Along with our new membership year, here's a new look for our newsletter by your new editor.

Our club owes a huge debt of gratitude to Tim Philp for all the work he has put into Event Horizon these past three years. It will be a challenge to follow in his keystrokes. I hope I can count on your support. Remember that this is YOUR newsletter. I welcome any and all submissions. In addition, I would like to showcase our members' photos on the masthead and throughout the newsletter. Please send me your photos as well as reports, sketches, cartoons, articles, letters, kudos and, yes, even complaints!

You can reach me at:
editor@amateurastronomy.org.

Ann Tekatch
Editor

From the Chair by Steve Germann

The new year has begun early for the Hamilton Amateur Astronomers. At this meeting, HAA 2010 Calendars will be on Sale. I am very impressed with the quality of this year's calendar both in the layout and the photos submitted by members.

I want to welcome the new members of the HAA team who will work this year to make meetings interesting and informative, and for the contributions of the rest of the team, including Mario, in Public Education and Publicity, and Wayne, our new Secretary, Mike Jefferson our new Recorder, and Andrew Bruce our new Councillor at Large. That these fine people have stepped forward speaks well of the quality and reputation of our club. Also, I welcome Ann to her new post as EH editor.

There are a few new things in the EH this month too. I have penned an article for "Dwarf Planet of the Month". I think they need some balanced attention. I am starting with Pluto. Having searched for Pluto in the sky in the past, and finding it, I recall a sense of connection with the edge of the solar system. (Even though it's a bit closer than Neptune right now.) It was quite a job star hopping to it. Not least because star charts don't show everything that my scope can help me see.

Breakthrough scientific instruments have been trained on Pluto to test their mettle.

The schedule has been set for the coming year's events, at least the main public ones, the meetings and clinics. I am happy to say that the list of upcoming speakers for our meetings looks good too. In January we will be back in Burlington for the Burlington Winter Carnival. The night-time events there, and the publicity to all of Burlington's school children,

IN THIS ISSUE:

From The Chair (continued)

should provide an opportunity for many people to see the Moon and brighter celestial objects as never before. In March we will be presenting at the Brantford Tourism Center. It's an indoor venue so we can do it rain or shine, but of course the scopes in the parking lot will get attention if there's any chance to see the sky. In April you will find us at McQueston Park for Astronomy Day. In August at Binbrook for the Perseids Meteor Shower, and in September in Grimsby.

I am excited when I think about the special treats being cooked up which we will hear more about later in the year.

All of our events provide an opportunity to look at, and usually through telescopes, discuss your own equipment, bring it for some help setting it up, and share ideas with people who truly enjoy astronomy and share their hobby generously. You can also get the answers to any questions about which scope is best for you, or for someone to whom you are considering giving a gift.

November is normally a month of cloudy nights. There's no better time to take the scope apart and tune it up. Our telescope clinic will be this month, on the 27th. Bring your scope and we will show you how to set it up, how to clean it, collimate it, focus it, evaluate it, and how to point it at the stars. Just in time for Christmas, you can also discuss the accessories that every amateur astronomer needs. Although there will not be any vendors at the clinic, we will have plenty of balanced advice on the best place to get whatever it is you are thinking about. Since there will not be any prepared talks for the evening, you will have all that time to chat with knowledgeable owners and operators one-on-one.

I hope to see you all there!

Astro Out and About by Jackie Fulton

The Mountsberg Conservation Authority (MCA) has a yearly event called “Explore the Night Sky.” For the past 15 years astronomers and members of the public alike have gathered at the MCA each Fall. For a small fee a ticket holder receives dinner, astronomy presentations, observing, lively discussion and tall tales about the history of astronomy around a camp fire. The event goes on rain or shine. This past October 24 was no different.

As guests began to arrive they were welcomed by Terry and the rest of the MCA staff. Dinner was from 6 to 7 pm, comprised of a hearty chili, a cauldron of soup, grilled cheese buns, tossed salad, and homemade sundaes for dessert. Beverages were juice, coffee and tea.

After dinner the first presenter was Phil Mozel from the Ontario Science Centre. Through his slide presentation, Phil updated everyone on the astronomy news of the day. He focused on the meteor find in Grimsby, and the LCROSS mission by NASA. Young and old were fascinated by the meteor sample provided , by its weight, its smell, and testing its magnetism. Throughout his presentation Phil fielded the questions of the curious, combining his experience with his infectious sense of humour.

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Make Your Own Dewstraps by Jim Wamsley

Living in the part of North America that we live in, controlling dew on our telescopes is a major issue. Without dew control, our time observing is restricted even more than just waiting for clear skies. How frustrating is it, when you get out for the first time in what seems like months, and 20 minutes after you complete your alignment, your telescope is totally covered in dew, and your night is finished?

Having this happen to me on several occasions, I started to look at purchasing dew straps at the local scope shops. Not surprisingly. I found them to be extremely expensive for what is in them. I then started to search the Internet for plans to construct my own.

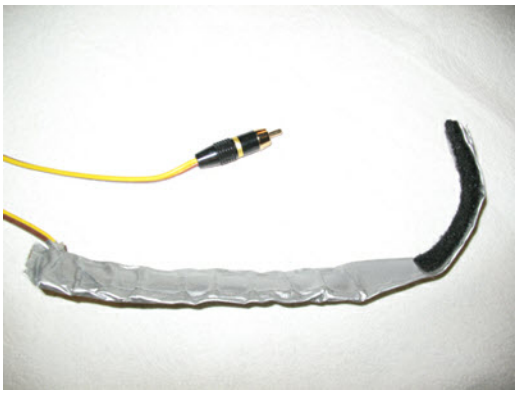
Finding several and adapting them to suit my needs and the materials I had on hand, I got started. First, the most important thing, is to get the proper size of the resistors, so they don't get too hot and burn up your scope! I found that to be 330 ohm 1/2 Watt (colour code orange,orange,brown,gold). I purchased these at Nutech Electronics on Parkdale Ave. for about 25 cents each.

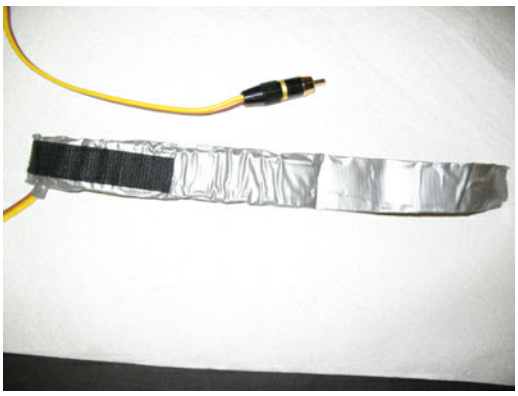
I made plans to make a strap for my 2" eyepieces. For this, I laid out two lengths of 14 gauge wire 5/8" apart, secured to a board with screws. I then soldered resistors to the wires every 5/8".

