and they are open to the public. Guess where I’m going on my next visit to my sister!

Meade, Celestron, Sky Watcher and Vixen scopes, mounts and accessories, among other brands, are on display at Astronomia. A relationship with APM, one of whose 130 mm refractors was on the floor, has just been forged. Like all astronomy businesses these days, Astronomia operates a comprehensive [web site](#) for on-line commerce, and while we were there a large number of boxes of all sizes were being loaded on a truck in front of the shop, on their way to enthusiasts all over England.



Brian Cox, amazed and eloquent about something

Interest in amateur astronomy, long a popular avocation in England in spite of its infamous weather, has been growing even more in recent years. Neil told me this might be due to the almost rock-star popularity of physicist Brian Cox, who in his younger days was indeed a rocker, a keyboard player for the band D:Ream. It’s not surprising that he excites interest in astronomy among the UK public. Some of you may have seen him on the Science Channel in the series *Wonders of the Solar System* and *Wonders of the Universe*. He’s the UK’s answer to Carl Sagan (who was one of his inspirations), an effective communicator of both the science and the spectacle of astronomy.

Attractively less polished and far more boyish than America's Neil DeGrasse Tyson but just as informative, he comes across much like a guy you'd meet at a WAA meeting, waxing breathlessly about the latest supernova or digital camera. His quirky sense of humor is particularly evident in his many guest appearances on droll British television "chat shows", that dot the BBC TV schedule, and he is a co-host of a comedy science magazine program, *The Infinite Monkey Cage*, on BBC Radio 4. Think of it... a comedy science magazine program! "A quark and a gluon walked into a bar...."

Like most other commodities in Great Britain, prices for astronomical equipment are high compared to the US. Much of this is due to the VAT, or value-added tax, a 20% national sales tax on most goods and many services, such as hotel rooms. In addition, the pound is doing well against the dollar, so shopping for gear in England, if you're an American, makes little sense.

The primary competition for Astronomia in the London metropolitan area is a shop mysteriously called The Widescreen Center, in the Mayfair section of London near fabled Baker Street. Unfortunately, I didn't have an opportunity to get there on this trip. Their web site shows a more diverse inventory, including digital projection equipment and even (film) movie cameras. They also participate in astronomical events, and a local club with which they are allied, the Baker Street Irregular Astronomers (a riff on the name of Sherlock Holmes' spy network of local London waifs), claims 800 members and holds star parties in Regent's Park in central London once a month, which must be a significant challenge for anything other than planets and the moon. I'll check them out next time I'm in London, but I'm sure there's no way they could surpass Astronomia in enthusiasm for the hobby and support for amateur astronomers.

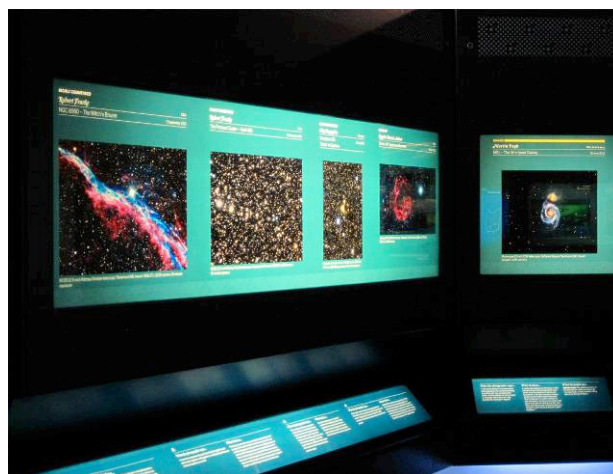
During our stay in London a week later, Elyse and I took advantage of a sunny mid-October day to take the 1-hour Thames boat ride from Westminster to Greenwich. We walked up the hill to the Royal Greenwich Observatory. The obligation to stand with a foot on either side of the Prime Meridian had been fulfilled on prior visits, so we went to the planetarium to see the [Astronomy Photographer of the Year](#) exhibit. The contest is sponsored by RGO and *The Sky at Night*, the British amateur astronomy magazine, along with Flickr.com, the image-posting web site. This is the fourth year of the competition. We caught it last year and were very impressed with the images. As it happened, earlier in the week I had

received an email from WAA member Jim Cobb with a link to the British newspaper *The Guardian's* [on-line display](#) of this year's winning and runner-up images, so Elyse and I made time in our itinerary to see the full exhibit.



