Orbit

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Roger Hill, Editor

Another year has come and gone for the Hamilton Centre. We didn't do anything earth-shatteringly important, but we got a lot of little things done, and we're now ready, and poised, for growth.

We got our expenses under control, for instance. We had a good look at the sorts of things we could do without, and those we could change to less expensive means of achieving the same things.

As an example, the phone was costing us a small fortune. Since the observatory is not a residence, it must therefore, be a business, and as such, we had to pay business rates for the phone. So we had a look at why we need a phone. Requests for tours now come in much more through the web site (and to my desk) than by leaving a message on voice mail. Discussion about going to the Observatory or not works the same way...much more is done via email. The only really major reason why we'd need a phone there is for emergency use, because although most people have cell phones, there was little to no coverage there.

That has changed recently, though. Blackberrys and iPhones, whether from Rogers or Bell, now give a good signal, where none existed before. So, we cancelled the land line into the Observatory, and bought a pay-as-you-go phone. We've gone from over $60 a month to $10. That $600 is much better off in our hands than Bell Canada's!

We had a look at other options to bring the cost of the insurance down. Arguably, this is the single biggest item in our budget, and when it gets renewed every year, it's always a source of concern. Did we really need earthquake insurance, for instance?

One of the other big savings was moving to Discovery Landing in Burlington. Again, at $60 a month for 10 months, well, it helped a lot!

There were a couple of projects that started, but weren't completed.

The 17.5", for instance hasn't been used much (if at all), since the 16" RC arrived. So, the decision was made to transform it into a Dobsonian. That way, it could be used in other places than the observatory, like down in Spencer Smith Park for Sidewalk Astronomy, for instance. The construction has been taken on by two guys, and a fair bit of marine plywood has been purchased. The upper cage has yet to be done, and with their respective work schedules, it'll be a bit more time yet before the 'scope is ready for its second "First Light".

The other project we're embarking on is making sure that the legacy of one of our founders is kept in as good a condition as possible. The Reverend Marsh was a seminal figure in the early part of the 20th Century in southern Ontario when it comes to astronomy. He had a hand in the founding of three(!) RASC Centres (including Hamilton), and in revitalizing the Hamilton Centre after he'd left and returned.

About 30 years ago, we took possession of Marsh's original refractor and mount. There were several attempts made to get the mount repaired and in working condition. For the most part, the attempts were successful, but the mount and drive remained finicky and difficult to use. The 'scope, however, was a different matter. It gave wonderful images, although not at first. It was rumoured to have been made by John Brashear, the renowned astronomer and optician from Pittsburgh, who put the flint glass element of the objective on the outside of the lens, facing the sky. This is contrary to virtually all opticians, but Brashear made it work.

When the lens was disassembled, cleaned, put back together and collimated, the images produced were not the exquisitely sharp ones that were expected. It was not until the flint and crown glass elements were reversed was the image produced by the telescope as sharp as had been expected.

Putting in a modern eyepiece, with a light yellow filter to reduce the effect of chromatic aberration showed that the telescope was as sharp as legend said that it should be. And yet there was that anomaly of the reversal of the lens elements. So was the Marsh 'scope one of the rarest of rare things—a Brashear 'scope with the crown element facing the sky, or was it made by someone other than Brashear? Who would that be? Well, considering the beautiful images it produces, there was really only one other optician in North America who could produce such an instrument.

Anyway, over the years, other people have helped in refurbishing the Marsh scope. I think it was Colin Haig who removed the white paint and restored the brass to it's current beauty. Les Nagy, too, made some pieces for it to replace parts that had corroded over the years.

Now, however, with a pair of 10" Dobsonians and a 17.5 inch on the way, along with the C8 and the incredible 16", the Marsh (and the Bell refractor, too, for that matter) was not seeing any use. The issue of the mould last year caused a lot of heartache, and we had to face the reality that an unheated observatory was not the place to hold an historical relic like this. What was really needed was a place for it that really knew how to care for things of historical value. But sending the scope out on loan to a museum would not be good either...it's too nice an instrument to languish gathering dust in some display case.

It was Mark Pickett who came up with the idea, and he's the guy who has run with it.

There's a place called Westfield village in the town of Rockton that is a recreation of a period of history in this area. Westfield has a substantial number of buildings and equipment dating from 100 to 200 years ago. The Reverend Marsh lived in the Hamilton area and used the 'scope during that time period. We've had a few discussions with the people there, and they have a lovely well maintained and secure facility where the scope could be kept and removed occasionally for Sidewalk Astronomy purposes. They're very excited by the possibility of having this instrument there. From what I gather, the various historical villages across North America are friendly, polite, and co-operative, but underneath, there's a bit of a spirit of competition. "Wow…", Mark and I were told at one meeting, "even Williamsburg doesn't have a telescope!"