You can put as many of these in a series as you need, for the length you want. Ten were fine for my 2" diameter. If you are doing a strap for a scope, just keep adding till you reach your required length. You then solder the power lead to the ladder, using about 10' of insulated wire. I used some leftover trailer wiring. If you don't have that, speaker wire works. Attach your connector to the power lead. I used an R.C.A. jack to plug into an existing controller (shown below).

Make Your Own Dewstraps (continued)

I then laid out a length of duct tape, and put the ladder on one side. I placed a strip of sticky-back rubber insulation over that and then folded the other side of the duct tape back over all. A second layer of duct tape was used to close the open side.





I used sticky-back Velcro to secure the strap to the eye-piece.

To buy a dew strap for a 2" eyepiece would cost about $60.00. My cost was $2.50 plus some scrap and duct tape I found around the house.

Dwarf Planet of the month: Pluto by Steve Germann

Since the IAU recently pronounced Pluto to be a 'dwarf planet', and considering that Pluto has as much water as the Earth does by some estimates, I think it's high time these 'dwarf planets' got a place of honour.

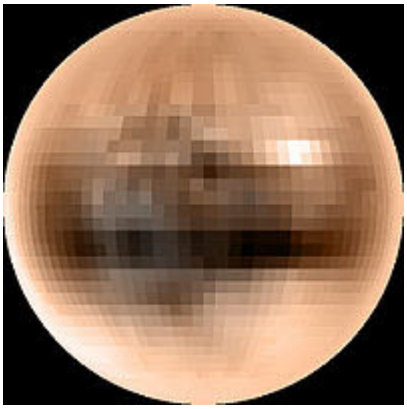
Together they outnumber the more staid and stuffy original 8. Their locations reach far beyond the orbits of Neptune, so they have been there, done that, much more than Neptune or the other planets. So... having been kicked out of the 'unqualified' planet club, it's time they pick up and make their own club. They have the qualifications. So, it's the minor and dwarf planet club.

Rather than tip my hand and divulge just how many members there might be, I think I will get started with the father of all dwarf planets, Pluto. Venetia Burney, an eleven-year-old schoolgirl in Oxford, England proposed the name 'Pluto', the Greek god of the Underworld. The first 2 letters are Percival Lowell's initials. Announced on March 13, 1930 by Clyde Tombaugh. it's recently been renamed 134340 Pluto because of its sequence in the list of, ahem, non-planets discovered.

Dwarf Planet of the month: Pluto (continued)

Originally inferred due to perturbations of Neptune's orbit, Pluto, in a way similar to Swift Tuttle, (which brings the Perseids Meteor Shower each August), actually crosses inside Neptune's orbit. As such, if Neptune happened to be there, there would be a collision so energetic you could see it in the daytime from Earth. As it is, resonance between Neptune and Pluto's orbits means they won't be at the same place at the same time. Neptune is always elsewhere in its orbit when Pluto comes by.

Pluto has 3 moons. The largest of these is Charon. Charon is so massive that the mutual center of gravity of the Pluto-Charon system lies outside the surface of Pluto. Some might consider Pluto and Charon to be a double planet, something like Newfoundland and Labrador, perhaps.



We were fortunate some years ago to have crossed the plane of Charon's orbit and therefore were able to observe eclipses of one body in front of the other. It allowed astronomers to map the surface colouration of Pluto and Charon, by monitoring the incoming light as one planet swept across the face of the other, temporarily blocking light from certain regions. By subtracting the before and after, the colouration of the stripe just covered could be inferred. Repeated enough times, this yielded some interesting splotches on Pluto. Necessarily, these were kind of blurry pictures, since technically only one pixel worth of data at a time was being sensed. There's a map of Pluto's surface coloration here: http://upload.wikimedia.org/wikipedia/en/thumb/3/30/Pluto.jpg /200px-Pluto.jpg

Pluto's orbit is highly eccentric. It ranges from a perihelion distance of 4.437 billion km to 7.376 billion km at its most distant, 124 years later.

That's .07 percent of a light year. It takes up to 6 hours and 48 minutes for light to propagate to Pluto from the Sun. Viewed from Pluto the Sun would look like a bright star, casting little more light than our own full Moon casts to Earth. Anemic indeed. But Pluto will not be changing affiliations and orbiting another star. They are still much further away.

When Pluto was discovered, there was intense competition to find it. It was predicted to be in a certain place, by someone, and eventually found there. Meanwhile others claimed the calculations were wrong and continued to search elsewhere.

Pluto is almost a double planet. Its moon, Charon is a quarter of its size, similar to how Earth’s moon is very large for it's planet.

Pluto's day is very slow, about 6.8 Earth days. Interestingly, Charon stays fixed in the sky, as viewed from Pluto. You might say it's in a Pluto-centric orbit, similar to our communication satellites. Doubly interesting, Pluto is in a Charon-centric orbit, orbiting Charon as quickly as Charon rotates.

To get an idea of what it would be like on Pluto, consider that in the winter time, Pluto's atmosphere freezes to the surface. That includes methane and nitrogen. Summer pressure of 0.15

Dwarf Planet of the month: Pluto (continued)

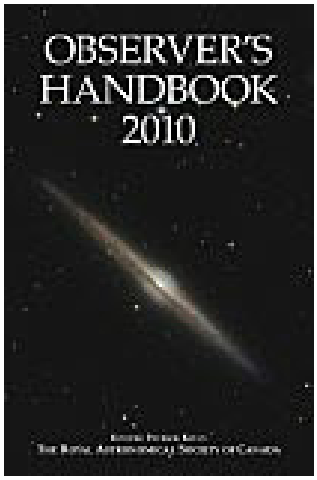
Pascals is about 1/700000 of Earth's atmospheric pressure. However, because Pluto's gravity is lower, there's still a fair bit of gas involved. If our atmosphere condensed, it would be about 10 meters thick. On Pluto it would be more like a quarter of a millimeter. Not exactly enough to do more than frost the rocks. However, because frozen atmosphere is white, Pluto is one of the brightest surfaces in the solar system. That makes it comparatively easy to see, even from far away in dim light. Gravity is lower on Pluto than on Earth's Moon. About 16 times less than it is here. You could jump 50 feet in the air there. The escape velocity for a spaceship is only 1.2 km per second. A railgun could easily fling small objects on a trajectory back to Earth. Why, it's probably cheaper to send water from Pluto to Earth's moon than from the Earth, provided you are not in a hurry and you really need a lot of water.

If you made a snowball and flung it as fast as a pitcher throws a baseball, on a part of Pluto without any intervening hills, you could throw it about 800 meters. Of course, that's assuming your space suit does not impede your motion much. But you could also probably hit a golf ball several kilometers. With the thin air, you would not need dimples on the ball.

