Next Ottawa Centre Meeting

Friday June 3, 2011, 8 PM
Canada Science and Technology Museum
Public Welcome

The Largest Full Moon, March 19th by Bob Olson

Clear Skies!

AstroNotes

Newsletter of the Ottawa Centre, RASC

INTERNATIONAL ASTRONOMY DAY
MAY 7, 2011

Share the Passion
Volunteer Your Time

Vol. 50 No. 4 May 2011

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Article submissions: email to: astronotes@ottawa-rasc.ca
Deadline for June 2011 Issue is May 27, 2011

Editor.....Debra Ceravolo
Membership and Addresses.....Art Fraser

The Ottawa Centre is one of 29 centres of the Royal Astronomical Society of Canada – an organization dedicated to the advancement of astronomy and allied sciences. The Ottawa Centre, formed in 1906, has approximately 400 members. Centre facilities include the Fred P. Lossing Observatory, near Almonte. The Centre also operates an astronomical book library and a telescope loan library. Membership in the Ottawa Centre is $70 per year for regular members (outside Canada, US $112) and $41 for junior members. Members receive the annual Observer's Handbook, the bimonthly electronic RASC Journal, the Canadian bimonthly magazine SkyNews, and 10 issues of the Ottawa Centre's newsletter, AstroNotes. The Centre can be contacted at P.O. Box 33012, 1363 Woodroffe Avenue, Ottawa ON K2C 3Y9; Internet at www.ottawa.rasc.ca

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Light Pollution Abatement.....open
AstroNotes Editor.....Debra Ceravolo
Memberships.....Art Fraser

The Sky this Month - May 2011

Planets in May 2011:
* Jupiter is visible in predawn sky
* Saturn is the best planet to observe in the evenings
* Venus is nicely visible in the mornings before sunrise, Mag 3.8
* Mars will be visible in the morning sky by mid-month
* Mercury is not visible until the end of the month

May 3 - New Moon
May 6 - Eta Aquarid Meteor Shower-Comet Halley Dust
May 7 - International Astronomy Day
May 8 - Mother's Day
May 17 - Full Moon
May 23 - Victoria Day
May 29-31 - 4 planets and thin crescent moon visible in the morning before sunrise:

Cassini image of Saturn, courtesy NASA

Astro Quote of the Month

The moving moon went up the sky,
And no where did abide:
Softly she was going up,
And a star or two beside.

Samuel T. Coleridge, British Poet (1772-1834)

Member's Images

The Pleiades by Paul Klauninger

Omega Centauri by Bob Olson

An Announcement regarding AstroNotes

By Debra Ceravolo AstroNotes Editor

Effective immediately, the black and white printed version of AstrNotes will no longer be available to Ottawa members. However, for those who feel they want to read a paper copy, the booklet version can still be downloaded and printed from the Ottawa Centre website. The number of members requesting the printed and mailed version has declined significantly and now it no longer makes sense to continue creating a separate black and white printer ready version. This will also help the Centre financially as printing and mailing these copies are expensive. Volunteer time will is also spared as the black and white version demanded extra time to produce as well as sorting and mailing. This decision was voted in at the last Council meeting on April 6, 2011. Any members who have paid for their copies this year will be fully reimbursed by the Centre. All members will continue to be notified by email when the latest issue is ready for online viewing.

For now, the same format of AstroNotes you are familiar with will continue. However, being an electronic newsletter opens up possibilities for a more dynamic and interactive AstroNotes in the future. Issues can be as large as its contributors make it without the limitations of size and weight that the printed version dictated. Several other RASC Centres have already embraced this reality and have gone completely electronic. Feel free to email the Editor to express your thoughts on the termination of the printed newsletter and how you would like to see the new electronic version develop.

In This Issue

Cover Photo: Celebrate International Astronomy Day on Saturday, May 7, 2011. Support the Ottawa Centre by volunteering your time.

News around the Ottawa Centre

Celebrate International Astronomy Day - May 7, 2011

The Canada Science and Technology Museum and the Ottawa RASC have teamed up again to celebrate International Astronomy Day on Sat May 7th.

Event details:

Outdoor events, weather-permitting (free):

Daytime safe solar-observing with special filtered telescopes from the RASC (10 am – 4pm)

Evening stargazing with telescopes from the RASC. The Helen Sawyer Hogg Observatory will be open, weather-permitting. (8pm – 10pm).

