Orbit

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My First Issue
By Grant Maguire

I would like to welcome you to my first issue of Orbit. I am looking forward to working with our many contributing members who make the publication what it is. Please bear with me as I struggle through my first issues. I am not a publisher by trade nor do I want to pretend that I am one. This issue will have some interesting stories as well as many photos by our talented membership. If you have any suggestions please feel free to contact me at my email address **maguires@lara.on.ca**.

From the Eyepiece
By: Mark Kaye

October has been a busy month for me. Once again, despite my objections, I find myself president of Hamilton Centre. Fortunately for the centre, this year will be my last as three terms is enough for anyone. I hope that next year, somebody who actually lives in Hamilton will take on the job. I think it is important for the President to be easily accessible to the membership and having someone who lives out of the city with two separate addresses is not the ideal person for the job. Despite my misgivings about my qualifications for the job, I am enjoying the work. Hamilton Centre is the best centre going and we have a lot to offer both to the region and to the RASC as a whole.

I would like to thank all of the members who came out to the observatory to help in the fall clean up. A lot was accomplished. Mike Spicer laid the foundation for a firm-observing pad. Bob Botts oversaw the renovations of the roll-off building. The floor was worked over to remove the central trip hazard and the rotting pier, that everyone has bumped into at least once, was pulled and discarded. This leaves a nice new spot for the Tin Tube and gives the Ford scope room to swing. The carpet was taken out and given a good beating and what a difference that makes. The building looks a whole lot better for the work. But most of all, it was the shovel work of Ken Lemke. Ken and his crew of shovel hands Gary Colwell, Grant Maguire, John Williamson, Bert Rhebergen, Glenn Kukkola and David Boki distributed over 16 yards of gravel to the parking lot and driveway. Hopefully this will reduce the awful mud problems created by the shallow bowl that all the traffic had created right outside the observatory door. Inside, our new curator, Heather Neproszel was kept very busy cataloguing all that we own. Scott Barrie made numerous trips to the dump hauling refuse from the site, as did Ken. I am happy to report that the last remnants of the Carr dome are gone, as well as lots of other trash that used to litter the site. If I missed your name and you were there, I do apologize. It was a very productive day. I hope to see you out at the next work party.

October is also the month for the fall National Council meeting of the RASC. One of the largest bombshells delivered was one of the first items up for discussion. The society voted in favour of a new policy on grant procedures. Basically, all centres must report to National Office (NO) all grant applications and get their approval before submitting them. This mainly applies to federal grants, but from what I can see in the policy any grant the centre applies for, NO must give their approval. This policy is in effect until it can be further reviewed at the next general assembly. The reason for this policy is that due to the increasing number of fundraising opportunities available, quite often only one grant can be given to any one organization. This means that if Vancouver Centre applies for and receives a federal grant, St. John's Centre could not apply from

the same granting organization for another three years simply because both centres are members of the RASC. The policy also states that any federal grant money given to a centre would actually make anything purchased with this grant the property of NO. How this policy would affect centres that are incorporated on their own is not really clear, but NO insists that this federal policy would apply to any centre, incorporated or not. Scott Young, second Vice President, was given the task of keeping track of grant applications.

Rajiv Gupta continues to solicit photographs from members for the Calendar. It was brought up that a large number of members are unhappy that non-RASC members are being printed in the Calendar and Rajiv asked that more members should send in their best material. If you have a picture that is not similar to one printed in the last two years, send a copy to Rajiv for consideration. Rajiv has promised to try and respond to anyone who sends material, even if the pictures are not selected for printing.

The constitution committee has prepared a set of model centre bylaws. I believe this was partly due to centres such as Calgary that do not have their membership year in line with the policy of the society as a whole. These guidelines are available on the society's web pages.

Robert Garrison informed us that there is one honourary membership of the RASC position to fill. If you have a suggestion for someone who is worthy of this honour, please contact Dr. Garrison as soon as possible.

The computer use committee has been experimenting with new software that would give us the capability of providing list services to all centres on an easy to manage basis. This would mean that all centres could have, at not any cost, a secure email list service system that is free from ads and would be Spam free. Look for an announcement of this new service to come shortly once we are certain that all the bugs have been worked out of the system.

