Orbit

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Roger Hill, Editor

I know Santa didn't bring me the LX200 wireless hand controller I wanted, but I think I'm going to need it. When I was outside last night in the cold (-27C, according to the LX200GPS thermometer), the direction control buttons stopped working. Fortunately, I had it hooked up to a laptop and used some software on it to control the scope instead. Still, it would be nice to be wireless. I did find out that the 7.4 volt adapter for my Canon XSi worked perfectly, though, for the four hours it spent outside. Once of the nice things about an observatory is that you can go inside and monitor things from where it is nice and warm.

I'm also testing out some software called BackyardEOS, which has a very nice focussing routine in it. You use Live View and select a star. It tells you what the FWHM (Full width, half maximum) is and the aim is to get it as low as possible as you focus. The seeing was lousy, so this number was bouncing all over the place. It didn't help that I was using an old SMC Takumar 300mm f/4 telephoto lens, whose internal lubrication was obviously having trouble trying to not freeze solid! It was, therefore, almost impossible to get exact focus, no matter how hard I tried as I couldn't get the requisite tiny little changes needed. I think I may have to wait until the spring before I play with this lens again. It was only after I gathered over an hour's worth of images and stacked them, that I could see little red halos around every bright star. It's a shame, really, because the Horsehead was quite visible, despite the un-modified Canon XSI having a poor reputation for recording h-alpha.

Astrophotography...there's always something going wrong!

However, what was nice is that the Astronomik UHC clip-in filter I bought on Kerry-Anne Lecky Hepburn's advice seems to work quite well. The sky background was quite bright even with a 1 minute exposure, but processing allowed the rather faint red nebula to make it through. I suspect if I take it to the observatory, that it'll work even better to get nice dark backgrounds.

Which brings me to the next topic. There has been a lot of interest in starting up an astrophotography special interest group. So, we've ordered a special, absolute positioning, focuser for the 16" that will allow autofocusing. The plan is to use some software on the computer to run the focuser in conjunction with a Canon camera. Using a fairly bright star (2nd magnitude, or brighter, I expect), the software will monitor the FWHM of a star it will pick out from live-view and minimize it. The good thing about this is that we can position a camera at, or very close to, the sweet spot that exists for every Ritchey-Chretien, rather than using the relative positioning of the moving secondary mirror.

The other good thing is that it will be possible to store the focus values that your camera is best at, and start from there to autofocus. You see, someone with a different filter (or no filter) than I, or a modified camera, will need slightly different focus positions, all other things being the same. If you save your settings in a "profile" and use that as a starting point, you'll be up and running that much sooner.

There'll be other software, too, so it'll be possible to automate the entire process...which will allow you to do some visual observing as the computer/telescope/camera goes about it's business. Perhaps with the soon-to-be completed Dobsonianized 17.5".

Or you can ask Bert to show you around the sky.

Or bring your own scope up!

Anyway, the Astrophotography group will kick off on Thursday, March 24th. We're going to keep them around the Moons Last Quarter, so it won't interfere much. As a result the date will change every month...keep an eye open!

Our first meeting in Waterdown went very well, despite the bad weather.

There are a number of things that we'll have to do a little differently at this location, but it's a nice big room, easy to get to, plenty of (free) parking, and at a very good price!

There was a problem with the restaurant, Turtle Jacks, in that they have live music on Thursday nights. It was loud enough to be a problem holding conversations so enjoyed by the people who go. So, there's another place called The Coachman where we've gone before after Observatory work parties.

As noted last month, the Legions does not have a projection screen, so we had to buy one. We got the biggest one we could, commensurate with our funds, and it was used for the first time. I had tried opening it up in my basement to see what it was like, but it was too tall. Anyway, it functioned perfectly, and is a nice big screen, easily seen from a good distance away.

Our February meeting will be held in Toronto on Saturday night (the 5th). We've invited a number of other local RASC Centres to join us, and we'll have people from Mississauga, Kitchener-Waterloo and London, as well as ourselves. As I write this, there are only a couple of tickets left, so if you want in...you'd better get in touch with me very quickly! We have to charge for this one. The Toronto Centre is giving us a very nice discount off their usual price, but we'll be charging $10 a head. The weather forecast for Saturday is calling for a mix of Sun and cloud, so hopefully we'll still get a look through the big scope.

We're looking at putting a fresher face on our web site over the next couple of months, as well as trying to keep it more up to date.

We're also going to be implementing a number of recommendations regarding Centre meetings and outreach programs. These come from National Office, and are a summary of "best practices" from other Centres across the RASC, and from other organizations like the Astronomical Society of the Pacific.

We've got some more stuff from NASA and JPL, designed specifically for newsletters of amateur astronomical organizations.

There are also some announcements from National regarding things like safety for green laser pointers (GLP's). Although some of this is available on the RASC web site, it's important enough that it bears repeating here.

Oh...for our March meeting, we're going to have a prize winning Canadian astrophotographer start off our meeting as part of the kick-off to the new Astro-photography group.

So...that's all for this month,

Clear skies, one and all,

Roger Hill
Orbit editor and President.

Position Statement of The Royal Astronomical Society of Canada On Green Laser Pointer Usage By Deborah Thompson, National Office Feb 1, 2011

The Royal Astronomical Society of Canada's (RASC) mission is to encourage improved understanding of astronomy for all, through education, outreach, research, publication, partnership, enjoyment, and community. The RASC advocates the safe and responsible use of green laser pointers (GLPs).