So what we're in the process of doing at the moment, is setting up a 5 year loan for the mount and telescope, to be stored in Westfield's climate controlled storage, and brought out to be used under the supervision of a suitably qualified member of the Hamilton Centre. If the situation is amenable to all parties, then we'll revisit the arrangement in five years time and renew if for a further five years, or possibly longer.

So the Marsh refractor will emerge once again, to delight the visitors to Westfield for years to come.

Finally, we have two new Board members. Ed Mizzi (frequent contributor to these pages) and Gary Benett joined me, Andy Blanchard, Gary Colwell, Mark Pickett and Will Gray. Will and I retain our respective positions, while Gary Colwell takes on Observing director, Mark looks after Public Outreach, Ed is now our Recorder, Andy becomes Vice President, and Gary Bennett is councillor at large.

Clear skies, one and all,

Roger Hill
Orbit editor and President.

The Huronia Star Party 2010 by Ed Mizzi

Strange how things offset each other sometimes. In 2009, Starfest was a wash-out with a storm that everyone will remember. That same year the Huronia Star Party gave participants some of the clearest skies ever. This year, 2010, was almost the exact opposite, with Starfest providing some beautiful clear skies and Huronia giving us a single clear night but with so much dew that we thought it was raining.

Many of us arrived on Wednesday afternoon and it rained, along with a cool wind, until Friday morning. So we were able to observe and image only on Friday night because Saturday brought back cloudy skies.

I camped alongside Dave Yates, Gary Bennett and Vic Cooper and, once again, I owe them all a debt of gratitude for helping me hone my imaging skills, as well as Gary Colwell who helped me with processing when I returned home. I used PHD for guiding and Images Plus for camera control and processing, with a little tweaking in Photoshop. I was able to image M2 and M16 and I was very happy with my "amateur" results. Astro-photography is like anything else, where practice makes perfect, although it does involve a rather steep learning curve and I often find myself slipping back down the curve a bit. That's where guys like those mentioned above are indispensable because they help me back up that slope. There were a few good seminars during the star party, including one about using a special webcam connected to a CRT monitor for live viewing of deep-space objects. The images could not rival those taken by serious astro-photographers but they are very good regardless. This would be a great system for things like sidewalk astronomy where multiple viewers could observe at the same time without lining up at the scope.

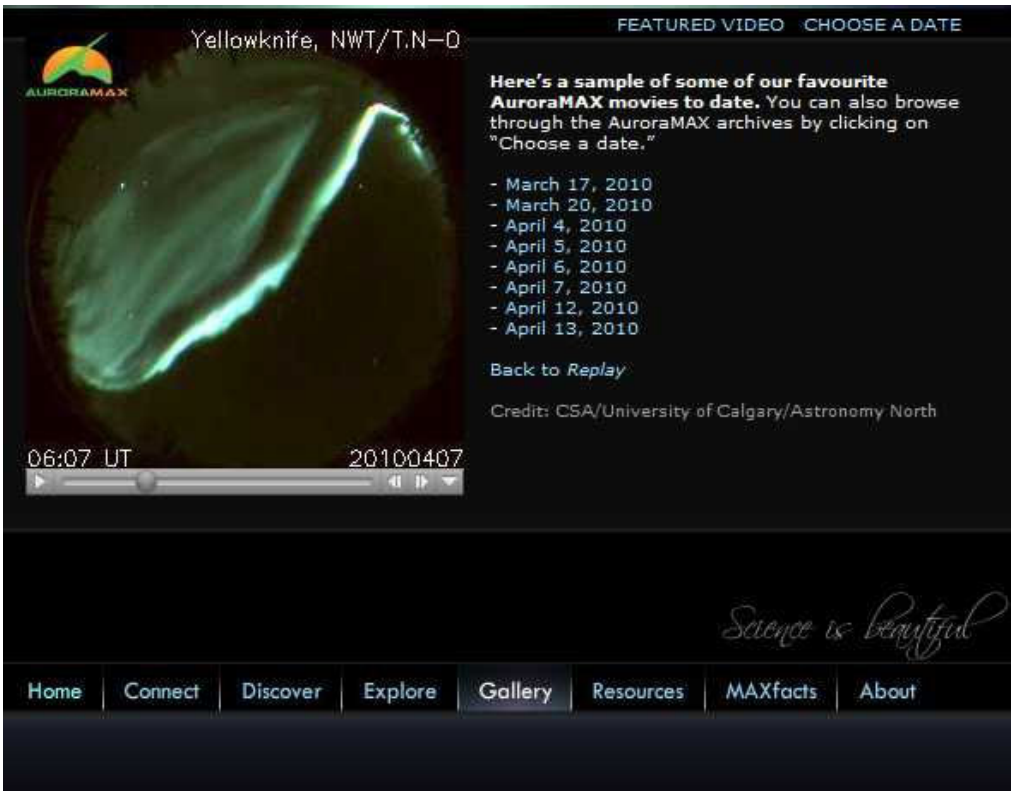
Another seminar involved a description of a relatively new image-processing software called PixInsight, from Europe. It can do wonders when processing images and can fulfill many of the actions previously done in Photoshop.
There were many prizes won at the banquet and, in fact, one of our very own, Gary Bennett, won a new eyepiece, lucky fellow!