Indoor events (10am – 4pm)

Enjoy the Starlab planetarium and a large display of astrophotos, exhibits, astronomy give-aways.

Contact Mike Moghadam to volunteer and help make this event a great one.

email: moghadam@rogers.com

Upcoming Ottawa Centre Star Parties at the Carp Library

Address: 3911 Carp Road, Carp, Ontario.

Saturday, May 28 Main Event
Saturday, June 4 Cloud Date

Friday, June 24 Main Event
Saturday, June 25 Cloud Date
Saturday, July 2 Cloud Date

Friday, July 22 Main Event
Saturday, July 23 Cloud Date
Saturday, July 30 Cloud Date

Saturday, August 20 Main Event
Saturday, September 3 Cloud Date

Saturday, September 17 Main Event
Saturday, October 1 Cloud Date

Saturday, October 22 Main Event
Saturday, October 29 Cloud Date

The Lick Observatory

By Brian Ventrudo -The One Minute Astronomer

Located in the Diablo mountain range east of San Jose, California, Lick is the world's first permanently occupied mountain-top observatory. It was founded in 1888 and has been part of the University of California ever since.

Shortly before his death in 1876, James Lick, an eccentric businessman and one of the state's wealthiest citizens, designated a portion of his estate for the construction of a telescope "superior to and more powerful" than any yet made.

Lick's gift led to the construction of the 36-inch (91.44-cm) refracting telescope on Mt. Hamilton. This scope, built by Alvin Clark and still in use today, was the world's largest telescope from January 3, 1888, until the opening of Yerkes in 1897. It remains the second largest refractor in the world.

The dome for the 36" refractor was engineered by ship-builders. Today, you can see markings on the inside of the dome that reveal the naval origins of some of the materials. The location of Lick on Mt. Hamilton provides calm air and excellent viewing despite ambient light and pollution. The peak is normally above the level of the low cloud cover often seen in San Jose. The peak provides a stunning view to the west of the Valley of Heart's Delight, now better known as Silicon Valley. To the east, the Sierra's can be seen on a very clear day.

Despite its proximity to the 10th largest city in the U.S., Lick Observatory has kept up with the times. After 120 years of operation, it remains among the most productive research observatories in the world.

While the 36" refractor was the centerpiece in the early days, Lick also houses many modern telescopes, including the Shane 120-inch reflector, the Nickel 40-inch reflector, the Crossley 36-inch reflector, and the Automated Planet Finder which will search for Earth-like planets around nearby stars. In 1887, Lick's body was buried under the pier of the telescope. A brass tablet bears the inscription, "Here lies the body of James Lick.

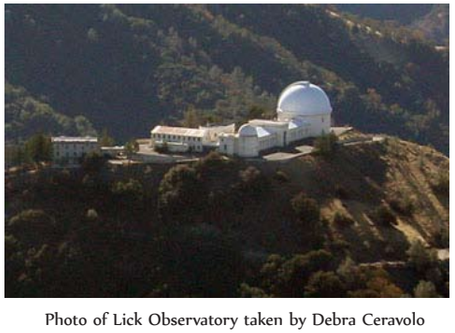

Photo of Lick Observatory taken by Debra Ceravolo

It was long theorized that the warped disk of the Milky Way resulted from the gravitational forces of the Clouds' occasional passes.

What about the intermittent star-forming episodes in the two Clouds? Only an elliptical orbit can yield such events, at least in my opinion. A parabolic geometry should cause a single star-burst scenario.

Several billion years ago both clouds passed each other causing star-birth and a chain of supernova events. A natural by-product was the creation of a stream consisting chiefly of hydrogen-gas. The Magellanic Stream was known since the 1970's and spans at least 100° in the sky. The invisible 'stream' has been a subject of much controversy.

Astronomers in Australia discovered an "appendage" of gas opposite the stream that appears to puncture the Milky Way's disk. It is about 70,000 light-years away and located near the Southern Cross. According to astronomers they think that the rest of the Clouds will be consumed by the Milky Way. At this point in time the idea is only speculation. The good news, however, is that the stream is not linked to our galaxy, but rather an artifact of an isolated event.

With all that stuff going on within the Magellanic Clouds, you can be sure that they will be scrutinized in the years ahead. The wonders of the Southern Sky have pleased amateur astronomers for decades. The Magellanic Clouds are no exception. They are conspicuous, large and bright to the naked eye. Through a telescope they become a real 'eye-opener '. Observing them (as well as other deep-sky objects) instills a humble feeling within our souls. It makes us aware how tiny we are in the big picture. A picture without a frame and countless discoveries.

