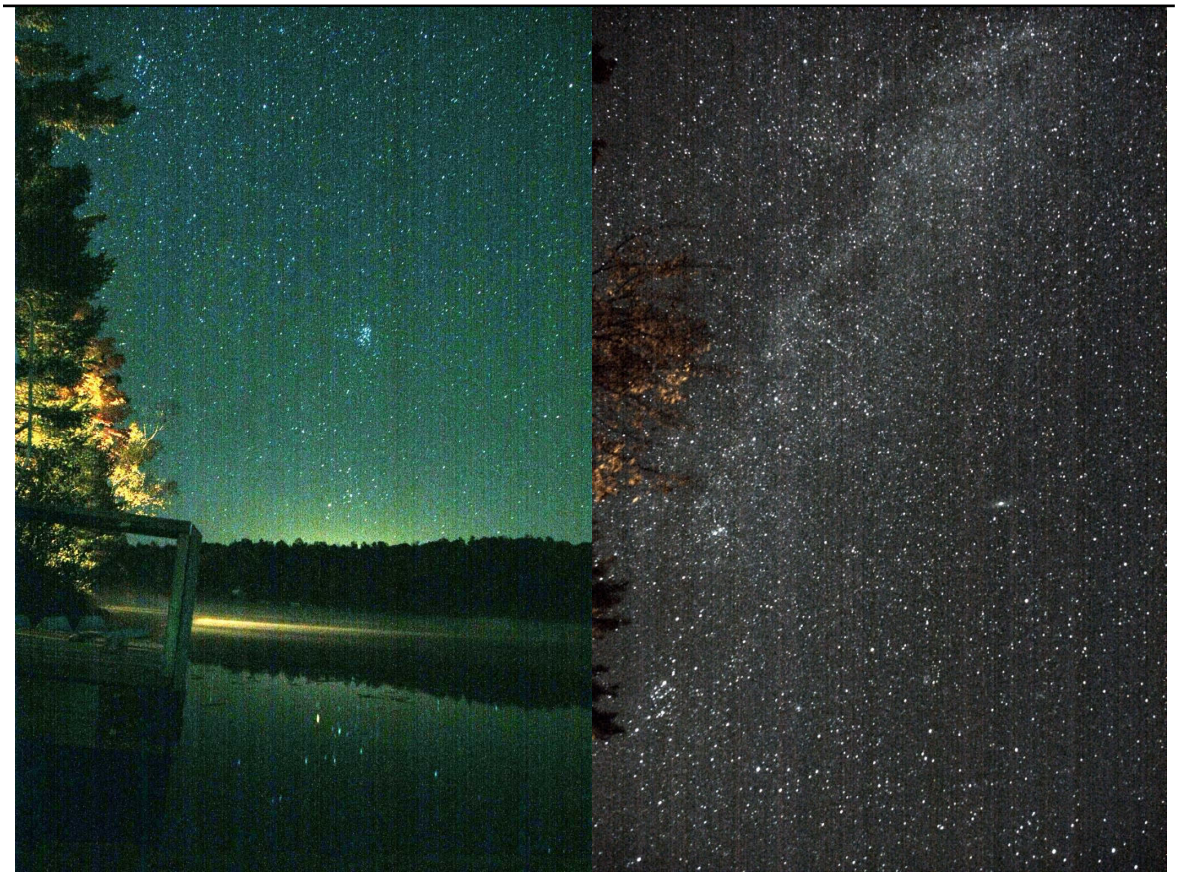

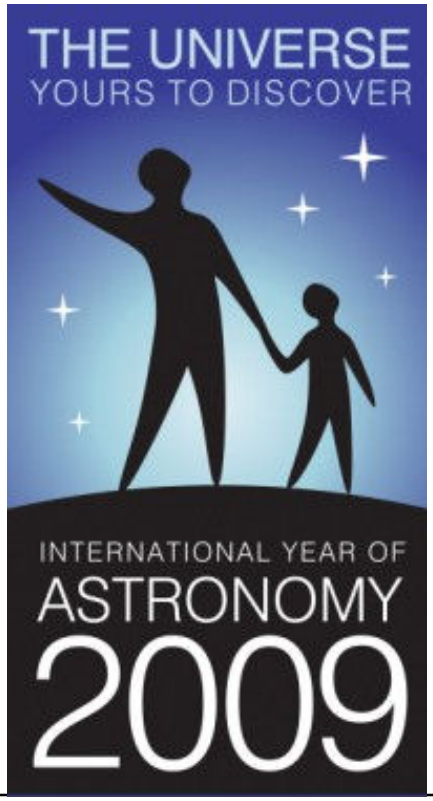


# Orbit

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November, 2009

# Issue Number 1, November, 2009

## Roger Hill, Editor

My how time flies...thus begins my third year of editorship.

I normally enjoy putting Orbit together. Some months it is a big struggle, in others, it almost seems to write itself. I'm hoping that this is the latter! The internet helps me tremendously, in that it's a vast source of information. Some of which is not worth the electrons used to paint it on my screen (yes, I still use a CRT). However, when you strike gold, it makes it all worthwhile.

Knowledge, either the acquiring of it, the searching for it, or the dispensing of it is almost always fun, and personally, I've some good reminders of this in the past couple of months.

Easily the high point, astronomically, was the series of workshops that we did at Discovery Landing in Burlington. It took a large amount of time to put these together and wow, was it worth it!

Finding themes around each of the four weeks, was, I assumed going to be relatively easy. But that was not the case. I wanted a series of lectures that would hang together as a coherent whole, leading towards putting together Galileo-Scopes. I asked around the RASC, and got some really good suggestions, some of which I could use, and others not. Dave McCarter came up with some great ideas, but they involved putting the scopes together first. The problem with this was that the program we'd already decided on (in conjunction with the City of Burlington) was that Telescope building would be the last workshop. There was a charge of $5 admission each of the nights, but an extra charge for the last one, as that would include a telescope! I did use a couple of ideas that Dave came up with, and if we do it again, I just may switch things around. So, the first was on Introductory Visual Astronomy, the second on How to choose a telescope, the third one was two themes: the first part was How High is the Sky, and the second about using a planisphere. The final one was building the GalileoScope itself.

