Star Gazer News

Newsletter of the Delmarva Stargazers
www.delmarvastargazers.org

Prez comments…

I'll admit I'm still buzzed about the success of our first Skype meeting. Thank you again Karen Jennings for setting up this great meeting for the Delmarva Stargazers. It was certainly a thrill to have someone as prominent as David J. Eicher the editor of Astronomy Magazine with us for over an hour and to have the opportunity in a free format answering any and all questions we had on any subject.

How do you top a meeting like that? Well having a member like ***Ed Reznac*** of the Hubble Space Telescope Team make a personal appearance might just do it. This may seem repetitive but thank you again Karen Jennings. Ed hails from Dover Delaware and I know this is going to be a great meeting that you don't want to miss.

Just in case you haven't gotten the idea yet, our new facility has enabled us to ratchet up the quality of our meetings. So get to Smyrna and make a meeting and bring a friend or two with you.

We have the great honor via Skype of having Gianluca Masi from Italy of Virtual Telescope fame as our speaker for November. The Virtual Telescope is a pay to observe in real time over the internet telescope system with over 120,000 individuals a year observing. It is part of the Bellatrix Astronomical Observatory and consists of several scopes; the newest is a 17" Dall-Kirkham on a Paramount ME with a large format STL-6303 CCD. Gianluca will talk about the Virtual Telescope, give us a viewing and capability demonstration plus I'm sure an update on some of his present projects.

Gianluca is an accomplished professional with a PhD in astronomy and well known on the international stage. He has contributions in the field of asteroids, comets, variable stars and exrasolar planets. He may be best known as the person who determined the date that Vincent van Gogh painted *Starry Night Over the Rhone* by studying the star placement.

Again via Skype we'll have a NASA James Webb team member give us an update on Big Red during our December meeting.

We as a club have been doing a lot of observing lately, both at Tuckahoe and Black Bird. This is great as astronomy should be what we are all about. My hat goes off particularly to Doug Norton who has done some marathon observing sessions. Doug not only observes but he also keeps meticulous logs of each observation. I should also mention Doug won placement again this year of a photo for the 2011 Ducks Unlimited Calendar.

Check us out on our Yahoo group to find out when and where we'll be observing then stop by and join us in the fun. If you bring a scope great but none is needed to enjoy the night sky, I've never been turned away from sharing an eye piece with a fellow club member.

Last but not least don't miss No Frills XV. I look forward to the same great skies we've been experiencing lately. Add good food and great company on top of that and you have a standard

Announcing No Frills XV Star Party

When: Thursday, October 7, 2010 through Sunday, October 10, 2010.
Where: Tuckahoe State Park's Equestrian Center near Queen Anne, MD.

For more info:

http://www.delmarvastargazers.org/archive/NoFrills2010/index.html

Upcoming Events:

Meeting !	**Oct 5th**	**7 PM**	**SHWC**
No Frills !	**Oct 7-10th**	**Thur-Sun**	**Equ. Cntr**

What a Country !

Pj Riley

Whenever this club does something, people pitch in. Whether it's at a meeting, star party, or mirror grinding, people help. No need to ask, or beg, and they don't have to be members, they just help.

Go to a star party, and people WANT you to look through their scope. Someone forgets to bring batteries, others help by sharing theirs'.

As editor of this newsletter, members pitch in by submitting articles and pictures for publication. Non-members also pitch in.

We get articles for inclusion in our newsletter from a few outside sources. One of these sources is Tom Koonce of the Antelope Valley Astronomy Club in Palmdale, CA

You have read articles from Tom before, and his latest is on page 5.
Tom, on behalf of his club, has one-upped others who have assisted us. His offer is below:
"…By the way...

If any of your club members come out to the Los Angeles area (to go to Disneyland for example) and would like to spend an evening observing under the dark desert skies, let me know. My local club loans out telescopes to experienced amateurs and will get them set up with a guide for specific locations (within 100 miles of Disneyland). Send me an e-mail at takoonce@aol.com.

Best Regards,
Tom."

So if you're a member and gonna be out that way and have the time, contact Tom, and at least give him a hearty handshake for his help and offer.