So, ignoring the three days of rain/clouds, the one clear night was fruitful for many and for me it made the trip worthwhile as I have two "okay" images to prove it. And while Huronia is much smaller in both scope (ignore the pun) and numbers of participants, it is a more intimate experience and sometimes, believe it or not, smaller is better!

Both of my images (M16 to the right, and M2 on the front cover) were taken with a Canon XSi DSLR, at 800 ISO. I took 25 lights at 2 minutes each, along with dark, bias and flat frames for each image. I used PHD for guiding my Skywatcher 120ED scope (using a focal reducer) and Images Plus for processing.

The AuroraMAX project

The AuroraMAX project is a five-year educational and public outreach initiative that will monitor the intensity and frequency of the aurora borealis above Yellowknife, Northwest Territories, during Solar Maximum, the most active period in the 11-year sunspot cycle (expected in 2013).
Sunspots (regions of intense magnetic activity that form cooler, dark patches on the Sun's surface) release powerful bursts of solar wind that lead to vivid, brilliant auroras on Earth. Through the development of strong northern and national partnerships, as well as a commitment to observation, outreach and science, AuroraMAX will enhance our understanding of the relationship between activity on the Sun and auroral activity on Earth.



- Observation
  AuroraMAX features an online observatory that will provide Canadians with instant access to colour images of the northern lights above Yellowknife, Northwest Territories—a prime location for aurora observation in Canada.

- Outreach
  Northern and national outreach initiatives will provide informative and interactive learning experiences for aurora watchers of all ages. Colour images of the northern lights collected at Yellowknife will be the foundation of AuroraMAX outreach.

- Science
  The AuroraMAX Project will enhance the Canadian Space Agency's contribution to the research on the northern lights by collecting data of aurora sub-storms using innovative aurora camera technology, developed by the University of Calgary. Led by space physicist Eric Donovan, the University of Calgary will provide scientific and technical support for AuroraMAX.

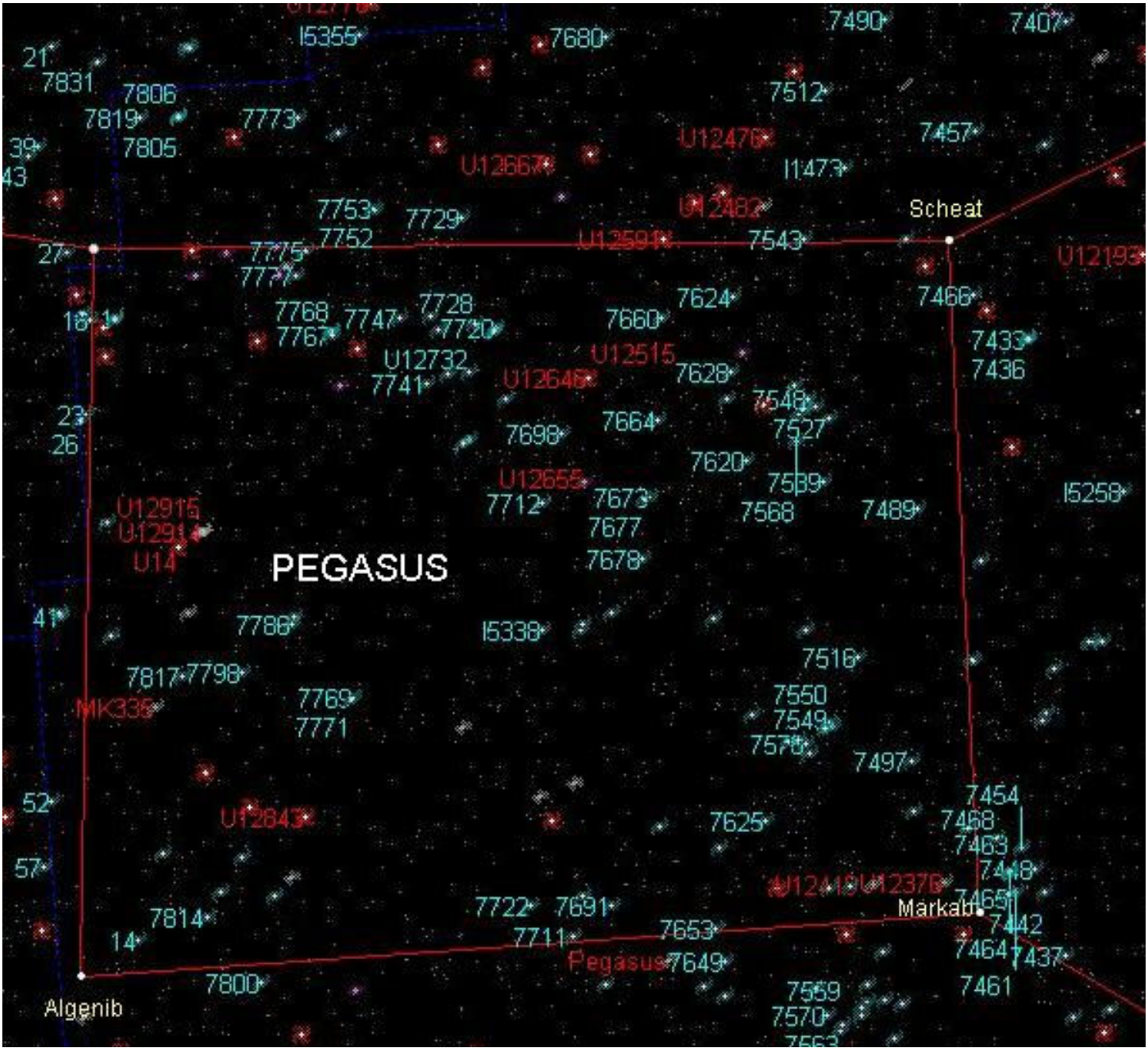
Partners & objectives
Through the collaboration of the Canadian Space Agency, Astronomy North, the City of Yellowknife and the University of Calgary, AuroraMAX aims to:
- Raise awareness of the science of the northern lights; and
- Enhance public access to aurora observation in the North and across Canada.