Up until I actually started putting them together, I'd presumed that this would not be difficult. After all, I've had a telescope since 1965, and first joined the Centre in 1970. Some of the electives I took at the University of Waterloo were the astronomy courses offered through the Physics Department. I've observed from three different continents, and from some of the planets most legendary skies, spent over ten minutes in the Moons umbra, and attended lectures by people like Frank Drake, Bart Bok, and the most amazing one of all by Alan Dyer. It was the latter that gave me the inspiration I needed. Thanks to Glenn Kukkola, I own a copy of The Backyard Astronomers Guide. This is one excellent book, despite my picture being page 37 (you can also see Les Nagy in the background), and it had everything in it that I needed. It became the textbook.

Coming up with the images needed took a lot longer, too, but at least I wasn't searching blindly. Using Messrs Dyer and Dickinson's book, at least all I had to do was go looking. I wrote myself some good notes that I could refer to, so that the images shown on the screen amplified what I had to say.

Key to all this was time, and fortunately, my work schedule allowed some major numbers of hours for me to devote to the project. This worked reasonably well for the first two lectures, although I had to backtrack a bit after the first one because for some reason, I had a nagging feeling that I'd forgotten something major. After the initial lecture was over, and just before we headed outside to take in the views through telescopes set up by some members, I was asked why I hadn't talked about Auroras! That was it! I covered this at the beginning of the next one.

Of all the topics covered, my favourite part came in the third lecture, when I talked about the how far it was to the centre of the Milky way, and mentioned about the monster black hole thought to lurk there. Hands shot up all over the room, and we ended up having a great discussion about black holes, neutron stars, event horizons, supernovae, and the like.

Friday nights became my favourite night of the week, but the final one, building the GalileoScopes, was very different from all the others.

First of all, it was pouring down. Secondly, I forgot the projector! I told my contact at Discovery Landing, and hoping that the three brave volunteers wouldn't panic when I wasn't there, I headed back to Milton to get it. A 50 minute round trip later, and I got everything set up. Mark, Andy and Will were a tremendous help, and with just a couple of hiccups, we were off and running. We managed to get 12 of them built, with only a couple of false starts but the biggest disappointment was that with the rain pouring down, we were not able to take them outside to use. I'd timed the final one to be around 1st Quarter, so they'd be able to find, and see, the Moon. Afterwards, when all questions had been answered, and everything was packed away, the four of us went next door for a well earned drink, and a slice of pizza.

We had some discussion about Discovery Landing being a great place to have our monthly meetings, with Andy making some informal inquiries. One of the nice things about the place is that there's a very good restaurant attached to the place. I don't know how happy they'd be if a couple of dozen amateurs descended on the place and wanted to have a good chat, as it's more a place for a quiet conversation, than raucous laughter, but we'll see.

The renovations to the observatory are just about finished. There's still a couple of things left to do, but on the whole, the place is ready for use again! The annual meeting we held in the main room was well attended, the business portion looked after, and we cleaned out the library of some old books that had suffered with the mould problems we had. It would have been nice to have had a bit more time for the paint we used to dry. It's a high-hide white paint with mould inhibitors in it, so it has a rather distinctive odour. By the time we had our Board meeting there two weeks later, the aroma had completely dissipated.

We've still got to put the projector and sound system back in, the new gate to be installed, and the outhouse to do.

So what do we have coming up this year now that the renos have essentially been done?

We'll be running some courses over the winter, including, but not limited to, how to use the big 'scope! We're looking at some other series of presentations, some that were initially offered by other Centres. For instance, there's a great beginners course offered by the Prince George Centre that looks amazing. There's some that involve observing, like working towards getting your Messier certificate, and the other certifications that the Society offers.

For Thanksgiving, my family and I visited Bancroft. This is a great part of the province, no matter what the weather, and one I'd like to get to know a lot better. One of the great things is that not only does it offer some tremendously dark skies, but even if it's cloudy, during the day you can hunt for some incredible minerals.

The terrain is varied, dotted with gorgeous lakes and rivers, and at that time of year, the Fall Colours are at their peak. We were fortunate to have a very good friend fly in from Ottawa, and he treated the rest of the family to a flight each in the right hand seat...we ran out of time for me to go, but he and I had flown over Ottawa some years ago, so it was only fair that my wife and children got the view this time! Saturday night saw us in town, scrambling over the CN rock pile with black lights in hand, looking for fluorescent minerals. Successfully, I might add. On Sunday we went to a place called the Bear Lake Diggings, and found some wonderful crystals of apatite. The walk though the woods would have been worth the trip, but finding these perfect crystals was very much an added bonus.

Sunday night turned cold and crisp, and when I went outside at about 10pm, the sky was that inky black you only get from truly dark skies. M31 stood high in the sky, and M33 was glimpsed several times. I grabbed my camera and my sons tripod and went off to take some pictures. You can find some of the results on the front cover, but remember these were not only unguided, but undriven! They were 30 second exposures, and then stacked using Iris, and processed with Photoshop.

The following morning was one of those marvelously sharp fall mornings. Not a breath of wind, there's a lovely veil of mist on the lake, and the leaves are tumbling off the trees...some slowly wafting down, others spiraling in, some colliding in mid-air, creating a gentle rustling sound. It was an amazing moment.

