PeGASus
Newsletter of the
Royal Astronomical Society of Canada
Prince George Centre

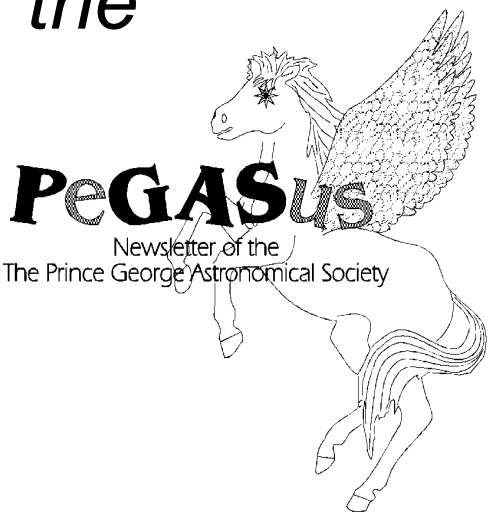
The RASC-PG meets next at 7:30 pm Wednesday May 26 at The Observatory

Map on Page 2

MAY 2004

In Issue # 137

the

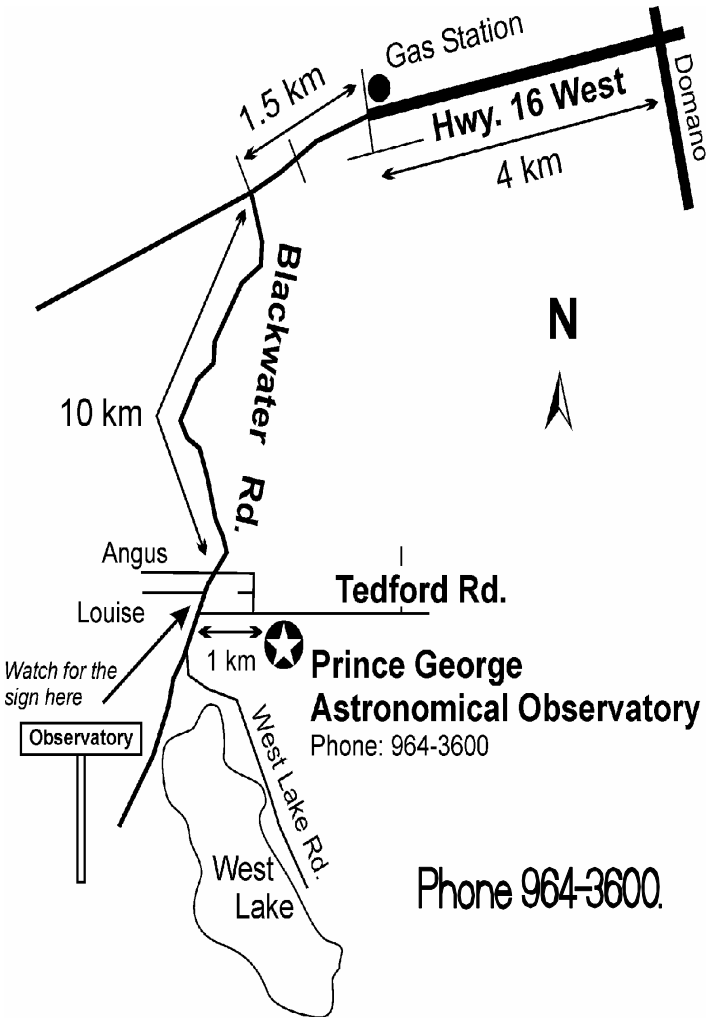


Also This Month;

2

the PeGASus
is published monthly by the
Royal Astronomical Society Canada
Prince George Centre

Our pursuits are out of this world.
Our activities are astronomical.
Our aim is the sky.



Contributions to the newsletter are welcome.

Deadline for the next issue is

August 14

PeGASus Editor
Gil Self

Send correspondence to
Prince George RASC
7365 Tedford Road
Prince George B.C.
V2N 6S2
or
gil-pg@shaw.ca
phone:964-3600

you can renew your membership at
www.rasc.ca/princegeorge

Editorial

By Gil Self

Good news !

We have ordered three great new eyepieces and a two times barlow for the big scope. We also ordered a JMI motor focuser for the soon to be installed flip mirror assembly. If this all works as designed (and I have all the confidence in the world in Bob's design), we will have an f/4 scope. Just think about that. We are very fortunate to have a large, equatorial scope. Sure more and more folks are building big scopes, but the ones I have seen are dobsonians. That's ok for a small scope but when you have to crawl up an eight foot ladder in the dark to look through an un-driven scope, I think it looses some of it's lustre. No, our 24 inch on the solid mount with the eyepiece back behind the primary is perfect. Now make it an F/4 —sure the prime focus is up by the secondary but the wide field will more than make up for the added inconvenience. With a high speed CCD camera up there you probably will prefer it over eyepieces anyway. The design required a very complex secondary, if it works as planned , it will be awesome!!

