Star Gazer News

Newsletter of the Delmarva Stargazers
www.delmarvastargazers.org

From the Prez….

Congratulations! We have begun our 18th year of Delmarva Star Gazers…yes, it was in the Spring of 1993 when a few of us met to create a group dedicated to star gazing.

So far, we have sponsored 30 star parties (16 Delmarva Star Gazes and 14 No Frills), 10 mirror making weekends, 17 Fourth of July picnics, and 17 Christmas parties. We have been in contact with our community thru numerous outreaches to libraries, scouts, school groups, and local parks.

Our group has been very successful over the past – almost two decades. Most organizations don't have that kind of longevity.

We have been successful because we have been flexible and friendly. We have embraced technology to communicate more effectively. We know that all who attend a meeting or a star party volunteered their time and expense to do so…so if we expect all those people to continue to participate then we must be friendly toward each other and offer opportunities for those people to find some satisfaction in their participation.

I have repeated many times that we are all amateurs and we all learn, teach and learn from each other. This simple concept is the foundation of progress.

Now for our May 4th meeting…Come and see our new facilities. Our topics will be:

1) Wrap up of DSG #16
2) Discussion of what to expect from DSG and what we can offer to DSG
3) Coma Berenices
4) Star Atlases and Their Uses

As always, if someone has a hot topic that requires time for discussion we can make adjustments in the agenda for the topic.

So, put May 4th, 7:00PM on your calendar. See you at the Community Room of Christiana Care Center, Smyrna.

Don…

I am sure all of us we will miss the ambience of Mallard Lodge but it is time to move on. I look forward our new facilities at Christiana Care Center in Smyrna.

I will bring the new Lunt Solar Scope...and I plan to be at Christiana Care Center around 5:00PM so that we can see prominences...I also plan for the weather conditions to be clear and warm.

Additionally, if anyone learns of a topic of "burning interest" we can always make room for it in the schedule.

Our Meeting Place has Moved !

See pg. 7 for details

Upcoming Events:

Meeting !	**May 4th**	**7 PM**	**SHWC**
Observing !	**May 14Th**	**Dusk**	**Equestrian Cntr**

An Excerpt from
GREAT ASTRONOMERS

by SIR ROBERT S. BALL D.Sc. LL.D. F.R.S.
Lowndean Professor of Astronomy and
Geometry in the University of Cambridge

"There are many types of astronomers—from the stargazer who merely watches the heavens, to the abstract mathematician who merely works at his desk; it has, consequently, been necessary in the case of some lives to adopt a very different treatment from that which seemed suitable for others."

Pierre-Simon Laplace

Born at Beaumont-en-Auge, near Honfleur, in 1749, just thirteen years later than his renowned friend Lagrange. His father was a farmer, but appears to have been in a position to provide a good education for a son who seemed promising. Considering the unorthodoxy in religious matters which is generally said to have characterized Laplace in later years, it is interesting to note that when he was a boy the subject which first claimed his attention was theology. He was, however, soon introduced to the study of mathematics, in which he presently became so proficient, that while he was still no more than eighteen years old, he obtained employment as a mathematical teacher in his native town.

Laplace's most famous work is, of course, the "Mecanique Celeste," in which he essayed a comprehensive attempt to carry out the principles which Newton had laid down, into much greater detail than Newton had found practicable. The fact was that Newton had not only to construct the theory of gravitation, but he had to invent the mathematical tools, so to speak, by which his theory could be applied to the explanation of the movements of the heavenly bodies. In the course of the century which had elapsed between the time of Newton and the time of Laplace, mathematics had been extensively developed. In particular, that potent instrument called the infinitesimal calculus, which Newton had invented for the investigation of nature, had become so far perfected that Laplace, when he attempted to unravel the movements of the heavenly bodies, found himself provided with a calculus far more efficient than that which had been available to Newton. The purely geometrical methods which Newton employed, though they are admirably adapted for demonstrating in a general way the tendencies of forces and for explaining the more obvious phenomena by which the movements of the heavenly bodies are disturbed, are yet quite inadequate for dealing with the more subtle effects of the Law of Gravitation. The disturbances which one planet exercises upon the rest can only be fully ascertained by the aid of long calculation, and for these calculations analytical methods are required.