Recent reports indicate a rising trend in the illegal targeting of aircraft by people on the ground misusing consumer laser devices. This practice threatens the safety of aircrew, passengers, as well as people and personal property under flight paths. The RASC wishes to add its voice to those of the health-and-safety sector, aerospace industry associations, law-enforcement agencies, and government in calling for greater public awareness of the issue, for safe and responsible use of laser pointers.

Green Laser Pointers have established legitimate applications as effective teaching aids in astronomical education, observing, and public outreach, if used safely. The eye is very receptive to the wavelength of the green laser pointer, making it a very effective instrument for pointing out features in the night sky. People attending education sessions and star parties at science centres and observatories can experience the green laser beam apparently reaching out to the planets, stars, and nebulae.

The RASC, Canada's leading organization dedicated to astronomical education and public outreach, has developed a voluntary Green Laser Pointer best-practice policy to promote the safe and responsible use of GLPs for astronomy education and outreach. The RASC has established freely available guidelines for public education on the responsible use of laser pointers in astronomy. In keeping with the RASC's commitment to informative and safe education and public outreach, it encourages everyone to follow the guidelines at www.rasc.ca/education/other/glpuse.shtml.

Green Laser Pointer Usage

Prepared by the Green Laser Pointer Committee Updated: January 30, 2010

Over the last decade, the striking ethereal glow of Green Laser Pointers (GLPs) has become a familiar sight at astronomy education and public outreach (EPO) events, from star parties for beginners to sky-at-night tours around astronomical installations. With the beam of a GLP an astronomy educator can direct an audience unerringly to a specific object - planet, meteor shower radiant, star, asterism, constellation, or nebula. The very light of the GLP itself can seem to confer an enhanced authority on the EPO guide. The GLP remains one of the coolest tools in the amateur's instrument case - but only if used responsibly. GLPs are tools not toys, and their misuse can lead to serious harm.

Under the Canadian Aeronautics Act, conviction for laser flashing an aircraft carries maximum penalties of a five-year prison term, and a $100,000 fine: www.tc.gc.ca/eng/civilaviation/standards/aerodromeairnav-standards-ais-directed-bright-light-menu-1068.htm.

The RASC counsels its members at all times to cooperate with law enforcement officials, and to remain within the law.

In keeping with the RASC's commitment to informative, inspiring, and safe EPO, it encourages its members to follow the following guidelines for the use of GLPs:

1. Ensure that GLPs are operated only by designated, responsible adults, preferably RASC members who are familiar with the potential hazards of laser light. During public events, consider assigning one or more RASC members to help GLP operators spot oncoming air traffic;
2. Take special care not to shine GLPs in the direction of any person, vehicle, aircraft, or wildlife;
3. Avoid using GLPs near an airport or airport runway approach. We suggest that GLPs not be used within 10 km of any airport;
4. Use the minimum power to do the job: if a 5 mW laser is bright enough, why use a stronger one?
5. Be aware that distraction and distress can be experienced by anyone illuminated by green laser light, even if the level is well below that which would cause physiological damage;
6. Use good sense in storing GLPs. Don't leave lasers accessible to children. Consider removing the batteries when you

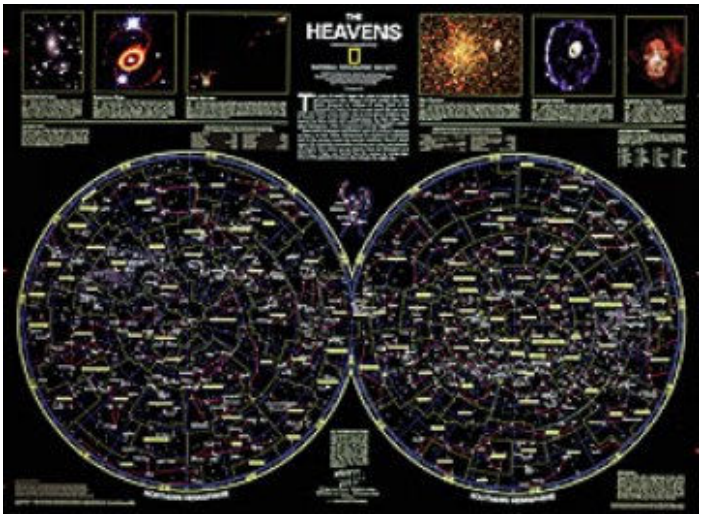
By following these guidelines (which are simply common sense) RASC members will reduce the chance of an unfortunate incident involving GLPs,and will demonstrate due diligence while leading public astronomical activities.

Remember, GLPs are useful if you're SMART about using them.

Safe = place safety foremost
Mature = keep GLPs in responsible hands
Astute = use GLPs skilfully and economically
Rational = match your GLP use to your scientific approach
Tactical = think ahead - plan your GLP use

Astronomy – A Brief History of Mine…. By Gary Colwell

After almost 45 years in this hobby, there have been many things that have captivated my time and my imagination. The earliest occurred when I was the ripe old age of 10 years old. I was fascinated with the night sky and I wanted to learn all the constellations. There was no internet back then to consult, so I got my parents to by me a National Geographic sky chart.