Is there life on Pluto? We don't know, but it's probably always been very cold there. Anything alive there is living in deep freeze. Average summertime temperatures are only -223 degrees C. (50 degrees above absolute zero). Winter time gets down to about -233 degrees C. Only 20 percent colder. When ice gets that cold, it's hard as a rock. Water ice is probably the main 'mineral' in Pluto's crust. It's not large enough to have a liquid core anymore, but the heat generated by radioactive decay in its rocky interior might be enough to melt the water, allowing the rock to settle in the center and the ice and water to be above it.

Tours to Pluto have been considered in the past. When Voyager 1 was approaching Neptune, the decision to take it past Triton for some close up pictures meant it would be flung haphazardly out of the solar system, missing its chance to visit Pluto on the way. Voyager 2 approached Neptune from an angle that made a trajectory to Pluto impossible. The New Horizons space probe will visit Pluto, and on July 14, 2015 it will reach its closest approach. Then we will have at last images of Pluto's surface to rival those of the unqualified planets.

We need to celebrate the diversity of planets in our solar system. Next month, watch for a report on Ceres.



2010 RASC Observer's Handbook

HAA Members may order the 2010 RASC Observer's Handbook and take advantage of a volume discount.

Price per copy is only $16.75 including tax. Orders must be received no later than November 28, 2009, and the price after that will be $31.97 for single orders. Handbooks will be available at the meeting on the second Friday of December.

The Observer's Handbook is a wealth of information and no amateur astronomer should be without it!

To order your handbook, see Steve Germann or email him at chair@amateurastronomy.org.

Through the Looking Glass by Greg Emery

The beautiful colours of fall sit in piles on the lawn waiting to be picked up (or burned in place where I live); the crisp air signals the cold weather to come. Winter is near, and with the coming of winter we must prepare - for Christmas shopping!

The problem with this wonderful hobby of ours is its degree of specialization. A well-intentioned friend or relative (and not all relatives are friends) will get a Christmas gift for you - something you can use when you are doing your "stargazing thing". To avoid disappointment or the ever possible resentment when you are not enthusiastic about the gift, I would suggest some ground rules:

Rule #1: No Optical Equipment is to be purchased as a surprise. It is truly a wonderful feeling when you know your family, kids or friends want to buy a new piece of equipment. Unless you have been extremely adept at leaving subtle clues (like ripping the same ad out from each month's Sky and Telescope and taping it to the fridge) people just do not realize what to get. Even high quality equipment can be a poor fit for your existing equipment.

Rule #2: Clothing and outerwear for the various seasons is always a good choice. Gloves, hats, socks, boots... the list goes on. Other ideas that have worked for me include the cargo style pants that turn into shorts with zip on legs at the knee. Thermal underwear is usually one of those things that by the time I wish I had some it is too late.

HAA 2010 Calendars are now available for ordering by email or at HAA General meetings. Price will be $20.00 each.

These make a great Christmas gift and are perfect for the home or office. Deliveries will begin at the General meeting on November 13, 2009. The calendar has been improved for 2010 with a lot more celestial events and historical anniversaries. And of course, there are many amazing photos taken by your fellow club members.

To order your copies or for more information, please send an email to Don Pullen, treasurer@amateurastronomy.org.

Through the Looking Glass (continued)

Rule #3: Magazines and subscriptions are a good way for family and friends to give you an astronomy related gift. Make sure people know what magazines you read. Books about astronomy can be a little more dangerous. If possible, do not let people buy skycharts or field books for you. Biographies, histories and general knowledge books are often a great choice, are usually inexpensive and can be appreciated on cloudy nights.

Rule #4: Accessories are always needed, encourage people to get these for you. Large toolboxes or tackle boxes for storage and transportation of the other accessories are always a good place to start. Flashlights, batteries, spare bulbs for the flashlights - or better yet a nice LED flashlight! Assorted hand tools, optics/lens cleaner, Velcro tape (great for a quick fix), tape, screws, nuts and washers. Utility knives and scissors always have a use. Consider a headband flashlight with red or white light with the flick of a switch. Camping equipment can be used in everyday observing, not just at star parties. Tables and chairs/stools are needed whenever you're observing. A nice tent is nice to find under the tree, or how about an air mattress to put in the tent? If you don't have one, a camp stove or burner is nice. A roof rack or car carrier to carry all this stuff might come in handy. A pump for the air mattresses is nice. How about a nice cooler?

The Sky This Month November, 2009 by John Gauvreau

November is a month that is grouped with August and December in the minds of astronomers. Can you see what those three months have in common? Give yourself a pat on the back if you recognized that those months host the three big **meteor showers** of the year. Of course there are a large number of showers through the year (the RASC *Observer's Handbook* lists 16 major showers, and the International Meteor Organization will give you a list of no less than 72 showers, both major and minor. No month is without some kind of event). But, of course, August hosts the most watched shower of the year, the Perseids, December sees the equally active Geminids, and November brings us the near legendary Leonids. All three are spawned from cometary debris, left behind as the comets deteriorate during their close encounters with the Sun. Trails of material are left behind, and then as the Earth passes through these trails, we have comet dust raining down on us. As such, we would expect to see reliable and consistent displays whenever we pass though one of these streams, and that is exactly what we get from the Perseids and Geminids.

This month though, in fact just a few days after you received this newsletter, the **Leonids** bring us their unpredictable and tantalizing show. Stemming from debris left from comet Tempel-Tuttle, which orbits the Sun in a mere 33 years, the meteor shower varies wildly depending on what part of the debris stream the Earth passes through, and how dense that stream is. Some years the comet leaves a large amount of material behind, and other years very little, and a bumpy trail is created along the comet's orbital path. If we pass through a fairly thin cross section, we get a mediocre shower, far worse than the Perseids. Other years we may hit a part of the stream that is thick with abandoned cometary particles, and then we get many more meteors in our sky. Understandably, it is hard to predict just when we may hit such a thick patch, since you can't see these things out in space, even with the best of telescopes. Based on historical performances though, and a now clear understanding of all the orbital elements involved, astronomers feel confident in making predictions, and the prediction for this year is very good!

On **November 17th**, just at sunset, it is expected that we will encounter a stream that could give us 200 meteors per hour (from the most conservative predictions) or 300 per hour (from the more daring prognosticators). This peak of activity will be brief, and so as soon as it is dark on the night of the 17th (around 5:30 pm), bundle up and head outside for an hour or so, so take in what just might be the best meteor shower of the year. Of course, they've been wrong before, so no promises! Be sure to report any observations or observing tales so they can be shared with your fellow observers. Who in the club will record the highest number?