Astronomy Photographer of the Year exhibit (LF)

Entries are in four categories: Earth and Space, Deep Space, Our Solar System and Young Astronomy Photographer of the Year (under 16). Special prizes are awarded for People and Space, Best Newcomer and Best Photo by a Robotic Telescope. The prize-winning entries (£1500 for the grand prize winner and £500 for the category winners, with lesser amounts for runner up and honorable mention) were displayed as backlit transparencies on a green field in a room with subdued light, which gave them wonderful vibrancy and depth. All of the 30 or so images on display were outstanding.



More of the exhibit (LF)

The grand-prize winner was a spectacular image of M51 by Australian Martin Pugh, taken with a 17" Dall-Kirkham telescope and high-end camera, extensively and expertly computer-processed.



Martin Pugh's winning M51 image

The image that I liked best was a stunning wide angle shot of the aurora borealis, entitled "Green World", by Norwegian Arild Heitmann. As displayed at the show, the blue-tinted snow and green aurora were simply electric. This is artistic photography at its best!



"Green World" by Arild Heitmann

The Sky at Night magazine is an outgrowth of the famous BBC television program of the same name, hosted by Sir Patrick Moore since 1957. Still productive at age 89, although slowed by arthritis and other medical problems, Moore just published another book, *The Cosmic Tourist*, with astrophysicist Chris Lintott and Queen guitarist-turned-PhD astronomer Brian May (he's responsible for "We Will Rock You"...what is it with these ex-rock-star astronomers?). *Cosmic Tourist* is a coffee-table

picture book of the "100 most awe-inspiring destinations in the universe." Moore claims the distinction of being the only person to have met the three most important people in the history of flight: Orville Wright, Yuri Gagarin and Neil Armstrong.



Sir Patrick Moore

The Sky at Night also recently published *The Complete Guide to Astrophotography*, a 116-page magazine-sized "how-to" book on every form of imaging. It's filled with practical tips including many computer image-enhancement techniques. Elyse found it on a magazine rack while we were waiting on the checkout line at the Micro Center computer store in Yonkers, of all places! It's full of helpful tips on every type of imaging, from simple star trails shots to advanced deep sky work, and it has a lot of computer post-processing advice. I've already found it helpful. There's also a wealth of astronomy information on *The Sky at Night's* [web site](#), worth saving as a favorite on your browser as a British counterpart to Sky & Telescope.

The only other science-related activity on this trip was a visit to the Science Museum in Kensington (part of the great London museum complex that includes the Natural History Museum and the glorious Victoria and Albert Museum of decorative art). We spent a half-hour in their small but well-organized rocketry and space travel exhibit (which includes a full-size mock-up Lunar Excursion Module, but see a real one at the Cradle of Aviation Museum in Garden City, LI) on our way to an exhibit on the life of Alan Turing. The exhibit displayed four intact German Enigma code machines, some hardware remains of the original "bombe" WWII code breaking machine and most of ACE, one of the first stored-program computers.

First Light with Celestron NexImage 5 Solar System Imager **by Larry Faltz**



Jupiter and Ganymede, 11/17/12 (8" SCT). Best 200 frames of 2,000

I picked up a new Celestron NexImage 5 planetary camera (\$199.95 list, less at Adorama). The size of and weight a large walnut, it has a color CMOS chip measuring 5.7mm by 4.28mm (7 mm diagonal) with 2.2 micron pixels. The USB-connected camera records avi images at frame sizes of from 0.3 megapixels (640x480) to 5 megapixels (2592x1944). It comes with iCap 2.2 software which seems intuitive enough. In my initial tests, capturing images on a Gateway netbook with N450 processor, I found that even though the display on the computer screen looks as expected when recording at any of the available frame sizes, the software seems to output all the files at 720x480. The result is that Jupiter, my first target, came out a little egg-shaped when I displayed the recorded file on the computer. To compensate, after stacking and processing the avi file in Registax, I resized the final 720x480 image to 640x480 in Photoshop, achieving the correct proportions. It's very strange problem and the brief instruction manual says nothing about it. I suspect there are software settings I'm missing. I've contacted Celestron and await their response.