The other item soon to arrive is a high quality equatorial goto mount. The black Celestron C-8 will be mounted on this drive. This combination of a high quality scope and mount opens all kinds of possibilities. I think this is the item that will really open the door to a lot of people. Members who don't feel comfortable leading sky tours will have a tool to help them out. Folks that bring their own scope out for open house or tours will likely use this scope as well as their own since it will be easy to set up and will require little attention. With the built in sky tours, guests will be able to operate the scope themselves. I have to admit that I don't get out under clear skies as often as I would like and with the frequency of partially clouded nights, I often have difficulty finding my way around. I am guessing there might be a couple of other members in the same situation. With the laser pointer the goto scope and without the dome in the way, we should be able to put on a much better "show". This unit comes with a very sturdy tripod. The drive is powered by 12 volts, this combined with our laptop should also make this a very useful portable scope.

I hope everyone has a great summer. There will be several work bees throughout the summer, we will keep everyone up to date by e-mail. If you can make it out to lend a hand we would love to see you.

Faye Mooney , my best regards.

Looking forward to your contributions to PeGASus

Gil Self

Coming Events

Next General meeting Wednesday May 25th
at the observatory 7:30pm

The Night Sky for June 2004

by Bob Nelson, PhD

Hi Folks,

As is often the case, I am late with the copy this month (sorry Gil!!!). As I write this it is a beautiful day outside, an early arrival of summer – much welcome (but oh, the forest fires and water shortages to come!). Progress is continuing on the flip secondary at a slow but steady rate. I hope to have it finished and installed in June. (There, you can hold me to it!) When it and the Newtonian focuser are mounted, we will be able to take good CCD images with my SBIG ST-9, a modern CCD camera that will be well matched to the pixel scale. (It has 512x512 pixels and a 11-second download time!) We will also be able to observe visually at the Newtonian position, but we will need a bigger ladder. It may well not be worth it; we shall see. Anyway, here is what is happening in our skies during the short June nights.

PLANETARY ROUNDUP

MERCURY is in superior conjunction (on the far side of the Sun) and is therefore lost in its glare for most of the month.

VENUS, as an evening planet at the beginning of the month, setting an hour after sunset on the first. On the 7th, it not only undergoes inferior conjunction, it also makes a rare transit of the Sun!!! Sadly, it occurs after sunset at this location (it's largely an Asian event). You can't see it in Hawai'i, either (owing to its more southern location), but it will be visible in the Yukon – the further north the better. In Whitehorse, second contact occurs about 50 minutes before sunset, when the Sun will be 3.1 degrees above the horizon. In Dawson City, second contact occurs 2 hours before sunset when the Sun will be 7.1 degrees altitude, and in Inuvik, at second contact the Sun will be 8.2 degrees altitude and there will be no sunset, as the Sun is circumpolar at that date. This sounds like the place to be, unless you can afford to travel to Japan or places further east.

MARS passes from Gemini to Cancer on June 20, sets at mid-month at about midnight. Almost gone (conjunction occurs mid-September).

JUPITER, in Leo until August, sets at mid-month at 1:15 PDT, at about the centre of our short viewing window. Going, going, gone!

SATURN, in Gemini until 2005, sets at mid-month at 22:55 PDT, an hour after sunset, and is still there for the die-hards. It has now shrunk to a 16.6" disk of magnitude 0.1.

URANUS, in Aquarius until 2009, rises at mid-month at about 01:00, PDT. Since this is at the middle of a very small observing window (2 hours long in June at these latitudes!), it might be worth going after. As usual, it's a 3.6" disk at about magnitude 5.7.

NEPTUNE, in Capricornus until 2010, rises at mid-month at 00:16,

PDT. Wait 'til fall for better views. As usual, it's a 2.3" disk at about magnitude 8.0.

PLUTO, in Serpens until August, rises at mid-month at 20:11 PDT. Since it transits at about 01:00, it could be a good target with our big scope. As usual, it's a 0.1" disk at magnitude 13.8

Summer Solstice (for northern observers) occurs on June 20 at 17:57 PDT.

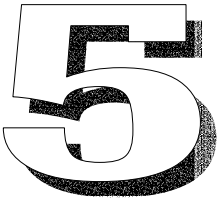
CONSTELLATIONS to look for in June (at midnight, PDT) are Corona Borealis, Hercules, Serpens Caput, Scorpius, and Ophiuchus.