On the next cloudy night, check out his club's website, http://www.avastronomyclub.org/

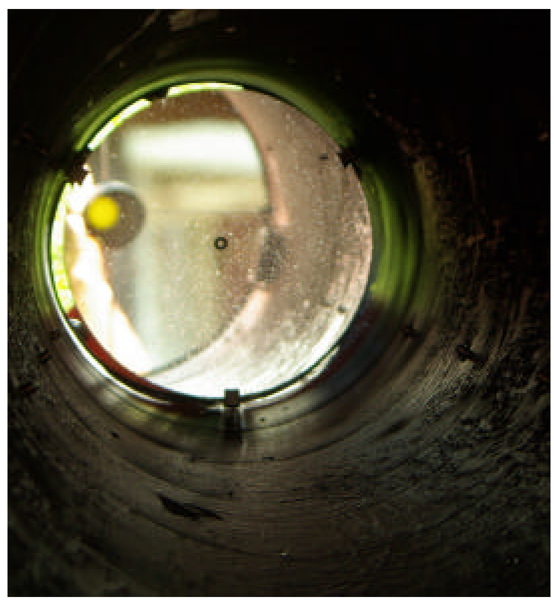
Newtonian Mirror cleaning *in situ*

Michael Lecuyer

Cleaning mirrors is always a dangerous job especially as size increases. It might be fun to give a six inch mirror a bath but larger mirrors become increasingly unwieldy. There are instructions everywhere on cleaning mirrors with the best advice being don't. So you have a dirty mirror that needs work and you're lazy or just trying to play it safe – try this method.

Typically the mirror cell is removed from the telescope, then the mirror from the mirror cell. Then the dust is blown off with pressurized air and a dilute solution of dish detergent and water is prepared and cotton balls gently dab the mirror and so on. There are many places to make bad mistakes moving the slippery heavy mirror.

In situ is a fancy Latin phrase meaning 'in the place' and makes this article appear scholarly to scare away the timid. So we will clean the mirror in place in



(See Mirror on page 6)

Your 2010-2011 Officers

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Are we alone??

Brief biography on Frank Drake Founder of SETI

Rocky Nelson

Frank Drake was born in Chicago on 28 May 1930 and has one sister and one brother. While in school, he experimented with motors, radios, and chemistry. He also studied astronomy on his own. It was during this time that he started thinking about other life in the universe. He was afraid to talk to his parents, teachers or other students about his thoughts because of their religious views and convictions.

He went to Cornell on a Navy ROTC scholarship where he majored in electronics. He also studied astronomy. He attended a lecture by Otto Struve who was one of the leading astrophysicists who thought as he that there is life on other planets in the galaxy. Struve believed that there may be planets circling half the stars in the galaxy and that surely there is life on some of those planets. This strengthen Drake's convictions as he had found a person who thought as he did about life in the galaxy. He started thinking more about astronomy as a career.

He received his degree in electronics and entered the Navy to fulfill his obligation for college. He was commissioned and became an electronic officer on the USS Albany where he was able to work with the latest electronic gear and equipment.

He left after completing his 3 year obligation and was accepted as a graduate student at Harvard. His experience with the latest electronic equipment in the Navy helped his entry into Radio Astronomy. He was a tremendous asset to the department by repairing and fixing the equipment which was in constant need of tuning and repair. This is where he got a taste of radio astronomy and basically decided his career.

He graduated from Harvard in 1958 and applied for and was accepted for a position with the newly formed National Radio Observatory in Green Bank, WV. In 1960 Project Ozama was started and he conducted observations, one signal was positive signal which later proved to be from earth and not space.

In 1961, Frank Drake and J Peter Pearman (an officer on the Space Science Board of the National Academy of Sciences) started thinking about a conference on exterrestrial life to be held at NRAO in Green Bank WV. The conference was planned for November and Drake was given the task of putting together an agenda for the meeting. While drawing up the agenda for this conference that he came up with the now famous "Drake Equation". His purpose was to get those attending the conference to think about the possibilities of other life in the galaxy

The Drake Equation: $\boldsymbol{N = R^* \times f_p \times n_e \times f_l \times f_i \times f_c \times f_L}$

Where:

N = the number of civilizations in our galaxy with which communication might be possible.