An awful lot of time was spent on debating changes to the bylaws considering the names of several committees. When the dust all settled, two new standing committees were approved by council, to be submitted to the General Assembly for acceptance, and one was not. Both the Education and Observing committees will become standing committees if the general membership approves. The Light Pollution Abatement committee will remain a special committee.

The Banquet and Northcott speakers have given notice to the Vancouver GA committee that they will attend. The Northcott speaker will be Gordon Walker and the Banquet speaker will be Alan Dyer. Plan to be there, sounds like a good excuse for a party!

The final agenda item from the First Vice President, Peter Jedicke was given far too little time to debate, but was passed for general membership approval. It was carried that the chairs of standing committees be changed from voting to non-voting members of national council. This is another item that will be discussed at the upcoming meeting to take place on February 22nd, 10:00EST, Toronto and at the Vancouver GA.

That wraps up the council meeting. Observing you say? What is that? I did observe, briefly. I arrived at The Observatory to clear skies late in the night, but while I observed, it clouded over and the rest of the time I spent at home, it was cloudy, cool and rainy. I did manage to at least look through a telescope once this month. Given the quality of observing in the spring, I guess that is better than nothing. I hope that the winter skies treat us better.

Clear skies!

mark.kaye@sympatico.ca

Winter Wonderland
By Ken Lemke

With the winter weather almost upon us, it brings with it an opportunity for some exceptional observing. While last winter was my first experience with cold weather observing, it will always be special, as it was about this time that I became comfortable with identifying constellations and other objects in the night sky. If this is your first winter observing session, hopefully the following will encourage you to enjoy the winter sky.

The first thing that struck me about the cold, clear winter nights was that the stars seemed brighter and clearer and I could see fainter stars when compared to the summer. I'm assuming this is because there is less moisture and pollutants in the air, both of which affect transparency and seeing conditions.

The late autumn and winter sky also seemed to have more bright stars when compared to spring and summer. I haven't done an actual comparison with a star atlas to verify this — it might be a project for a cloudy night, or for a more experienced observer to confirm.

A few of the brighter stars to look for are:

* Mirfak and Algol (in Perseus)
* Capella (in Auriga)
* Aldebaran (in Taurus)
* Betelgeuse and Rigel (in Orion)
* Castor and Pollux (in Gemini)
* Sirius (in Canis Major)
* Procyon (in Canis Minor)
* Regulus and Denebola (in Leo)

Not only are these nice naked eye objects, but most have quite interesting star fields around them which I enjoyed looking at with binoculars or my 80 mm refractor – no need for large aperture to enjoy these beauties.

There are so many bright naked eye stars in the winter constellations, I found it was enjoyable just to survey the sky naked eye and pick out the various constellations.

Auriga, Leo, Gemini and Orion are particular favourites. I'll never forget the first time I saw Orion, as I was stunned by its sheer size. Star charts on paper tend to give a false impression with respect to size, unless you look at an accompanying scale.

Some other objects to examine every night with binoculars or a small aperture telescope are:

- The area around the three bright stars that make up Orion's belt.
- A little below Orion's belt you will find the Orion nebula (M 42), which, while very nice with a small aperture, it's a WOW with a larger aperture telescope, i.e. 8" plus.
- "The kids" – a largish three star asterism near Capella (can be seen naked eye).
- The Hyades in Taurus — best with binoculars or small aperture telescope.
- The Pleiades (M 45) in Taurus — stunning in binoculars. All sparkly as Tina would say.
- The Double Cluster in Perseus — best with binoculars or small aperture telescope.

- My favourites — the Alpha Persei cluster which is just below Mirfak — it's a must for me.

There are a number of open clusters that make for fine viewing in a small telescope:

a) M-36, M-37 and M-38 in Auriga
b) M-35 in Gemini
c) M-41 in Canis Major
d) M-47 in Puppis

- The constellations Cassiopeia and Cepheus are fun to explore with binoculars or a small aperture telescope, with Delta Cephei being an attractive double star as well as a variable. It's quite fascinating to observe Delta Cep for five to six nights in a row (clouds permitting) and see how it fluctuates in magnitude.