References:

1) Astronomy Magazine, June 2010, Mysteries of the Magellanic Clouds
2) http:en.wikipedia.org/wiki/Magellanic_Clouds
3) http:en.wikipedia.org/wiki/Large_Magellanic_Cloud
4) http:en.wikipedia.org/wiki/Small_Magellanic_Cloud
5) http://www.sciencedaily.com/releases/2007/09/070926123359.htm

2011 RASC General Assembly - July 1-4, 2011

The 2011 General Assembly will be held in Winnipeg, Manitoba, from July 1-4, 2011. Registration is now open and the full program is available at the Winnipeg Centre website.
http://winnipeg.rasc.ca/ga-2011-home

The General Assembly - it's not just Committee meetings it's also a time to network with old friends and some new acquaintances, pick up a few photography techniques, win a prize or two, party and sing along, eat well and often, drink occasionally, gather in a few observing tips, pickup a few odds and ends for the telescope, see what's new in the stores, get the low-down on some distant observing sites, and learn something interesting and insanely scientific about this pastime of ours. The GA is a time for renewal - of the Society, the Centre, and your enthusiasm for astronomy. Be here on Canada Day.

RASC Designates Canada's Jasper National Park a Dark Sky Preserve

On March 26, 2011 the Royal Astronomical Society of Canada (RASC) officially designated Jasper National Park of Canada in Alberta as a new RASC Dark Sky Preserve through its National Certification Program. Jasper is the 13th Dark Sky Preserve in Canada, and largest, to be designated by the RASC.

Together with the RASC, Parks Canada Agency recognizes that natural darkness is an ecological resource in need of protection and both organizations are committed to lighting practices that preserve the beauty and wonder of the dark sky and night environment for all Canadians to enjoy.

Through this recognition, Jasper National Park is committed to protecting the night environment from the impact of artificial lighting. The Park is supported by the RASC Edmonton Centre to assist it in the development of nighttime programs to take advantage of the dark night sky and its contributions to Canadian culture.

Ottawa Centre meeting report - April 1, 2011

By Estelle Rother -Recorder

Bill Wagstaff welcomed everyone to the April meeting. He announced that the National RASC will be awarding Rob Dick with a Service Award for his long standing involvement with light pollution abatement. We then saw a video sent in by Gary Boyle about the star size comparison which was not produced by an astronomer. This individual does 3D rendering and complex motion videos. We saw the planets, in order of size, to the largest star and on to galaxies. The presentation ended with the message 'You Are Not The Center Of The Universe'.

Rolf and Linda Meier spent about a month in Arizona and New Mexico. While he was there, he took over 1300 pictures. At the meeting he showed communities designed for amateur astronomers in Arizona and New Mexico. Arizona Sky Village near Portal, Arizona was started around 8 years ago. This was followed by Rancho Hidalgo in New Mexico. Granite Gap is the newest community. All of these communities were founded in dark areas by Gene Turner who made his fortune in Florida real estate development. Arizona Sky Village was developed in conjunction with Canadian Jack Newton. Each 4 acre lot must have at least a 1200 square foot house. An observatory building is also allowed. There are currently 20 houses; other lots are for sale. Rolf and Linda rented a house for their 2 week stay. There is also available land outside of the Sky Village. Rancho Hidalgo it the site of Clyde Tombaugh's 16 inch telescope. It also consists of 4 acre building lots. There are fewer rules here so houses can be smaller with a greater variety of housing types. Trailers are also allowed and RV sites are available. This is also a working ranch with ranch bunkhouse accommodations and horse riding. A time share option is also available. A series of remotely controlled observatories have a Newfoundland connection. Granite Gap features many RV sites. Mobile home time shares and roll-off roof observatories are available. There are also plans to build a planetarium and a rock and mineral museum and there is an area for model aircraft, a man-made lake and an amateur rocket launch site. The rocket recovery team consists of kids on horseback with cell phones. In addition to images of the sites, Rolf showed a video of a Granite Gap rocket launch. The largest rocket reached an altitude of 6500 feet.