Go to http://www.asc-csa.gc.ca/eng/astronomy/auroramax/ to access the live camera.

The Sky This Month - October 2010 by Gary Boyle

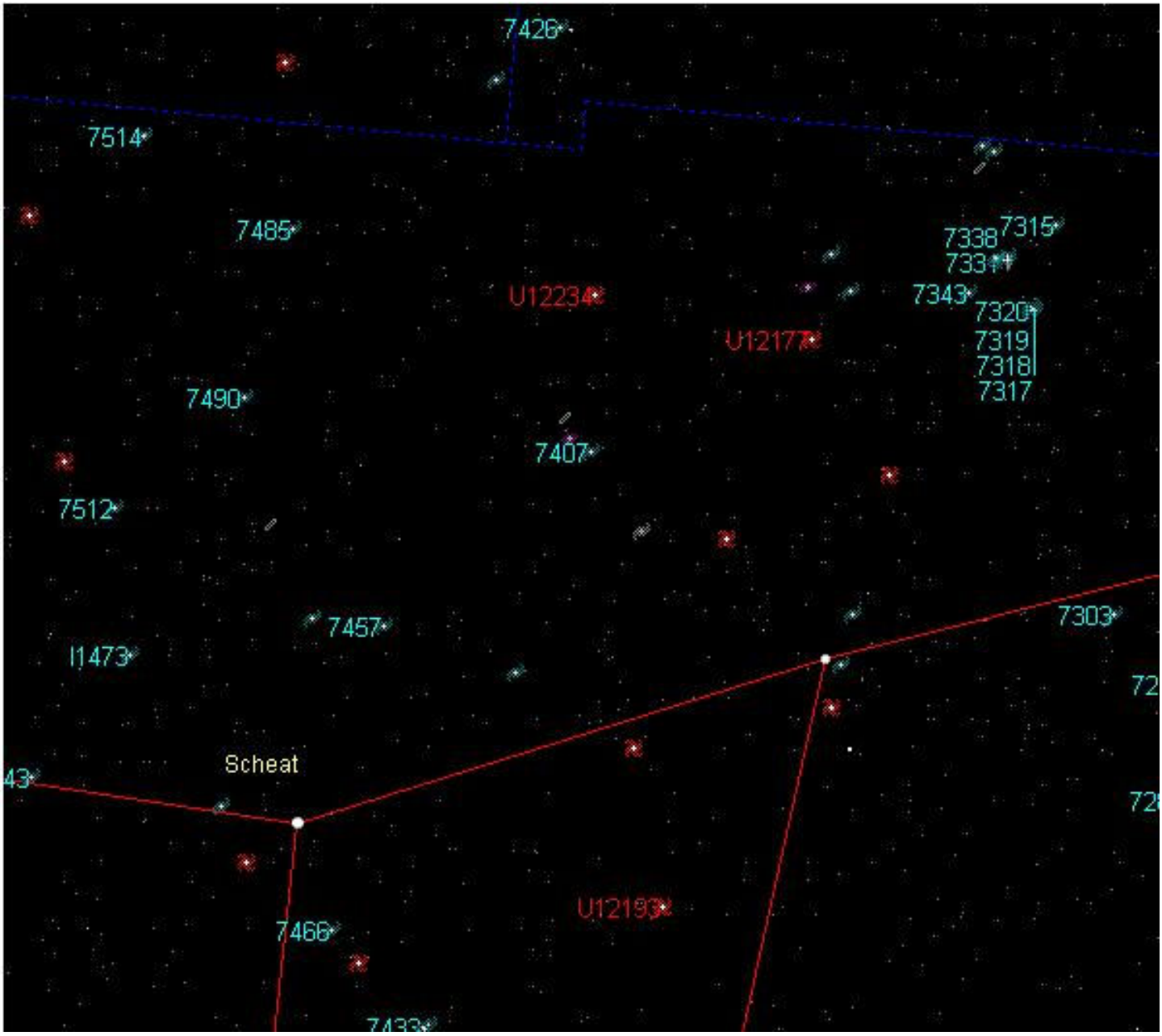
Giddy Up Pegasus

Other than the familiar circle, a square is one of the easiest shapes to recognize. After all, it consists of four equal length sides with its corner measuring perfect 90-degree angles. If I were to ask you to point out a nonagon in the night sky, not knowing it is a nine-sided polygon with 140 degree inside angles, you would never find it. However, you would have better luck with the common square.



The great square in the night belongs to Pegasus. The winged horse, is portrayed in the mythological story of Perseus the hunter slewing the Medusa and saving Andromeda from the sea monster - Cetus. Perseus and Andromeda fly off into the sunset on the winged beast. It is not a perfect square in the sky but still close enough to the real thing. Each side measures from thirteen to fifteen degrees of sky, so this is a large constellation.

Pegasus ranks 7th in overall area with 1,121 square degrees of sky. All but three of the 298 NGC objects that reside within its borders are galaxies. With numbers like this, your night is definitely cut out for you. First, let us look at the star Markab – the horse's neck. Markab designated the alpha star is found in the southwest portion of the great square and is a sun on its last legs – literally. This class B sun is located 140 light years away and is just over 200 times the luminosity of our Sun.



This star should be undergoing vicious physical changes as it appears to be starved for fuel. If it has not met its demise, Markab will soon show signs of withering. When this occurs, Markab will expand rapidly which in turn will cause the star to rotate slower and become a much cooler orange giant. Markab will then brighten to many times its current luminosity to die finally as a massive white dwarf like Sirius-B.