R^* = the average rate of star formation per year in our galaxy

f_p = the fraction of stars that will have planets

n_e = the average number of planets that can potentially support life per star with planets

f_l = the fraction of the above that actually develop life at some point

f_i = the fraction of the above to develop intelligent life

f_c = the fraction of civilizations that develop a technology (electromagnetism) that releases detectable signs of their existence into space

f_L = the length of time such civilizations release detectable signals into space.

Here are the numbers that Drake used in that conference:

$N = R^* \times f_p \times n_e \times f_l \times f_i \times f_c \times f_L$

$N =$ 10 x 0.5 x 2 x 1 x 0.01 x 0.01 x 10,000 = **10**

Since 1961 some of the estimates have been change because of the increase in knowledge of our galaxy. The following attempts to list the current estimates for the Drake equations.

$N =$ 7 x 0.5 x 2 x 0.33 x 0.01 x 0.01 x 10,000 = 2.1

R^* = Estimated by Drake as 10/yr. Latest calculations from NASA and ESA indicate that the current rate of star formation is 7/yr.

f_p = Estimated by Drake as 0.5. It is now known from modern planet searches that at least 40% of sun-like stars have planets, and the true proportion may be much higher, since only planets much larger than Earth can be detected.

n_e = Estimated by Drake as 2. This in combination with f_l indicates that two planets per star develop life.

f_l = Estimated by Drake as 1. Charles Lineweaver and Tamara Davis (University of New South Wales and the Australian Center for Astrobiology) estimated f_l *as* > 0.13 on planets that have existed for at least 1 billion years (Used Earth).

f_i = Estimated by Drake as 0.01. He had nothing to base this estimate on at that time. The estimate for this number remains one of the most argued points of the equation. In fact skeptics say that the large spread of this number makes the equation unreliable.

f_c = Estimated by Drake as 0.01. Most wonder why a civilization might not want to communicate but there is no data.

f_L = Estimated by Drake as 10,000 years. This has been argued that since civilization has developed it will survive for a much longer time. It will protect itself so it can survive.

This is the Drake Equation - how do you feel about the numbers and estimates used compared to what Drake used or the more modern estimates. Use your own estimates to see what you will get for an answer.

The Hunt is On!

Carolyn Brinkworth

The world of astronomy was given new direction on August 13, 2010, with the publication of the Astro2010 Decadal Survey. Astro2010 is the latest in a series of surveys produced every 10 years by the National Research Council (NRC) of the National Academy of Sciences. This council is a team of senior astronomers who recommend priorities for the most important topics and missions for the next decade.

Up near the top of their list this decade is the search for Earth-like planets around other stars—called "extrasolar planets" or "exoplanets" —which has become one of the hottest topics in astronomy.

The first planet to be found orbiting a star like our Sun was discovered in 1995. The planet, called "51 Peg b," is a "Hot Jupiter." It is about 160 times the mass of Earth and orbits so close to its parent star that its gaseous "surface" is seared by its blazing sun. With no solid surface, and temperatures of about 1000 degrees Celsius (1700 Fahrenheit), there was no chance of finding life on this distant world. Since that discovery, astronomers have been on the hunt for smaller and more Earth-like planets, and today we know of around 470 extrasolar planets, ranging from about 4 times to 8000 times the mass of Earth.

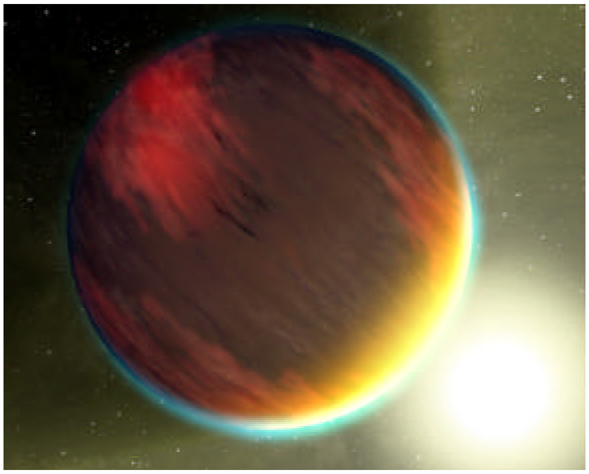
This explosion in extrasolar planet discoveries is only set to get bigger, with a NASA mission called Kepler that was launched last year. After staring at a single small patch of sky for 43 days, Kepler has detected the definite signatures of seven new exoplanets, plus 706 "planetary candidates" that are unconfirmed and in need of further investigation. Kepler is likely to revolutionize our understanding of Earth's place in the Universe.