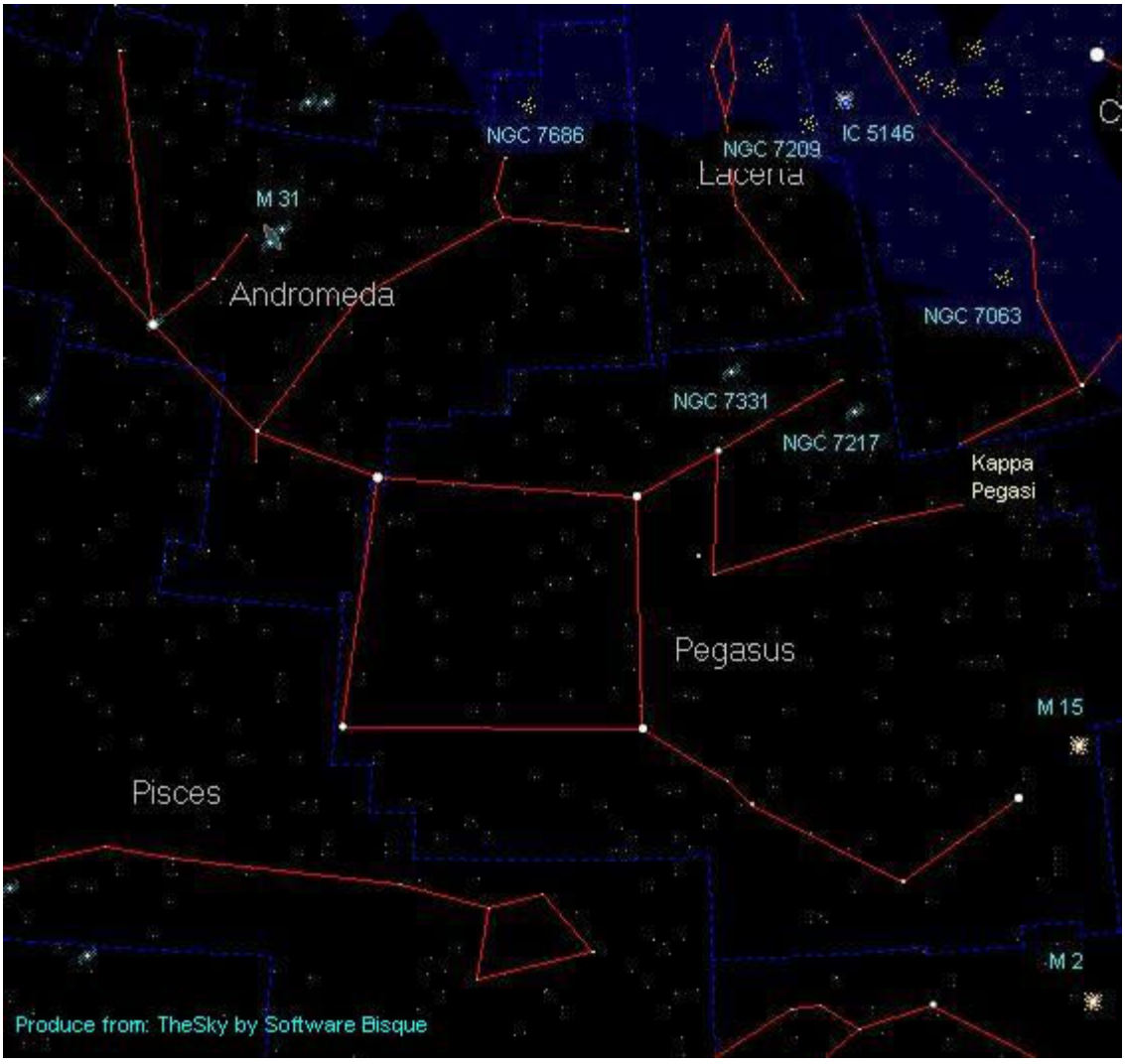
Clear skies, one and all,

Roger Hill
Orbit editor and President.

# The Sky This Month - November 2009, By Gary Boyle, Ottawa

## The Legend Continues

Throughout time, the winged horse Pegasus has appeared in many different mythological stories and legends. One of the most famous tales is the "Royal Family of Constellations" where Perseus the hero rescues Andromeda the maiden from the sea monster Cetus. Upon slaying the monster, Perseus and Andromeda ride the winged horse into the sunset.




Other stories have Pegasus helping Bellerophon fight the Chimera and the Amazons which is also depicted as an insignia of the U.K.'s parachute troops of WWII. In Normandy, France - a key bridge was secured by the British 6th Airborne thus limiting the German's counter attack. In 1944 this bridge was renamed Pegasus Bridge in honour of the operation.

