PeGASus

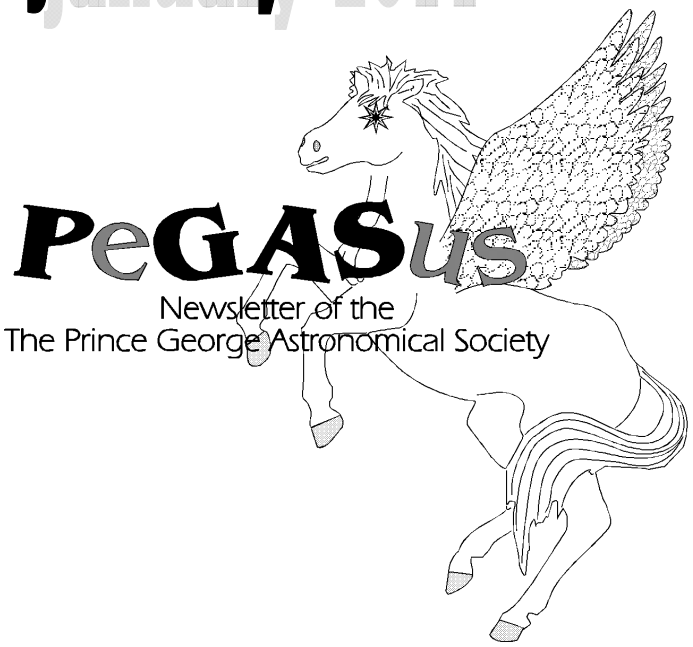
Newsletter of the

Royal Astronomical Society of Canada: Prince George Centre

Published: January to May & September to November. www/rasc.ca/princegeorge

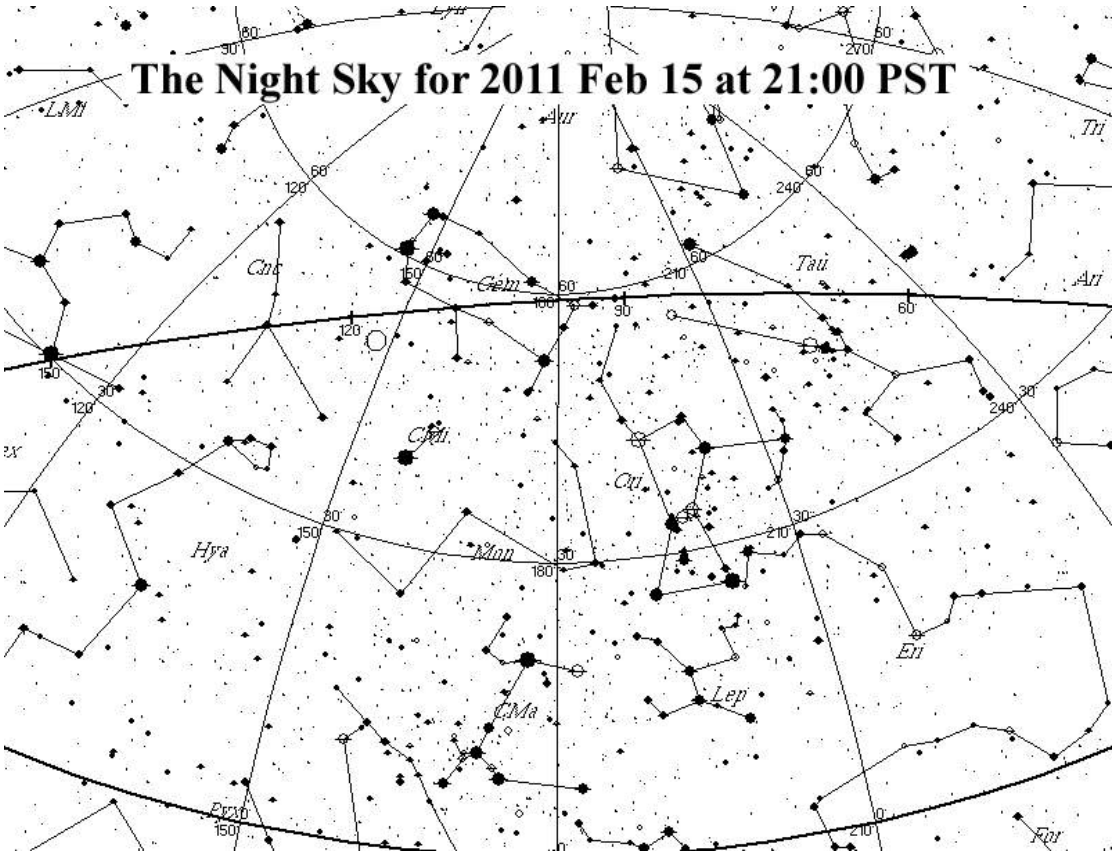
January 2011

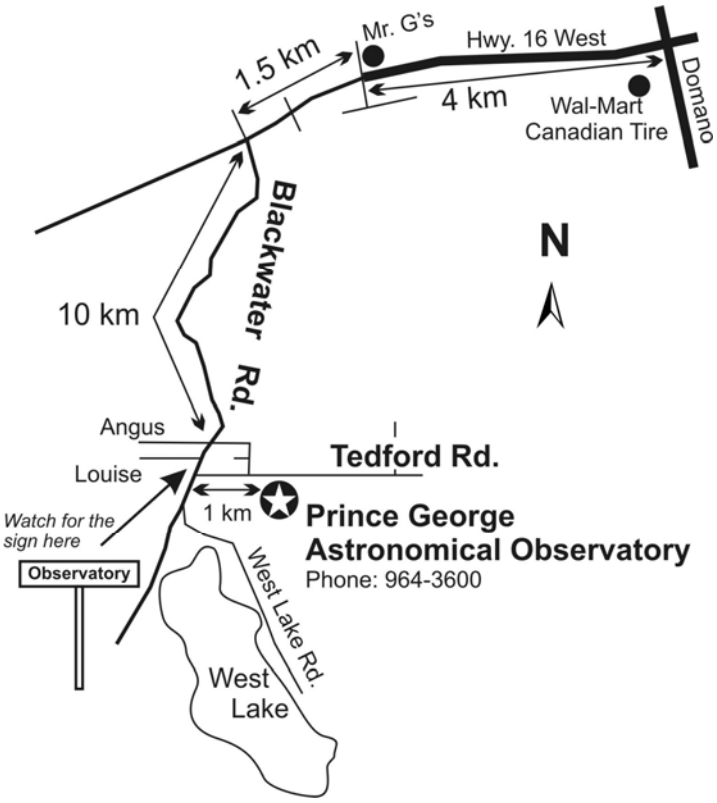
Our pursuits are out of this world.
Our activities are astronomical.
Our aim is the sky.



In Issue # 181

There is still time to Join NOVA
Next session February 12 7:30 pm at the Observatory
Small fee for members for Books and materials





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Contributions to the newsletter are welcome.

Deadline for the next issue is February 18,2011

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Coming Events

To Volunteer to help run an event please leave
A message At the Observatory 250-964-3600

Date	*Event*	*Time*	*Place*	*Volunteers*
Feb 9	Business Meeting	7:30pm	SpeeDee	Members welcome
Feb 4 /11/ 18/ 25	Open House	7:30pm	Observatory	Everyone welcome
Feb11 /12	— Members Viewing	7:30pm	Observatory	Members welcome
Feb12/ 26	— NOVA	7:30 pm	--Observatory	Everyone welcome

For an up to date list of the Volunteer Schedule / meetings / classes visit our website in the MEMBERS AREA
www.rasc.ca/princegeorge

Editorial

Gil Self

http://www.vts.bc.ca/pgrasc/index.html
Or
www.rasc.ca/princegeorge
Or
Google : PGRASC

Have you visited our website recently? There is a lot of useful material there. As I listed above its easy to find, two web addresses , and first hit for PGRASC on Google. Don't bother trying our other name PGAS, there is some company "Partitioned Global Addressing System' and of course the PGA if you want to find a golf course. We may be in there with 361,000 hits but I quit looking.

But, fact is it isn't hard to find. Once you get there first thing that greats you is our home page. The home page offers club contacts right at the top so if you don't know what to do next you can simply click the contact and write your question and we will get back to you. But lets take a look around. Scroll down on the home page and you will see a list of upcoming events, times and location. Most events are held at the observatory which is easy to find (my car even knows the way), but if your not sure there is a clickable link to a well marked map. On the left side is a long blue menu. This gives you access to everything