One favourable condition for this year's Leonid shower is the lack of **Moon** in the sky at the time. This year on the 17th the Moon will be just one day past new, so even if you don't see lots of meteors, the new Moon is the perfect time for deep sky observing. The open clusters of Cassiopeia and Perseus, the last glimpse of the doubles in the Summer Triangle, or the first glimpse of the nebulae of winter are all waiting in a sky that has a crispness and clarity that only comes with November.

A week later the Moon meets **Jupiter** on the night of November 23rd. Only a little over 3 degrees apart, they will make a lovely pairing in the southern sky after sunset. This is also a good excuse to do a little Jupiter observing before it begins to slide into the west and disappear for

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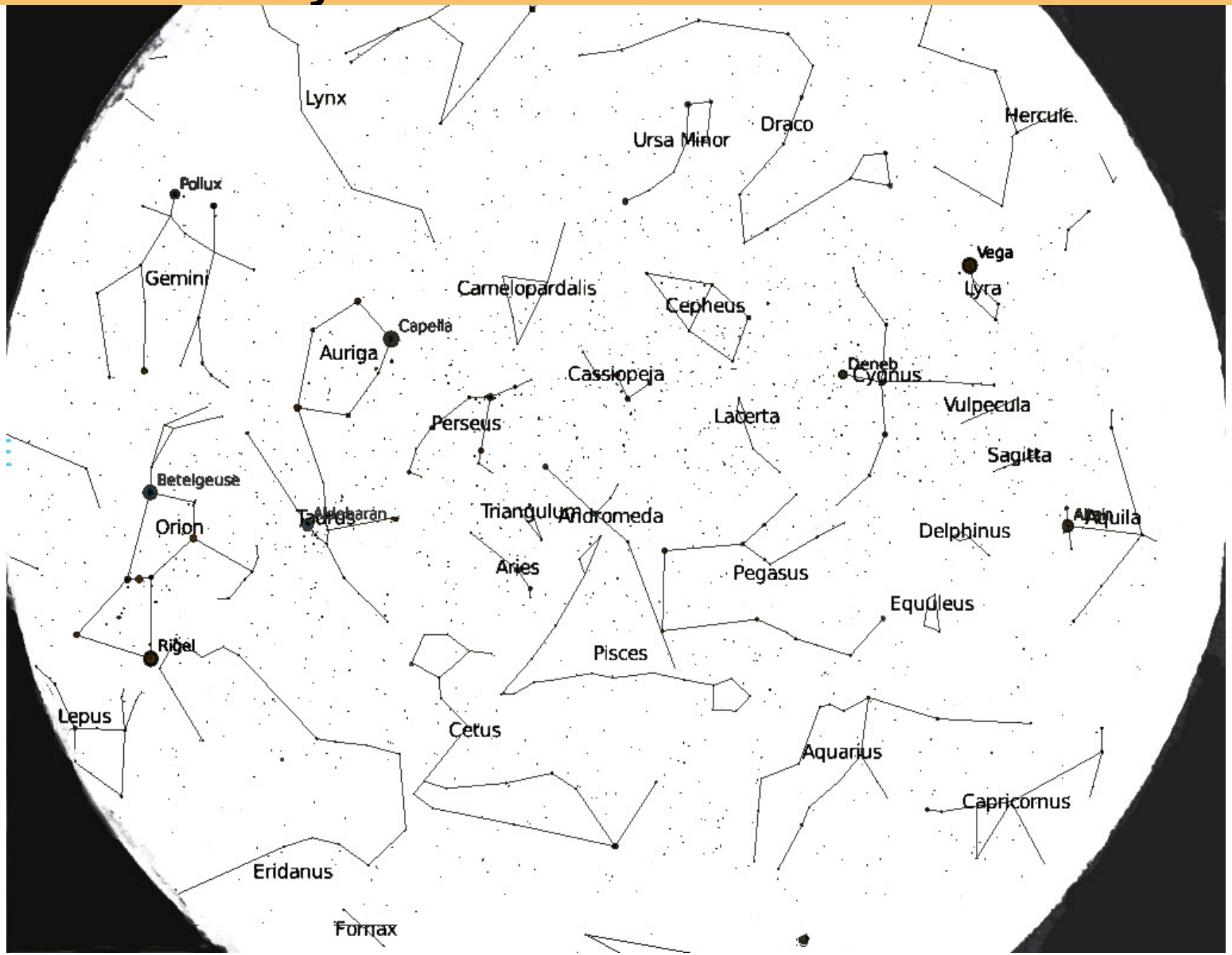
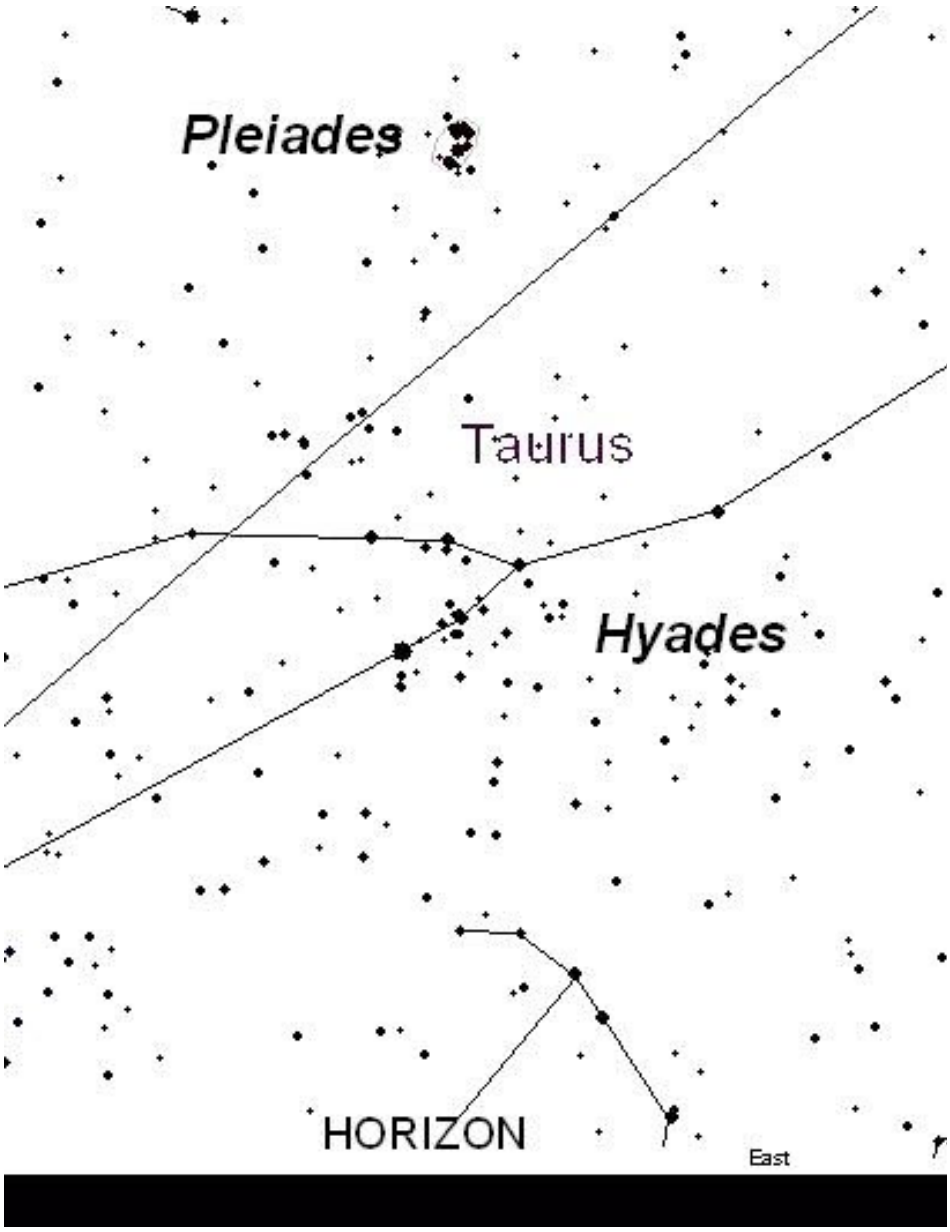
The Sky This Month - November 2009