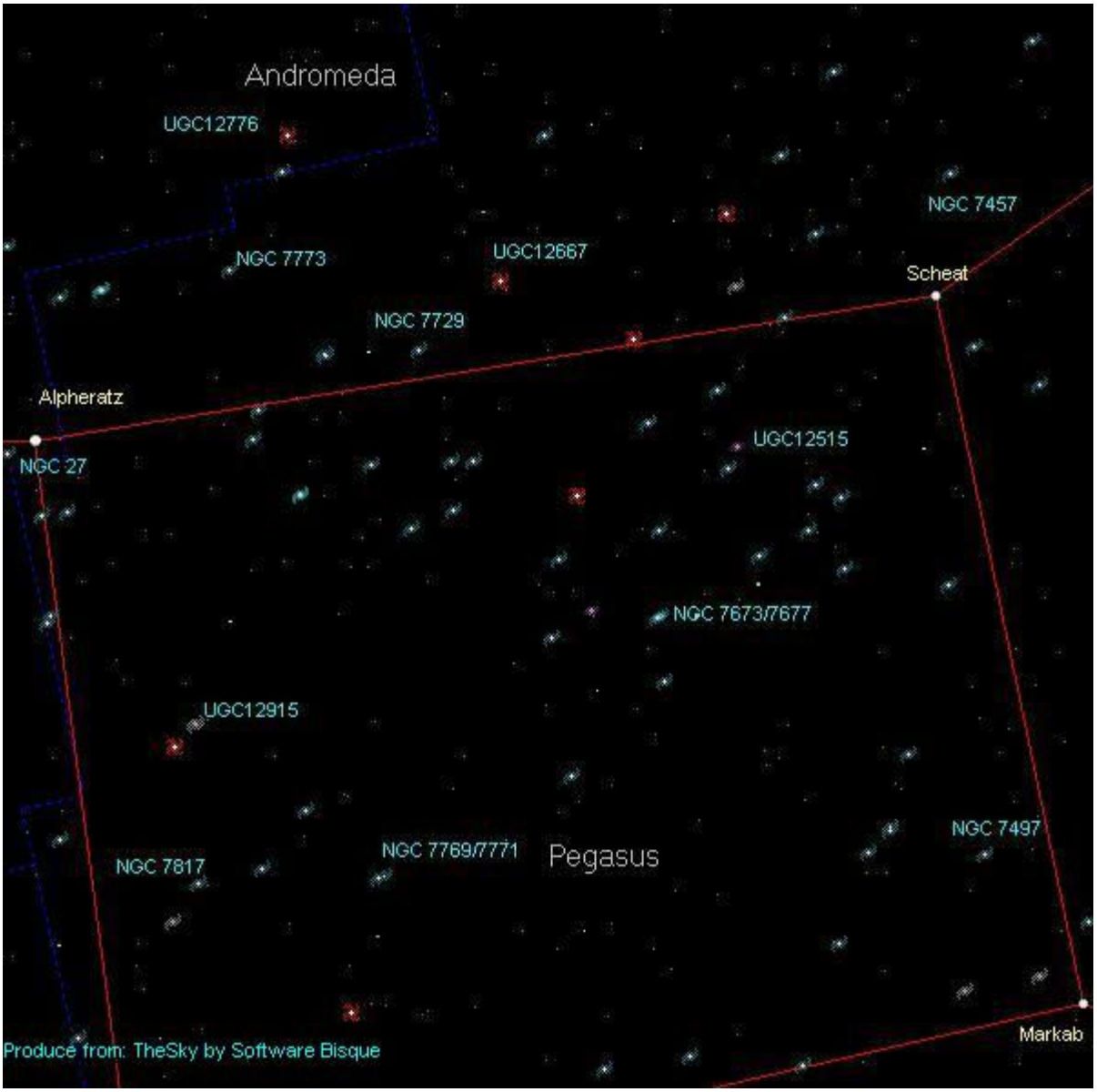
Today, the winged horse appears on the Mobile gas logo and Pegasus Airlines in Istanbul Turkey just to name a couple. Even the movie industry's TriStar Pictures has incorporated our four legged hero as its own. These are far too many other sources to mention in this article.

In astronomical terms, Ptolemy included Pegasus in his original 48 constellations in the year 2 BC and has survived changes made in the sky over countless centuries. In 1930, the International Astronomical Union set forth the permanent positions and boundaries of all 88 constellations in the sky. Pegasus will be recognized forever in time.

Looking at the Great Square at night, the alpha star called Markab – not to be confused with Markeb (Kappa Velorum) is slowly dying, as it appears the fusion process at its core are almost coming to an end. Markab can be found at the lower right of the square and signifies the shoulder of the famed horse. Residing 139 light years from us, Markab is presently a B9 star but as time goes on, it will become a cooler orange coloured mammoth sun, thus moving off the main sequence and into the section reserved for giants.

Moving to the upper right of Square, we come to Scheat or 53-Beta Pegasi. Located 200 light years from us, it is a class M red giant or supergiant star. If we replaced Scheat with the Sun; it would extend about half way to Earth. This size works out to about 350 times as bright as our Sun but since most of the star's output is in the infrared, the true value is more like 1500 times that of our daytime star.

Kappa Pegasi is a fine, but close double star consisting of magnitudes 4.8 and 5.3. They dance around each other in eleven and a half years with a small separation between the two. Today, their gap is 0.2 arc minutes along with a PA (position angle) of 132 degrees. This binary system is 115 light years from us.




The Great Square of Pegasus, lists 7th in area and takes up 1,121 square degrees of sky. Within these boundaries lay 298 NGC objects down to magnitude 16.2. At the top of our observing list is the spiral galaxy NGC 7331. Aka the Deer Lick Galaxy, its located 46 million light years from us. Even at this distance it still glows at a decent magnitude 9.5 - yet somehow missed a place in Charles Messier's famous catalogue of objects. NGC 7331 measures 11 by 4 arc minutes or just over a third the size of the full moon of length in the sky. A supernova recorded in 1959 is the only one associated with this galaxy.

The Deer Lick is also a guide to locating the illusive Stephan's Quintet. Sometimes regarded as Hick 92, the Quintet is a collection of very faint remote galaxies which are estimated to reside somewhere between 210 and 340 million light years from us. Astronomers believe that four of the five galaxies are gravitationally bound and will eventually merge together.

You might find NGC 7729 will pose a bit of a challenge. That does however depend on the aperture of your telescope as well as seeing conditions. Those owning a 20 inch and larger telescope should not have a problem finding anything in the sky. NGC 7729 is about 14th magnitude and measure 1.8 X 0.6 arc minutes and is elongated with a bright central bulge.

Look for the globular cluster M15. It is located to the right side of the constellation boundaries. This extremely dense cluster is located a little more than 33,000 light years from us. It just reaches naked eye visibility of magnitude 6.4 on a very dark moonless night. There have been 112 variable stars identified in this incredible cluster.

If you are up to a real challenge, try spotting or photographing Pease 1 in M15. This is a rare planetary nebula residing in a globular cluster. Pease 1 is listed as magnitude 15.5 and is a mere 3 arc seconds wide. Good luck on this one.

Before leaving the confines of Pegasus, be sure to look for NGC 7497. This very elongated galaxy measure one-fifth the wide of the full moon. At almost edge-on status, NGC 7497 is listed at 13th magnitude and shows some nice detail in its spiral arms.