else on our website. One of the most useful links is a few items down on the menu "Observing/ weather. Click on that link and you will be on a page that could keep you busy for the rest of the year. At the top are some useful aides, moon phase, solar activity (northern Lights?) . Just down a bit is a link to an active sky map, showing current sky and clickable. This is very handy, just print the map out and your set to go. But the next step is what separates the successful observers from the disappointed observers. Click on the clear sky clock , now click on the funny looking bar next to the Prince George Observatory. I have found these charts to be very useful and surprisingly accurate. You can predict the cloud cover , the seeing and the transparency (Friday night is looking pretty good) . I don't think I have had anything as accurate since Al Whitman was a , because he was professional forecaster. Try out the Clear Sky Clock.. You can also see the current sky conditions at the observatory. A little further down the page we feed a live weather cam .

Further down this page is what might keep you busy for the rest of the year. There is a very broad selection of viewing lists observing projects and reference aids. All free for the taking, pick a project that interests you , run it through your printer (don't forget to check the clear sky clock) and your set to go. There is also a lot of good material in the link- learning centre.

All of our previous newsletters are also available at the website , click on the link newsletters. There are a lot of local focus articles in these newsletters. Pretty good editorial back in January 2000 even if I do say so myself.

In the members area you will find everything you might need to know about the club, meeting minutes, constitution and by-laws and many handy logs and tracking sheets. One item that proves its value every now and than is the observatory operating procedures. Once upon a time close-down procedure was pretty simple, don't forget to put you flashlight in your pocket and don't forget to lock the door. Now there are a lot of steps, a new key holder will demonstrate familiarity with start-up and shut-down but print up a copy just to make sure you remember everything. Also new equipment brings new procedures , even folks that have been around for twenty plus years (me) have to look steps up from time to time.