In **Corona Borealis**, there are no Messier objects; but there are two interesting stars that I talked about last year: Alpha Corona Borealis (CrB), a 17 day eclipsing binary of the Algol type and R Coronae Borealis (R CrB) which is the prototype of a small but distinctive class of variable stars. There is also the Corona Borealis Galaxy Cluster. Located at the southwest corner (lower left) of the constellation, it contains more than 400 galaxies, all concentrated in an area less than the Moon's area (a disk 0.5 degree wide). Most are elliptical galaxies - to be expected in a rich cluster - but most are dimmer than about 16.5 mags, so you won't see them in the average eyepiece. Maybe our 24" would give you a glimpse on a dark, clear night, but a better bet is to take a CCD image (which is child's play on our telescope!). The distance to the cluster is around 1 to 1.3 billion light years.

Hercules ("The Son of Zeus") contains, of course, the famous Hercules (globular) cluster M13, one of the three finest globulars in the sky. Hercules also includes M92, another globular lying some 35,000 light years distant, discovered by Bode in 1777 and Messier, independently in 1781. Let's compare the two clusters giving M13 first, followed by M92. Overall visual magnitude (6.4, 9.3), angular size (12.9', 5.9'), distance (21,000, 35,000 light years), diameter (79, 60 light years), total luminosity (250,000, 50,000 solar units), age (10 billion years, ›slightly less). So if you are keeping score, M13 wins by a lot - it's bigger and brighter not only because it's 1/3 closer but also because it contains many more stars. Both are, of course dwarfed by Omega Centauri.

Libra ("The Balance") contains no Messier objects. It does, however, lie far from the Milky Way and contains many galaxies NGC 5xxx plus the globular cluster NGC 5897, a large and loosely-structured cluster.

Serpens Caput and Serpens Cauda ("The Serpent"). Caput, the western half, lies off the Milky Way and contains the spectacular globular M5 (the fifth brightest, after Omega Centauri, 47 Tuc, M22 in Sgr and M13 in Her) lying some 26,000 light years from us.



It's one of the oldest objects around, dated at 13 billion years and must have formed very early in the history of the universe.

Cauda, the eastern half, lies essentially on the Milky Way but is not part of the luminous band owing to the large amount of intervening dust. It contains M16, the famous "Eagle Nebula" (with its EGGs). M16 lies some 8000 light years away in the great Sagittarius arm of the Galaxy.

Ophiuchus ("The Holder of the Serpent" -- and separating the two halves) contains numerous globular clusters -- Messiers 9, 10, 12, 14, 19, 62 and 107 -- too many to discuss! The southern part of the constellation lies in the rich portion of the Milky Way (see below).

Scorpius ("The Scorpion") contains numerous globular clusters: M80, about 4 degrees northwest of Antares (Alpha Scorpii), M4, just one degree west of Antares, M62, about 7 degrees southeast of Antares, and M6, near the tail of the beast (which will be very low in our northern skies) plus other NGC globulars.

Clear skies,
-Bob

Bringing the Cosmos to you -

deciding on a telescope – part 1

By Maurice Sluka

This is the first in a series of articles examining different types of telescopes and what to look for and what to avoid. Astronomy can be a wonderful way to learn about science, universe around us, and appreciate nature. It does not take any special requirements to get started other than an interest. A telescope can bring the universe to you, by collecting those photons of light that may have been traveling for millions of light-years, to your eyes.

There is much to consider when deciding on a telescope, this article is intended to help narrow down the selection for the first time buyer. The factors to consider are: cost, optical quality, and type of design in regards to: ease of use, type of use, and portability.

Cost

The cost of a telescope, at first glance may seem high, but the value can be appreciated when one considers the very high manufacturing accuracy required to provide good views. The telescope must accurately focus photons of light, through a series of lenses or reflecting off mirrors. The minimum amount that one should consider spending is about $400.00. There are very few scopes available for less that function well and the quality of construction and performance can be very frustrating. There are a number of designs that offer very rewarding and pleasing views for under $1000, such as a reflecting dobsonian. The costs can go up from there depending on design and viewing requirements.
One option that can be considered is building your own telescope, if one is an experienced observer, has the time, is handy and enjoys building. With the exception of the eyepieces all the components can be hand made including the mirrors. One can also buy a kit & mirrors to build a high quality telescope in less time. The best value of the dollar is in the 10" and bigger aperture for a kit, since compete telescopes in smaller sizes are very well priced now.