The investigations of Laplace are, generally speaking, of too technical a character to make it possible to set forth any account of them in such a work as the present. He did publish, however, one treatise, called the "Systeme du Monde," in which, without introducing mathematical symbols, he was able to give a general account of the theories of the celestial movements, and of the discoveries to which he and others had been led. In this work the great French astronomer sketched for the first time that remarkable doctrine by which his name is probably most generally known to those readers of astronomical books who are not specially mathematicians. It is in the "Systeme du Monde" that Laplace laid down the principles of the Nebular Theory which, in modern days, has been generally accepted by those philosophers who are competent to judge, as substantially a correct expression of a great historical fact.

The Nebular Theory gives a physical account of the origin of the solar system, consisting of the sun in the centre, with the planets and their attendant satellites. Laplace perceived the significance of the fact that all the planets revolved in the same direction around the sun; he noticed also that the movements of rotation of the planets on their axes were performed in the same direction as that in which a planet revolves around the sun; he saw that the orbits of the satellites, so far at least as he knew them, revolved around their primaries also in the same direction. Nor did it escape his attention that the sun itself rotated on its axis in the same sense. His philosophical mind was led to reflect that such a remarkable unanimity in the direction of the movements in the solar system demanded some special explanation. It would have been in the highest degree improbable that there should have been this unanimity unless there had been some physical reason to account for it. To appreciate the argument let us first concentrate our attention on three particular bodies, namely the earth, the sun, and the moon. First the earth revolves around the sun in a certain direction, and the earth also rotates on its axis. The direction in which the earth turns in accordance with this latter movement might have been that in which it revolves around the sun, or it might of course have been opposite thereto. As a matter of fact the two agree. The moon in its monthly revolution around the earth follows also the same direction, and our satellite rotates on its axis in the same period as its monthly revolution, but in doing so is again observing this same law. We have therefore in the earth and moon four movements, all taking place in the same direction, and this is also identical with that in which the sun rotates once every twenty-five days. Such a coincidence would be very unlikely unless there were some physical reason for it. Just as unlikely would it be that in tossing a coin five heads or five tails should follow each other consecutively. If we toss a coin five times the chances that it will turn up all heads or all tails is but a small one. The probability of such an event is only one-sixteenth.

There are, however, in the solar system many other bodies besides the three just mentioned which are animated by this common movement. Among them are, of course, the great planets, Jupiter, Saturn, Mars, Venus, and Mercury, and the satellites which attend on these planets. All these planets rotate on their axes in the same direction as they revolve around the sun, and all their satellites revolve also in the same way. Confining our attention merely to the earth, the sun, and the five great planets with which Laplace was acquainted, we have no fewer than six motions of revolution and seven motions of rotation, for in the latter we include the rotation of the sun. We have also sixteen satellites of the planets mentioned whose revolutions round their primaries are in the

(See LaPlace on page 6)

A Report on the “Prize”
The TMB 100 9mm Eyepiece

Doug Norton

Having won the "The TMB 100" 9mm eyepiece at the star party raffle, I was fortunate to have one of the best evenings afterward to give it first light. I have a classic orange tube Celestron C8 that has a 2000mm fl and an f/10 ratio. I really didn't know what to expect from the eyepiece. It wasn't a Tele Vue, it wasn't a Nagler and it wasn't an Ethos. Only one way to find out how good it was.

I started off the evening looking at the best globulars in the sky. M3, M5, M13, M92 and M10. I was astonished with how well this eyepiece performed. Simply stunned. Stars were sharp from edge to edge. The entire 100 degree field was usable. I didn't notice any field curvature. It was flat. Colors were accurate. I didn't notice any kind of halos or other artifacts around brighter objects. And best of all, the field was bright! Even at 222x this eyepiece provided a bright field. I just couldn't have been more pleased.