I have to admit that right now I'm just bluffing my way through the powerful Registax wavelet function (which brings out all the details), but the first images came out better than I thought they would. I know the image above is way too noisy and would benefit from more patience and experimentation with wavelets to reduce noise while increasing sharpness, two seemingly opposing qualities in a captured image. But it was exciting to be able to see so much detail on the surface, a visual impossibility with the 8" scope.

Internet Corner: The Planetary Society by Tom Boustead

"We are dads, moms, grandparents, teachers, kids, scientists, engineers, and space geeks. We are those who reach out into the Universe to seek answers to those deep questions: Where did we come from?, and Are we alone?"

This statement aptly sums up the identity and mission of the Planetary Society (<http://www.planetary.org/>). Founded by Carl Sagan, Bruce Murray and Louis D. Friedman, the Society provides an avenue for the participation in and advocacy of space science if that's your interest. If not, the Society's website still offers a plethora of neat astronomy stuff.

Open the EXPLORE tab and then SPACE TOPICS link, you'll find links for current space missions and such shallow sky objects as the Moon, planets and asteroids as well as exoplanets and life in the universe.

For example, navigate to EXOPLANETS. There you'll not only be able to access the Paris Observatory's [Extrasolar Planets Encyclopaedia](#) but also read about the discovery of an exoplanet in the Alpha Centauri system, our closest neighboring star system. Alas, although not substantially larger than Earth (113% more massive), the Exoplanet orbits only 6 million kilometers from Alpha Centauri B suggesting a surface temperature above 1000 deg. celsius.

The BLOGS tab provides links to entries by the Society's principal correspondents. These include Bill Nye (the "Science Guy"), Dr. Bill Betts (a Caltech Ph.d. in planetary science and the Society's Director of Projects), Emily Lakdawalla (Master of Science degree in planetary geology from Brown University) and Mat Kaplan (host of the Society's Planetary Radio Show).

The MULTIMEDIA tab is worth a thorough look. It features the Planetary Radio Show--a weekly visit with a "scientist, engineer, project manager, astronaut, advocate or writer who provides . . . perspective on the exploration of our solar system and beyond." A recent show featured Alan Stern, Principal Investigator on the New Horizon's Pluto Mission. For those new to Astronomy, Bill Betts presents an on-line astronomy course, which tours solar system objects in-depth and then ends by

reaching out into deep space. The MULTIMEDIA tab also includes links to Society Podcasts as well as a library of Space images.

Overall, the Planetary Society offers a rich experience, especially for those interested in current solar system research. If you find the site intriguing, there is always the option of becoming a member.



Starway to Heaven Saturday, November 17th

The final star party of the year took place under a cloudless sky. The temperature at sundown was in the mid-40's, but as expected the cloudless sky allowed rapid cooling so that by 9:15 pm the surface temperature was below freezing, with air temperature dropping below 32° by 10 pm. Fortunately, the early sunset and good transparency made for some fine

observing in the early evening, but only a few well-insulated folks stayed late.