There are some great articles in this newsletter. Thanks to the contributors and while you read these stories try and think if you have a story to tell. I have tried for the last few years to keep the newsletter ours, articles from members not cut and paste from the internet. Sometimes folks run out of ideas or burn out so if you can add an article even just once in a while than everyone is adding a bit , no one is pushing too hard.
Gil

The Night Sky for February 2010

by Bob Nelson, PhD

Hi Folks,

A new spring season lies before us, a new NOVA course has started, and lots of events are planned. The flip secondary has been installed on the big 'scope and works. Flipping back and forth between Cassegrain mode, Newtonian mode and back results in a star shift of less than 1/3 eyepiece diameter. (We need, of course, to keep an eye on this.) In the weeks ahead we'll install the Newtonian focuser, collimate the Newtonian optics, get the autoguider working and—hopefully—have some astrophotos to show. It's all very exciting (to me at least) and will be, I am sure, seen as a natural evolution of the telescope.

Anyway, here is what is happening in PG skies this month:

MERCURY is technically a morning object until its superior conjunction on Feb 24, after which it becomes an evening object. As always, it is hard to observe., but it's worse now, because right now, it's slightly below the ecliptic. On he morning of the 1st, it lies a paltry 2°46' above the SE horizon at sunrise.

VENUS, is a morning object all month. On February 1st, it lies 12° above the SSE horizon at sunrise (having risen 2.5 hours earlier—at 05:13). Then, its phase is 61% (gibbous) and diameter 19" and magnitude -4.3. By month's end, however, it rises at 05:32, some 2.5 hours before the Sun, and is a gibbous disk 71% illuminated, diameter 16" and magnitude -4.1. At sunrise, it's only 9.5° above the SE horizon. A small blob.

MARS, In Capricornus (until February 19, after which it passes into Aquarius), is technically a morning object, but it is very close to the Sun, and owing to the obliquity of the ecliptic (and the season), it rises at almost the same instant as the Sun. Forget it, chaps.

JUPITER, in Pisces until the 24th, when it passes into Cetus, is an evening object all month. At mid-month at sunset, it lies 28° above the SE horizon at sunset; it sets almost 4 hours later (at around 21:00 PST). It's a 35" disk of magnitude -2.1.

SATURN, in Virgo until late 2012, is a morning object all month. At mid-month, it rises at 21:30 PST, transits at 03:37, and lies almost 14° above the WSW horizon at sunrise. It's a 19" disk of magnitude 0.6.

URANUS, in Pisces until May, is an evening object all month. At mid-month, at sunset, it lies 24.5° above the WSW sky at sunset; it sets some three hours later, at 20:22, PST. As usual, it's a 3.6" disk at about magnitude 5.7. This should be a good target for binocular viewing as it will be 6.1 arcminutes east along the ecliptic (or down and to the right as you stand). It *is* also possible to see it with the naked eye, but that might be difficult in the glow of sunset.

NEPTUNE, in Aquarius all decade, is an evening object at month's start. At sunset then it lies a scant 10° above the SW horizon and is only 15° eastern elongation from the Sun at that time – a challenging if not impossible object. After that, it is pretty well lost in the glare of the Sun this month, reaching conjunction on February 17. At month's end it lies to the west of the Sun, but rises at almost the same instant!

A COMET! Scanning across Guide 8 with the comets turned on, I see that on Feb 4, comet P/Hartley [103P], period 6.4 years, perihelion distance 1.05 AU will be magnitude 12.2 and lie just 20' north on Beta Eridani and 3.87° NW of Beta Orionis. (It's the bright star on the opposite side of Orion's belt from Betelgeuse). After that, it moves toward Orion's belt and disappears off Guide's radar screen. On the 4th, it transits at 20:30, so it should be well placed for observation. [Note: This is embarrassing. It reached a maximum of mag 8.1 on Nov 24 and no one noticed! I shall have to leave the comets in Guide 8 turned on more often.]

CONSTELLATIONS to look for in February (at 21:00) are Eastern Eridanus, Taurus, Canis Major, Lepus, Monoceros, Orion, and Gemini.

Taurus (Tau, "The Bull"), contains The Hyades, the well-known V-shaped open cluster which represents the head of the bull. For astronomers, it's the closest open cluster (after the Ursa Major Group), lying at about 40 parsecs (=130 light years) distant and probably containing several hundred members. It's important because the distance is too great to be measured by normal stellar parallax, but can be determined by a method known as the "moving cluster method". After that, its Hertzsprung-Russell (HR) or colour-magnitude diagram can then be used to determine the distance to clusters lying further away. This cluster is thus an important rung in the cosmic distance scale.

Taurus also contains M45, the Pleiades star cluster (the 'Seven Sisters') which lies about 3 times further away -- 126 pc (= 410 light years). On deep exposures, many of the stars exhibit circumstellar nebulosity which is the tip-off that these are young stars. Another attraction in Taurus is M1, the well-known Crab Nebula. The subject of much study, the Crab is thought to be the result of a star

that exploded in 1054 (on July 4th, of all days!). It's not too hard to find -- give it a try -- but the image is just an amorphous blob in the sky. Better images are obtained with a CCD camera (yeah!!).

Gemini (Gem, "The Twins"), is a well-known northern constellation that lies just to the east of Auriga. Just missing the Milky Way as it does, it lacks a lot of deep sky objects. (It does have open clusters M35, and NGCs 2158 and 2392 however.) Some of the stars are quite interesting. Alpha Geminorum, better known as Castor (one of the twins), lies about 45 light years from us and has a total luminosity of about 36 Suns. It is a multiple system: Castor A and B form a visual binary making an orbit of about 6 arcseconds in radius (corresponding to a real distance of about 90 astronomical units) and a period of about 400 years. There is a third star, Castor C, which orbits the other two at a distance of about 72". The fascinating thing about Castor is that each of the three stars (A, B, and C), as revealed by the spectrograph, is also a binary system.