Also look for Mu Cephei – Herschels' Garnet star near the bottom of Cepheus.

To top it off, we have two stunning planets. By early December, Saturn clears the horizon about 6:00 PM and Jupiter about 9:30 PM.

The rings of Saturn are tilted giving you an excellent opportunity to see the Cassini division, and the two prominent ring divisions. This year, I'm hoping to see some of the surface details, which I didn't get to see last year.

Jupiter was extremely fascinating, as I was captivated with the movement around Jupiter of it's four major moons on a nightly basis. Every night seemed to present a different combination. I even got to see the two more prominent equatorial belts. This year I plan to make use of the transit information published in Sky and Telescope and hopefully catch a shadow transit and the Giant Red Spot.

I could go on and on, but I trust the above sampling of the winter sky has wetted your appetite.

Before closing, I'd like to share a few observing hints which will hopefully help you to get the most out of your time under the skies, this winter.

Cold Weather — in the beginning last year, I ignored advice and had some cold (and short) sessions. Wear warm clothing, (layering is best) under a warm coat. Get a decent pair of thermal mitts (not gloves) and a thermal toque to keep your head warm (an uncovered head can result in significant heat losses). A good pair of boots is essential, since cold feet will cut your sessions very short. I found Mark's Work Wearhouse to be sources of reasonably priced and very functional winter wear. My boots are VERY ugly, but VERY warm!! Remember that Astronomy is not an aerobic sport and you aren't trying to make a fashion statement (it's dark, no one can see you). Dress to be warm. I found when properly dressed, staying out for 3 - 4 hours on the coldest of evenings was not a problem.

Planning — make use of cloudy nights by consulting star charts, your planisphere etc and make a list of objects you want observe. Prepare notes or little diagrams that will help you find your objects. Consult a star chart found in one of the various magazines to determine whether the Moon is going to present a problem. It can be very disappointing to be all prepared with a hunt list and notes, only to find a full moon smack in the middle of the field you wanted to work in. A back-up list of lunar features for those occasions might be handy. Consulting your planisphere will provide you with information you need to determine when a particular constellation or object will clear the horizon, or when it will reach the zenith etc. By spending a little time planning and

preparing, you will maximize your observing on those precious, clear nights.

In closing I'm sure you'll make interesting discoveries of your own and when you do, write about them and submit an article for Orbit. We all enjoy hearing about others' experiences and about objects we can add to our own hunt lists.

Most of all enjoy the night sky and have fun.

Library Cataloguing
By John Williamson

As I mentioned at the last general meeting in November, all the books in our library at the observatory are being catalogued. To help facilitate this, I would please ask that all members that presently have books out on loan from the library return them by the end of December. Once all the books have been returned, the cataloguing can be completed, and members will once again be welcome to enjoy the many books we have. I thank you for your cooperation in this matter, and hope to have everything completed as soon as possible.

March General Meeting has been changed
By Mark Kaye

Our regularly scheduled general meeting for Thursday March 7 2003 has been changed to **Thursday February 27 2003**. This change has been made to accommodate guest speaker, Mr. Rajiv Gupta.

Rajiv's topic is "Composite Digital Techniques for High-Resolution Astrophotography with Film".
The best deep-sky images now being produced are composites, formed by combining two or more individual exposures into a single image. Thanks to various powerful computer programs on the market, composite imaging is now easy. This talk will demonstrate some of these exciting techniques as applied to film, with several examples.

Over the past 8 years, Rajiv Gupta has been developing methods to produce finely detailed colour images using the black-and-white wonder film of astrophotography, Kodak's black-and-white Technical Pan. Rajiv is co-developer of RegiStar software, which automates the alignment of digital images, and is also editor of the Royal Astronomical Society of Canada's Observer's Calendar, in which many composite images have appeared, editor of the RASC Observer's Handbook, and President of the RASC. By profession, Rajiv is a mathematics professor at the University of British Columbia.