Optical quality & telescope design

There are two basic design types of telescopes: refractors, using lenses to collect & focus the light, and reflectors which use mirrors to collect & focus the light. The optical quality required for a telescope is very high because to provide clear & sharp images, the mirrors and lens need to be of high quality and accurately aligned. The surfaces of lens or mirrors must be accurate under a fraction of wave of light. Aperture size (the diameter of the opening of the scope) is very critical to the performance of the scope. The larger the aperture the greater amount of light is gathered, providing a brighter image of dim objects like galaxies and nebula. With the greater amount of light the more magnification can be used, it is rare to use x200 power or greater power on a 8" scope. A 2" focuser can offer the use of a wider selection of eyepieces of 1.25" and 2" types. The bigger the scope (10"+) the less likely it will be used, and the added weight can be tricky if setting up at dusk or later. The views from a refractor are limited from smaller aperture, but are usually sharper and thus well suited to the moon and the planets. The fewer optical components the less light is lost from scattering of light, regardless of quality.

The tripod & mount should be as sturdy as possible, without being too heavy to move around. Without a steady mount it can be difficult to even focus the image. A good test to see if the mount and tripod is rigid enough is to look through the scope at the stars and tap the scope. Count the seconds it takes the image of the star in the eyepiece to stop moving, 1 to 2 seconds is very good and anything over 4 seconds is poor. Tripod legs are available in wood

(sturdy but less common), aluminum (delicate and sometimes too flexible), steel: square & round (sturdy but heavier, round tube is usually more rigid).

Construction materials

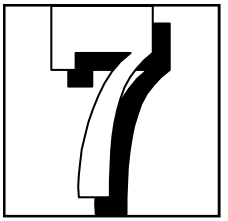
There are a number of materials to consider such as:
Plastics –cheap to build & light weight, but are less rigid than steel (not well suited to gears), delicate and sensitive to temperature change
Aluminum – light weight and durable
Cardboard sono tube – inexpensive and sturdy, too much moisture could weaken it over time
Metals – heavy but very strong and durable
Plywood – sturdy and is not overly heavy.
Particle board – the added weight can make it steady, but is more delicate that plywood

Buying

Avoid an impulse purchase, far too often people buy a starter telescope and it does not perform to expectations and may be difficult to use because the buyer does not know what to look for. Educate yourself so you know what kind of viewing you enjoy, some designs are better suited to different observing. Check prices across Canada and the US they can vary up to 20% (remember to check all the shipping, exchange, handling, and GST charges), these can also make the difference in total price, depending on where they come from. It is best to buy from a retailer that a large part of their business is for astronomy; they can offer more models and options suited to your requirements.

What to avoid

There are number of things to be cautious of, such as advertising magnification of high power of x300 or more (very rarely used, even on big 10" scopes), a tripod or mount that is too light or flexible, delicate plastic parts, eyepieces smaller than 1.25". If you find lots of websites with "fixes" for a type of scope, perhaps that scope needs work to function well and maybe the quality is lacking or is inconsistent. Is the scope you are considering the cheapest of its type and aperture? It might have poorer quality or assembly, investigate further.



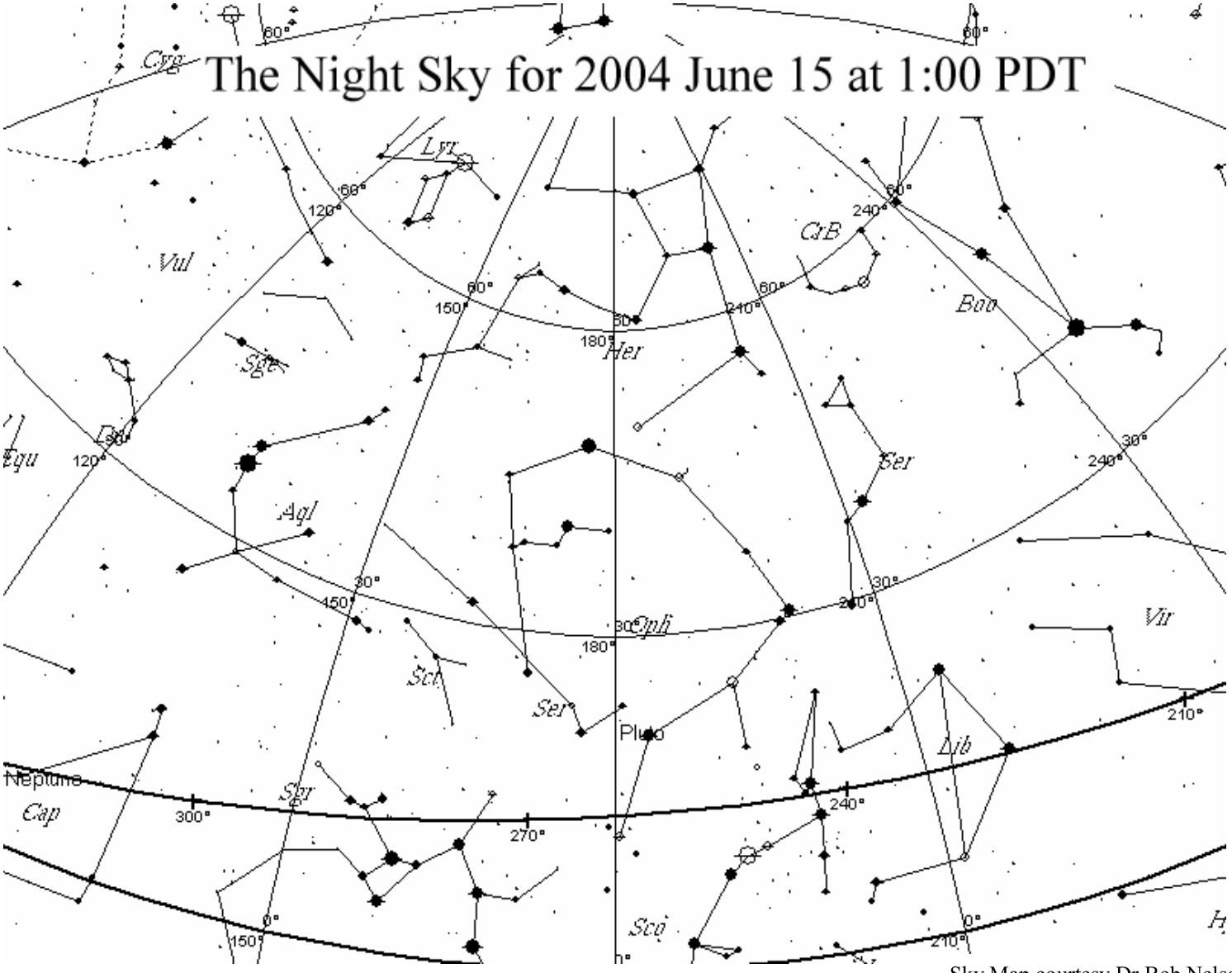
Before you buy, research & view:

Research the different types available & read reviews; some designs are better suited to different types of observing than others. There are a few good websites for reading reviews, such as scopereivews.com and cloudynights.com. Consider joining the local astronomy club (a very good value), you can learn a great deal and hopefully avoid some of the pitfalls. Buy a few books on astronomy and check out the magazines.
Probably the most valuable thing you can do is visit the RASC Prince George Centre and talk to the members and look at & through different scopes. Then you will have an idea of what to expect for a particular telescope or style.

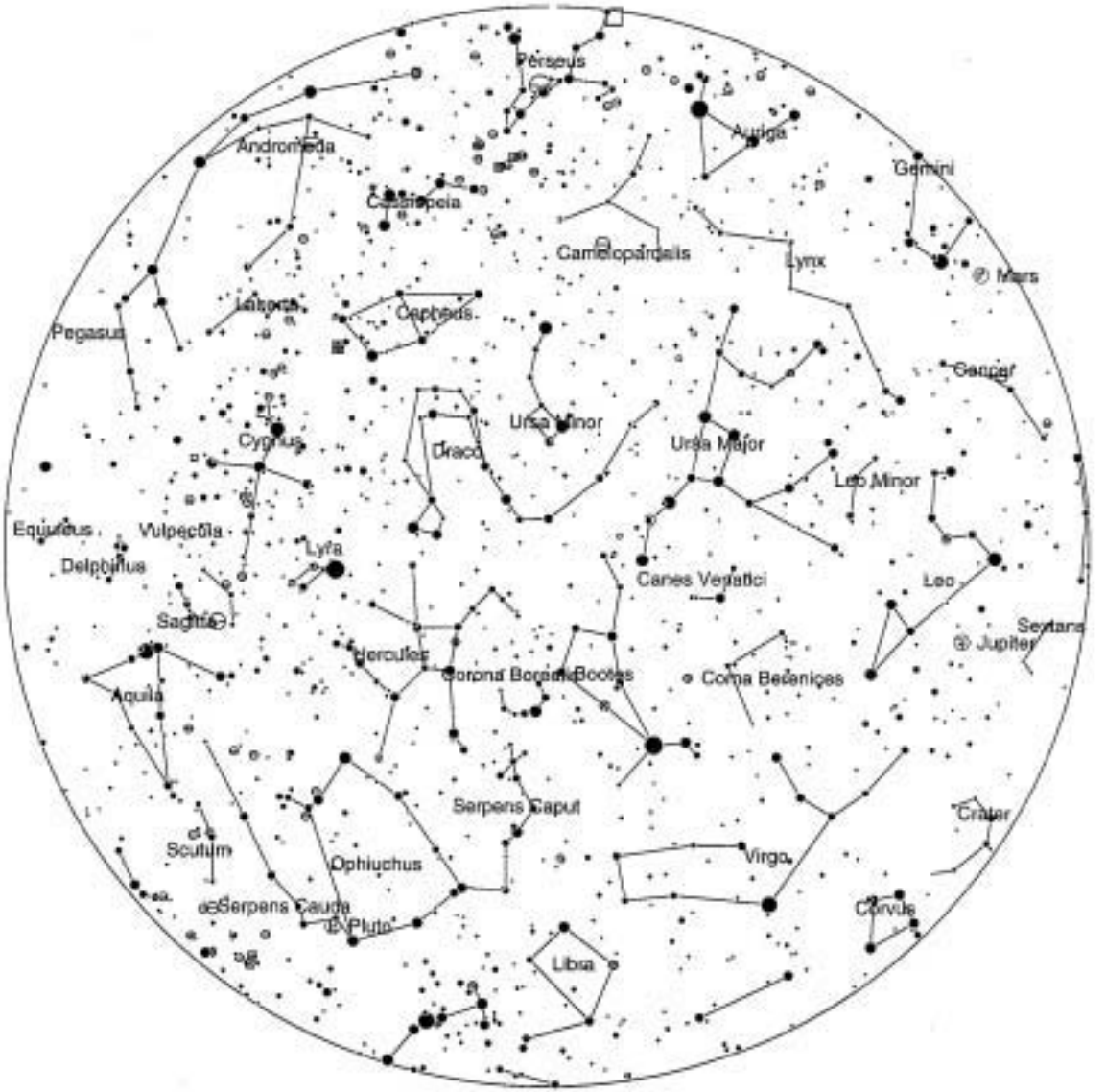
Stay tuned as I examine the different designs available and their features as this series continues.