Gemini also contains U Geminorum - discovered variable by J.R. Hind in 1855 - which is a typical example of a rare class of objects called "dwarf novae". Normally quite faint at magnitude 14.9, every 17 days or so, it suddenly flares up to magnitude 8 or so staying at that brightness for a week or two. (Needless to say, these figures are averages; on occasion this system has gone 200 days between eruptions). Today we know that stars of this class (SS Cyg is another) consist of a white dwarf primary (the hotter star) with a red dwarf main sequence (cooler) secondary star. Now white dwarf stars are remnants of stars that have gone through the nova stage - exploding as they reach the end of their lives, settling down to an electron-degenerate compact object (sorry about that mouthful). What the term means is that it behaves like a giant atom, prevented from collapsing further by the laws of quantum mechanics. Anyway, there are rules for the mass and temperature of this object. Now usually, at a slow rate, mass spills over from the secondary to the primary star. Owing to rotation, this material does not fall to the white dwarf directly but enters a disk surrounding the latter. Periodically (and we are not sure what initiates the process), some of this material - which is mostly hydrogen - falls to the white dwarf, breaks the rules and ignites into a thermonuclear explosion. Much material is expelled in a large hot shell, and that is what produces the extra luminosity. The total light output increases by a factor of 100 or more in these outbursts. In a few weeks or months, the whole process repeats. Studies of these objects continue using the latest space telescopes. In order to coordinate these observations, NASA relies on the many amateur astronomers in the AAVSO (American Association of Variable Star Observers) to send the professional astronomers timely outburst notices.

Clear skies,
-Bob

Organized Viewing...Or Not

Trying to organize scheduled viewing in the Prince George region has become more miss than hit. After a number of planned events that went according to plan, the last number of events has become complete washouts. Since the end of summer, trying to plan and set a day for astronomical viewing event has become all misses and no hits.

The Sinkut Mountain trip was weathered out as well as viewing session on Baldy Hughes. The December Geminids were a complete cloud-out. We didn't score any better with the Lunar Eclipse one week later. As the sky darkened and the Earth's shadow became apparent on the moon, the ever present clouds took over and killed another event. With a new year, it brought the possibilities of improved viewing. The binoculars only, Open Cluster Marathon were a complete cloud-out, next week's Lunar Marathon meet with the same fate.

The only lesson that one can take from this is, if it's clear, its viewing time. If one is inclined to Deep-Sky objects, then the Moon's position can ruin a clear sky, so you'd better become a Lunar fan and observe the Moon.

Blair Stunder

Asian Astronomy

Taiwan, the sweet potato shaped piece of rock in the pacific waters, is a place where one must take to the mountains and hike above the clouds if you want a guarantee of clear skies – you need to outwit (and outwalk!) the forces of the weather. That's a lot to ask of a backyard astronomer, especially one with gear. There are those nights of course, when the weather is just right or the clouds take a break from their afternoon congregation, to let the starlight make it to your eyes. But those are fleeting and if one word could sum up Taiwanese amateur astronomy, as I have written before, it would be "an act of unwavering patience and diligence and the willingness to accept that you may just never see anything for a really long time but still are willing to wait a bit longer and try again the next night…". Ok, that was forty words. You get the point. To be an amateur astronomer here is tough.

But, what about a professional astronomer? What about a physics department at a university that is strong in astrophysics, astrobiology, cosmology and leading fronts of particle physics as they apply to astronomical questions? All this in a Country with basically no window to the night sky?

This is not a country where a practical mind would plan to build a professional quality (with professional costs) astronomical observatory to do such work. You could build above the clouds, but it's a little different here…access to high peaks, while technically possible by car, is not practical and the landslide and earthquake prone mountains offer a poor engineering choice. Hawaii solved this problem with intense infrastructure to make it work, but Taiwan is not there, yet.

But where they *are* is what makes this story a story. They produce the 'stuff' that will become the 'professional quality observatories'. We all know the refrain "*made in Taiwan*" but, in the case of astronomy, that speaks of its problem solving skills. If you can't do it yourself, help others do it. Science still gets done. And they have taken a lead in producing some of the most dominating products in some of the most famous telescopes around the world. The technology that lets many people see the night sky comes from a place that rarely gets to see it themselves.

The *Academia Sinica Institute of Astronomy and Astrophysics* is based out of Taiwan's premiere university, National Taiwan University. Aside from being a leader of astronomy in the Asian region, they are constantly collaborating with Canadian, Japanese, American and Australian institutions to better our understanding of the cosmos and to push cosmological boundaries. And helping to build telescopes in foreign lands. In their words, they are:

> Devoting our efforts in specific directions, we have built up core groups in theoretical and experimental astrophysics and instrumentation. Research topics carried out at ASIAA range from solar system, star formation, to extra-galactic science and cosmology. ASIAA also frequently hosts international workshops and conferences. The goal of ASIAA is to become an international research institute engaged in frontier projects, competing and collaborating with the leading research groups worldwide.

While there are direct limitations on conducting primary research in a country plagued with tropical skies, they are still avidly involved in global projects. They had a problem – clouds and no place to build – and instead of giving up hope on a reputable national astrophysics institution, they took advantage of another opportunity. They chose the road less travelled. They took their skills in manufacturing and engineering and became a leader. Now their astronomy departments bulge with researchers and students using data from the tools they helped to build.