Observatory Inventory
By Heather Neproszel

As curator of the Powis Observatory, it is my responsibility to keep an up-to-date inventory of the items belonging to the Hamilton Centre as well as to report on the overall condition of the observatory. I am currently updating the list of items recently inventoried. I also plan to have centre property photographed to prepare a visual catalogue.

I understand that some Centre property is currently not on-site, as items have been borrowed for use, repair or storage. For individuals who have borrowed items from the centre, please contact me with a list of items in your possession, with accompanying digital photo(s) and/or a description, in order to make the inventory as accurate and complete as possible. I can be contacted at **hneproszel@aol.com**. Thanks so much.

Update on the 2002 Saturn Project
By Michael Spicer, Project Coordinator

As we enter the last month of the 2002 Saturn project, I encourage every reader to get out in the evening and look at the ringed planet before the end of this year!
To date I have received over 100 observing reports from various observers across Canada and the US – thank you all! As Saturn reaches its best position this year I ask you to send in more observations for this important study.

The rings are at their maximum tilt now, and the planet is dazzling in its honey-yellow brightness! Even a small telescope can show you Saturn's 8th magnitude satellite Titan, the Cassini division between the dull A Ring and the bright B ring of the planet, and some surface features: the large dark polar cap and the very distinct south equatorial belt hanging just above the rings. (well, "above" in a refractor). Saturn is different in its appearance than when this study was last done, in the late 1960's. I believe the Study will have future significance.

If you have access to a telescope of 6" aperture or above, please try to complete a Saturn Project observing report this month – they are available from the RASC Hamilton Centre web site (go to "Download Orbit", download the March 2002 issue in pdf format and then print off page 9, the Saturn Study Observing Report page. If you have any trouble downloading, just call me at (905) 388-0602 with your name and address; I'll mail you a reporting sheet and a return envelope!

We'd like your observational expertise in identifying the various features and assigning them relative brightness measurements. You can return your observing sheets at the January general meeting (remember, owing to the holiday season it's on the second Thursday that month, January 9th at the Steam museum), or you can mail them to the Les Powis Observatory, Box 1223 Waterdown, Ontario L0R 2H0.

I look forward to hearing from you.

Update on the 2002 Double Star Project
By Michael Spicer, Project Coordinator

Everyone who attended the September general meeting of the Hamilton Centre was given a Double Star Project handbook and since then other members and non-members have requested copies of the Project Handbook. I was asked to speak to the Hamilton Amateur Astronomers group about the project, and was received with interest there. Last month a workshop for interested double star observers was held at the Les Powis Observatory and more workshops are planned.

I am pleased to report that a considerable number of observers have been using the Double Star Project

handbook. In 2003 the handbook will be expanded from 50 stars to 250 and interested observers are asked to contact me for updating their handbooks.

Meanwhile, if you have not yet sent in your blue Reporting Sheet or a list of the doubles you have observed, please do so. I would be very interested in knowing what double stars you have found interesting during the past several months. You can reach me by Email at DeBeneEsse2001@AOL.com, or by Canada Post mail at the Les Powis Observatory, Box 1223 Waterdown, Ontario L0R 2H0.

Save Money on Sky & Telescope Subscriptions
By Michael Spicer

Many of you are readers of Sky & Telescope magazine. No doubt you are aware that subscription to S&T by Canadian readers at US$47.95 per year is a costly proposition, almost as expensive as buying your copy every month from a local store at $5.75 plus tax. Hamilton Centre members qualify for a 10% discount on their annual subscription to S&T provided that (a) a minimum of ten members request the discount, and (b) the full cost of the subscriptions is paid by the Centre using a club cheque in payment. Our Treasurer Tina Coppolino has kindly agreed to write a cheque to Sky Publishing if she receives payment in advance from each of a minimum of ten members, together with their names and addresses for subscription delivery. If interested, write a cheque payable to "RASC Hamilton Centre" for C$69.00 which will cover the cost of a one-year subscription at the discounted price, and send it to the Centre: Les Powis Observatory, Box 1223 Waterdown, Ontario L0R 2H0 before December 24th. In the event we do not get 10 interested members, your cheque will be returned to you or destroyed.