By Maurice Sluka

The Night Sky for 2004 June 15 at 1:00 PDT



Sky Map courtesy Dr Bob Nelson



SOUTH

P.G. Astronomical Observatory

June 15, 2004

23:00 hrs.

Hi guys
Here are some photos for the current issue.
All are taken with Vesta pro web camera modified for long exposure, although
these photos are not long exposures.
Wayne

Type: Scarp
Geological period: Imbrian (From -3.85 billions years to -3.2 billions years) ?
Size:
Dimension: 110x0Km / 67x0Mi
Height: 300m / 900ft
Height/Wide ratio: 0.0027
Description:
Rectilinear fault situated on the East bank of Mare Nubium. Connects Thebit D to the North with a small mountain to the South. Slope inclined to 7° only. Slope covered with bright materials.
Observation:
Interest : Exceptional formation
Observation period: 1 day after First Quarter or Last Quarter
Position:
Longitude: 7.0° West
Latitude: 22.0° South
Quadrant: South-West
Area: Mare Humorum region

Size:
Dimension: 110x110Km / 67x67Mi
Height: 0m / 0ft
Height/Wide ratio: 0.0169

Description:
Circular formation situated on the North bank of Mare Humorum. Steep slopes to the North gobbled to the South in Mare Humorum and supporting the couple Gassendi A and B to the North.Walls higher to the West and gobbled to the South in Mare Humorum. Very large flat floor covered by Rimae Gassendi. Internal mountainous ring. Double central mountain 1200 m high. Hills craterlets and lines of crest.

President Bush's Space Initiative, a commentary

By Maurice Sluka

I support President Bush's space initiative, not for political reasons, but I believe it is best for humanity. This program with solid long term backing would work to challenge ourselves in all scientific and engineering fields. When we are challenged to innovate, we can bring out the very best of human nature.

We must apply ourselves to push forward the limits of technology and beliefs of what we are capable of. I believe President Bush, got it half right when he said we could find resources that could boggle the mind, on the moon and Mars. Our most tangible and readily available resource to be found is ourselves and what we can learn. This program could develop an interest and demand for more scientific interest and knowledge and motivate us to achieve more for all humanity, by capturing the interest of the people. Even those who are not directly in the sciences or engineering fields would still benefit from a greater appreciation of the universe and the advantages of critical and analytical thinking. Such an effort if maintained would bring unprecedented abilities and understanding to society and industry, launching a new era, where we can have optimism for the future.

We must dream big and be prepared to back those dreams. This initiative can start on a permanent presence in space, that could some day become self-sufficient. There are many valuable programs that should not be sacrificed to establish a moon base. Most of the funding for the moon base and manned Mars mission currently will come from transferring funding from other programs.

In many fields of the economy, development and manufacturing is moving over seas from the first world. This gives emerging economies an opportunity to join the leading economic countries and provide a better standard of living and education to their peoples. This is why the first world nations must use their current ability to innovate and establish new fields of technology and industry, to not only demonstrate leadership but also widen the availability of what can benefit everyone.

The risks involved cannot be completely avoided, to paraphrase a fictional character "risk is our business". Pushing the limits of what we can achieve, is not without risk, but the benefits to humanity and our understanding of the universe is always in the balance.