Members' observation reports followed. This time Paul Comision showed objects from the IC catalog, a junior brother to the NGC catalog. IC 0166, also known as Tombaugh 3, is an open cluster in Cassiopeia with 120 stars. IC 0342 is a galaxy 8.2 million light years away in Camelopardalis. IC 1590 is an open cluster 9500 light years away in Cassiopeia., also known as Collinder 8. IC 5146

New Research - The Magellanic Clouds by Richard Alexandrowich

Both clouds helped astronomers unravel the mysteries surrounding the origin of cosmic rays. Do they come from within our galaxy, or travel to us from beyond? If cosmic rays were detected throughout the universe as a blanket universe thing, then cosmic ray interactions in other galaxies should be detected. But then scientists failed to 'observe' these rays in the SMC, they concluded their sources were located within the galaxies themselves.

In 1987 the scientific world was treated to a surprise of colossal proportions in the LMC. A massive star had blown itself to pieces in an event known as a supernova. The fact that a star had blown itself up was only one part of the surprise. The other being that the progenitor star was a blue supergiant , not a red one as would be expected. According to stellar evolutionary models at that time, massive blue stars should not have gone supernova.

Astronomers suspect the object in question was part of a binary system whose components had merged to produce a blue supergiant. After twenty years of scanning the sky, a compact object or neutron star remains to be detected.

Another mystery relates to the gravitational interaction between our larger Milky Way and the smaller Clouds. Scientists assumed that the two galaxies were bound by our more massive spiral as they endlessly travelled in an elliptical orbit.

In a minor revelation in 2007, astronomers at Harvard used Hubble Space Telescope data to determine that the Clouds travelled much faster than previously thought. By moving at higher velocity it is likely the objects are overcoming the gravitational pull of our galaxy and are scribing a parabolic orbit that takes them near the Milky Way but once.

Combining their original calculations with the new data proved only fruitless. It was becoming clear that reproducing this bound, elliptical orbit would be very difficult.

The total mass of our Milky Way wasn't enough to lock-in their orbits. It may be that our satellite galaxies will swing by and then continue onward into deep space never to return to our local neighborhood. Unfortunately their fate may never be known.

New Research -The Magellanic Clouds

By Richard Alexandrowich

Being all but forgotten for centuries, the Magellanic Clouds named after Spanish explorer Ferdinand Magellan (1480 – 1521) have rewritten textbooks on galactic evolution. Also uncertain is whether both objects will collide with our Milky Way or leave the confines of our galaxy never to return.

It is beginning to appear more evident that both the Large and Small Magellanic Clouds are unrelated to our galaxy and may be interlopers from another system that are just passing by.

Both objects continue to surprise scientists with their wealth of detail. They are one of the nearest galaxies that can be studied from our vantage point. Looking at them is analogous to viewing our own galaxy from the top.

Appearing as two distinct clouds in the Southern Hemisphere, one can say they resemble debris thrown off by the Milky Way. Both galaxies are considerably smaller than our galaxy – the LMC is only 1/10 as large. The fact that the they are unusually low in metals, became a tantalizing object of study. Stars rich in hydrogen and helium populate these galaxies.

In an astrophysical sense, the LMC is classified as an irregular galaxy with no obvious shape. However, it does have a prominent central bar as well as a spiral arm. The distorting effects of galactic interaction is clearly evident in this study. It is the nearer of the two galaxies at 160,000 light-years away. Armed with a large-aperture scope, a backyard astronomer can easily spend many nights studying this object. It is curious to note that the central bar is so warped by tidal waves that its ends are closer to the Milky Way than its central part.

Its companion galaxy, the Small Magellanic Cloud (SMC) lies 22° from its larger sibling as viewed on the celestial sphere. In reality, that translates to about 75,000 light-years through space. It is ten times smaller than the LMC, or one-hundred times smaller than our galaxy.

Both galaxies seem to be immersed in an "envelope" of hydrogen gas of much lower density than either cloud. This pocket of gas has been dubbed the Magellanic Bridge. The low metal content and higher gas concentrations in these objects indicate that they mimic galaxies of the early universe.

is located in the Cocoon Nebula. Gordon Webster usually shows sketches. This time he showed photos of lunar craters Copernicus, Plato and Proclus. Brian McCullough showed his souvenir shot of Discovery and the ISS that he took on March 7. Gary Boyle began with Saturn: it would be in opposition on April 3. He then showed images of lunar features. The crater Clavius is 231 kilometers across. Crater Gassendi is 114 kilometers across. Delisle changes from night to night. Sinus Iridum is 411 kilometers across. Doug George submitted an image of the full moon. Rolf Meier showed an image taken on March 26 during Earth Hour. He followed that with an image taken the following night. It was hard to tell which sky was darker. The main contributor to light pollution is street lights and they were not turned off. Bob Olson had recently returned from Florida. He showed images of the face on spiral galaxy M100, the Markarian Chain, the Rosette Nebula and Omega Centauri. Back in Ottawa he photographed M13 with the same equipment. M13 is a lot smaller. He also photographed the largest full moon.