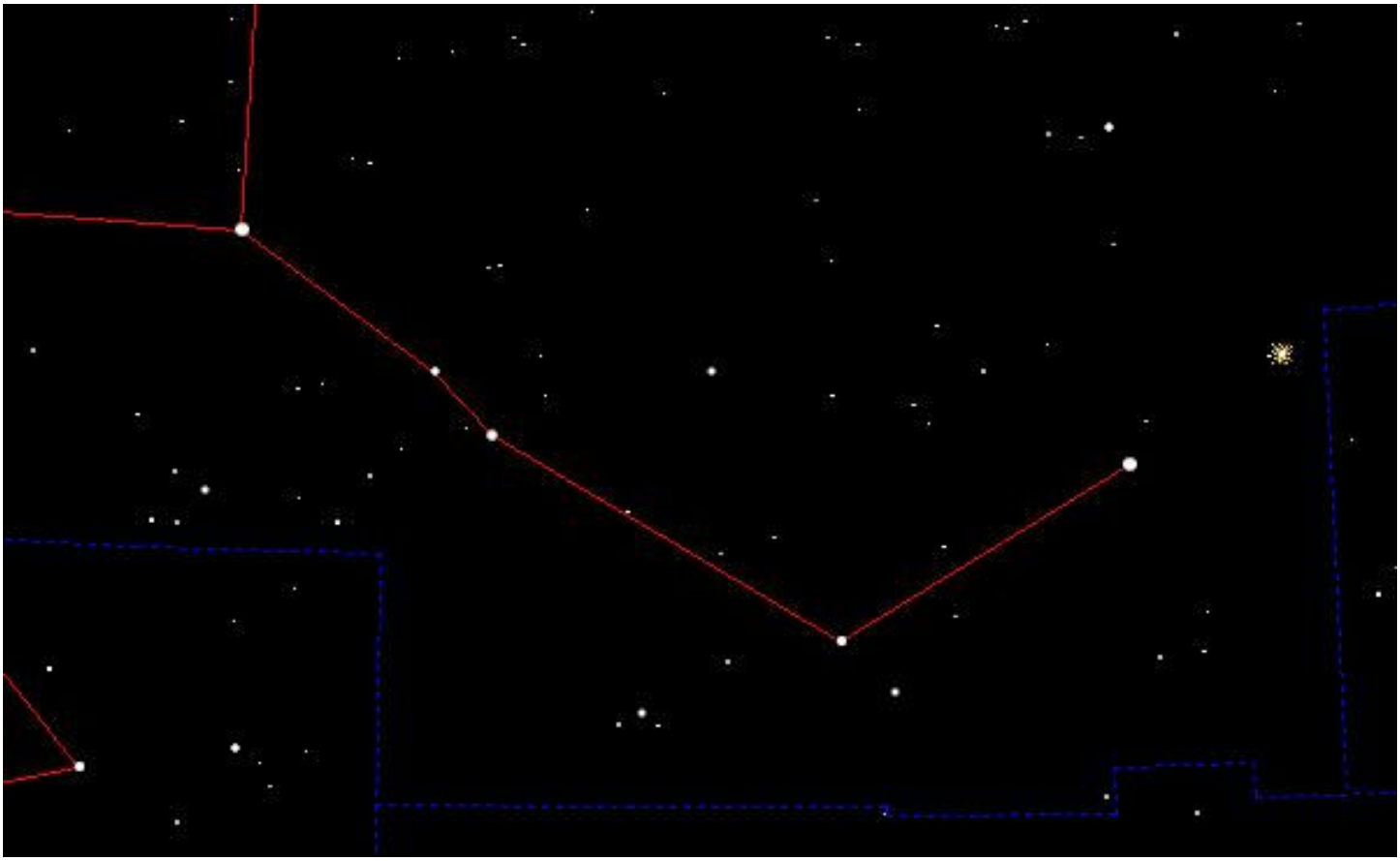
One of the prettiest galaxies to grace Pegasus is NGC 7331. Nicknamed the "Deer Lick" galaxy, NGC 7331 is a very close resemblance to our own Milky Way Galaxy and give us a nice indication what our galaxy would look from 46 million light years away. I wonder why Charles Messier never included this gem in his catalogue of objects. NGC 7331 is a delicate spiral galaxy whose arms that appear a bit more expanded on one side. Below is a fantastic image taken by Dietmar Kupke, Stefano Cancelli, Paul Mortfield all from Toronto, ON. Keep up the great work.

If you use the Deer Lick galaxy's length as a pointer, slide your scope south 30 arc minutes or the width of the full moon until you come to a tiny patch of fuzz. If dark skies are in your back pocket, you have found Stephan's Quintet. Catalogued as Hickson 92 or Arp 319, the Quintet is a treasure of five extremely faint galaxies in one neat little package. Their magnitudes range from 13.6 to 14.8. Oh by the way, this little package is an estimated 280 million light years from us.

Another wonderful galaxy to add to your observing list is NGC 7479. This 11th magnitude object is listed at 105 million light years away. At 4 X 3 arc minutes, this backwards shaped S could be a bit of a challenge. By comparison NGC 7331 measure 11 X 4 arc minutes.

For a change of pace M15 is a beautiful globular cluster located some 33,000 light year away. Deemed as one of the oldest clusters around, it is thought to be almost as old as the Universe itself, M15 contains 112 variable stars and 8 pulsars including one double neutron star system. To top it of, astronomers believe M15 posseses a central black hole. Now that is some collection. For a challenge, try to locate Pease 1 which is the planetary nebula seen to the top left of the cluster.