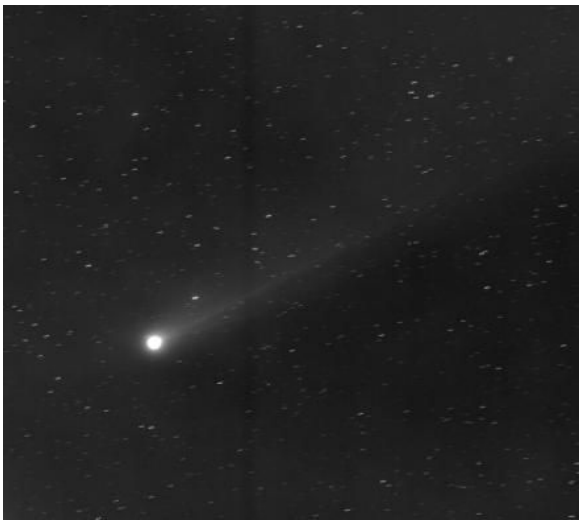
They did so and thus began my journey of learning the constellations…. I learned most of the northern constellations over the next year or so…then wanted to try something new….so I began a study of the moon….and wanted to learn all the major craters and seas…..another request to my parents, and they bought me a small metal moon globe.

It was the best thing I had and set out to memorize (although I couldn't pronounce half of them) the major craters…..that took me to about the age of 16.

My real interest in the hobby blossomed in Grade 10….The Science Fair!!!..

In school it was announced that we would be competing to send four of the best science projects to the Peel Regional Science Fair competition…..Ah….the Science Fair!!! In true 'geekdom' fashion I made it a priority during my school year, and it wasn't too hard to guess what field of science I was going to embark on…you guessed it Astronomy!....
My first project was a collaborative effort between myself and another student entitled "The History of the Space Program"….not directly astronomy related but in the same "space". We were selected as one of the winning projects. We competed in the Regional Science Fair, and though we didn't win anything, it was a gold mine of information on what to do next year. The following year I did a project entitled "Stellar Evolution", and to my utter amazement I won my category and the overall Science Fair!!!! And won a trip to Thunder Bay to represent Peel Region in the Canada Wide Science Fair…..what a blast! And I won honourable mention in the Junior Physics category at that event. It was time to get serious!....lol..

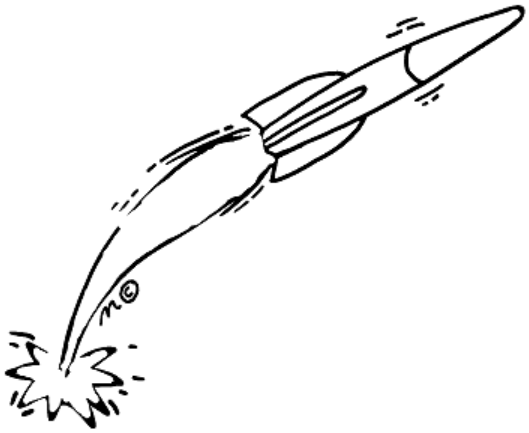
The following year, 1973, there was a faint comet named Comet Kohoutek 1973f



My chance had arrived. I did my project on the motion and development of the comet over a 5 month period. As a matter of fact my very first astro-photo was a picture taken of the comet. My equipment was very sophisticated!.. I had a 35mm Pentax Asahi loaded with tri-x pan ASA 800 B&W film, and it was strapped to the chimney on my house (yes I climbed up on the roof!) to get high enough to take a picture of it….it was a 30 second exposure and I developed it myself in my friends darkroom!

...fast forward….Peel Regional Science Fair….could I make it 2 years in a row?....the competition was real tough….a fellow by the name of Robert Pike, my arch "Science Fair" nemesis, had done a project on sunspots and their relative formation and movement on the sun….and it was a good one!...

To make a long story short….I was fortunate enough to win again that year and I was off to Calgary AB for the Canada Wide Science Fair there….It was on of the best experiences I had ever had in school, and I was fortunate to win 3rd place in Senior Physics, but the most excitement came when I found out that I had won the RASC award for best astronomical project…I was elated…
My final year in high school I did a project on meteors, but lost out to a fellow who did a project on model rockets...MODEL ROCKETS?????.....and so ended my illustrious Science Fair career….



1986 brought comet Halley into the night skies, the long awaited return of perhaps the most famous of all comets…..I bought a Celestron C8…and it was a complete dud to say the least…but it got me into a bigger scope and more and more objects became visible to my curious eyes.

The years passed on and life got in the way of my hobby….as it does for most of us….I had to sell the scope for a down payment for my first house…money that used to be funnelled into the hobby was now replaced by mortgages, car payments, bill payments and raising 5 children…..only in the last 10 years have I been able to re-acquaint myself with my hobby….