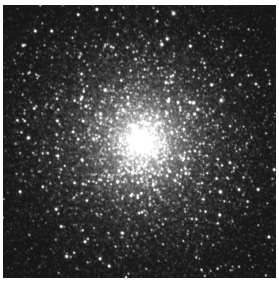
Jupiter is still the show stopper for November and by month's end, will be on the meridian at sunset, setting six hours later. On November 1st, Jupiter was 715 million kilometers away and moving from us at 1,700 kilometers a minute. But although Jupiter is slowly leaving our skies, Mars is becoming more prominent as the weeks go by. The red planet on November 1st was 175 million kilometers and closing fast. The Mars opposition will take place on January 29, 2010 at which time our two planets will be closest.

Brilliant Venus is still up in the eastern predawn sky but sliding lower each day. By month's end it will be a mere 10 degrees from the Sun, making it difficult and a bit hazardous to find. Being this close to the Sun in the sky, one can accidentally catch a glimpse of an unfiltered Sun in binoculars or a telescope.

The Leonid meteor shower will peak on November 17th at 15 hours UT. This year, the International Meteor Organization is expecting rates to be close to 100 meteors seen per hour at its peak. This shower is the result of 55P/Tempel-Tuttle's return in 1998 when the comet replenished new debris in its wake. With a 33 year orbit, the comet's next return is around the year 2031. It is this comet dust that Earth plows through each year on this same (or close to) date. These sand size meteoroids will dive into Earth's atmosphere at about 72 km/sec, vaporizing 80 to 100 kilometers above us.

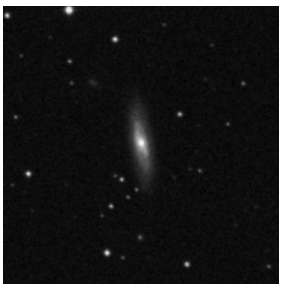
The best place to enjoy the show is away from city lights. Simply pack a lawn chair that reclines, a sleeping bag along with winter gear for warmth and head into the country side. You will have to wait for the radiant (area where the meteors seem to come from) to rise around midnight local time. The higher the radiant is in the sky, the greater the numbers of meteors seen. New moon occurs on the night before so it will not interfere with the sky show.

| Object | Type | Magnitude | Coordinates |
|---|---|---|---|
| M15 | Globular cluster | 6.4 | RA:21h 30m 0.0s Dec:+12d 10 |
| NGC7331 | Galaxy | 9.5 | RA:22h 37m 6.0s Dec:+34d 24 |
| NGC7497 | Galaxy | 13.0 | RA:23h 09m 6.0s Dec:+18d 11 |
| NGC7729 | Galaxy | 14.0 | RA:23h 40m 36.0s Dec:+29d 11 |
| Stephan's Quintet | Galaxy group 1 | 3.5 | RA:22h 35m 53.9s Dec:+33d 57 |


M15


NGC7331


NGC7497


NGC7729


Stephan's Quintet

# CARRYING THE SHUTTLE HOME

**A quick "trip report" from Triple Nickel, the pilot of the 747 that flew the shuttle back to Florida after the Hubble repair flight - a humorous and interesting inside look at what it's like to fly two aircraft at once.**

**Well, it's been 48 hours since I landed the 747 with the shuttle Atlantis on top and I am still buzzing from the experience. I have to say that my whole mind, body and soul went into the professional mode just before engine start in Mississippi, and stayed there, where it all needed to be, until well after the flight...in fact, I am not sure if it is all back to normal as I type this email. The experience was surreal. Seeing that "thing" on top of an already overly huge aircraft boggles my mind. The whole mission from takeoff to engine shutdown was unlike anything I had ever done. It was like a dream—someone else's dream.**

**We took off from Columbus AFB on their 12,000 foot runway, of which I used 11,999 1/2 feet to get the wheels off the ground. We were at 3,500 feet left to go of the runway, throttles full power, nose wheels still hugging the ground, co-pilot calling out decision speeds, the weight of Atlantis now screaming through my fingers clinched tightly on the controls, tires heating up to their near maximum temperature from the speed and the weight, and not yet at rotation speed, the speed at which I would be pulling on the controls to get the nose to rise. I just could not wait, and I mean I COULD NOT WAIT, and started pulling early. If I had waited until rotation speed, we would not have rotated enough to get airborne by the end of the runway.. So I pulled on the controls early and started our rotation to the takeoff attitude. The wheels finally lifted off as we passed over the stripe marking the end of the runway and my next hurdle (physically) was a line of trees 1,000 feet off the departure end of Runway 16.**

**All I knew was we were flying and so I directed the gear to be retracted and the flaps to be moved from Flaps 20 to Flaps 10 as I pulled even harder on the controls. I must say, those trees were beginning to look a lot like those brushes in the drive through car washes so I pulled even harder yet! I think I saw a bird just fold its wings and fall out of a tree as if to say, "Oh, just take me."**

**Okay, we cleared the trees, duh, but it was way too close for my laundry. As we started to actually climb, at only 100 feet per minute, I smelled something that reminded me of touring the Heineken Brewery in Europe. I said, "Is that a skunk I smell?" - the veterans of shuttle carrying looked at me, smiled, and said, "Tires"! I said, "TIRES? OURS?" They smiled and shook their heads as if to call their Captain an amateur. Okay, at that point I was. The tires were so hot you could smell them in the cockpit. My mind could not get over, from this point on, that this was something I had never experienced. Where's your mom when you REALLY need her?**

**The flight down to Florida was an eternity. We cruised at 250 knots indicated, giving us about 315 knots of ground speed at 15,000'. The miles didn't click by like I am use to them clicking by in a fighter jet at MACH .94. We were burning fuel at a rate of 40,000 pounds per hour or 130 pounds per mile, or one gallon every length of the fuselage. The vibration in the cockpit was mild, compared to down below and to the rear of the fuselage where it reminded me of that football game I had as a child where you turned it on and the players vibrated around the board. I felt like if I had plastic clips on my boots I could have vibrated to any spot in the fuselage I wanted to go without moving my legs...and the noise was deafening. The 747 flies with its nose 5 degrees up in the air to stay level, and when you bank, it feels like the shuttle is trying to say, "Hey, let's roll completely over on our back" - not a good thing I kept telling myself. So I limited my bank angle to 15 degrees and even though a 180 degree course change took a full zip code to complete, it was the safe way to turn this monster.**