The only thing I noticed was a slight kidney bean effect. Anyone who has owned a 13mm Nagler generation 1 eyepiece knows what I'm talking about. There is plenty of eye relief. But if your eye falls inside or outside the optimum distance it gives you a kidney bean effect. But it is at least half as noticeable as the original 13mm Nagler. So in other words it is more forgiving. But it wasn't distracting. With my eye in the sweet spot there is an amazing view the likes of which I haven't seen before. Better than the 9mm Nagler to be sure. I loved my 9 Nagler. But I would choose this 9mm TMB over the Nagler any day (or night).

Physically it is well built. A removable 2-inch eyepiece adapter makes this usable in 1 1/4-inch diagonals as well. That was important for me because I never wanted to own anything larger than 1 1/4 inches in size. No 2-inch eyepieces or diagonals for me. My biggest concerns now are weight. I travel light and fast now. Four eyepieces and one 2.5x Powermate. The eyepiece is light considering its large size.

The final thing that won me over completely was the planetary nebula NGC6369. I had never looked at this PN before. With the 9mm TMB I observed it and in my notes that night I wrote, "small, diffuse, looks like Ring Nebula". When I got home the next day I looked up the description of the object in Burnham's Celestial Handbook. "Mag 11, Diam 28"; pB,S,R, perfect ring with 16mag central star". I didn't see the central star but I could tell it was a ring! As small as it was I couldn't believe I could see that detail. This is a fantastic eyepiece.

Report on Star Gaze 16

Myles Rice

I got back from the Delmarva Star Party yesterday. There was about 50 to 75 people. They gave out some nice door prizes. They gave away 1 small Celestron and 1 small Orion telescope. 4 or 5 gift certificate to different company. I won a gift certificate for a set of Bobs Knobs. Now on to the observing.

Thursday:

We had very clear skies all day and night with temperatures in the low 70's during the day and mid 50's during the night . I observed from sunset till 3 am, and viewed 18 object some I have never saw before such as the Siamese Twins Galaxy in Virgo, NGC 449 Galaxy in Canes Venataci, and NGC 2264 Open Cluster (Christmas Tree Cluster) in Monaceros. Other object that I viewed were M42, NGC2392 planetary nebula in Gemini, M5, Saturn, M104, M65 & 66, M53, NGC 3242 Ghost of Jupiter, HGC4656.

Friday:

Wash out—The day started out bad, we had a couple of 5 minute rain shower in the morning, and stayed cloudy all day. The day time temperature in the low 80's. But, here come the evening temps in the high 50's and lots of rain and wind

Saturday:

The day continued from Friday night minus the rain. The wind was between 20 and 25 mph with gust around 30 mph. Partly to mostly sunny during the day with the high temperature in the low 60's. During the Delmarva Astronomy Club annual fish fry the in the late afternoon the skies clear up but still windy and cold. During the night the temperature got down to the high 30's to low 40's. I viewed the normal Messier object M52, 13, 5, 102, 104, 103, and 34. I made it an early night because of the coldness.

Clear Skies

Your 2009-2010 Officers

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Past President	Tim Milligan	410-841-9853	Milligan@integ.com

New telescope : 20" f/6

Greetings,

Many of you are aware that for some time now I have been working on a large 20" f/6 telescope which is now complete. I am sending this email to anyone or everyone that I think has expressed any interest, or might be interested, in this endeavor. If you really don't care about this, I understand, no offense taken, sorry for the SPAM. Hope you're doing well. Please delete the message. Others, read on...

This past weekend the new telescope was used for its first "serious" observing session in its fully completed form. Myself and many from our local astronomy club (West Hawaii Astronomy Club) went to a 9,100-ft site on Mauna Kea our club refers to as the "power station" site. The sky is perfectly dark, nearly 2 miles in the air and so above all significant water vapor, has routinely exceptional seeing, and we are at 19N latitude offering us many fine southern objects. I have attached a photo of the telescope taken at sunset by Andrew Cooper, our club President.