RASC Hamilton Centre – Trillium Foundation Grant Committee
By Grant Maguire

A new committee has been formed at the RASC Hamilton Centre. Mike Spicer, Heather Neproszel, John Williamson and Grant Maguire will be preparing to make application to the Trillium Foundation for grant money. The committee will be pursuing a Community Program grant for equipment and renovations. The amount of funding available under this grant program is $75,000.

Some ideas for use of such a grant are as follows:

- High speed internet access
- Running water
- LX200 class scope, CCD equipment
- Poured floor in the Chilton building covered with that rubberized material used at water parks.
- Concrete pad(s) at the front, by the road.
- Plant low cedars or other hedge around the parking lot so headlights don't bother observers as much.
- Buy a piece of land without tree obstructions and with darker sky. Probably south of Hamilton.
- A building with a good meeting room -- large enough for public meetings and Centre meetings. Include indoor plumbing for washrooms and water so you could make a pot of coffee or tea or hot chocolate when there is a public night. Building should have additional room for library, chart room, observatory.
- Ancillary equipment such as projector for general meetings and educational endeavours.
- Landscape the back lot (grass)
- Convert 17.5” telescope to a dobsonian

- Build piers with electricity
- Replace the aging dome
- Replace the roof of the observatory
- Fence and gate the observatory.
- Add proper signage to the observatory site.
- Improve phone system to better keep the public and members informed.
- Rebuild the website
- Purchase a new computer system.
- Improve security to the property and buildings
- Purchase a computer projector.

We would like to invite input from our member on how they envision spending $75,000 at the observatory. If you have any ideas that you think should be included please contact me at maguires@lara.on.ca. or mail them to RASC Hamilton Centre, Box 1223 Waterdown, Ontario L0R 2H0. This is a wonderful opportunity for the Hamilton Centre to improve our site to better serve the public and our members.

Crosshair Eyepieces Available
By Michael Spicer

Not everyone can afford a special crosshair eyepiece, especially one of the illuminated ones that cost as much as $200 in the stores. And yet there's no doubt that a crosshair eyepiece can be of great assistance.

For double star observing, a crosshair eyepiece can assist with measuring separation between stars and the position angle of the system as well. By putting one star of the pair in the crosshair and timing how long it takes for drift to carry the second star into the crosshair, it's possible to accurately measure the separation in seconds of arc, for example.

Several members have found that a crosshair insert can be used in different eyepieces. An insert is a laser-etched glass set in a metal ring that screws into the filter-end of a 1.25" eyepiece, usually a longer focal length eyepiece. I have used them in Meade 26mm eyepieces with great advantage. They are not illuminated but when observing stars the crosshairs are rather easy to see. I have a number of these crosshair inserts available at cost ($5 each). Please contact me if you want one: (905) 388-0602.

MID-ATLANTIC STAR PARTY 2002
By Michael Spicer

MASP had everything the observer could want this year. Clear dark skies, 24 hour per day food service, improved washroom facilities, great speakers, your pick of items for sale – new and used, hundreds of telescopes, and friendly observers in all directions!

The star party is held late in October each year at Camp Reeves, just outside Robbins, North Carolina. Registration is US$20 at the door ($15 if paid in advance) that includes camping, washroom and shower

facilities, electricity and all events. It's a bargain like you won't find elsewhere! This year MASP ran from 28 October to 3 November and as with last year's party, I made plans to stay with Foothills Astronomical Society President Steve Prewitt and Vice-President Mark Hornbeck in Mark's 36' motor home. This year the curator of the Les Powis Observatory, Heather Neproszel also attended MASP.