This is not abnormal; many people/nations do

this. But what it speaks to is that we should all do what we can, no matter what that is, to help improve something. The Astronomical example here can be a catalyst for action for you, too. Me, too. Do something – volunteer your time, teach a Nova lesson, share ideas with those at the college, university or those at the club, lend your astro-stuff to your neighbour and their children for a night and show them how to use it, find a place in town that needs your skills and offer them up…write a piece for your local astronomy clubs newsletter. Anything. Taiwan did not give up on astronomy; they took a different route to get to the same destination that all astronomers aim for. And by them doing their part, and other places doing their own part, a huge mountain was moved. We got to see the sky where we really shouldn't be able to.

If you can do anything well, share it with others. You may not be up to the task of building a new telescope on a foreign mountain or funding the development of a new mirror system for ground based telescopes, but you will be able to fix one small thing. It will definitely help, but it may also come back around and help you too!

Thanks to Trevor Padgett P.G.club member temporarily (I hope) living in South East Asia.

Lunar Eclipse 2010
by Pamela den Ouden

Clear and cold was the forecast for December 20th, and this time, the weather forecaster wasn't wrong. I tried to drum up a general air of excitement among my students and finally convinced a few of the faithful to come out and watch the eclipse with me. I teach English as a Second Language, and so, first, had to explain to my students exactly what an eclipse was. We decided to gather at the college dorm, where we could go inside to warm up. The front door faces south so we were assured of a good view.

Some of us headed over to the dorm at about 9:30 p.m. I now know that this was way too early, but we were eager, and we didn't want to miss anything. Oliver, a member of our motley group, decided we should tromp through the snow and go into the forested area near the dorm. It would offer shelter from the wind, he said. So we broke trail and stood in among the trees. It was beautiful, with the full moon beaming down on the diamond-surfaced snow.

Among our group were two students from the University of Ottawa, visiting family here over the Christmas holiday. Tim is studying Russian, so I introduced him to Vlad and Nick, two Russian students at the college. Before long, they were singing Russian songs together as we stamped our feet and clapped our hands, trying to keep warm. The temperature hovered around -30, and although we were dressed for the weather, it doesn't take long to get cold.

Another student joined us, but when it was discovered that he wasn't wearing any boots—just socks and clogs—we told him he couldn't stay outside, and Oliver walked back to the dorm with him.

In and out, we were in and out of the dorm many times in those few hours. Every time someone else went in or out, I asked, "Do you know about the eclipse? Here, take my binoculars and have a look." It didn't matter if I didn't know them. One of the students from Nigeria was carrying out his garbage to the bin. "Have you ever seen an eclipse before?" I asked. "You don't want to miss this one!"

It was exciting as we watched the shadow of the earth slice into that great silver moon. We watched and waited and waited and watched. Someone was using the computer in the dorm lobby to follow the eclipse "live" on the Internet. I think she preferred the warmth of the lobby to the bitter cold of the front walkway.

By 1:30 a.m., a thin layer of cloud had covered the sky, but we could still see the reddish glow of the shadowed moon. Mostly everyone was ready to pack it in by then. I drove my students home and then went back home myself. My kitchen window faces south, so I had a good view of the sky. I made a cup of tea and kept watching in the eerie light.

When I looked at the eclipse for the final time, it was 2:30 a.m. The bronze veil was being drawn back, once again revealing the bright white edge of the moon
Pamela.

Meteor Data Collection Systems Report
submitted Jan 22 2011

As is no surprise the early days of January 2011 have been somewhat of a dismal failure for visual sighting of meteors.

The anticipated meteor event, "The Quadrantids" projected to peak January 3rd was clouded out as well as supper cold. This is one of three more visually observable yearly showers.

The four "All Sky Cameras" operating locally were also a bust for the first 3 weeks of January getting perhaps less that 30 hours of total viewable data which did not capture many meteors.

The camera slated to be installed at 108 Mile House School is completed and sitting on the shelf awaiting the School District #27 completion of their "Green" project where they are reworking the roof of the school to install solar panels.

This project will go onwards ASAP once the roof is complete. This will likely happen in the early spring.

Two of the local sites that are equipped for passive radar detection of meteors did capture the above-mentioned Quadrantids with a count of 372/hr at 14.00 UTC Jan 3 2011 (Fig 2)
There is a total of 8 hours where the count remained above 250/hr making the debris path that earth traveled thru about 15*8 =120 degrees wide for that date. The count dropped back to normal for 5 hours then rose again for 5 hours, 2 hours of which were on the next day. This would indicate that there are two separate debris fields. The second field 5*15 or 75 degrees wide. See fig1

Further investigation with this phenomenon makes me believe that a capture of ether the Jan Leonids (JLE) or the Alpha Hydrids (HAY) has taken place. Digging deeper it appears that the radiant for the Jan Leonids are just coming over the horizon for this location. The Alpha Hydrids are still below my radio horizon for another 3 hours.