There are many projects that NASA is working on and could advance faster, such as:

Project Prometheus, to develop and implement high performance nuclear technologies to power and propulsion to explore the outer planets. It is the only option for exploration beyond the moon, because of the distances involved and to reduce the time of radiation exposure in space to equipment and crews.

Jupiter Icy Moons Orbiter, a nuclear powered & ion engine spacecraft to explore Jupiter and it's moons & oceans.

Moon base, to establish a manned base to test new technologies, explore, and learn how to utilize moon resources. Robots could build much of this base, these robots could mine minerals, refine materials and prepare shelter components, before humans would occupy the base.

(Cont on page 12

More Missions to Mars, to learn about atmospheric and geological conditions and effects and how the can relate to Earth.

Re-launch the canceled New Horizons Pluto-Kuiper Belt mission, to explore far reaches of the solar system. If the a propulsion rocket stages we assembled in sections a direct course could be used to get the probe to Pluto before its orbit takes it too far away and its thin nitrogen atmosphere condenses as frost.

When launching missions, always send them in identical pairs of spacecraft, if one is lost the other can continue and if both are successful we get twice the information. Since these spacecraft are expensive to build, building a pair is a good value for all the engineering and development.

Expand community outreach education to encourage people to consider education in the sciences and engineering fields. This would also improve the public's understanding of the value of the space program.

Other possible projects that would aid in exploration:

The manned moon base would be a good opportunity to build large optical and radio observatories, these could be assembled, upgraded and maintained. With the low gravity building large structures would be easier to build.

Send survey probes to the asteroid belt for mining of rare minerals. Then test and develop robotic mining, refining, and manufacturing technology, so that free enterprise can retrieve these resources.

A manned maintenance/ repair and construction hanger in high orbit, this would enable the assembly of large spacecraft and other structures. To be the most useful it should be large enough to hold a spacecraft the size of the space shuttle or sections of larger ones. This hanger could be delivered in sections on disposable rockets in the shape of rings and then stacked together. This pressurized hanger would make assembly and maintenance far simpler than in open space.

With these facilities operational we could develop, construct, explore across the solar system and beyond. The initial cost would require funding higher that NASA has received in decades, but the benefits of a highly educated, literate, and optimistic generation would far outweigh the cost to fund NASA at a high level.

By Maurice Sluka

,

Summer Star Hop in Hercules

By Doug Wayland

Map on page 15

Just look for the small bold numbers on the map and match them to the corresponding numbers in the text. It is very important that you know the directions in your eyepiece. You can do this by nudging your scope in a known direction while looking in the eyepiece, note which part of the field the stars are appearing, that is the direction in which you were pushing the scope. You may have to do this for both finder and telescope

For the summer skies I have selected several double stars that should be viewable with less than dark skies. I have also included three globular star clusters, two planetary nebulas, one galaxy and one open star cluster.

1) We'll begin with double star Kappa or 7 Herculis just to the left of the 1 one on the map. You can star hop about 4 degrees SW from the naked eye star Gamma Herculis. The pair of stars indicated on the map show nicely in your finder scope, Kappa is the SW one of the pair. In a 57x eyepiece Kappa is a nice pair of yellow stars centered in a field of fairly bright stars. The primary is mag 5.3 and the secondary is mag 6.5. Position angle is 12 degrees and separation is 28 arc seconds.

2) Now go back to Gamma Herculis, which is a double star and our next target. This is an unequally bright pair of yellow stars. A 57x eyepiece is a good view, showing a nice bright mag 3.8 primary and a very dim mag 9.8 secondary well spaced at 42 " and a PA of 233 degrees. The pair is located in a field of dim stars.

3) For our next target, NGC 6210 planetary nebula, begin at Beta Herculis. Star hop about 3 1/2 degrees NE to the pair of stars to the left of the 3 on the map. In my 8x50 finder I could see what looked like a third star forming a triangle with the two. In a low power eyepiece this object still looks like a star. I increased the power to 147x and the planetary became obvious as a small ball that formed a triangle with two stars to its east. This planetary is listed as mag 8.8. It is about 3,600 ly away from us.

4) Go to the NW of the keystone of Hercules to the naked eye star Tau Herculis to start a hop to our next target, NGC 6058 planetary nebula. From Tau follow the line 6 degrees SW to the group of stars which include Chi Herculis. Center your finder cross hairs 3 degrees SE of Chi and you will be close to the NGC 6058. This planetary is very dim at mag 12.4 and will be a real challenge. It took about 147x and averted vision to see it in my 8" scope. It is located within a triangle of magnitude 9 stars. You definitely will need dark skies for this one, so you will have to wait until August. NGC 6058 is 8,500 ly away from us.