I decided on a 20" f/6 for a variety of reasons. One, a 20" seemed to be a good balance between making a big telescope, but not too big. I have made smaller mirrors in the past, and wanted to avoid a jump too far. I have always enjoyed the sharpness of longer focal lengths. Many years ago at the Winter Star Party I viewed through a 20" f/6 and it left a permanent imprint on my memory. I have heard of a few other 20" f/6's in existence, and comments about them have all been favorable. In making the mirror, the f/6 is much easier than shorter f/#. The image quality of a mirror improves with longer f/#, suffering less coma, more forgiving of alignment tolerances, and so forth. The length of the telescope and need of a ladder is the primary drawback.

About the mirror: The techniques I used were those I learned at the Mid-Atlantic Mirror Making Seminar in 2006. Each spring the Delmarva Stargazers host a single-weekend mirror making seminar. They teach how to make a mirror using very tried and true principles. I attended their 2006 seminar and had a wonderful time meeting many wonderful persons, and learning a LOT in the process. At that event I made a 10" f/6. The 10" f/6 proved to be a spectacular telescope. To make the 20" f/6 mirror, I followed the same techniques with as few changes as I could get away with. The primary differences were the logistics of handling larger, heavier disks and I had to use a sub diameter tool for figuring. Otherwise, nothing different. I confirmed what I suspected, that making the 20" f/6 was no different than the 10" f/6. "Less worrying, more grinding", they say! The image quality of the telescope seems very good, as no object appeared less than perfectly presented. I have not made that many mirrors, and can vouch that it is very do-able to make a mirror of good quality and of significant aperture. My observing colleagues tell me that the image quality seems excellent.

The telescope itself is a fairly standard 20" f/6 Dobsonian. I closely followed the Berry/Kriege book "The Dobsonian Telescope", which means it an Obsession-style telescope. For the same reasons as the mirror making, I decided to avoid innovation, and stick to what is proven to work well. The Berry/Kriege/Obsession design is very thoroughly described in their book and is based on very sound engineering principles. Making the telescope was completely straightforward and presented no significant challenges thanks to the quality of the book.

To make the telescope (from concept to observing) was about 2 years of occasional weekend/occasional evenings work. I made three sets of parts for three 20" telescopes (different story for another time), which increased the time to complete significantly. If I would have made just one 20" f/6 by itself, a year of work is about what it would have taken.

Although in theory it could fit in a Toyota 4-runner, and one time I tested and it did fit, there isn't room for anything else. A local outlet recently had a sale on nice, covered trailers, so I bought one. With the trailer being towed behind the 4-Runner, the vehicles seem almost empty. I upgraded to an 8' ladder (taller than needed for most objects, but a taller ladder is more stable, even if only going up a step or two) and some other odds and ends. I can take non-folding chairs and other such comforts of home when going observing.

Observing with the telescope was every bit as spectacular as I had hoped for. Some select highlights: Whirlpool Galaxy/M51 - the arms of the galaxy are clear and obvious to see. Eta Carina Nebula is bright with all sorts of dark features. Giant globular Omega Centauri is beyond description. It spans about the diameter of the full Moon. The Antenna galaxies (NGC 4038/4039) could easily see distorted shapes of these interacting galaxies. Edge-on galaxy NGC 4565; just like the pictures. No field in the Virgo/Coma area was without some galaxy being visible, and in most places numerous galaxies in each field. In the summer Milky way, each and every Messier object was bright and obvious. M-57 seemed artificial it was so bright and sharp. The overall impression from the people that looked through the telescope was that it makes these showpiece objects look very similar to the pictures, and do not require leaps of imagination. For example, when looking at M-51, the arms are obvious. None of that "..if you squint real hard and look to the side, you might glimpse the arms…"

More about the night is here: http://www.darkerview.com/darkview/index.php?/archives/1687-Another-Dark-Night-on-Mauna-Kea.html#extended

So, it is done. Or as we say here…"all pau!"

Aloha!

Craig Nance

Magazine Subscriptions

As a paid member of DMSG, you can sign up/renew your S&T or Astronomy mags through the club for a discount over private rate. S&T, reg. $42.95, is $32.95 thru DMSG, Astronomy, reg. $44, is $34. See Michael Lecuyer for details.