**Airliners and even a flight of two F-16s deviated from their flight plans to catch a glimpse of us along the way. We dodged what was in reality very few clouds and storms, despite what everyone thought, and arrived in Florida with 51,000 pounds of fuel too much to land with. We can't land heavier than 600,000 pounds total weight and so we had to do something with that fuel. I had an idea....let's fly low and slow and show this beast off to all the taxpayers in Florida lucky enough to be outside on that Tuesday afternoon.**

**So at Ormond Beach, we let down to 1,000 feet above the ground/water and flew just east of the beach out over the water. Then, once we reached the NASA airspace of the Kennedy Space Center, we cut over to the Banana/Indian Rivers and flew down the middle of them to show the people of Titusville, Port St.Johns and Melbourne just what a 747 with a shuttle on it looked like. We stayed at 1,000 feet and since we were dragging our flaps at "Flaps 5", our speed was down to around 190 to 210 knots. We could see traffic stopping in the middle of roads to take a look. We heard later that a Little League Baseball game stopped to look and everyone cheered as we became their 7th inning stretch. Oh, say can you see....**

**After reaching Vero Beach, we turned north to follow the coast line back up to the Shuttle Landing Facility (SLF). There was not one person laying on the beach... they were all standing and waving! "What a sight" I thought.....and figured they were thinking the same thing. All this time I was bugging the engineers, all three of them, to re-compute our fuel and tell me when it was time to land. They kept saying, "Not yet Triple, keep showing this thing off," which was not a bad thing to be doing.**

**However, all this time the thought that the landing, the muscling of this 600,000 pound beast, was getting closer and closer to my reality. I was pumped up! We got back to the SLF and were still 10,000 pounds too heavy to land. So I said I was going to do a low approach over the SLF going the opposite direction of landing traffic that day. So at 300 feet, we flew down the runway, rocking our wings like a whale rolling on its side to say "hello" to the people looking on! One turn out of traffic and back to the runway to land.....still 3,000 pounds over gross weight limit. But the engineers agreed that if the landing were smooth, there would be no problem.**

**"Oh, thanks guys, a little extra pressure is just what I needed!"**

**Well, we landed at 603,000 pounds and very smoothly if I have to say so myself. The landing was so totally controlled and on speed that it was fun. There were a few surprises that I dealt with, like - with the orbiter on it - the 747 falls like a rock if you pull the throttles off at the "normal" point in a landing and secondly, if you thought you could hold the nose off the ground after the mains touch down, think again - IT IS COMING DOWN!!! So I "flew it down" to the ground and saved what I have seen in videos of a nose slap after landing.**

**Then I turned on my phone after coming to a full stop only to find 50 bazillion emails and phone messages from all of you who were so super to be watching and cheering us on! What a treat, I can't thank y'all enough. For those who watched, you wondered why we sat there so long. Well, the shuttle had very hazardous chemicals on board and we had to be "sniffed" to determine if any had leaked or were leaking. They checked for Monomethylhydrazine (N2H4 for Charlie Hudson) and nitrogen tetroxide (N2O4). Even though we were "clean", it took way too long for them to tow us in to the mate-demate area. Sorry for those who stuck it out and even waited until we exited the jet.**

**I'm sure I'll wake up in the middle of the night here soon, screaming and standing straight up dripping wet with sweat from the realization of what happened. It was a thrill of a lifetime. Again, I want to thank everyone for your interest and support. It felt good to bring Atlantis home in one piece after she had worked so hard getting to the Hubble Space Telescope and back.**

**Triple Nickel, NASA Pilot**

# Ivan Semeniuk's Embedded Universe

## Is Fermi Seeing Dark Matter?

A team of Harvard and NYU researchers has upped the ante in the race to discover the true nature of dark matter.