5) Return to Tau Herculis to hop to NGC 6229, the first and dimmest of three globular star clusters we will view in Hercules. In your finder follow the fairly bright stars as indicated on the map to NGC 6229 , 5 degrees ENE of Tau. This globular is fairly large and easy to see, but does not resolve into individual stars in my 8" scope. After finding it in a low power eyepiece, I increased to about 114x for the best view. This circular glow forms the western point of a triangle with two mag 8 stars. NGC 6229 is listed at mag 9.4 and is a very distant 102,000 ly away from us.
It is a cool comparison to the other two brighter globulars in Hercules.

6) The next target is the famous Hercules Globular Cluster, M13, easily found 1/3 of the way between Eta and Zeta Herculis on the West side of the keystone. M13 is mag 5.7 and looks good at

(Continued on page 14)

any power, but increasing the power to 100x or more starts to resolve the individual stars very nicely. Also noticeable at higher powers is the streamers of stars that appear to curl of the main body. Just less than 1/2 degree to the NNE of M13 is a faint mag 11.6 galaxy, NGC 6207. I could pick it up at 114x with averted vision even when there was some auroral glow in the sky, so it shouldn't be too hard with a 6" or larger scope under dark skies. You may have to move the bright glow of M13 out of the field to see the dim lenticular galaxy. M13 is about 150 ly wide and 26,000 ly away from us. NGC 6207 is much more distant at 46 million ly beyond M13.

7) Now for the third globular star cluster, M92. To find this I usually just position my finder at the point of a large triangle formed with Pi and Eta Herculis, as indicated on the map. With a small amount of fishing around I usually pick up this fairly bright globular. Start with a low power eyepiece and after you find it, increase to over 100x. At mag 6.4 it is only a little dimmer than M13 and starts to resolve in my 8" into points of light, super-imposed on and around the background glow of the rest of the cluster. There are several dimmer stars scattered around the field of view. M92 is about 110 ly wide and is 28,000 ly away.

8) Next put your finder on the NE corner of the keystone at Pi Herculis. About 2 degrees to the ENE of Pi, in your finder, you will see a bright star located just NW of a dim pair. That bright star is the double, Rho Herculis. In a 114x eyepiece this star is a striking, bright, close pair of stars. The primary is mag 4.6 and the secondary is mag 5.6. The separation is only 4.1" and PA is 316 degrees.

9) The next double is naked eye star, Delta Herculis, SE of the keystone. I like the view at 57x, it showed a bright mag 3.1 primary with a dim mag 8.2 secondary tucked close on the SW side. The bright one looked white and the dim one looked bluish purple to me. This is a nice view with the primary being the brightest star in the field.

10) Now look up at Hercules and slide your eyes south to his foot. This is Alpha Herculis, a beautiful, close, color contrasting double. Be careful not to fix on Alpha Ophiuchi, which lurks just under 5 degrees to the ESE of Alpha Herculis. Aim your scope at Alpha Herculis and with a 114x or so eyepiece you will see a bright orange star with a greenish and a little dimmer companion only 4.7" to the ESE. The primary is a variable star that varies from mag 3.1 to 3.9 over a period of 90 days. When it's at its brightest it tends to overwhelm the secondary and separation is tougher. I believe I have noticed this on different occasions of observing this double.

11) The last double in this tour is 100 Herculis, located 2 1/2 degrees due south of Omicron Herculis. I have been able to follow the naked eye line of stars ENE of Delta to locate Omicron. You have to be careful though, my atlas shows Omicron as being variable and it may be below nakaed eye visibility when you look. If it is, just use Chi Herculis, the one labelled like an E on the map, to hop from. 100 Herculis is the brighter star just to the left of the top of the 11 on the map. Once found, boost your power up to about 100x and you will be rewarded with a view of two bright eyes peering back at you from the abyss. There are only a few other dim stars scattered around the field. This pair is equally bright and white. They are mag 5.9 and 6, separation is 14" and PA is 183 degrees or N-S.

12) To hop to the last object of the tour, again use Chi as a starting point. The pattern of stars to the NE of Chi, as seen on the map, are easy to follow in your finder. Put your cross hairs on the location 3 1/2 degrees NE of Chi to view DoDz 9, a large, dim open cluster. Use a wide field, low power eyepiece to view. I found a field full of equally low magnitude stars. Not a bad view for such an obscure name as DoDz 9.

Have a good summer all.

Doug Wayland, e-mail: djwayland@hotmail.com

Summer Star Hop in Hercules

North is Up, West to the Right
by Doug Wayland
Stars to mag 8.0

Technical information from Night Sky Observers Guide by George Robert Kepple and Glen W. Sanner and from Sky Atlas 2000 Companion by Robert A. Strong and Roger W. Sinnott.

Map Courtesy Your Sky
web: www.fourmilab.ch/yoursky/