Binocular object: M45, The Pleiades



The Pleiades, also known as the Seven Sisters, is one of the best known deep sky objects there is. Undoubtedly due to the fact that is is easily seen with the unaided eye, it is known to most non-astronomers, and even if they think it is somehow related to the Big or Little Dipper (which it marginally resembles, but on a much smaller scale) they will admit a familiarity with it. But for the moment, we wish to discuss it as a binocular object, for this is not just a good binocular object, this is the best binocular object there is!

My all time favourite astronomy book is *Starlight Nights; The Adventures of a Star-Gazer* by Leslie C. Peltier. Although Peltier had great success in the field, he started out as an young amateur, observing with a small scope on his farm. I once heard the book described as being not so much about how to do astronomy, as *why* to do astronomy, and I think that is a fair statement. The book begins with a story from his youth, when shortly after the turn of the last century, a five year old Peltier goes in to the dark kitchen to get water from a pail. He climbs on the table and looks out the window into the cold autumn night. There he sees the Pleiades, shining in the east, ready to send him on a life-long journey of discovery. Right now, you too might gaze out a window to the east, just after dinner, and mimic Peltier's observation. At 7:00 pm they are only 30 degrees above the horizon; just high enough to clear the neighbour's house, but still low enough to be easily seen through a window. Once you're done though, step outside and lift your binoculars to M45. Where 6 or 8 stars might show themselves to your unaided eye, now dozens of sparkling stars shine forth from the surrounding black of the binocular field. Although a telescope will show more stars, most will agree that the best views of the Pleiades come through binoculars. They will be with us through the winter, for many months to come, but start you season of observing now, with this small ritual of greeting the rising Pleiades. I promise that, even after the season is done, and many other objects observed, you will remember this simple sight.

The Sky This Month November, 2009 (continued from page 9)

another season. On this evening of the 23rd, the satellite **Europa** can be observed on front of Jupiter, accompanied by its shadow, for an hour after sunset. At about 6:15 pm Europa will cross the limb of Jupiter and appear against the black sky again. These kinds of events are always exciting to watch, and should be considered a treat when one actually gets to observe the workings of the celestial spheres.

The very next night the **Moon** will be at first quarter. In fact, when the Sun sets the Moon will be at almost exactly first quarter phase, showing 50.1% of its face illuminated. Can you tell by looking at it that it is that close to a half Moon? Through a telescope you can observe changes on the terminator over a very short period of time. Mere hours can make a big difference in how features like craters and mountains appear. But to the unaided eye, is there any difference? Recall that only a few hundred years ago the unaided eye was all there was to observe with, and a couple of thousand years ago the great astronomer Aristarchus attempted to determine the distance to the Moon and Sun by comparing their positions in the sky at exactly first quarter. How difficult it must have been for him to determine the exact moment to observe.

From the time of Aristarchus to the 21st century, the sky hasn't changed much but our understanding of it has, and from understanding springs appreciation. Go out on these cool nights to take your place in a line that goes from Aristarchus to Galileo to you, and enjoy the night sky.

Astro Out and About (continued from page 2)

Following Phil Mozel was our own John Gauvreau. IYA festivities at the MCA would not be complete without the appearance John G as Galileo. John G delighted the audience with his informative and interactive role play describing 400 years of astronomy.

Unfortunately the Clear Sky gods did not rule in favour that night, making observing impossible. Undaunted, Terry and the MCA staff guided everyone outdoors to a blazing campfire. Once there, huddled together in the firelight, Phil Mozel told of the legends and folklore of the night sky.

It was quite late before the evening drew to a close, with sighs of disappointment as the audience was reluctant to leave. A tribute to the ongoing success of this event.

Starting next September be sure to look for “Explore the Night Sky” at Mounstberg and find a place for it on your list of astro things to do. Be sure to contact the MCA for reservations to avoid disappointment. It is a truly enjoyable night of family fun, and is well worth the drive.

ASTRONOMY: The Real 'Space Travel' by Mike Jefferson

Years ago one of the Astronomers Royal of Great Britain pronounced the idea of space travel as 'utter bilge'. In more recent years (1948) Professor J.W. Cambell of the Royal Astronomical Society of Canada concurred with such sentiments in his presidential address to that body. 'Supposedly more forward-thinking' authors, like Arthur C. Clarke, took umbrage with such 'antiquated' ideas, pronouncing them as outdated. However, will these 'trogladytes' turn out to be correct, in the long run?

Since childhood, I have had a strong interest in the idea of 'space travel' or 'space exploration'. However, recent personal reflections have left me wondering about the state of the American International Space Station ISS, the remains of the shuttle fleet and the manned NASA space programme. In almost every facet of its operation it seems to be looking for justification for its continued existence. On the other hand, the largely publicly unsung unmanned missions, from the 'drawing boards' of JPL, are returning understandings of our solar system and the universe around us almost beyond our belief and even our comprehension - the cosmic void being bigger, more mysterious, more complex and more wondrous than we formerly believed. So, where do these two facets of space exploration stand with respect to one another and their futures, as of the writing of this feature?

In a book that I recently purchased, “Voodoo Science”, by Dr.Bob Park, he states the following:“America's astronauts have been left stranded in low-Earth orbit, like passengers waiting beside an abandoned stretch of track for a train that will never come, bypassed by the advance of science.” It would seem that NASA's manned programme is in serious trouble these days, with the Obama Administration wanting to cut operating costs on all fronts, with only two of four orbiters still flying and with a 'space station' that is moving around our planet, looking for reasons to justify its existence.