We don't yet have the technology to search for life on exoplanets. However, the infrared Spitzer Space Telescope has detected molecules that are the basic building blocks of life in two exoplanet atmospheres. Most extrasolar planets appear unsuitable for supporting life, but at least two lie within the "habitable zone" of their stars, where conditions are theoretically right for life to gain a foothold.

We are still a long way from detecting life on other worlds, but in the last 20 years, the number of known planets in our Universe has gone from the 8 in our own Solar System to almost 500. It's clear to everyone, including the Astro2010 decadal survey team, that the hunt for exoplanets is only just beginning, and the search for life is finally underway in earnest.

Explore Spitzer's latest findings at http://www.spitzer.caltech.edu. Kids can dream about finding other Earths as they read "Lucy's Planet Hunt" at http://spaceplace.nasa.gov/en/kids/storybooks/#lucy.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

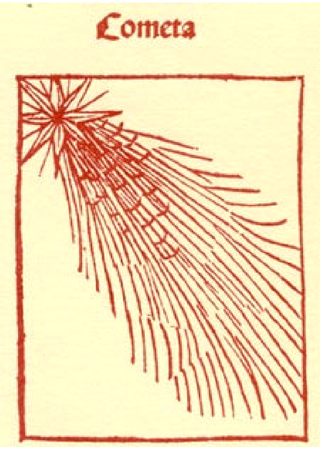


Artist's rendering of hot gas planet HD209458b. Both the Hubble and Spitzer Space Telescopes have detected carbon dioxide, methane, and water vapor—in other words, the basic chemistry for life—in the atmosphere of this planet, although since it is a hot ball of gas, it would be unlikely to harbor life.

Comet Code: Understanding How Comets are Named

Tom Koonce

Two hundred years ago, the discoverer of a prominent comet usually had their name incorporated into the official name of the object, but not always. The first named comet was Halley's Comet, named after Sir Edmund Halley who had calculated its orbit and made the discovery that it was a regular visible visitor to the inner solar system. The comet is now officially known as Comet Halley. The name credit for the comet 2P/Encke, discovered in 1786 by Pierre Méchain, was given to the man who calculated its orbit, Johann Franz Encke. If the comet was exceptionally bright and non-periodic, they were known as "The Great Comet of…" followed by the year in which they were observed.



Woodcut thought to represent Halley's Comet dated 684 A.D.

The naming of comets became standardized in the early twentieth century, retaining the names of up to the first three independent discoverers. Comet White-Ortiz-Bolelli (formal designation C/1970 K1) was named for its discoverers amateur astronomer Graeme White, Air France Pilot Emilio Ortiz, and professional astronomer Carlos Bolelli. More recently, comets have been discovered by robotic space-borne instruments, and the instrument's name is included like Comet IRAS-Araki-Alcock (C/1983 H1), discovered by a team of scientists using the Infrared Astronomical Satellite (IRAS), and two amateur astronomers, George Alcock and Genichi Araki.

The "Old Style" of naming comets gave them a provisional designation of the year of their discovery followed by a lower case letter indicating its order of discovery in that year. Comet Bennett is designated Comet 1969i, the 9th comet discovered in 1969. This worked well until 1987 when more than 26 comets were discovered in a single year. The alphabet was used again with a "1" subscript (Comet Skorichenko-George, 1989e1). In 1989, the count got as high as 1989h1 with 34 comets discovered that year. Once the orbit had been established, the comet was given a permanent designation in order of time of closest approach to the Sun, consisting of the year followed by a Roman numeral. For example, Comet Bennett (1969i) became 1970 II.