The weather was mixed. Noting there was rain in North Carolina early in the week, I left for MASP on Wednesday 25 October and arrived the next day in time to set up for clear skies. As you'd expect after rainy days, there was dew all night but I had brought a set of Kendrick heaters for my Meade 5" refractor. The refractor's LXD-55 go-to mount is very good, and if you set the slew rate at the penultimate setting, it is so quiet that no one can tell it's a Meade when it is slewing! Mark had an observatory set-up for his Nexstar 11" GPS with computer control, etc… and Steve had brought his Celestron 8" Ultima. This year we were joined by campers in nearby tents: Chris Enterline of Raleigh who used a 6" dob for NGC observing, and Hamilton Centre's curator Heather Neproszel and her Nexstar 80GT with its great wide-field views.

MASP advertises mag 6.5 skies and Steve and Mark checked this out by looking at the shield of Orion – Pi [1] Orionis starts a little line of stars and they could see to magnitude 6.8. With my eyeglasses I could see to mag 6.2 and that was fine for me (time for a stronger prescription, I guess). It was cold at night, though I don't remember any frost like we had in 2001. Every hour or so we would take a break from observing to get a hot chocolate and a hot dog from the little tuck shop (reasonable prices).

The weekend offered many interesting and well-attended speakers under the Big Tent:

Friday

2:00 p.m. Use of the Astrolabe for Observational Astronomy by Dr. Joseph Mack

3:00 p.m. Project Deep Impact Update by Elizabeth Warner, U. Maryland. A brief update on the status of NASA's Deep Impact mission set to launch in Jan 2004 and impact comet Tempel 1 in July 2005. See www.ss.astro.umd.edu/deepimpact/

3:30 p.m. Gamma Ray Burst Transient Detection: A Challenge to the Amateur.
Mr. Steve Robinson, AAVSO searches for transient gamma ray bursts using a split ring 18 inch scope and an SBIG ST-9E camera. See www.highenergyastro.homestead.com

Saturday

10:00 a.m. Observing Planetary Nebulae, Both Popular and Obscure Mr. M. Eric Honeycutt. See http://www.icplanetaries.com/Fall.html

11:00 a.m. NRAO - The National Radio Astronomy Observatory Dr. Lee Shapiro, Director of Education & Public Outreach for the National Radio Astronomy Observatory. See http://www.nrao.edu/

2:00 p.m. International Dark sky Association (IDA) Update. Doug Hill, Bob Henderson, David Lakey and Dr. Dan Caton, North Carolina IDA. See http://www.raleigh-nc.org/planning/Commissions/lighting.htm

3:00 p.m. A Brief Observing History of the Sun. Mr. Gayle Riggsbee, Astro-historian, Charlotte Astronomy Club

4:00 p.m. Final Remarks and FINAL DOOR PRIZES

MASP is heading towards its 10th anniversary in 2003 with a great reputation! I highly recommend you look into attending MASP next year from 21-27October, 2003. The web site is: www.MASP.org/ if you want more information on this excellent fall star party.

R.A.S.C. Hamilton Centre Calendar of Events

December 2002

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1 Venus 2 deg. S. of Crescent Moon 06:00 EST	2	3	4 New Moon 02:34 EST	5 General Members Meeting - Hamilton Steam Museum 7:30PM Venus 1.8 deg. S. of Mars	6 Venus at Greatest Brilliancy	7
8	9	10	11 First Quarter 10:49 EST	12 Board Meeting Powis Observatory 7:30 PM	13 Public Observing Night Powis Observatory 7:30 PM	14 Geminid Meteors Peak 04:00 EST
15 2 Moon Shadows on Jupiter visible in all of N. America 02:33 EST	16 2 moon Shadows on Jupiter visible in E. N. America 21:02 EST	17 Saturn at Opposition	18	19 Full Moon 14:10 EST Saturn 2.5 deg. to left of Moon. 06:00 EST	20	21 Winter Solstice 20:14 EST
22	23 2 Moon Shadows on Jupiter visible in E. and Central N. America 22:55 EST	24	25 CHRISTMAS DAY	26 Third Quarter 19:31 EST Mercury @ Greatest Elongation (20 deg).	27 Public Observing Night Powis Observatory 7:30 PM	28
29	30	31 2 Moon Shadows on Jupiter visible in all of N. America 00:48EST				