(LaPlace from page 2)
same direction. The rotation of the moon on its axis may also be reckoned, but as to the rotations of the satellites of the other planets we cannot speak with any confidence, as they are too far off to be observed with the necessary accuracy. We have thus thirty circular movements in the solar system connected with the sun and moon and those great planets than which no others were known in the days of Laplace. The significant fact is that all these thirty movements take place in the same direction. That this should be the case without some physical reason would be just as unlikely as that in tossing a coin thirty times it should turn up all heads or all tails every time without exception.

We can express the argument numerically. Calculation proves that such an event would not generally happen oftener than once out of five hundred millions of trials. To a philosopher of Laplace's penetration, who had made a special study of the theory of probabilities, it seemed well-nigh inconceivable that there should have been such unanimity in the celestial movements, unless there had been some adequate reason to account for it. We might, indeed, add that if we were to include all the objects which are now known to belong to the solar system, the argument from probability might be enormously increased in strength. To Laplace the argument appeared so conclusive that he sought for some physical cause of the remarkable phenomenon which the solar system presented. Thus it was that the famous Nebular Hypothesis took its rise. Laplace devised a scheme for the origin of the sun and the planetary system, in which it would be a necessary consequence that all the movements should take place in the same direction as they are actually observed to do.

Let us suppose that in the beginning there was a gigantic mass of nebulous material, so highly heated that the iron and other substances which now enter into the composition of the earth and planets were then suspended in a state of vapour. There is nothing unreasonable in such a supposition indeed, we know as a matter of fact that there are thousands of such nebulae to be discerned at present through our telescopes. It would be extremely unlikely that any object could exist without possessing some motion of rotation; we may in fact assert that for rotation to be entirety absent from the great primeval nebula would be almost infinitely improbable. As ages rolled on, the nebula gradually dispersed away by radiation its original stores of heat, and, in accordance with well-known physical principles, the materials of which it was formed would tend to coalesce. The greater part of those materials would become concentrated in a mighty mass surrounded by outlying uncondensed vapours. There would, however, also be regions throughout the extent of the nebula, in which subsidiary centres of condensation would be found. In its long course of cooling, the nebula would, therefore, tend ultimately to form a mighty central body with a number of smaller bodies disposed around it. As the nebula was initially endowed with a movement of rotation, the central mass into which it had chiefly condensed would also revolve, and the subsidiary bodies would be animated by movements of revolution around the central body. These movements would be all pursued in one common direction, and it follows, from well-known mechanical principles, that each of the subsidiary masses, besides participating in the general revolution around the central body, would also possess a rotation around its axis, which must likewise be performed in the same direction. Around the subsidiary bodies other objects still smaller would be formed, just as they themselves were formed relatively to the great central mass.

As the ages sped by, and the heat of these bodies became gradually dissipated, the various objects would coalesce, first into molten liquid masses, and thence, at a further stage of cooling, they would assume the appearance of solid masses, thus producing the planetary bodies such as we now know them. The great central mass, on account of its preponderating dimensions, would still retain, for further uncounted ages, a large quantity of its primeval heat, and would thus display the splendours of a glowing sun. In this way Laplace was able to account for the remarkable phenomena presented in the movements of the bodies of the solar system. There are many other points also in which the nebular theory is known to tally with the facts of observation. In fact, each advance in science only seems to make it more certain that the Nebular Hypothesis substantially represents the way in which our solar system has grown to its present form.

Not satisfied with a career which should be merely scientific, Laplace sought to connect himself with public affairs. Napoleon appreciated his genius, and desired to enlist him in the service of the State. Accordingly he appointed Laplace to be Minister of the Interior. The experiment was not successful, for he was not by nature a statesman. Napoleon was much disappointed at the ineptitude which the great mathematician showed for official life, and, in despair of Laplace's capacity as an administrator, declared that he carried the spirit of his infinitesimal calculus into the management of business. Indeed, Laplace's political conduct hardly admits of much defence. While he accepted the honours which Napoleon showered on him in the time of his prosperity, he seems to have forgotten all this when Napoleon could no longer render him service. Laplace was made a Marquis by Louis XVIII., a rank which he transmitted to his son, who was born in 1789. During the latter part of his life the philosopher lived in a retired country place at Arcueile. Here he pursued his studies, and by strict abstemiousness, preserved himself from many of the infirmities of old age. He died on March the 5th, 1827, in his seventy-eighth year, his last words being, "**What we know is but little, what we do not know is immense**."