Well the Jupiter show is winding down. With a combination of a close approach to Earth as well as riding higher on the ecliptic than in the past few years, astrophotographers worldwide had a great opportunity to attain their own personal image of our solar system's largest planet. It is a show that I will never forget. Jupiter attained opposition on September 21st and is slowly moving away from us so now is the time to still catch some good seeing. The king of planets is up in the east just before sunset and is unmistakably bright all night long. Only the moon is brighter.



Although Venus is now sliding between the Sun and us, it is seen very low on the ecliptic in the west after sunset and passes below the Sun (inferior conjunction) on October 29th. A few weeks later, it moving into the morning sky.

Beginning October 6th the Zodiacal Light can be seen in the east before dawn sky lightens. The Zodiacal Light is cause by Earth and our location on it, lining up with the leftover dust and rock debris of the inner solar system. This is not an atmospheric display but interplanetary from us to the Sun. For the next two weeks without moon interference, this is a nice target to try to photograph.

Our astronomical community worldwide will be celebrating Astronomy Day part 2 on October 16th. On this day astronomy and stargazing clubs and other organizations around the world will plan special events. You can find out more about October's events by checking the Astronomy Day link

We have not had a naked eye comet for a couple of year but the drought is over. Comet Hartley is now well placed in Cassiopeia thus visible all night long. Use the chart to follow its path across the sky. Around October 20th should be your best time to see Hartley 2 without optical aid but you still need to find a dark spot. On the 20th the comet will be only 18 million kilometres from Earth. Who will have the best seat to view out interplanetary visitor? It is more like what. NASA's Deep Impact spacecraft will observe comet Hartley 2 from a distance of about 600 miles. This would also be a great target for Astronomy Day star parties.