Photo of C/2009 R1, (Comet McNaught, discovered September 9, 2009 by Robert H. McNaught)
Photo Credit: Ria Novosti

More and more comets began to be discovered and the naming procedure became unwieldy, so in 1994 the International Astronomical Union (IAU) approved a new naming system called the "New Style". Using the New Style, comets are designated by the year of their discovery followed by a letter indicating the half-month of the discovery. "A" denotes the first half of January, "B" denotes the second half of January, "C" denotes the first half of February, "D" denotes the second half of February, etc., and a number indicating the order of discovery. As an example, the third comet discovered in the second half of October 2010 would be designated 2010 U3. "I" and "Z" are not used when describing the half of a particular month the comet was discovered because they can be easily confused as the numbers 1 and 2 respectively.

Prefixes are also added to indicate the nature of the comet, with" P/" indicating a periodic comet, "C/" indicating a non-periodic comet, "X/" indicating a comet for which no reliable orbit could be calculated (typically comets described in historical chronicles), "D/" indicating a comet which has broken up or been lost, and "A/" indicating an object at first thought to be a comet but later reclassified as an asteroid. Periodic comets also have a number indicating the order of their discovery. Thus Halley's Comet, the first comet to be identified as periodic, has the systematic name 1P/1682 Q1. Comet Shoemaker-Levy 9 was the ninth periodic comet jointly discovered by Carolyn and Eugene Shoemaker, and David Levy but its systematic name is D/1993 F2. It was discovered in 1993 and the prefix "D/" is applied, since it was observed to break up and crash into

(See Comets on page 6)

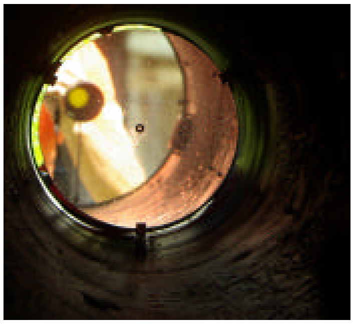
(Comets from page 5)
Jupiter. *(Ref. http://wapedia.mobi/en/Astronomical_naming_conventions?t=8.)*

Now you can decode the name designations of comets. Stars are another story altogether… For example, Betelgeuse = Alpha Orionis = HR 2061 = BD +7 1055 = HD 39801 = SAO 113271 = PPM 149643, whose coordinates in the sky are RA 05:55:10.306, Dec +07:24:25.35 (2000.0), the bright red supergiant in Orion. There is a system determined by the IAU for naming all astronomical objects. It just takes some time and study to make sense of it.

Photo of C/1995 O1, (Comet Hale-Bopp, discovered July 23, 1995)

(Mirror from page 2)
the telescope and dispense with the cotton balls, detergent, paper towels, tap water, and the drama involved in scratching, chipping or dropping the mirror.

First we need a telescope tube or mirror box that's pretty much impervious to water and not sensitive to alcohol (test it on a small hidden place as solvent instructions say). Sonotubes and polyurethane coated boxes should be quite safe.



Next acquire a Hasbro Super Soaker™ water blaster (or equivalent) from a child or a store. Yes, we'll be using a Super Soaker spray gun to clean the mirror! The Hasbro toys will shoot about 25 feet and this is enough pressure. Any more pressure (like a real pressure washer) would be in uncharted territory. I found a stubby 'Soaker Wars Rattler'!

Here are the few technical details: you'll need **distilled** water, not the ionized stuff. This will be used to wash the mirror. To remove the distilled water and leave a spotless surface we'll use some fairly pure alcohol - Isopropyl of 91% or greater purity or better is acceptable (avoid the 70% junk) or a good quality methanol will work. Denatured ethanol contains unidentified solvents so don't use it. Rum is right out! You may find the alcohol step optional since distilled water shouldn't leave spots. The spray gun should only seen action in a pool or with clean water. If it's seen action in salt or pond water avoid it. New soakers are inexpensive.