Al Scott brought us the 10 minute astronomy news update. He began with breaking news: Messenger had arrived in orbit of Mercury. It is the first spacecraft to orbit the planet. In the first 5 days of taking data, Messenger had returned more images than all previous missions to Mercury. Al showed us some of the first images to be released. It looked a lot like the moon. Al continued with 'dead stars and x-ray stripes', a talk that involved cosmic rays. Cosmic rays are high energy subatomic particles that bombard Earth from space. Over time scientists have seen some of these particles with anomalously high energy. There is no known event in the near universe that can accelerate these particles. In 1572 a star 13,000 light years away exploded to create the Tycho supernova remnant. Scientists believe the explosion occurred when a white dwarf gained mass and exceeded its weight limit, resulting in a Type 1a supernova. A pattern of x-ray stripes around the perimeter of the remnant may be the first direct evidence that cosmic events can accelerate particles to these very high energies. One way to reach these energies involves extremely high magnetic fields arrayed in large coherent structures. Theory suggests the magnetic fields are amplified in the blast wave from the supernova. A ball of energy from the dead star is expanding outward. The magnetic fields are tangled and the motion of the particles in the blast waves are very turbulent. The magnetic fields trap the charged particles which then spiral around the field lines. Every time a particle crosses the blast wave, it gets more energy. Eventually it shoots out and reaches our atmosphere.

Mike Moghadam gave a public outreach update. The Centre participated in Earth Hour at the museum on March 26, attended by 750 visitors. There was a star party, indoor displays and a star lab planetarium. On Tuesday April 12, the 50th anniversary of the first human space flight would be celebrated. The Canadian Aviation and Space Museum was hosting a panel discussion with Al Scott as one of the panellists. Check the Centre web site for the 2011 Carp star party schedule. International Astronomy Day will be celebrated at the museum on Saturday May 7. The Centre will be participating with day and evening activities. On Thursday June 30 the Cube gallery will be hosting the opening party for Nuit Noire. An invitation is issued to display astronomy art. Cube Gallery is located at 1285 Wellington. Mike is seeking the help of a graphic artist to create a new display, posters and signs. Solar observing events and mall outreach activities are under development. Contact Richard McDonald or Mike to have your name added to the Centre all-member e-mail list. Sylvie Letourneau asked for volunteers to participate in school outreach. We then paused for a short break.

A few months ago, Richard Alexandrowich presented a talk about Omega Centauri. In this talk he discussed 2 other southern sky objects: the large and small Magellanic Clouds. Astronomers have assumed these objects have been orbiting our galaxy for several billion years. But that may not be the case. Please see Richard's article in this issue of Astronotes.

Chris Teron presented the second part of his talk about applications for the iPad and iPhone. A search of iTunes resulted in 398 iPhone and 139 iPad apps for astronomy. Three components can be found in most iPhones and iPads: a built-in GPS, a digital compass and an accelerometer. This combination lets the device know where it is pointed on the sky. Chris began with a brief review of 2 planetarium apps. Redshift is available for these devices as well as for the computer. There is also an app for Google Earth. On the computer, there is a feature called Google Sky. Unfortunately this feature is missing from the iPad app. Solar Walk is visually rich. It is very good for non-amateur astronomers who want to know what is up in the sky. It still shows 9 planets. Touching on any of the planets takes you on a 3D tour of the solar system until you reach that planet. At any time, you can rotate the view, zoom in or zoom out. Touch any object to see general information about that object. Touching Earth also gives orbiting satellites in real time.

must be in the wind for her to be summoned to Sailfleet like this, but it likely did not include breakfast with the admiral. She would find out soon enough.

As she stepped down onto the first rung of the ladder Ariane asked of no one in particular among the bridge team, "Enyboddy know vad t'veddr's like outside?"