The Orionids Meteor Shower is expected to put on a good display in the morning hours between Oct 20 and 24. With a predicted rate of only 20 meteors per hour, it will not be a great show but it is still a meteor shower. Best viewing is looking east after midnight.

And lastly, new moon is slated for October 7th with the full Hunter's moon occurring on the 23rd.

Until next month, clear skies everyone.

The Old Astronomer to his Pupil, by Sarah Williams (1837–1868)

Reach me down my Tycho Brahe, I would know him when we meet,
When I share my later science, sitting humbly at his feet;
He may know the law of all things, yet be ignorant of how
We are working to completion, working on from then to now.

Pray remember that I leave you all my theory complete,
Lacking only certain data for your adding, as is meet,
And remember men will scorn it, 'tis original and true,
And the obliquy of newness may fall bitterly on you.

But, my pupil, as my pupil you have learned the worth of scorn,
You have laughed with me at pity, we have joyed to be forlorn,
What for us are all distractions of men's fellowship and wiles;
What for us the Goddess Pleasure with her meretricious smiles.

You may tell that German College that their honor comes too late,
But they must not waste repentance on the grizzly savant's fate.
Though my soul may set in darkness, it will rise in perfect light;
I have loved the stars too fondly to be fearful of the night.

What, my boy, you are not weeping? You should save your eyes for sight;
You will need them, mine observer, yet for many another night.
I leave none but you, my pupil, unto whom my plans are known.
You "have none but me," you murmur, and I "leave you quite alone"?

Well then, kiss me, -- since my mother left her blessing on my brow,
There has been a something wanting in my nature until now;
I can dimly comprehend it, -- that I might have been more kind,
Might have cherished you more wisely, as the one I leave behind.

I "have never failed in kindness"? No, we lived too high for strife,
Calmest coldness was the error which has crept into our life;
But your spirit is untainted, I can dedicate you still
To the service of our science: you will further it? you will!

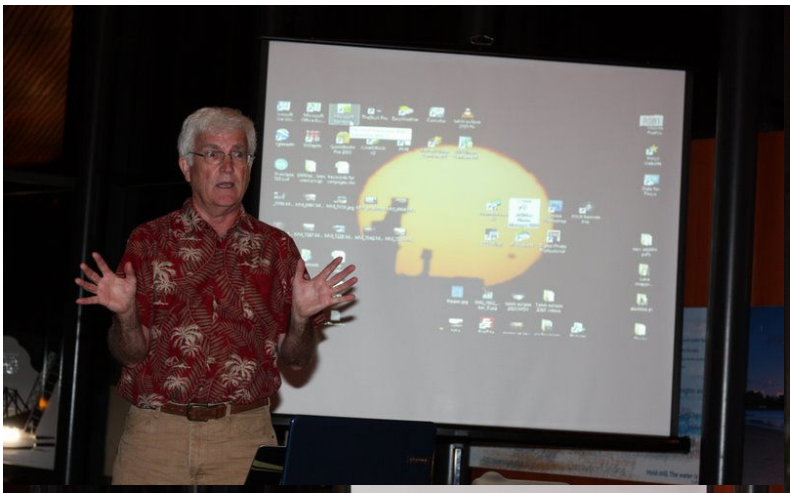
There are certain calculations I should like to make with you,
To be sure that your deductions will be logical and true;
And remember, "Patience, Patience," is the watchword of a sage,
Not to-day nor yet to-morrow can complete a perfect age.

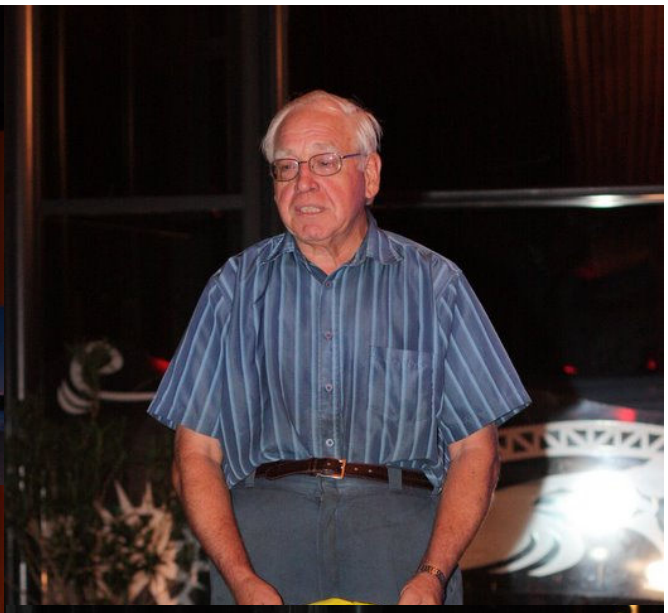
I have sown, like Tycho Brahe, that a greater man may reap;
But if none should do my reaping, 'twill disturb me in my sleep
So be careful and be faithful, though, like me, you leave no name;
See, my boy, that nothing turn you to the mere pursuit of fame.