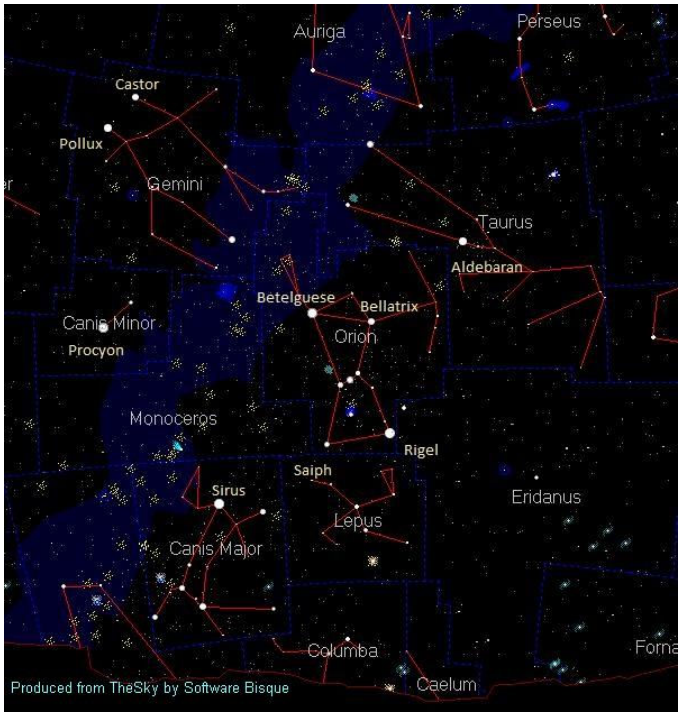
Which brings me to today….several telescopes later, a lot of grey hair later… and the realization of a life long dream of owning my own observatory and the joy of not only observing the heavens, but taking pictures of it as well.
I never would have thought that his hobby would last for me all these years…but it has.
No more science fair projects in the cards for me….but there is always something new and exciting to do and discover in this hobby….bring on the next 45 years!!!!

By Gary Colwell

The Sky This Month - February 2011

By Gary Boyle, Ottawa

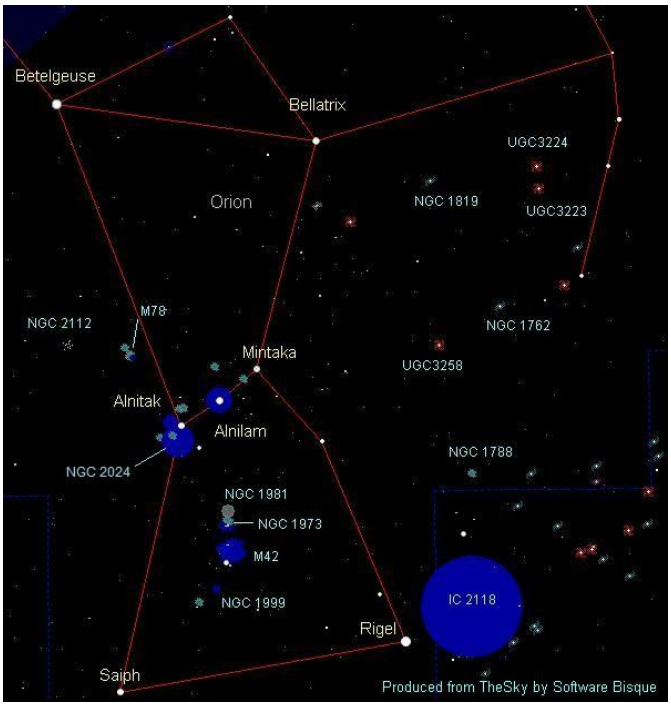
A Dozen Bright Dots



There is something about cold winter nights that make the stars shine a bit brighter than usual. Could it be the lack of haze – the kind we experience on sultry July and August nights? Or could it be the fact we can only last for a short period of time in the extreme cold. These are all valid reasons but the fact of the matter is Orion the Hunter and its neighbouring constellations represent a dozen of the brightest stars in the winter sky.

Half this number makes up Orion's body from his shoulders down to the knees. Others are labeled on the chart below. Orion is one of - if not the most observed constellation. With its belt stars lying on the celestial equator, both hemispheres of the Earth have a chance to the see the hunter in action as he battles Taurus the Bull. The obvious favourite target for telescope or binoculars is the great Orion Nebula. Also widely known as M42, this 4th magnitude cloud can easily found in light polluted suburbs. Within the confines of the cloud located 1,500 light years from us, pockets of gas and dust are slowly condensing and growing to produce hundreds of stars. The immense glow lighting up this 45 light year wide gas cloud comes from the ultraviolet radiation from newly developed young stars. This stellar nursery is known as an emission nebula.

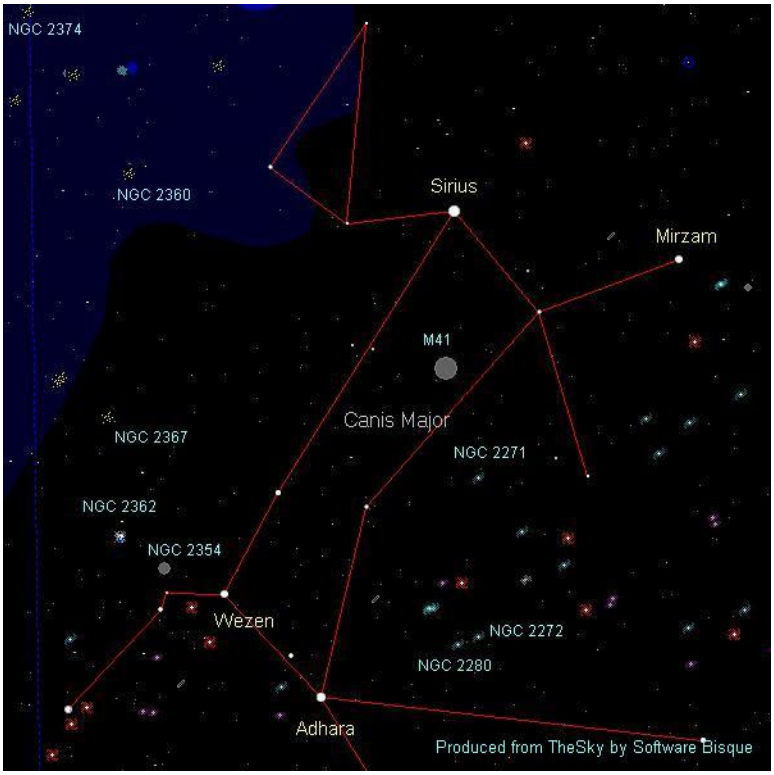
Another example of an emission nebula is The Flame Nebula. NGC 2024 is located at eleven o'clock from the left most star of Orion's belt called Alnitak. The Flame is only a symbolic name as there is no fire in space. NGC 2024 is a combination of an emission and reflective nebulas. The obscuring dust in the middle of the gas cloud is blocking the brightest portion of the star making region and give the appearance of fire. NGC 2024 is the same distance from us as the Orion Nebula. The Horsehead Nebula located below the Flame is very difficult to see visually.