Prepare the telescope. The telescope tube should be tilted up a bit to shed water from the tube and mirror. If you have heaters, fans or other electrical items in the area move them out of the way. Be sure the water can drain from the mirror area. Make sure any special mirror coatings and anything materials around the mirror will resist the alcohol. They will resist water – after all they have to be dew resistant. The telescope must be out in the fresh air. This is not an indoor project.

Prepare the soaker. Empty it completely then load it with distilled water and chase an unarmed person or pet to remove any residual pool or tap water. Load it up with a couple of cups of distilled water and aim at the mirror spraying the surface thoroughly. Drain the soaker of residual water. Add some of the alcohol (not much, maybe a cup or so) – just enough to shoot with, and again spray the mirror mostly at the top so it drives the water off. Alcohol is flammable – especially when atomized by the spray gun and upon impact with the mirror. On the other hand the story about your burning telescope will be enjoyed at star parties. Let it sit until dry – won't take long! The mirror should look pretty good! If not quite good enough do it a second time.

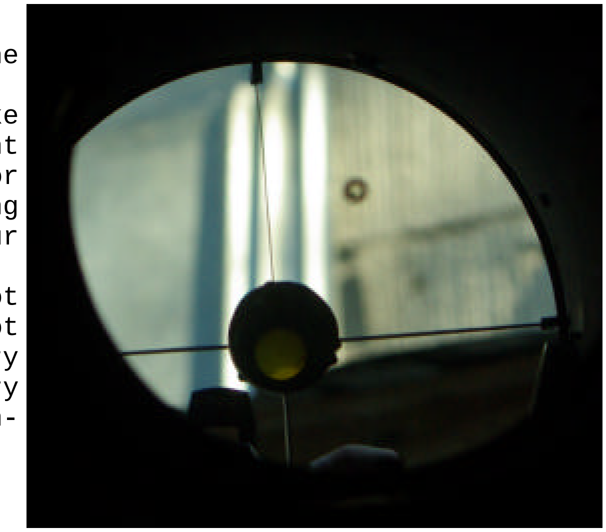
Advantages: The spray of water exerts more pressure than you can achieve with the traditional cotton ball but nothing harder than the aluminum touches the surface. Unless you coated your mirror with aluminum paint the mild water pressure will not blow the coating off. The mirror doesn't have to be removed from the cell. The alcohol nicely combines with the distilled water and completely removes it and doesn't leave spots. There

(More Mirror on page 7)

(More Mirror from page 6)
is no physical contact with the mirror other than the light solvents – no chance to scratch or sleek it.

Disadvantages: Special coatings may not like the alcohol. Alcohol is not good for the environment since it's a toxic solvent. Your telescope tube or paint may dissolve. You may dissolve. With the wrong alcohol you may be found drunk in a ditch with your telescope.

What about the secondary mirror? This may not be the best way to clean it although you might shoot through the focuser. Since we're spraying the primary mirror from the front of the telescope the secondary is pretty easy to avoid. It may benefit from inciden-



tal washing or you may want to put a baggy around it.

Works for me and quickly too! Unfortunately the photo of the mirror before cleaning didn't show much degradation. There was a dusty film, cobwebs, and chunky dirt stuck to it from being stored upright (for the last couple of years it's been able to lie down). The first photo shows the Super-Soaker in action, next is the picture of the water spots. The third photo tries to show the effect of the alcohol but the only evidence is around the alignment circle where a film is forming. The last photo shows the final clean mirror.

A Giant Opposition

Jim Tomney

It happens every August now if you're an amateur astronomer. The phone rings and your friend, acquaintance, or family member wants to know if it's true. You give a sigh and gently deflate their curiosity, explaining that it's a perennial Internet hoax and Mars will *not* appear as large as the full moon this month.

Of course the catalyst for this urban legend is the Mars opposition in 2003 when circumstances aligned for a very favorable apparition. This year it was Jupiter's turn to benefit from celestial mechanics. Like all planets its orbit is eccentric, and this year with the giant cruising along the perihelion point of its orbit it swung some 47 million miles closer than when at an aphelic alignment. An average opposition yields a disk size of about 47", but this year at only 368 million miles from us it came within a few tenths of the maximum 50.1" of arc.