It was an old Dutch astronaut EVA joke.

No one laughed.

Not that she would have heard anyway. The top of her head had already disappeared below deck level.

****

Sailfleet Commander Ariane de Vries never felt less in command of anything than she did at this moment. Being back on Earth, back in National City usually felt good. It was a chance to unwind. But not this time. As she disembarked the monorail at Canal Centre and made her way down to street level nothing seemed to be on an even keel. She was feeling queasy from the rough de-orbit flip down from Gateway and she was still trying to find her one-g shore legs. She also had much on her mind.

The debriefing with Admiral Vaughan had been cryptic to say the least. The sealed orders placed on her datawand by the admiral's secretary would tell her more, but she could not access them until after she was airborne tomorrow evening. For some reason Sailfleet had booked her on the 17h50 Aeroflot flight to Novosibirsk. So much for down time.

Ariane knew something was wrong the moment she stepped inside the small tripartment unit she shared with Darius. The place smelled of desertion. The sight of his beloved ornamental plants lying stone dead in their mini-jardinarium told the story better than the note waiting for her on the table. It explained why Darius had not been returning her messages. At least the worrying was over.

Ariane twisted the engagement ring off her finger and dropped it among the stalked ruins of the jardinarium. She found a blanket in the hall closet and curled up on the living room floor. Sleep would come quickly. There was nothing left for her here, and she had a flight to Siberia to catch the next day.

Next time — Serial 2: Future in the Past

She thought for a moment then gestured within her web space, her bright red nail polish creating a crimson blur as her hands called up the ship's routing chart. Still six hours to go to the high-orbit fleet station. Far too long to test Admiral Vaughan's shallow well of patience.

Ariane gestured once more inside her virtual environment and this time a wizened Oriental face snapped into view. She had no idea how old her sailing master actually was. Sixty-eight? A hundred and eight? It was impossible to say just looking at him. For reasons that were well above her pay grade to know she could not even check Kwan Jin's service record. It was sealed under a Level One directive. In other words, off limits to anyone outside of Sailfleet Supreme Council. What everyone *did* know was that he had served as sailmaster's mate on board *Argonauta* during the historic first circumnavigation of the inner Sol system by a manned solar sail vessel. That was in 2061. Twenty years ago next year. With his drooping moustache and embroidered cap and robe Kwan Jin looked more like he belonged in the late 19th-century pirate dens of Kowloon than on the decks of a modern solar sail vessel. Ariane also could not explain Kwan's presence on board *Merope*. What was a —

"I await your pleasure, my young captain."

Ariane grimaced. "I beg your pardon, honoured sailing master. I have been recalled to Sailfleet immediately. The ship is yours. I will shuttle ahead and meet you on arrival at Gateway. If your mates can squeeze a few more knots out of her on the way in that would be good, but smooth as silk with their sail drill if you please." She shivered. "I feel the admiral's sensors all over us. Log to note — sailing master has the con."

Ariane spared no further thought for the tiny yellow man now taking manual web control of *Merope's* vast and complicated array of solar sails, rudder lights and ion pulse thrusters. As she had learned during the past three weeks the ship could be in no better hands. She did not see the knowing smile forming on Kwan Jin's leathery face.

The captain punched an intercom button on the arm of her command chair. "Bosun? I need *Delilah* ready in ten minutes for a run down to Gateway. Negative. We'll rejoin *Merope* after the ship docks. De Vries out."

Ariane released the datawand from her console and pocketed a handful of crackers before heading for the bridge ladder. Something big

Moon Globe was released specifically for the iPad. It allows you to control the phase of the moon. As you zoom in, you get high resolution images of that area of the moon. There is an extensive catalog of lunar features including the locations of all the Apollo landing sites. You can also see the back side of the moon. Chris was disappointed with Software Bisque's Gas Giants app. At the moment there is not much in it. Messier List contains a full catalog of all the Messier objects. Unfortunately it only provides the same information you can get from any planetarium program. NGC List is basically useless but at least it is free. Chris also talked about 2 interesting satellite apps. Remember that the iPhone knows where you are and the current time. As soon as Satellite Flybys is opened, it shows the satellites that will be overhead that evening. Click on any of the satellites to see where it is rising, where it will be in the sky, what its elevation will be, its magnitude and other information. GoSatWatch is a similar program but instead of giving you a lot of data about the satellite, it gives you a simplistic view of the sky in your area and where you can expect to see it. NASA has an outstanding app. Select missions to see a list of 80 missions. The photo library selection has 3 sections: the NASA IOTD (image of the day), APOD with the full catalog of 5,400 images, and a catalog of 147,000 NASA images. News releases are available. And then there are visible passes of the ISS for your area. For those people specifically interested in APOD, there is an app for that. Sky and telescope has the Sky Week app that is like the computer application. Exoplanet is a fascinating app that give you the latest list of discovered exoplanets. Click on any object in the list to see an animation of the planet's path across its star, its light curve, where to find it in the sky and other data. Sidereal Time is a utility for people concerned with astronomical time. The Clear Sky Clock web site is fully functional on the iPad.