Eva and Erik Anderson (Croton-on-Hudson) brought their Televue 101 NP 101 with its spectacular wide-field Petzval optics. Kevin Parrington (Harrison) brought a compact Celestron SLT 90 Maksutov and

got it going after some struggles with balky battery packs. WAA newsletter editor Tom Boustead (White Plains) observes with a Stellarvue 102T refractor on an alt-az mount with Sky Commander digital setting circles. This is still a “push-to” non-motorized mount, but with the Sky Commander you know exactly where you’re pushing to. Art Linker (Scarsdale) came with his 10” Orion Intelliscope Newtonian, another excellent push-to solution. Bob Kelly, WAA VP for field events and resident weather guru, had his 8” Orion dobsonian. Dave Butler, Bob’s predecessor as Field Events VP, brought his trusty Meade LX-90. This scope has probably been to more Starways than any other. Frank Jones (New Rochelle) came with his brand new self-aligning Meade LS-90 8” SCT. Harry Butcher observed through a Celestron 5SE computerized SCT. Larry Faltz (Larchmont) brought Locutis, his Celestron CPC800 with Mallincam video camera and the usual wires, batteries, video screen and computer. At the end of the evening, Carl Lydon (Stamford) came with his fine 11” Celestron HD SCT on an equatorial mount to do some DSLR imaging. He showed a wonderful image of the Orion

Nebula that he had taken and processed the previous night.

About 8 pm two busloads of Fordham University students in Hans Minnich’s astronomy class rumbled into the Meadow Parking Lot. They had the opportunity for visual observation of Jupiter, M31, double stars, open and globular clusters and the Orion nebula. Larry showed them some deep sky objects with the Mallincam, including planetary nebulas M27 and M57, globular cluster M15, galaxy NGC 7331 (the Deer Lick group), the core of M31 with surrounding dust lanes, and the Crab Nebula, M1. The video highlight was the Orion Nebula, M42, in full color with complex swirls of red and blue gas and black dust lanes filling the video screen. The students were genuinely interested but many of them were a little under-dressed as the temperature plummeted and frost covered all available surfaces. Scopes without dew heaters became useless after 9 pm.

Star parties will resume in March.

It Takes More Than Warm Porridge to Make a Goldilocks Zone ***by Diane K. Fisher***

The “Goldilocks Zone” describes the region of a solar system that is just the right distance from the star to make a cozy, comfy home for a life-supporting planet. It is a region that keeps the planet warm enough to have a liquid ocean, but not so warm that the ocean boils off into space. Obviously, Earth orbits the Sun in our solar system’s “Goldilocks Zone.”

But there are other conditions besides temperature that make our part of the solar system comfortable for life. Using infrared data from the Spitzer Space Telescope, along with theoretical models and archival observations, Rebecca Martin, a NASA Sagan Fellow from the University of Colorado in Boulder, and astronomer Mario Livio of the Space Telescope Science Institute in Baltimore, Maryland, have published a new study suggesting that our solar system and our place in it is special in at least one other way. This fortunate “just right” condition involves Jupiter and its effect on the asteroid belt.

Many other solar systems discovered in the past decade have giant gas planets in very tight orbits around their stars. Only 19 out of 520 solar systems studied have Jupiter-like planets in orbits beyond

what is known as the “snow line”—the distance from the star at which it is cool enough for water (and ammonia and methane) to condense into ice. Scientists believe our Jupiter formed a bit farther away from the Sun than it is now. Although the giant planet has moved a little closer to the Sun, it is still beyond the snow line.

So why do we care where Jupiter hangs out? Well, the gravity of Jupiter, with its mass of 318 Earths, has a profound effect on everything in its region, including the asteroid belt. The asteroid belt is a region between Mars and Jupiter where millions of mostly rocky objects (some water-bearing) orbit. They range in size from dwarf planet Ceres at more than 600 miles in diameter to grains of dust. In the early solar system, asteroids (along with comets) could have been partly responsible for delivering water to fill the ocean of a young Earth. They could have also brought organic molecules to Earth, from which life eventually evolved.