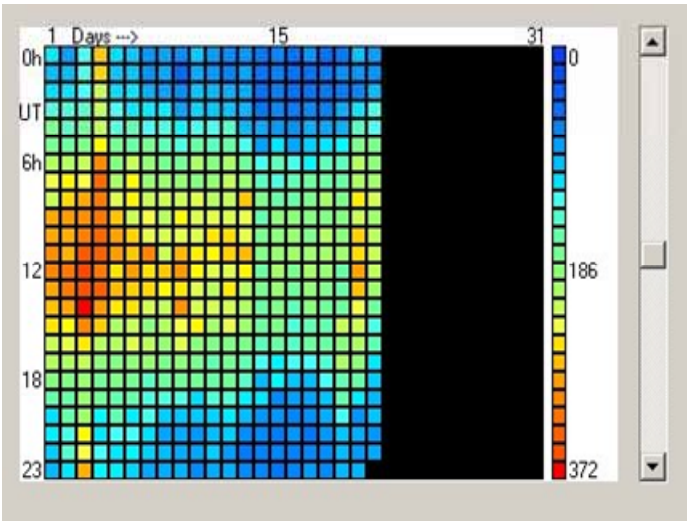


Fig1

Looking at the chart there are several periods shown where there are sudden drop off of counts following a large value notable the 5th day of January where there is a vary sudden and drastic fall off of count. Then a period of 15 days or so with lower counts likely for the Antihelion radiant (see note 1) which is ever present at about RA 8hrs _/+ 1 hr. where a number of none shower rated meteors appear to come from. On the 21 there is a less dramatic rise likely for the Southern Delta Cancrids (SCC) who's radiant is low at 10degree DEC. I feel there is about a 60 % chance this is a minor capture based on video captures from last year as well. Looking back at last year's data I do see this short shower. Video from 2010 has them as being slow movers ~ 24km./s

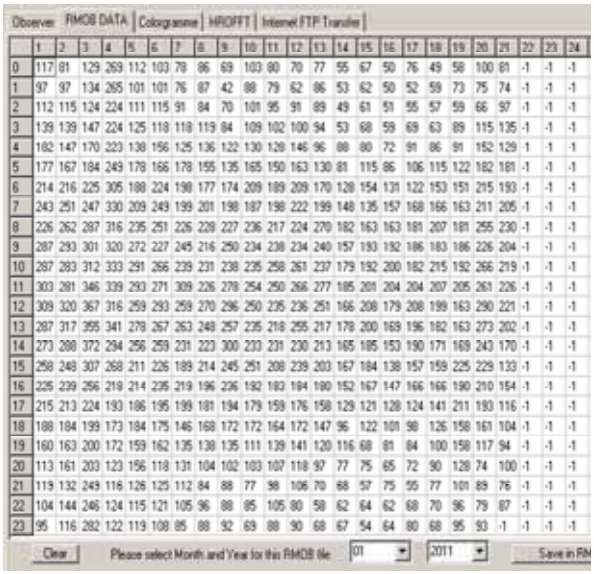


Fig 2 this is the same chart as above with numbers as instead of color.

Note 1
The Antihelion Source (ANT) is a large, roughly oval area around α = 30° by δ = 15° in size, centered about 12° east of the solar opposition point on the ecliptic, hence its name. It is not a true shower at all, but is rather a region of sky in which a number of variably, if weakly, active minor showers have their radiant.

Submitted Wayne Sanders

The Online Astronomer

Trevor Padgett

Last newsletter I offered some thoughts on the vast and seemingly endless content on the internet about, well, everything. It can be tough to find reliable information, let alone entertaining reliable information. The days of journalist being the main source for information has long passed us, for better or for worse. The digital age has given us a new opportunity for knowledge – a place where experts and professionals and those passionate and knowledgeable can speak directly to you. Well, here are some more places to start. Give them a read or a listen, and see where they take you. I promise that they are good for you, full of Vitamin-Astronomy!

The Planetary Society
http://www.planetary.org/
http://www.planetary.org/blog/

The Planetary Society is "*dedicated to inspiring the public with the adventure and mystery of space exploration*". They are a non-profit society founded in part by Carl Sagan (with Bill Nye the Planetary Guy now guiding the ship) who help to promote space exploration and astronomical education for the public. Most prominently, they are leaders of the Light Sail project, work with SETI and SETI@Home in the search for intelligence somewhere out in the universe and myriad other adventurous explorations of our cosmos. From a mission to Mars, the Moon or Mercury, all the way to Voyager updates and theoretical work done around the globe to help define space exploration is covered.

If humans put it in space, you can find out about it here. But not just bare facts and dates - the Planetary Society has some stellar (sorry!) writers and puts out strong opinion pieces that really get to the core of what is going on in the world of space exploration, and they are actively involved in building, promoting and advancing space research on the logistical and theoretical level too. They are involved in everything, and all their wisdom is free to you!

The blog is the specific area that I find myself constantly immersed in. This is the area for daily news updates, insights and commentary by real scientists working in the field. The main blogger, Emily Lakdawalla, certainly has the inside scoop and a way with words – it is both entertaining and informative. If you have a question, need clarification on space missions, want the history of a NASA project, looking to see what we have planned for space exploration in the future, hit this website first. And take some time to linger around in the archived blog posts…so much to read, and all of it from a highly credible and witty perspective.

The Planetary Society Podcast: Planetary Radio
http://www.planetary.org/rss/podcast.xml

All the beautiful insight, adventure and innovation of the Planetary Society wrapped up in a nice weekly MP3 file full of wit, science, entertaining oddities and all around excellent education! What could be better?