Ed. Notes—

Laplace also came close to propounding the concept of the black hole. He pointed out that there could be massive stars whose gravity is so great that not even light could escape from their surface. Laplace also speculated that some of the nebulae revealed by telescopes may not be part of the Milky Way and might actually be galaxies themselves. Thus, he anticipated Edwin Hubble's major discovery 100 years in advance.

Lapace's effort helped to move the solar system model from a geometric model to a mathematical model. His equations lasted through the 19th century. Advancements in mathematics corrected minor errors in his formulas.

Smyrna Health and Wellness Center 100 South Main Street Smyrna, DE 19977

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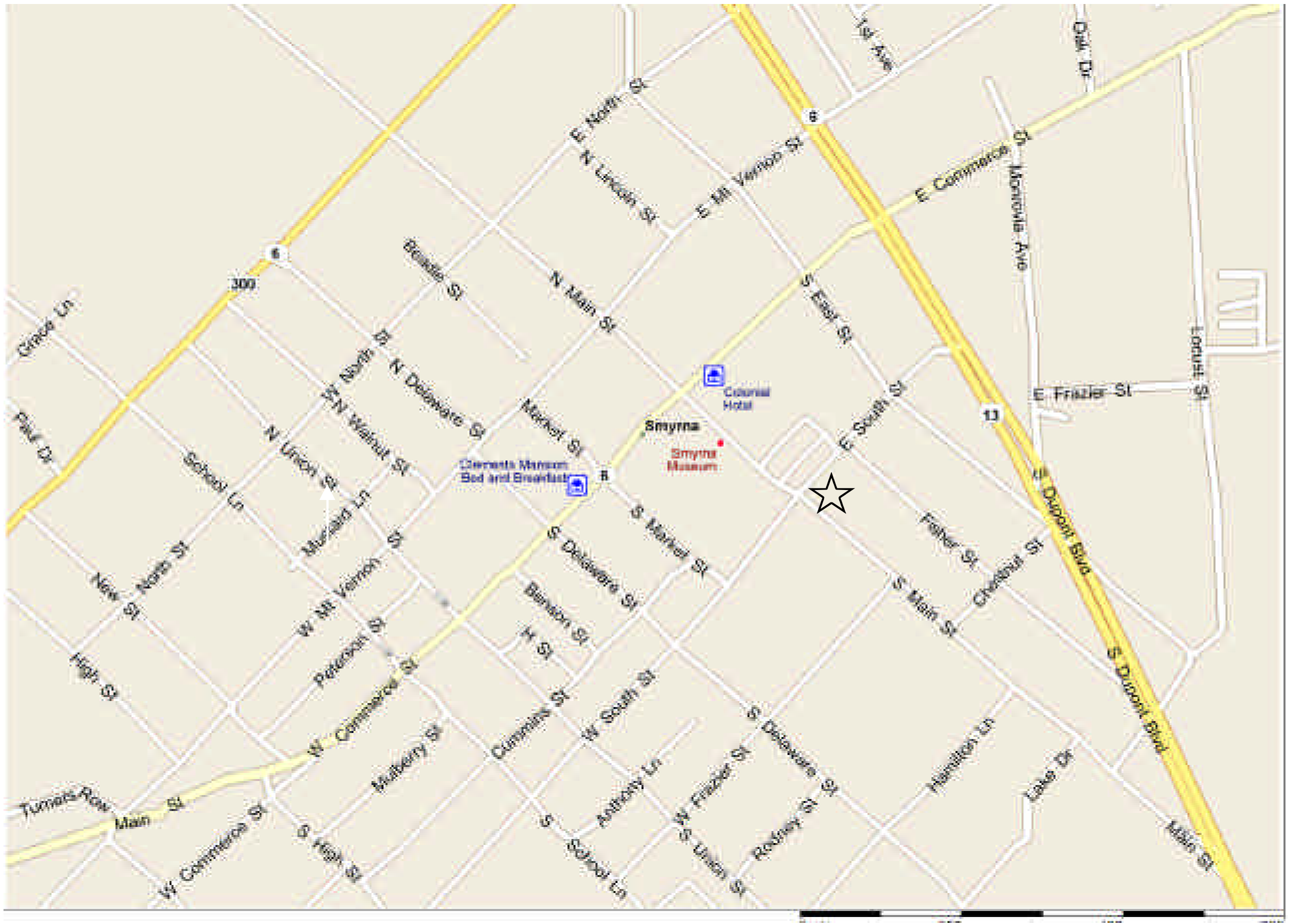