Of this dozen brilliant suns, the star Sirius is by far the closest and brightest. Our world and Sirius are separated by a mere 8.6 light years. In other words, if an alien observer around Sirius were to use a powerful telescope to spy on our daily lives here on Earth, it would see events from September 2002. We are always looking at the sky in the past.

The name Sirius is derived from the Greek word 'scorching' or 'glowing'. Sirius is deemed as the eye of the Orion's great hunter dog, Canis Major with Canis Minor being his other faithful beast. Sirius was used as an indicator to the change of seasons and that the Nile River would soon flood because of seasonal change. We even refer to this star in the term "dog days of summer". Early civilization believed the heat of this star in conjunction with the July Sun, produce hotter days than usual. Other than being the brightest star in the night sky blazing at magnitude (-1.46), Sirius has a tiny companion star called Sirius B. Unlike other double stars you have seen, Sirius B will be a real challenge to spot. At magnitude 8.6 it is some 10,000 times fainter than Sirius A.

Located some four degrees directly below Sirius is a lovely magnitude 4.6 naked eye open star cluster called M41. At first glance this cluster is only populated by a couple dozen stars spread out over an area the size of the full moon but about 100 suns live in this cluster. Some of its members comprise of orange and red giant suns. M41 is 2,300 light years from us, measures about 25 light years wide and was first noted by Aristotle in the year 320 BC.

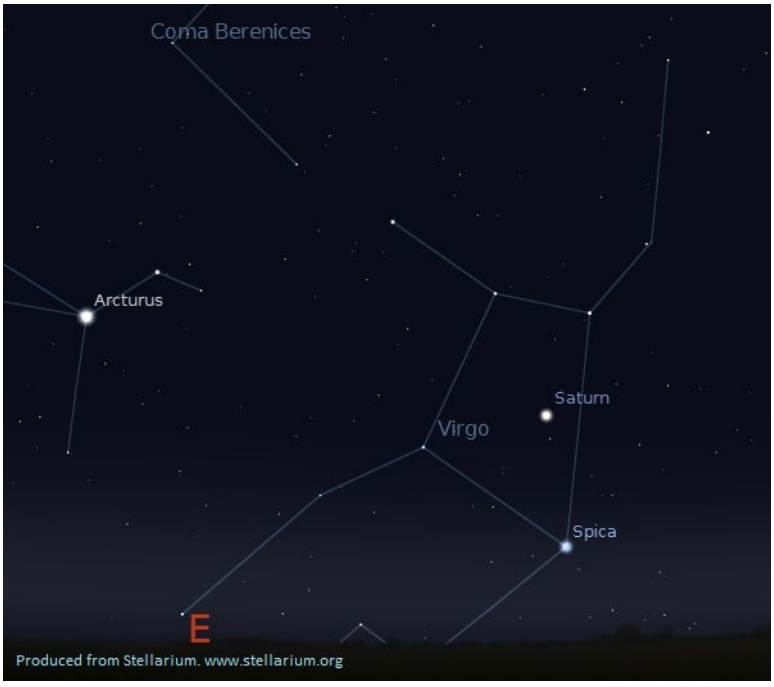


And now for something farther out in space – a lot farther. Look for NGC 2280 located 3.3 degrees west of the star Adhara. NGC 2280 is a spiral galaxy with delicate arm structure. This galaxy has an estimated distance of 75 million light years from us. In other words, dinosaurs were still roaming on Earth and hunting for food when the light left this object. Measurement show the galaxy is 140,000 light years wide.

Starting February 22 and for the next two weeks, start looking for the faint zodiacal lights on the western horizon. We witness this glow around the spring equinox in the west and the fall equinox in the east. The light is the scattering of interplanetary dust. We get to see this display from dark sites away from light sources and with the absence of the moon. Looking at these particles is like looking along the surface of a dark table top that has not been dusted for a week of two.

Jupiter is slowing regaining its lost belt. This will be your last month to get your final views of the king of planets. Jupiter will set at 9 p.m. local time on the 1st and by 7:30 at month's end. Get your cameras ready for a nice Kodak moment on February 6th and again on the 7th as the Moon slides to the right of the planet. This was a good season to observe and photograph this great planet. We even witnessed the disappearance of a previously mentioned belt. By the month of July – Jupiter will be twelve degrees higher in declination than it is now. Less atmospheric turbulence equals better observations and photos.