Amid the faint stars of Pisces Jupiter is a beacon without peer in the eastern sky this fall, climbing to a magnitude of -2.9 on opposition eve. As fate would have it this attribute was optimized not only by the closer approach but also by the fact that the planet's South Equatorial belt has disappeared, boosting the albedo by about 4%. While Venus still reigned as brightest planet in the evening sky, old Jove truly put on a show when one considers the goddess' veil of highly reflective clouds and far closer position.

Another interesting facet of this opposition was that it occurred September 21st – very close to the autumnal equinox – which means that Jupiter stood pretty much at the vernal equinox point in the sky. With this normally unremarkable point of the celestial sphere highlighted it's possible to contemplate the effect of precession since the time

(See Giant on page 8)

Astrophotos by Members and Friends

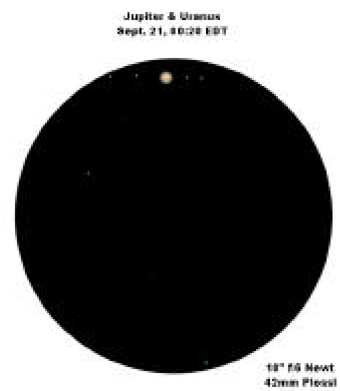
I was up at Spruce Knob Labor Day new moon along with NOVAC's Almost Heaven StarParty and got 2.5 hours of data of the Helix Nebula. It's a LRGB composition (L=5X10min; R=6X5min; G=6X5min;B=8X5min). I had intended to repeat the same series the next night but had problems with autoguiding in the wind even though I'm in a dome. The Helix transits so low on the southern horizon that I felt I could only shoot it 1.5 hrs on the east side and 1.5 hrs on the west side. I only kept the best frames so that's why only 2.5 hrs total were usable.

This was shot with my SBIG ST-10XME camera through a homemade 16" Newtonian with a MPCC coma corrector riding on an AP 1200 mount. Joe Morris

(Giant from page 7)

when astrology took root. As a Piscean myself I know that had I been born 5 days later on March 21st I would be an Aries. Or would I? Jupiter's position is just into Pisces, barely out of Aquarius. The sun clearly does not sit in the house of Aries on the first day of spring as it did several thousand years ago. Thus the slow westward march of the vernal equinox caused by Earth's wobbling axis was made manifest by Jove's opposition this year.

Serendipity was not done for this evening of September 21, for tucked away just some 40' to the north was the planet Uranus arriving at its own 2010 opposition a few hours behind Jupiter. As conjunctions go this one was not spectacular, yet it did have a certain charm. At lowest power in my 10" I could just frame Jupiter and Uranus in the same field that evening. Even so it was obvious that Uranus was a disk, exhibiting a light blue-green color that contrasted with the warmer colors of Galilean satellites that are also not point sources of light. If one considers that Uranus is about a third the diameter of our largest planet, and contrasts that with the difference in size subtended at the eyepiece (50" vs. 4"), you gain a sense of just how much farther out the 7th planet from the sun actually is. Looking at it another way – the 4 main satellites of Jupiter appear between 1-2" in size, while Uranus barely beats them at 3.5".



If you missed getting out on the evening of autumnal equinox to catch the show you needn't despair. Jupiter will remain a showy object through the end of the year. Uranus and Jupiter will continue to waltz through the stars of Aquarius & Pisces as well, having an even closer approach (30') soon after we welcome in 2011. So while I can't predict what perturbations my psyche may suffer from two giant planets in my zodiacal house, I can predict an enjoyable autumn of planetary observations for all!

How to Join the Delmarva Stargazers: Anyone with an interest in any aspect of astronomy is welcome

NAME____

ADDRESS______________________________________

CITY, STATE & ZIP________________________________

E-MAIL ADDRESS (If any)____________________________

Do you need the newsletter snail mailed to you (Y/N)?__________________

Please attach a check for $15 made payable to Delmarva Stargazers and mail to Kathy Sheldon, 20985 Fleatown Rd, Lincoln, DE 19960. Call club President Don Surles at 302-653-9445 for more information.