Jupiter’s gravity keeps the asteroids pretty much in their place in the asteroid belt, and doesn’t let them accrete to form another planet. If Jupiter had moved

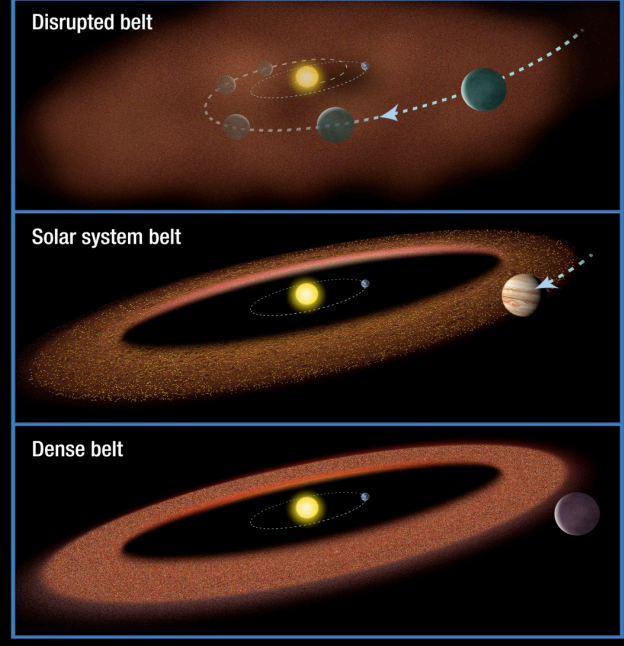
inward through the asteroid belt toward the Sun, it would have scattered the asteroids in all directions before Earth had time to form. And no asteroid belt means no impacts on Earth, no water delivery, and maybe no life-starting molecules either. Asteroids may have also delivered such useful metals as gold, platinum, and iron to Earth's crust.

But, if Jupiter had not migrated inward at all since it formed far away from the Sun, the asteroid belt would be totally undisturbed and would be a lot more dense with asteroids than it is now. In that case, Earth would have been blasted with a lot more asteroid impacts, and life may have never had a chance to take root.

The infrared data from the Spitzer Space Telescope contributes in unexpected ways in revealing and supporting new ideas and theories about our universe. Read more about this study and other Spitzer contributions at spitzer.caltech.edu.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with NASA.

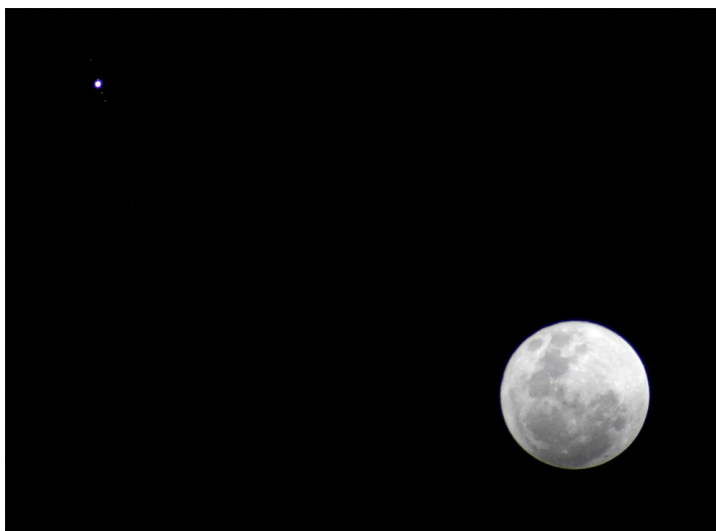
Three scenarios for asteroid-belt evolution



Our solar system is represented by the middle scenario, where the gas giant planet has migrated inward, but still remains beyond the asteroid belt.

Conjunction ►

Larry Faltz provided this image of the Moon and Jupiter in conjunction on November 28th at 10:30 pm. He used a Stellarvue 80mm f/6 refractor and Canon EOS T3i (composite of two images). The moons are: above Jupiter Callisto (faint) and Ganymede (closest to planet) ; below Jupiter Io, Europa.



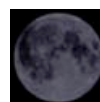
Almanac

For December 2012 by Bob Kelly

Perhaps it is not surprising that December, with the longest nights for residents of the Northern Hemisphere, hosts festivals that use light as their



Dec 6



Dec 13



Dec 20



Dec 28

theme. The miracle of the one day's supply of oil that lasted for seven; the candles of the African harvest festival; and the shining light brought by a newborn

baby - all these mysteries illuminate the December darkness. Perhaps us dark-sky lovers should be chagrined at these competing lights, but even those who do not celebrate these feasts can understand, since all of us seek the lights - brilliant and faint - in December's wonderful darkness.