The planet Saturn is nice up in the south east by midnight local time. Do not get confused with brilliant white coloured Spica located eight degrees south of yellowish Saturn. Before Christmas, Saturn developed a storm in its atmosphere. It has now escalated in a monster. See is you can spot this storm from one and a third billion kilometres away.



The planet Venus still dominates the morning sky but is slowly sinking to the horizon. On February 1st Venus crosses into Sagittarius from Ophiuchus and will stay here for the entire month. On the morning of February 4th you will find Venus nestled between clusters M21 and M23. The best conjunction with the 16 percent waning crescent moon will be on the morning of the 28th.

To help plan your observing sessions this month, new moon is on the 4th with the full Cold Moon will occur on the 18th. If you have questions or comments, feel free to contact me.

Until next month, clear skies everyone.

Planets in Strange Places

By Trudy E. Bell

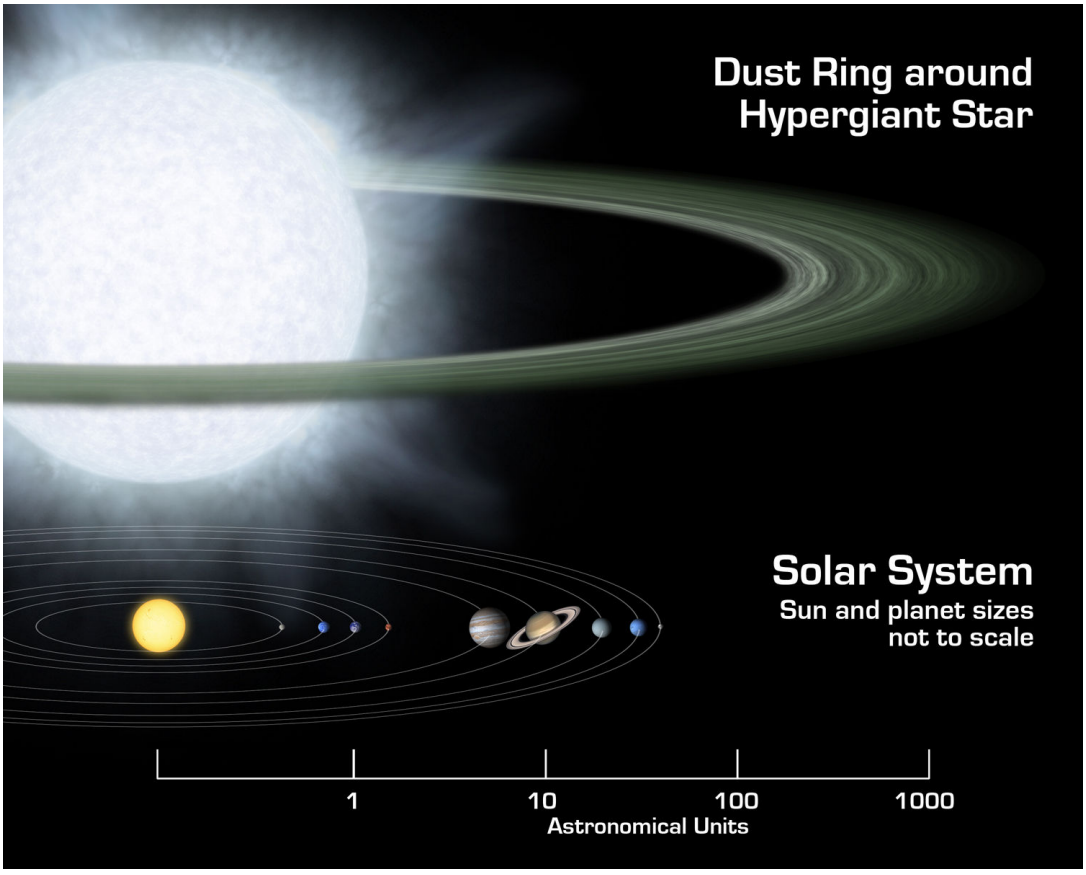
Red star, blue star, big star, small star—planets may form around virtually any type or size of star throughout the universe, not just around mid-sized middle-aged yellow stars like the Sun. That's the surprising implication of two discoveries in 2006 from the 0.85-meter-diameter Spitzer Space Telescope, which is exploring the universe from orbit at infrared (heat) wavelengths blocked by the Earth's atmosphere.

At one extreme are two blazing, blue "hypergiant" stars 180,000 light-years away in the Large Magellanic Cloud, one of the two companion galaxies to our Milky Way. The stars, called R 66 and R 126, are respectively 30 and 70 times the mass of the Sun, "about as massive as stars can get," said Joel Kastner, professor of imaging science at the Rochester Institute of Technology in New York. R 126 is so luminous that if it were placed 10 parsecs (32.6 light-years) away—a distance at which the Sun would be one of the dimmest stars visible in the sky—the hypergiant would be as bright as the full moon, "definitely a daytime object," Kastner remarked.

Such hot stars have fierce solar winds, so Kastner and his team are mystified why any dust in the neighborhood hasn't long since been blown away. But there it is: an unmistakable spectral signature that both hypergiants are surrounded by mammoth disks of what might be planet-forming dust and even sand.