With humor, provocative guests, honest questions and an overall science-and-politics-of-astronomy-made-easy framework, this podcast is certainly one of my highlights. If it happened in the universe, they'll cover it! Night sky updates, trivia, interviews, jokes (you know you love a healthy cosmic joke!) and overall a highly intellectual take on all things astronomical – it's all here in the podcast. Astronomy for those on the go….or those who just like to listen to a good podcast in the morning with a whole wheat bread and baked tofu sandwich and a thick cup of coffee. Or, well….anybody else, too!

But, I can't say it better than they do on their website, so I will close with their own words:

"*Each week, Planetary Radio visits with a scientist, engineer, project manager, advocate or writer who provides a unique perspective on the quest for knowledge about our solar system and beyond. We also showcase regular features that raise your space IQ while they put a smile on your face".*

And then there was more…
If you're still looking for something cosmically amazing to feast on, feast on this!

It's early, but it's always a good time to bust through a bogus myth. I take you back to Youtube, the Bad Astronomer and the myth of the egg….

http://www.youtube.com/watch?v=RrhdR0G2PQ0&feature=related

Trevor Padgett

My Stargazing Kit

By Pamela den Ouden

A flip-top shoe box that once held Merrell sandals now has a large blue construction-paper label, hand-lettered with felt pen: Mom's Stargazing Kit. The box holds everything I need for a night under the stars.

First, and maybe most important, is the most recent copy of *Sky News: The Canadian Magazine of Astronomy and Stargazing*. It's usually folded open to the monthly sky chart. Here's all the information about where to find what, along with celestial highlights of the month. It's a red-letter day when the new issue arrives in the mail! I thumb through the whole thing, noting the articles I'll read first. The writing is less technical than, say, the articles in *Astronomy*. Besides, I like the fact that it's Canadian. Living at 56 degrees north latitude means the sky charts are closer to what I see in the sky than the charts in the American magazines.

The Sky and Telescope special edition, *Popular Astronomy*, was worth every penny of the $7.99 that I paid for it. I used it lots in the fall, finding some new constellations that I had never seen before.

Next, there's a red laser flashlight so I can read the sky charts in the dark. A deal at $18, I use it almost every time I'm out. I'm not sure what the neighbours think that red glow is, but I'd be happy to show them if they venture over.

Another item I have in my cache is a Lucky Duck green laser light. I don't often use this when I'm observing by myself, but if I can convince someone to brave the cold with me, the green laser is very useful for pointing out individual stars and constellations. Everyone is always amazed at how it works. I issue plenty of warnings about astronauts, airplane pilots, cars, animals, and people. I've memorized the Safety Precautions:

> DO NOT LOOK INTO THE PATH OF THE LASER BEAM. Direct eye contact with laser beam may cause eye injury!
>
> Do not allow children to use this laser without adult supervision.
>
> Do not aim laser beam into windows of cars, aircraft or other vehicles . . .

There are other precautions about dust, water, static electricity, extreme temperatures, dropping on a hard surface, and tampering with components, labels, or serial number. The main warning, printed in reverse white-font-on-black-background screams, "Warning – It is a federal crime to purposely aim a laser at a moving aircraft."

Initially, after receiving this fine instrument as a Christmas present (everyone knows I'm a starwatcher), I was paralyzed by all these warnings, but eventually, I began to use it cautiously.

My observer's notebook, a 7½ x 10 inch notebook with unlined pages and a sewn binding, contains notes of various outings, drawings of the moon in various phases, and constellations with each star named. A pencil, a pen, and an eraser are stowed in the box, ready for recording my discoveries.

At the bottom of the box are several 3½ x 5 inch file cards. One has a rough sketch of Perseus, with several stars marked in—Mirfak, α Persei, and βAlgol. Another has a drawing of the open W of Cassiopeia, with Caph, Schedar, Navi, Ruchbah, and Segin pencilled in. Oh, yes, that was from my fruitless seach for Comet Hartley in October 2010. The last file card has . . . a recipe for Sour Cream Coffee Cake. It must have been in transit and just got forgotten!

The last item in Mom's Stargazing Kit is my small pair of binoculars, the first pair I ever owned. They're Bushnells, 10 x 42, and they opened the sky to me when I first got them. I remember being startled by the Pleiades, exclaiming over the Coat Hanger, and seeing double stars which my own eyes are not good enough to see unaided.

For Christmas this year, I received a new set of binoculars—Celestron Skymasters,15 x 70 with long eye relief. What I really need is some long arm relief! They're quite a bit heavier than my Bushnells, but oh, what wonders I'll see! I may have to upgrade to a larger box. I know for sure the tripod isn't going to fit in there!

The box holds everything I need for a night under the stars. Everything, that is, except a warm blanket and a thermos of hot chocolate!

While preparing this months editorial I was wandering around the clubs website. I wonder how often some of these older newsletters are accessed? There is some fine writing hidden away in the back corners of those old newsletters. Some of it is never outdated never non-relevant. I offer an article written by Orla Aaquist , long time member and actually editor and president of PGAS. Orla also taught Physics at CNC. If your ever in Edmonton look him up. You will be welcomed like an old friend and if your lucky it might be the week the Edmonton centre has their meeting and you can find out about pirates.
Enjoy
PS , I guess fonts and formats have changed a lot in thirteen years, I couldn't straighten out the letter formatting to fit our columns,
sorry

Nature of Laws

by Orla Aaquist

Physicists are not smarter than you. You simply think they are because you do not comprehend what they talk about most of the time. For the most part, the basic laws of physics are so simple that beings of any intelligence what-so-ever, above that of a common ground mole, accept them as obvious truths that need no further discussion. You are smart enough to accept these truths, but not the physicist. The physicist must publish volumes of discussion, elaborating on the truths until they become unrecognizable in jargon and generalities. Let me provide a specific example.