All of the high-level research that has been carried out and is being continued today, is being done by ground-based telescopes, space telescopes, robots and satellites, very often under the development and administration of NASA's Jet Propulsion Laboratory, from the comfort of its own control rooms. This organization has no need to subject itself to the rigours of the outer space environment, where the flares and coronal mass ejections from the Sun can kill any unsuspecting human. Indeed, the cosmic background radiation, alone, is lethal over the long duration of an interplanetary spaceflight. The 'road' to the solar system is a realm where boredom, silence, freefall heart problems and bone-mass loss plus interrupted circadian patterns will take a huge toll on all travellers.

The costs of operating the shuttle and continuing the low-grade science produced by the space station are far greater than the money necessary to fund satellites. These instruments will return vastly better science and understanding of the universe – and isn't that what 'space travel' should be about? A space station produces no valuable science at all – in fact, lecturing to university students (on the ground) from the station (a la Bob Thirsk) is an expensive political sideshow. Growing crystals, manufacturing the purest of gold or making ball-bearings in microgravity conditions does not produce better results. The close-up electromagnetic forces in all materials far outweigh the influences of gravity, even on Earth's surface. And, it would cost more to return the gold to Earth than the material itself is worth!

The original idea of 'space station' came from Arthur C. Clarke's article in “Wireless World' in 1945 and later developed further by Wernher von Braun. Clarke's plan was to develop worldwide communications using a trio of wheel-shaped stations in geosynchronous orbit. These outposts would be 'manned' because their crews would be necessary to replace the burned out vacuum tubes. Today, communications satellites do the same job thousands of times faster and more reliably. That advance is due to the inventions of the transistor and the printed circuit board, both from the late 1940's and both of which Clarke (or anyone else) did not foresee!

The sad fact, Star Trekkies notwithstanding, is that astronauts are relics of Disney's “Tomorrowland” and the 1950's. They were a prototype for the then-coming machine-based science. We now know that going into space is a very dangerous business (We have already immolated one Apollo and two shuttle crews.) better left to machines, while we sit in the 'control rooms' or on the internet, on the ground, in our pyjamas, coffee in hand, enjoying the fruits of our

ASTRONOMY: The Real 'Space Travel' (continued)

labours - and leave the danger to the instruments – for they are the real 'spaceships'. Today, we are using robots, more and more, to disarm bombs, visit hazardous places, do many tasks and operate in lethal environments that are considered far too dangerous for humans. Space beyond low-Earth orbit is one such danger zone. And, it is here that our robotic space vessels are outshining human achievement multifold!

Hollywood and science-fiction writers are responsible for making it seem possible and necessary for humans to do all of the scientific investigation that is so much better done by automatons.

The "Journey to the Centre of the Earth", as it was depicted in the film, is just not capable of being done. It is simply not possible to travel physically to Earth's core. We are able to know it through seismic and other longwave investigative techniques. However, those investigations do not not make bigtime HBO entertainment. In fact, all of science-fiction falls into that category – entertainment!

Yet in the 1940's and '50's, the "Trieste" submarine vessel took men 7 miles down to the bottom of the Pacific Ocean – also exceedingly dangerous. Later, it was assumed that we'd be living in plexiglass 'bubbles' under the seas. But people like sunshine! So, it has never happened. It was "Jason" and his robotic bretheren that got to explore the Titanic wreck – and they could share that adventure with every schoolkid in North America, to boot – call it 'oceanographic outreach'. Again, it was science with instruments and robots.

The 1966 film, "Fantastic Voyage", which starred a number of well-known's, included Stephen Boyd of "Ben Hur" fame, the voluptuous Raquel Welch and (poor) Donald Pleasence (a very fine actor, cast in the role of the demented scientist) whom critics dubbed "the meanest man in the world", was based on shrinking a submarine and its occupants down to the 'miniscule' so that they could navigate the intricacies of the human body. Imaginative? Yes! Educational? Yes! Possible? No! That kind of diminution would crush any being or object to a state of total inertia and out of existence! It is impossible and yet we do exactly that kind of work today with fibre-optics. We don't have to go there! Our instruments do it for us.

The 3,000 square kilometre Pierre Auger Observatory, a network of 1,600+ cosmic ray detectors, located in Argentina, allows us to probe into the core of the galaxy NGC5128 in Centaurus to detect these atomic nuclei coming toward us at near-light speed. It may well be the closest we'll ever get to 'touching' a black hole!

Our own LOFAR II is an automated example of what we could classify as a non-optical detector. It monitors the Sun's x-ray output and the interaction between the Sun and the Earth at very energetic wavelengths. Although it is part of a terrestrial network and is on the ground, Paul Mortfield, it's 'grandfather', described the operation of one of these stations as "...it's like having your own satellite." in August at Starfest 2009.

To these two we can add SOHO, TRACE, the Mariners, the Voyagers, Cassini, Sojourner, the Pioneers, the Veneras, the Sputniks, the Vikings, IRAS, the Compton Gamma Ray Observatory and many, many others at ALL wavelengths in the electromagnetic spectrum! They work without going on strike, sleeping, coffee breaks, food and negotiations! They are our 5 senses in the universe beyond Earth.

About 25 – 30 years ago, Dr. Gerard O'Neill, a believer in unlimited human reproduction, conceived the idea of giant space colonies orbiting the Sun at the Lagrangian 5 point in Earth's annual path. Here, humans would enjoy limitless 'multiplication' – or so he thought! These space stations would be 30X8 kilometres in size – obviously, cost-no-object! However, such an undertaking would bankrupt our planet without even considering the dangers mentioned in the 4th paragraph of this article. Critics have referred to these monstrosities as O'Neill's 'rabbit warrens in the sky'. From this idea he gained a huge following which dubbed itself The L 5 Society, bent on badgering politicians for funding for this project. Today it is largely gone, most of its more intelligent adherents having come to their senses and having given up on the idea totally! It's younger brother, though, The Mars Society is under the direction of engineer and space advocate Robert Zubrin. It is still bent on finding a 'direct', 'cheap' and

ASTRONOMY: The Real 'Space Travel' (continued)