At the other extreme is a tiny brown dwarf star called Cha 110913-773444, relatively nearby (500 light-years) in the Milky Way. One of the smallest brown dwarfs known, it has less than 1 percent the mass of the Sun. It's not even massive enough to kindle thermonuclear reactions for fusing hydrogen into helium. Yet this miniature "failed star," as brown dwarfs are often called, is also surrounded by a flat disk of dust that may eventually clump into planets. (This brown dwarf discovery was made by a group led by Kevin Luhman of Pennsylvania State University.)

Although actual planets have not been detected (in part because of the stars' great distances), the spectra of the hypergiants show that their dust is composed of forsterite, olivine, aromatic hydrocarbons, and other geological substances found on Earth.



These newfound disks represent "extremes of the environments in which planets might form," Kastner said. "Not what you'd expect if you think our solar system is the rule."
Hypergiants and dwarfs? The Milky Way could be crowded with worlds circling every kind of star imaginable—very strange, indeed.

Keep up with the latest findings from the Spitzer at www.spitzer.caltech.edu. Kids and their grownup friends can enjoy beautiful images from Spitzer while playing Spitzer Concentration at The Space Place (spaceplace.nasa.gov/en/kids/spitzer/concentration).

Winter Stars

I went out at night alone ;
The young blood flowing beyond the sea
Seemed to have drenched my spirit's wings --
I bore my sorrow heavily.

But when I lifted up my head
From shadows shaken on the snow,
I saw Orion in the east
Burn steadily as long ago.

From windows in my father's house,
Dreaming my dreams on winter nights,
I watched Orion as a girl
Above another city's lights.

Years go, dreams go, and youth goes too,
The world's heart breaks beneath its wars,
All things are changed, save in the east
The faithful beauty of the stars.

Sara Teasdale

Stars

Alone in the night
On a dark hill
With pines around me
Spicy and still,

And a heaven full of stars
Over my head,
white and topaz
And misty red ;

Myriads with beating
Hearts of fire
That aeons
Cannot vex or tire ;

Up the dome of heaven
Like a great hill,
I watch them marching
Stately and still.
And I know that I
Am honored to be Witness
Of so much majesty.

Sara Teasdale

The Light of Stars

The night is come, but not too soon ;
And sinking silently,
All silently, the little moon
Drops down behind the sky.

There is no light in earth or heaven
But the cold light of stars ;
And the first watch of night is given
To the red planet Mars.

Is it the tender star of love ?
The star of love and dreams ?
O no! from that blue tent above,
A hero's armor gleams.

And earnest thoughts within me rise,
When I behold afar,
Suspended in the evening skies,
The shield of that red star.

O star of strength! I see thee stand
And smile upon my pain ;
Thou beckonest with thy mailed hand,
And I am strong again.

Within my breast there is no light
But the cold light of stars ;
I give the first watch of the night
To the red planet Mars.

The star of the unconquered will,
He rises in my breast,
Serene, and resolute, and still,
And calm, and self-possessed.

And thou, too, whosoe'er thou art,
That readest this brief psalm,
As one by one thy hopes depart,
Be resolute and calm.

O fear not in a world like this,
And thou shalt know erelong,
Know how sublime a thing it is
To suffer and be strong.