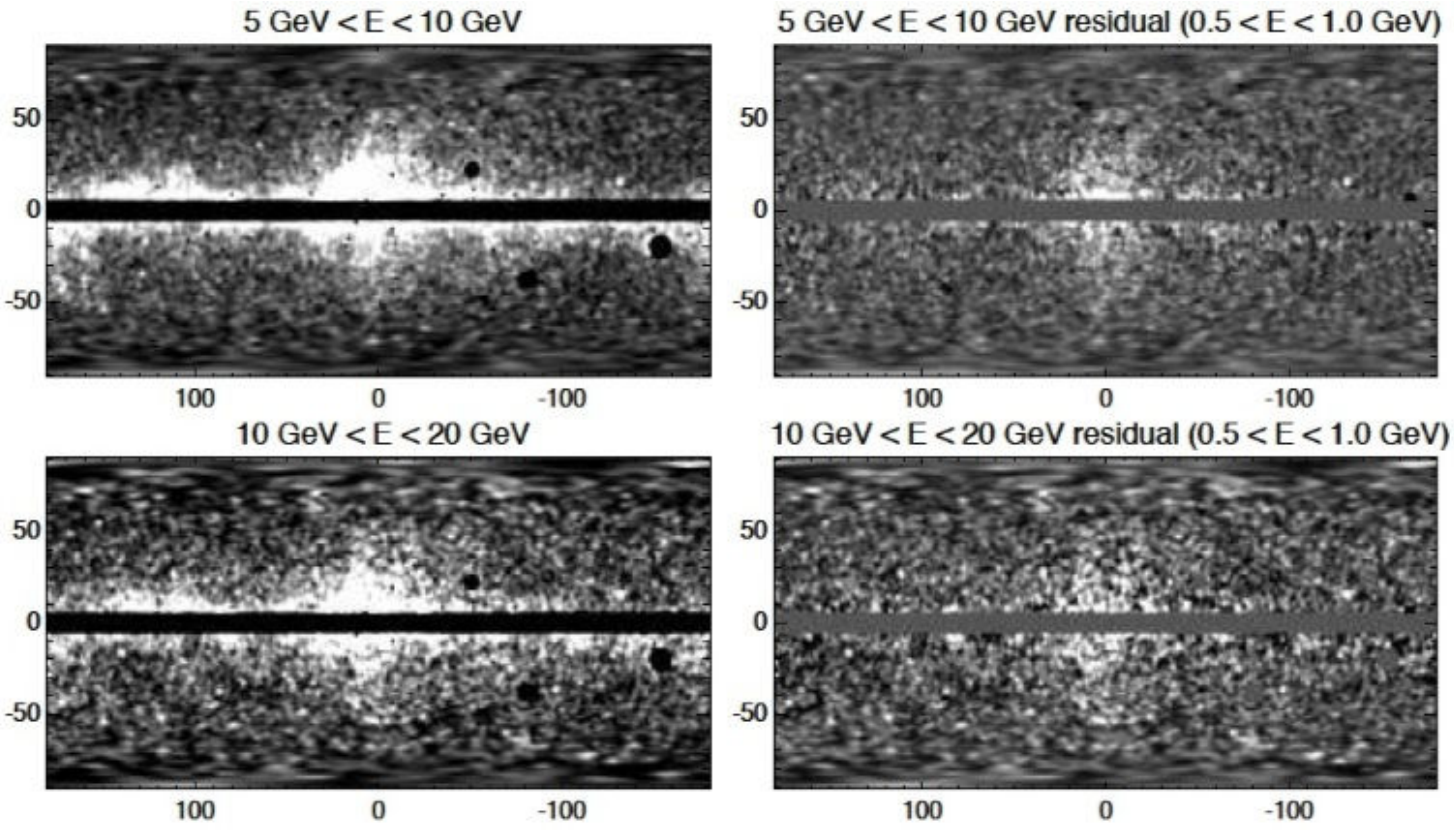
In a new paper posted online this week, the team says NASA's Fermi satellite has confirmed the existence of a vast cloud of energetic electrons surrounding the centre of our galaxy—electrons, they suggest, which could be subatomic shrapnel from dark matter particles colliding with one another.

If correct, their interpretation of the Fermi data would tie together a number of hints and puzzling observations that suggest dark matter is making itself visible through a process of annihilation. It also implies the existence of a new force to which only dark matter particles are attuned.

"It's very easy to produce this kind of a signal with dark matter," says Doug Finkbeiner of the Harvard-Smithsonian Center for Astrophysics, who is a co-author of the paper. "It's not so easy to do it with other things."

In contrast, scientists involved in gathering and analyzing the Fermi data have expressed caution over the claim. "While this work is certainly interesting, it's premature to draw any conclusions, especially if it requires exotic physics models." says Simona Murgia, a Stanford University physicist and Fermi science team member.

The new result is the latest twist in a story that began in 2004, when Finkbeiner reported the existence of an unexplained "haze" of microwave emission around the centre of the galaxy as seen by the Wilkinson Microwave Anisotropy Probe (WMAP). He suggested then that the haze could be the mark of electrons produced when dark matter particles, thought to be concentrated near the galactic center, interact and mutually destruct. Since then, ongoing debate over whether the haze really exists— let alone whether it's a byproduct of dark matter—has kept the question open.



Last year, the European PAMELA satellite and a balloon-borne detector called ATIC fueled excitement by detecting, respectively, energetic positrons and electrons in greater than expected numbers in Earth's vicinity. One possible source could be dark matter annihilations in or near the solar system, although a more conventional source, such as a nearby pulsar, could explain the excess.

Fermi's Large Area Telescope (LAT) is sensitive to both electrons and positrons, and early results discussed by team members in the spring seem to be consistent with the existence of a local excess.

Now Finkbeiner says that Fermi is also seeing a counterpart to the WMAP haze. The new result comes in the form of a diffuse glow of gamma rays around the galactic centre. The properties of the gamma rays suggest they are emitted by the kind of energetic electrons expected from dark matter annihilations. Most importantly, he says, the location and distribution of the "Fermi haze" closely fits that of the WMAP haze

Since the summer Finkbeiner has been sharing his analysis with colleagues, including the Fermi science team. The reservations they have expressed over the dark matter story stems from the basic challenge in understanding all the possible sources that could be contributing to Fermi's overall picture of the galactic centre.

"The gamma ray sky is very complex," says Murgia. "If a signal of dark matter annihilation is there it will be mixed with other conventional components, such as gamma rays produced in cosmic ray interactions."

For his part, says Finkbeiner, "I'm confident we're seeing the electrons we predicted" based on WMAP.

If Finkbeiner and his colleagues are right about what Fermi is seeing, it will be harder for others to come up with convincing explanations for the haze that don't involve dark matter.

For example the energy and smoothness of the gamma ray distribution suggests it is not the product of a single cataclysmic event, or even several discreet events, such as supernovae. Instead, the observations favor a process that generates high energy electrons throughout the galactic centre on a more continuous basis.

Dark matter annihilation could account for this, because theories in which dark matter is explained by supersymmetry suggest that the lowest mass dark matter particle—also called the neutralino—is its own antiparticle. That means two neutralinos would annihilate in a flash of energy when they encounter each other, producing photons and ordinary matter particles, including electrons.

The catch is that the expected rate of annihilations should be far lower than what is needed to create the observed haze. To account for this, theorists have proposed a new force among dark matter particles that enhances the likelihood of particles meeting and boosts the expected dark matter signal.

"This has led to a nice picture where the 'dark force' simultaneously explains why there are so many electrons and why the annihilation rate is so high." says co-author Neil Weiner of New York University.