First, let me state something so obviously true that you will see little worth in further discussion. Let's say you leave your wallet on your night table when you go to sleep at night. You expect it to be there in the morning when you wake up. If it isn't there, then someone has taken the wallet. No one in their right mind would think of writing a law which states that 'a wallet placed on the night table will stay on the night table unless removed by someone.' Of course, this statement does not apply to socks.

Now, it doesn't take much genius to realize that the wallet could represent any object what-so-ever (except for one of a pair of socks). So instead of saying that 'a wallet placed on the night table will stay on the night table unless removed by someone', a physicist would replace the word 'wallet' with the word 'object'. Moreover, it doesn't much matter where you put the object. It could be in your pocket or in your back yard, or in the trunk of your car. Once you put an object down somewhere, it will tend to stay there, without moving, unless someone moves it. You have to put it down on a flat surface, of course.

The genius of a physicist lies in the realization that a dog could come along and cause the object to move, especially if the object happened to be a cat or an old bone. It doesn't have to be a human 'someone'. So, the physicists replaces the word 'someone' with the word 'something', which cleverly allows for events like tornadoes picking up grazing cows, or the ground suddenly opening up causing the mysterious disappearance of, say, your mother-in-law or ... one of a pair of socks.

So what have we got so far? 'An object that isn't moving will stay unmoving unless something moves it.' Tell me that life doesn't get any simpler than this. If this is not obviously true to you, then please continue fulfilling your burrowing instincts . On the other hand, if you have any desire to discuss this truth further, then perhaps you should consider physics as a hobby or career.

Here is another obvious thought along the same vein. 'If something is moving, it will continue to move unless something causes it to stop moving.' Brilliant! ... NOT!

If you were to pass off these two ideas as thoughts worthy of further discussion, you would be laughed at by your fellow humans. Amazingly, Sir Isaac Newton (1642 - 1727) did just this with his fellow physicists and was applauded for his genius. Specifically, in the first of his three laws of mechanics, Newton states that 'an object at rest will tend to stay at rest and an object in motion will continue in a state of uniform motion unless acted upon by some net external force.' The only new word here is 'force', so we see that in order to make people take notice of his law, he had to use force.

As you can see from the preceding discussion, Newton's first law is pretty simple, and I bet your are kicking yourself for not thinking of it yourself, especially if you were born before Newton.

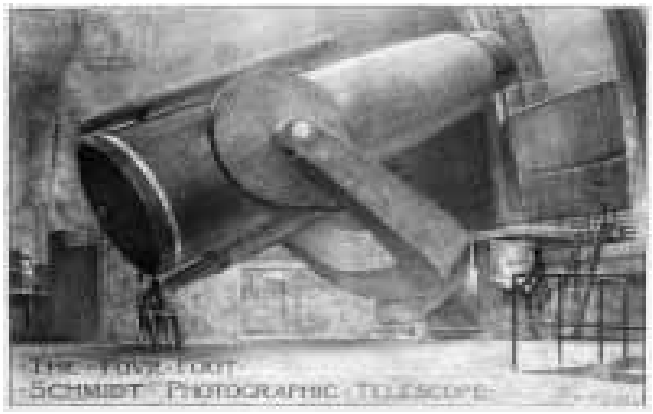
His other two laws are equally simple.

Newton's Third Law, in layman's terms, goes something like this, 'If you run into a brick wall, it hurts just as much as if the brick wall runs into you with equal speed.' Since brick walls are difficult to move (it can be done in the laboratory, however), here is a simple experiment you can do to test this statement. Get a willing participant (like your brother). Have him hold his fist steady while you smash your forehead into his fist at a particular speed. Note how much it hurts. Then hold your face still while he moves his fist towards your forehead with equal speed You will notice, after repeating this experiment several times, that the you cannot distinguish between the two collisions.

Physicists, of course, hide the truth of this in language more appropriate to academia. They state the law as follows, 'For every action there is an equal and opposite reaction.' Unless you read the entire chapter of a textbook, it is not too clear what is meant by an 'action'. Do they mean that if I raise my hand someone will grab it and try to lower my hand? Or if I raise my hand someone will lower theirs? Or, if I eat my supper with gusto, will someone else regurgitate theirs with equal gusto? Newton's wording seems to imply that if I hit my brother, then he hits me back with equal and opposite force. The truth is that if you hit your brother, he hits you back with at least twice the force, unless your brother is a Christian (in which case he kills you).

One consequence of a common misinterpretation of Newton's Third Law is the 'eye-for-an-eye' philosophy. Basically, this doctrine states that if you bring grief to someone, then you should be punished with equal grief. Such a belief has far reaching ramifications on a society which holds it. But this is not what Newton intended. His meaning is far simpler. The correct interpretation of Newton's Third Law is that 'you cannot place your hand on an object without touching it.' Stated in less personal terms, 'one object cannot make contact with a second object without the second object simultaneously making equal contact with the first.' Does that really need to be discussed among intelligent people? I think not.

O.A.



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