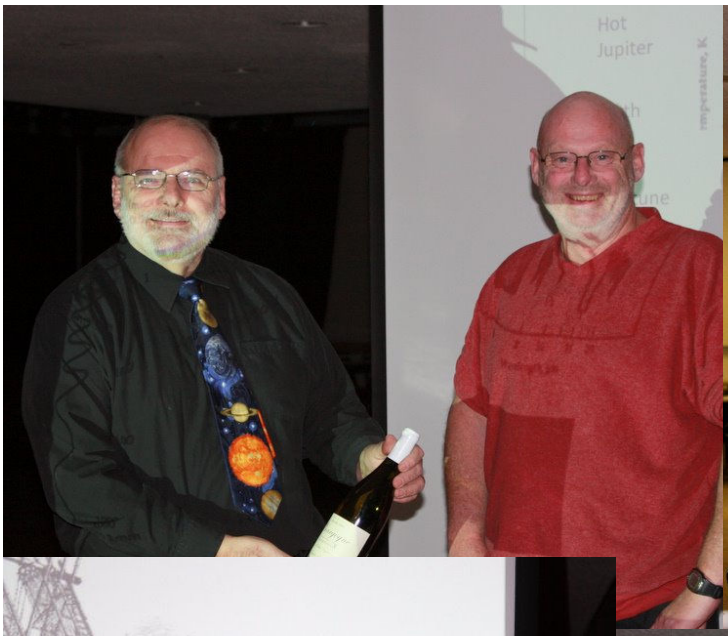
Henry Wadsworth Longfellow

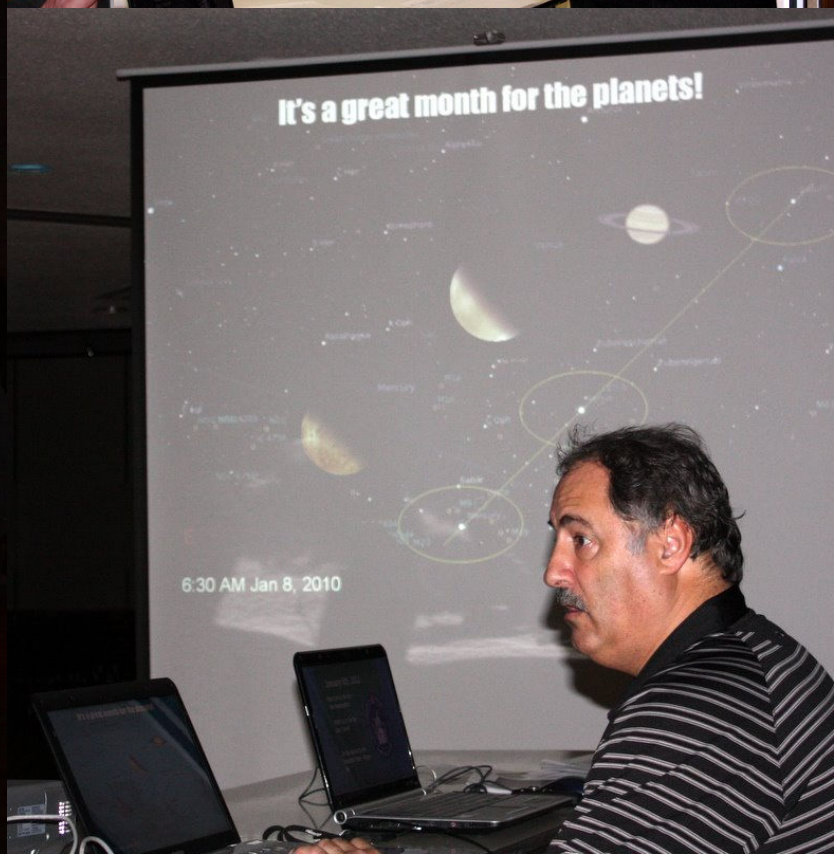
What you missed in January...!

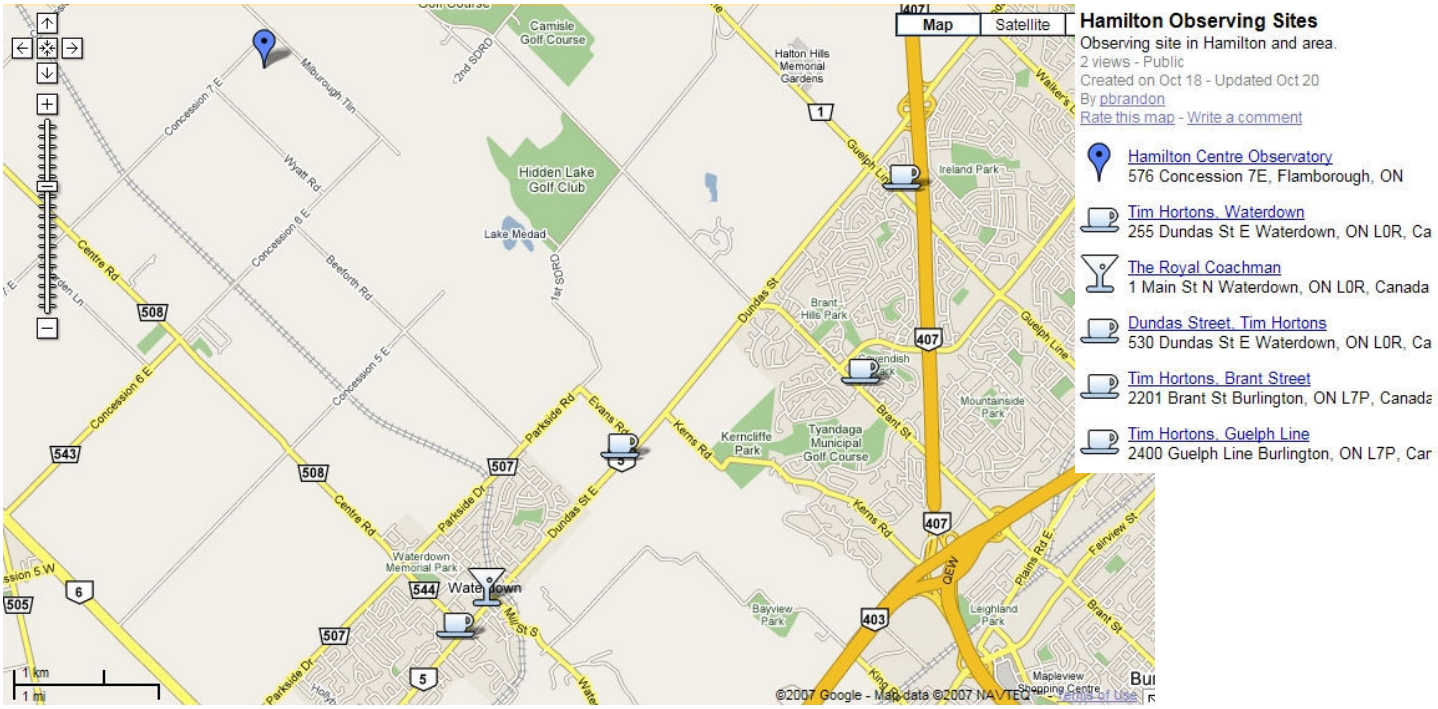
Ron McNaugton, Project Leader for the IYA 2009 planisphere was our guest speaker.

He reprised his talk from the past years Huronia Star Party, to whit: New Eyes on the Sky . It was a glimpse of telescopes planned or being built, on Earth and beyond it.

Gary Colwell added another great presentation on what's going on in the sky!







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What you Missed pictures by Ed Mizzi. Front cover photograph by Gary Colwell

Don’t forget, our meetings from January to June (except February) will be held at the Royal Canadian Legion, 79 Hamilton Road in Waterdown.