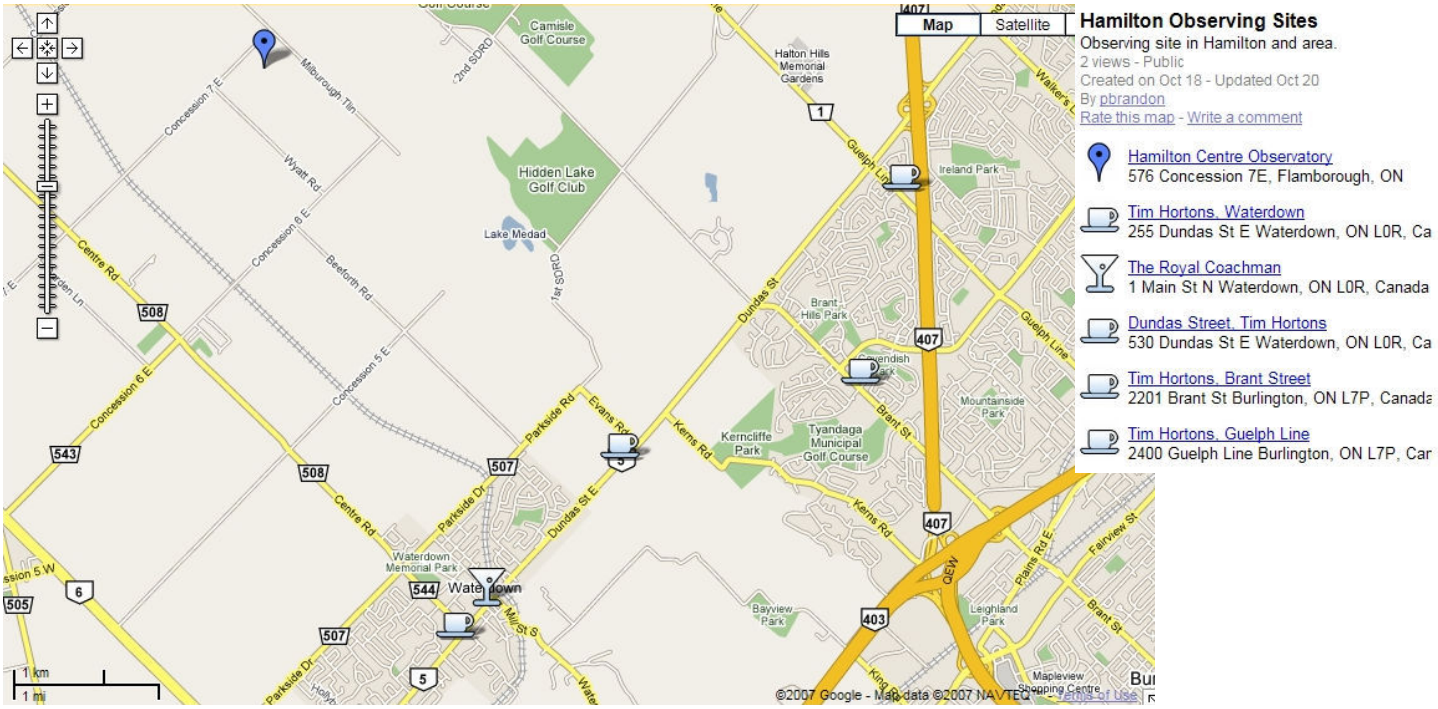
I must say Good-bye, my pupil, for I cannot longer speak;
Draw the curtain back for Venus, ere my vision grows too weak:
It is strange the pearly planet should look red as fiery Mars,
God will mercifully guide me on my way amongst the stars.

What you missed in September...!

September is normally the time when we get a chance to see what others have been doing over the last few months. This year was no exception, and as a result, if you weren't there, you missed a report on Colin Haig at the New Brunswick GA, Gordon Bulger at his entertaining best on the summers total eclipse of the Sun near Tahiti, Bert talking about solar observing, and Gary Colwell on how he took that incredible picture that won SkyNews astrophotography of the year!







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What you Missed pictures by Ed Mizzi.

Image at right is of Comet Hartley, at 23:30 EDT, October 1, 2010 taken at SplitRock Observatory by Gary Colwell