The new results add to a growing sense that the identity of dark matter, a decades-old conundrum in astronomy and physics, is close to being cracked.

In addition to Fermi and related observations, researchers say efforts to detect dark matter directly in underground experiments such as XENON100 and LUX, along with the possibility that dark matter could be produced in the Large Hardron Collider, will soon narrow the range of possible explanations for the mysterious substance that accounts for 85% of the matter in the universe.

"I'm very excited about these developments," says Katherine Freese, a theoretical physicist at the University of Michigan. "It could be that a problem I've been working on for twenty years is on the verge of being solved."

# What you missed last Month

Our Annual General Meeting was not held at the usual spot, instead we went to the Observatory. It was a touch on the crowded side, as quite a few members wanted to see the inside of the newly renovated building. Each Director stood up and informed the membership of what they had achieved and the challenges they faced. Reports by the Treasurer (Andy Blanchard), and President Roger Hill engendered the most discussion. There were still some paint fumes lingering from the previous weekends work party, but the membership agreed...the changes are a huge step forward!

Roger Hill handed out certificates of appreciation to all of the Board members, but one—John Williamson. At it's last Board meeting, the assembled Directors had voted to confer the William Fautley Award on John.

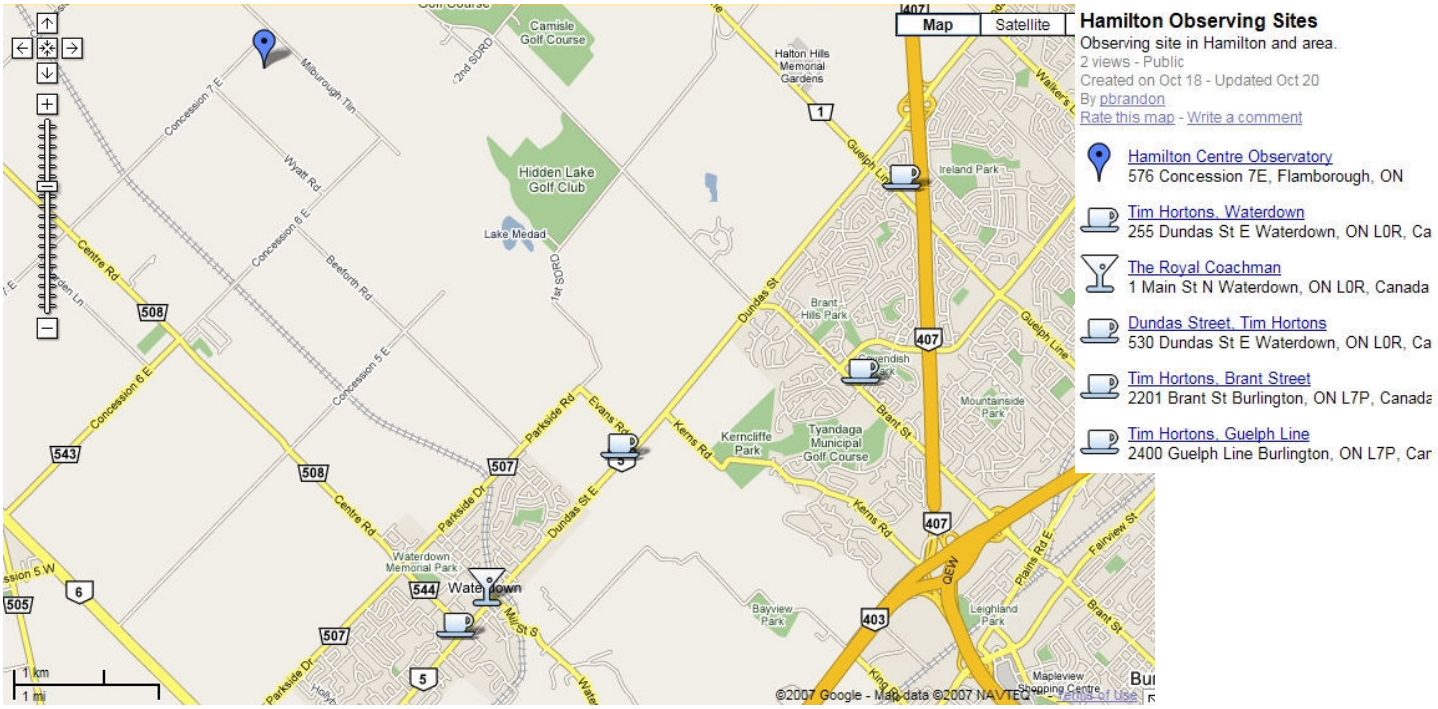
The Award is given for outstanding service, or contribution to Astronomy or the Centre. For several years, John has given unstintingly of his time and services. He has served the Centre as a Board member, as Treasurer, as President, and as Past President. During this time, he pursued his degree in Engineering at the UofT, as well as starting his family. The Centre has seen it's fair share of over-achievers, and John can stand among them.

During his time as President, with a very small, but active Board, the Centre was one of the partners in the successful 2008 General Assembly, held at York University, jointly between the Toronto, Mississauga and Hamilton Centres. John didn't quite do this singlehandedly, but there is little doubt that without him, the Hamilton Centre would not have been involved.

After that came the election of a new Board: Roger Hill, Mark Pickett, Gary Colwell, Andy Blanchard, with newcomer Will Gray. These people were approved by the assembled members. Will has taken the position of Treasurer, with some assistance from Andy, Gary took over as Recorder, Mark will handle Public Outreach, and I'll be doing Orbit and continuing as President.

At the end of the meeting, the library was scrutinized for useful or historical books, and the rest will be disposed of.

What are you going to miss in the coming months? Nothing, I hope. We've got some great speakers coming up, like Jim Kendrick, Paul Delaney, Jerry Wright and Kerry-Ann Lecky Hepburn.

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Front Cover and What you Missed pictures by Roger Hill

Back page image of the Double Cluster in Perseus by Gary Colwell