The May Sky—From Half-Hours with the Stars (1911)
RICHARD A. PROCTOR, F.R.A.S.

The Great Bear (*Ursa Major*) occupies all the upper sky from the west to north, except a small space occupied by the Hunting Dogs (*Canes Venatici*). The Pointers are in the northwest, almost horizontal. A line from the Pole Star (a of the Little Bear—*Ursa Minor*) to the Guardians of the Pole (ß and γ) now occupies the position of the minute hand of a clock 3 minutes past an hour.

Due north, low down, lies *Cassiopeia*, while above, somewhat toward the east, we find the inconspicuous constellation *Cepheus*. The Camelopard is in the west of north, and getting upright.

Low down in the northwest lie the Charioteer (*Auriga*), and the head stars of the Twins (*Gemini*) further west. The Crab (*Cancer*) is nearly due west, the Sea Serpent (*Hydra*) holding his head almost exactly to the west point. Above is the Sickle in the Lion, its blade curved downward, and the tail of the Lion (*Leo*) lies above, toward the south of west.

On the Serpent's back we find the Cup (*Crater*) and the Crow (*Corvus*), in the southwest and to the south of southwest respectively. Above these constellations, and extending beyond the south toward the east, the Virgin (*Virgo*) occupies the mid-heavens.

Above the Virgin we see the Herdsman (*Boötes*), his head and shoulders nearly overhead. Low down in the south is the Centaur (*Centaurus*), bearing on his spear the Wolf (*Lupus*) as an offering for the Altar (*Ara*), which, however, is invisible in these latitudes. Above the Wolf we see the Scales (*Libra*), while the Scorpion (*Scorpio*), one of the few constellations which can at once be recognized by its shape, is rising balefully in the southeast.

The Serpent Bearer (*Ophiuchus*) bears the Serpent (*Serpens*) in the mid-heavens toward the southeast, the Crown (*Corona Borealis*) being high up in the east, close by the Serpent's head.

Low down in the east is the Eagle (*Aquila*), with the fine steel-blue star *Altair*, the Swan on the left about northeast, and above it the Lyre (*Lyra*), with the still more brilliant steel-blue star *Vega*. Hercules occupies the space between the Lyre on the one side and the Crown and the Serpent's head on the other. He is high up, due east.

Lastly, the Dragon winds from between the Pointers and the Pole round the Little Bear, toward Cepheus, and then eastward toward the feet of Hercules, close by which we see his head and gleaming eyes (ß and γ).

Astrophotos by Members and Friends

I took the image during the winter. I noticed while I had a focal reducer on the AP 130mm telescope that M 97(the Owl Nebula) and M 108 shared the same field and made a pretty combination. The image was taken with a SBIG ST-10 camera. It is a stack of 24 three minute images per RGB filter, 12 half-hour Ha filter, and 30 six minute images through a clear filter. The Ha data was blended with the Red and the final was a LRblendGB image.

Joe Morris

M51 from Blackbird State Forrest. 8" f/4 on Orion Atlas. Canon Xti @ ISO 1600 19 x 45 second unguided exposures.

Cal Estrada

Here are a couple of shots from BBSF 4/10/2010...shot with my Canon XTi and an 18-50MM Sigma F2.8 lens...approx 5 seconds.

This is Orion setting...

and this is Venus & Mercury just after sunset...

Don...

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

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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.

Moondark is on hiatus this month. The column should return soon. Look here or keep an eye out on the *Moondark web site*).