In the December sky hangs many shining objects for the recipient of a first telescope or the receiver of the latest upgrade. This is a great time to start seeking sky sights - a newcomer can find Jupiter easily on the night of December 25th as this bright planet shines right next to the Moon that night; two great objects for beginners and veterans looking to test out their new equipment. But before using new equipment, the best first step is to test it out in daytime. Take a few minutes to make sure everything is in working order. It's hard in the dark to read a manual or even fix a small problem. If you have a new scope, use a distant object (power or light poles are good) and adjust the finderscope to point in the same direction as your optics. Details may be hard to come by on the Full Moon or Jupiter, as the glare of the moon that night washes out details. But you can get the bugs out of the equipment and each trip out will reveal more and more details. Jupiter is closest to the Earth on the 2nd and will get higher in the evening sky every night. Any optical aid will show Jupiter's four brightest moons as tiny dots near the very bright planet. A modest telescope will show Jupiter's cloud belts. Highest power and a large telescope will show more details and Jupiter's moons will appear as their own (very tiny) worlds. There are usually two darker belts on Jupiter, but at the November Starway to Heaven, one belt was split into two bands. Let us know what you see.

Some people may think the days are getting longer after the earliest sunset of the year occurs on Friday the 7th. The days are still getting a trifle shorter through the solstice at 6:12am on the 21st as the latest sunrise happens in early January.

Saturn made a close pass at Venus last month and on the 3rd Saturn is to Venus' upper right and Mercury is an equal distance to Venus' lower left. That gives us GPS-like directions to find the elusive innermost planet. Mercury hangs out to the lower left of Venus all month, but it's easiest to see before the 13th.

The Geminid meteors can fall at a rate of 80 or more an hour in the early morning of the 13th. Of course, that's if you can see the whole sky at once and adjusted as if the radiant is straight overhead.

However, most of us can see up to 10 reasonably bright meteors an hour, sometimes coming in bunches, after Gemini rises about 10:30pm on the 12th. They can send a chill through you, which is ok, if you've prepared with a coat, sleeping bag and reclining chair to let the sky give you its show.

Let's continue your trip through December, despite the crazy talk about the end of the world some claim will happen when the next baktun - number 14 in the Mayan long count - starts.

Mars is still low in the southwestern sky, setting quickly after dark. It's way on the other side of the sun from us, so the tiny planet is very small, even in a telescope - only looking 1/3 wider than much more distant, but larger, Uranus. Speaking of Uranus, it's at magnitude 5.8, technically in Aquarius, nearer to the faint stars of Pisces, best fished for after the sky gets dark and Pisces is highest in the sky. Neptune, at 7.9, is in the next door constellation of Capricorn, but getting low in the sky when darkness sets in.

But let's go even deeper into our evening sky. It turns out that Taurus, where Jupiter is hanging, has two of the largest asteroids - Vesta and Ceres. They are brightest this month, both topping out at magnitude 6 1/2, then dropping off by about 1/2 magnitude a month for the next few months. So this is the time to get a good chart of their locations and seek the finer minor planets. It's best to spy them later in the evening when they get higher in the sky. However, even then, they look just like the stars around them. Go back a few days later and see what isn't there - the object that has moved a bit is the asteroid.

After you practice with the brightest asteroids, you can try to catch Toutatus as it flashes past the Earth only 4.3 million miles away, brightening to magnitude 10 1/2 at mid-month. It may be hard to find, but at least you'll know which faint dot is the asteroid, as, in a telescope, Toutatus may appear to move ever-so-slowly as you watch it.

The International Space Station is a sight to see moving through the morning skies through the 3rd, in the evenings from the 9th through the 31st.

Watch for reminders on the WAA Facebook page. Bob's Heads UP blog is at bkellysky.wordpress.com.