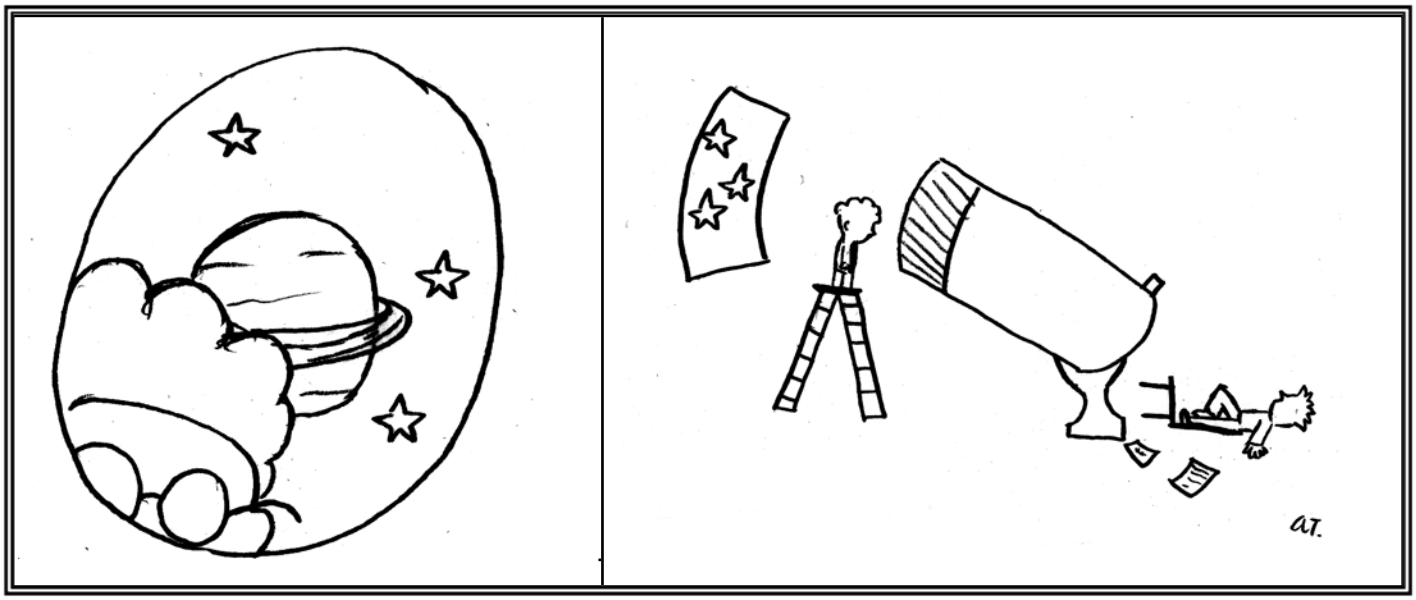
'fast' route to The Red Planet – and...actually terraforming it! That's the good news. The bad news is that 'it ain't gonna happen'...for all of the natural and scientific reasons stated above.

To conclude, my best idea for the manned programme is to dismantle it as soon as possible. Pack in the ISS and destroy the 2 remaining orbiters. The 'astronaut corps' can become pilots for airplanePegasus-small satellite air launches or mission specialists for JPL, ESA and near-future Iranian, Indian and Chinese space agencies. The savings can be put into real scientific space research.

Do I really think we will give up on the idea of returning to the Moon or going to Mars? Probably not. There will always be those willing to buck the odds and take chances. However, such ventures are a long way off. Real 'space travel' will become an activity for the even more-far-distant future when robot craft (far beyond our present capabilities) will probe the universe, carrying our genetic blueprints, looking for suitable planets to seed with our 'panspermia'.

Today, however, our money is best spent on 'learning about', not 'travelling in', the universe. Space travel? No. Space exploration through space science? YES!

Cartoon Corner by Alexandra Tekatch



“AHHHHH!!!”

“Are you trying to give me a heart attack??!!”

HAA's October Meeting by Heather Neproszel

Chairperson Steve Germann welcomed attendees to the October General meeting of the HAA. Steve invited Membership Director Jim Wamsley up to the floor to give a short talk on "sidewalk astronomy". Jim's enthusiasm was infectious as he described setting up his telescope where there is high pedestrian traffic, such as outside coffee shops and in local parks. John gives people an unexpected chance to look at impressive views of the Moon and planets, maybe even a deep-sky object if possible. People are delighted, especially the kids - "that's sick" ("cool" to my generation) they exclaim when looking at mountains on the Moon or a great view of Jupiter. Jim suggested members of the audience try a little sidewalk astronomy. Setting up a scope on your street is one idea. Give people a chance to have a "Galileo moment". John Gauvreau added that Halloween is a good opportunity to show people some celestial sights.

Mike Jefferson gave another update on the LOFAR II radio antenna. LOFAR II can provide information related to coronal mass ejections (CME's), auroras, solar activity, just to name a few. Right now the Sun is going through a solar minimum, so activity is very quiet.

Treasurer Don Pullen presented a thorough overview of the HAA's finances, as the October meeting is when we have the Annual General Meeting. Currently the HAA is running a deficit. Don expects that revenues in the upcoming fiscal year will help balance the budget. The new governing council for the HAA for next year was also elected. Ann Tekatch and Mike Spicer contested the position of Event Horizon Editor. Ann won the nomination. The HAA also welcomed Wayne Stansfield as our new Secretary and Mario Carr as our new councillor for Public Education.

Don also gave a terrific preview of the HAA Calendar for 2010.

John Gauvreau talked about the Saturn Equinox, where observers could see a ring-plane crossing, where the rings look like they disappear from view. John showed a wonderful image, from the Cassini spacecraft, of Saturn shine on the rings, as well as an image from the Spitzer Space Telescope of a newly discovered ring around Saturn, the existence of which may explain the light and dark features on Iapetus, a moon of Saturn.

On September 25, a fireball fell in an area southeast of Grimsby. Images of the event were captured by 7 all-sky video cameras (with fish-eye lenses) run by the University of Western Ontario. John detailed that a couple of area residents had found fragments of the meteor on their properties and have graciously lent them to the university for study. As former HAA chairperson Doug Welch exclaimed, we didn't have to send a multi-million dollar probe into deep space to gather data, these "pieces of the sky" conveniently fell in our own backyard!

2008-2009 Treasurer's Year End Report (Unaudited) by Don Pullen

The following are the final figures for the fiscal year 2008-2009 which ended on October 31, 2009. I have included some notes afterwards to help explain some of the numbers.