Al Scott is looking for a SmartScope observing coordinator. He is also looking for someone to help him as telescope loan library coordinator.

FLO keys can be renewed for $35. See Ron St. Martin.

'Turn Left at Orion' was the Stan Mott library pick of the month.

Thanks to Ann and Art Fraser for the after meeting refreshments.

AstroNotes of the Past - Remembering 1976

Astronotes Editorial by Jon Buchanan, July 1976

With the advent of warm weather and the short observing nights a number of changes have occured. One such change, in case you were not already aware of it, is that Astronotes has gone through another change of editors. Rolf Meier, the past editor for the last three years, has retired. His expert guidance, insight and wit will be missed by us all.

Other changes which will have occurred by the time you read this are: the July Observer Group meeting was moved forward one week, to June 25, with a Star Nite being held on the 25th or 26th; a Public Star Nite at Vincent Massey Park will occur on the first Friday in July, thereby resulting in the moving of the Observers Group meeting. I have it on good authority that the next meeting will be held at the regular time and place.

Stellafane is being held early this year, in July, meaning that there will be a lot of observers around to curse the full moon during the Perseid meteor shower in August.

Other changes that may occur are early elesctons; it seems the Chairman, Doug Somers, will be going away to Queens in the fall, and the Vice-Chairman, Doug Welch, may be going away as well, though it isn't definate. Therefore either substitutes are found until the fall elections, or the elections are moved up earlier this year.

Of course everyone has heard that the world, as we know it, was supposed to end on June 12th, 9:00 pm local time. It didn't, for whatever reason, and the metaphyical society has assumed a very low profile.

The Viking Spacecraft are starting on their exploration of Mars from orbit, and soon on the surface itself.

Summer means warm nights, and warm nights bring out the amateur astronomers, and the bugs. Hopefully, the two will meet often. Good observing!

Sailfleet Rubicon

By Brian McCullough © 2011

(Editor's Note: In the February issue of AstroNotes we ran a reprint of Virtual Reality, Brian McCullough's 1997 cautionary tale of a future marred by unchecked light pollution. With this month's issue we are pleased to introduce Sailfleet Rubicon, Brian's new speculative fiction serial based in the late 21st century. Welcome to a world of solar sail vessels, urban intensification and some seat-of-the-pants time travel. We hope you enjoy it.)

A wrong done two centuries in the future must now be corrected if mankind is to survive. The die has been cast. There is no turning back.

Serial 1: Sealed Orders

"Gateway Station picket hailing us on TacNet-9, captain."

Commander Ariane de Vries swivelled her command chair inside *Merope's* bridge web to face her yeoman of signals. Maanika's flat expression betrayed nothing, but this was a normal consequence of her having no eyes. Nor even any place for eyes. She had no need. The young commbionic's sensory whisker array more than compensated.

"TacNet-9?"

"Affirmative, ma'am."

If there was one thing Merope's captain could not abide it was anomalies. Ariane's fiancé once dismissed this aspect of her character as natural Dutch stubbornness: *wooden shoes, wooden head, wooden take no answer for an answer.* She could just smack Darius when he talked like that. But why would Sailfleet Command fire up an ultra-secure emergency tactical channel now? The solar sail frigate was just hours from space-docking at Earth Gateway Station, the ship's home port. It just didn't make sense.

"Are you —"

Maanika held up a finger, her long "cat" whiskers exploring the electromagnetic ether as she decoded the incoming message. "Captain report to Sailfleet Commander Gateway Station as soon as convenient." Her voice was as flat as her expression.

"Acknowledge."

Ariane frowned. *As soon as convenient.* Convenience had nothing to do with it. That was command speak for drop everything and do it now.