Income Statement

	31 Oct 09	31 Oct 08
Income		
Memberships	$2,496.00	$2,100.00
HAA Calendars	$1,372.50	$1,375.00
RASC Handbooks	$85.00	$200.00
Clothing Sales	$53.00	$2,309.00
50/50	$405.50	$383.50
Coffee Fund	$63.10	$129.90
Advertising	$100.00	$100.00
Donations	$430.44	$91.50
Messier Marathon	$0.00	$145.00
Miscellaneous	$0.00	$44.63
Prepaid Postage	$0.00	$68.49
Total	**$5,005.54**	**$6,947.02**
Expenses		
Insurance	$702.00	$702.00
EH Newsletter	$391.59	$874.70
Brochures	$47.25	$28.40
HAA Calendars	$1,288.20	$1,200.00
RASC Handbooks	$83.73	$169.07
Clothing Sales	$0.00	$2,188.36
Donations Expense	$358.44	$289.13
PO Box Rental	$131.25	$326.33
Speakers Allowance	$111.34	$82.60
Office Supplies	$27.77	$132.15
Postage	$88.75	$32.23
Bank Charges	$0.00	$34.10
IYA Events	$441.50	$0.00
Kids Outreach	$96.60	$0.00
Hall Rental	$175.00	$0.00
Prepaid Hall Rental	$875.00	$0.00
Miscellaneous	$0.00	$302.50
Total	**$5,144.82**	**$6,488.62**
Surplus/Deficit	**($139.28)**	**$458.40**
Without Prepaid Rent	**$735.72**	

Balance Sheet

	31 Oct 09	31 Oct 08
Assets		
Bank	$3,652	$3,809
Cash	$0	$0
Inventory	$0	$0
Prepaid PO Box Rental	$132	$127
Prepaid Mailing Expense	$0	$0
Prepaid Liability Insurance	$0	$702
Prepaid Hall Rental	$875	$0
Accounts Receivable	$0	$100
Total Current Assets	**$4,659**	**$4,738**
Fixed Assets – Equipment	$1,306	$1,632
Total Fixed Assets	$1,306	$1,632
Total Assets	**$5,965**	**$6,370**
Liabilities		
Deferred Membership	$1,325	$1,565
Accounts Payable	$166	$768
Total Liabilities	**$1,491**	**$2,333**
Equity		
Opening Balance	$4,037	$3,775
Retained Earnings	$576	($196)
Current Year (Surplus/Deficit)	($139)	$458
Equity Closing Balance	**$4,474**	**$4,037**
Total Liabilities and Equity	**$5,965**	**$6,370**

2008-2009 Treasurer's Year End Report (continued)

Deferred and Prepaid figures refer to amounts we have paid in this current fiscal year (1 Nov 08 to 31 Oct 09) but are applied to expenses that will be incurred in the next year (1 Nov 09 to 31 Oct 10). This is often due to a difference in timing of billing cycles between our club and our suppliers. Since our year officially starts on Nov 1 and we collect membership dues prior to that, we count this revenue in the year to which it would be applied. This is strictly an accounting convention and it doesn't affect how much money we have in the bank.

If we didn't have to pay for rent, then we would have shown a small club profit of $735 which is inline with our charitable and non-profit status. Unfortunately this is now going to become an ongoing expense which our normal sources of revenue would not be sufficient over the long term. In other words, we could run the risk of depleting our cash reserves if we don't find additional revenue in future years to cover the increased costs. At the moment we have a cash reserve of about $3000 which is fairly good historically for this club so we're not in an immediate panic but future councils will have to watch this carefully.

Budget Performance Overview

Item	Budget Amount	Actual	Remainder
EH Printing	$600.00	$391.59	$208.41
Insurance	$702.00	$702.00	$0.00
Hall Rental	$150.00	$175.00	($25.00)
Brochures	$150.00	$47.25	$102.75
IYA Events	$500.00	$441.50	$58.50
Donations			
- Clear Sky Chart	$65.00	$56.33	$8.67
- Dark Sky Association	$65.00	$56.04	$8.96
- Binbrook Conservation Area	$100.00	$100.00	$0.00
- BASEF Science Fair	$150.00	$146.07	$3.93
Kids Outreach Kits	$200.00	$96.60	$103.40
Website Registration	$0.00	$0.00	$0.00
PO Box Rental	$140.00	$131.25	$8.75
Speakers Allowance	$300.00	$111.34	$188.66
Miscellaneous	$300.00	$116.52	$183.66
Prepaid Hall Rental		$875.00	($875.00)
Sub-Total (excludes prepaid hall rental)		**$2,571.49**	**$850.51**
Total	**$3,422.00**	**$3,446.49**	**($24.49)**

Some of our budgeted items were very close to expected expenditures. We saved more than expected on printing of the EH newsletter due to a shift of printing at the Knights Of Columbus thanks to our chair Steve Germann who is a member there. We did over-estimate for our Speakers and Miscellaneous expenses this year, but the budgeted figures were close to what had been used in earlier years.

Obviously the biggest impact was the unexpected requirement to start paying rental of the auditorium at the Spectator. By prepaying for a full calendar year (10 meeting and 2 clinics) we were able to save some of the

2008-2009 Treasurer's Year End Report (continued)

initial anticipated cost, however we are uncertain whether this discount will be carried forward to future years.

If it wasn't for the prepaid hall rental, we would have come in more than $800 below budget due to conscientious monitoring of our expenses and looking for alternatives to save money.

Also during this past year, we found that there had been some errors in the calculations used when preparing our annual report to the Government to maintain our charitable status. These errors had been resulting in the growth of our Disbursement Quota (amount we're supposed to spend to achieve our mandate). While there is some leeway on an individual year basis, our deficiency had accumulated to the point where it was greater than our total revenues. By finding the corrections, we are now safely back into a small surplus position and our club status is safe.

So overall, the club has become healthier in the past few years than it has been for quite some time. However we still need to be watchful on our expenses and try to develop new sources of revenue to ensure a strong future.

Treasurer's Report by Don Pullen

Nov 2009 Treasurer's Report

(Unaudited)

Cash opening Balance (1 Oct 2009)		**$ 3652.01**
Expenses		$ 346.59
Revenue		$ 885.00
Closing Balance	(31 Oct 2009)	$ 3113.60

Notes:

1. Major revenue sources included: Memberships ($850), 50/50 ($35)

1. Major expenses included: Galileo Scopes ($184.24), Binbrook Event and office supplies ($75.24), Postage ($17.17), SkyNews magazine shipping ($22.68), EH printing ($47.26)

UPCOMING EVENTS

November 27 - 7:30 pm HAA Telescope Clinic at the Hamilton Spectator Building

December 11 - 7:30 pm HAA General Meeting at the Hamilton Spectator Building

2009-2010 Council

Chair	Steve Germann
Second Chair	Jackie Fulton
Treasurer	Don Pullen
Membership Director	Jim Wamsley
Observing Director	John Gauvreau
Event Horizon Editor	Ann Tekatch
Webmaster	Bob Christmas
Recorder	Mike Jefferson
Secretary	Wayne Stansfield
Public Education	Mario Carr
Councillors at Large	Brenda Frederick Ray Badgerow Harvey Garden Andrew Bruce Darrell Maude Heather Neproszel

Observing site for the HAA provided with the generous support of the
Binbrook Conservation Area

Come observing with the HAA and see what a great location this is for stargazing, a family day or an outdoor function.

Please consider purchasing a season's pass for $70 to help support the park.

www.conservation-niagara.on.ca/conservation_areas/binbrook/binbrook.html

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HAMILTON AMATEUR ASTRONOMERS