Board of Directors

Position	Name	Phone Number	Position	Name	Phone Number
President	Mark Kaye	(905) 873 1346	Obs. Director	Gary Colwell	
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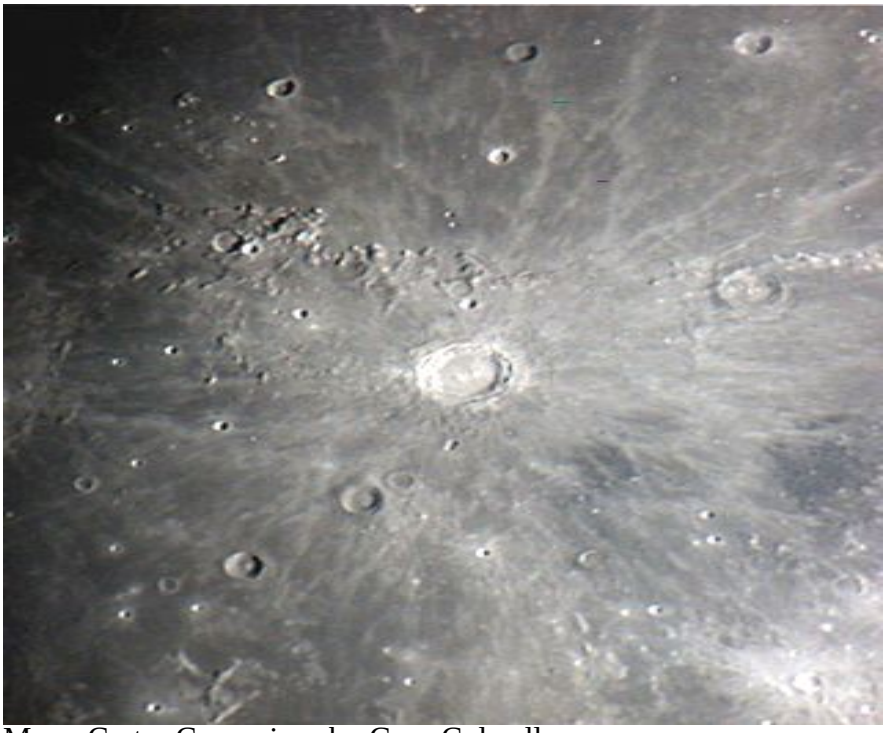
1st Vice President / Education	Michael Spicer	(905) 388 0602	Curator	Heather Neproszel	

Members Photo Gallery

Gary Colwell is a recent member of the RASC Hamilton Centre. Gary's enthusiasm for astronomy has led him down the path of astrophotography. Here are some of his recent images.

A nice shot of Saturn by Gary Colwell Moon Venus and Mars by Gary Colwell

Gary having fun during the Leonid meteor shower, Monday November 18, 2002.

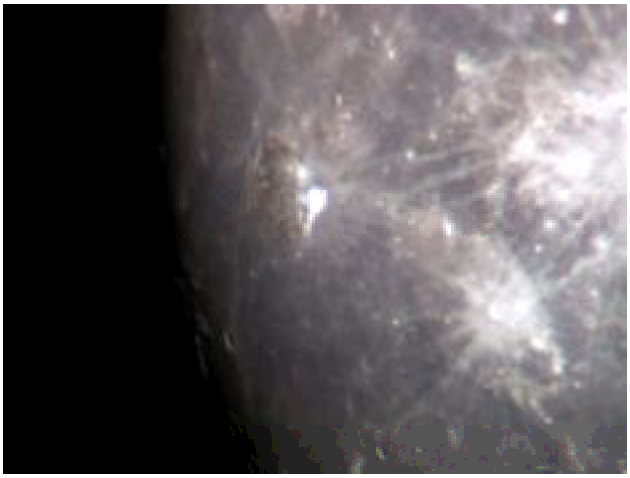


Moon Crater Copernicus by Gary Colwell

Bert and Glen spreading a bit gravel with the little wheelbarrow that could, during our fall clean up at the observatory.

How many loads of gravel has that been?

Here is Bob Botts first digital image of the Moon. It was taken with a Nikon CP995, in February 2002



Shooting the Moon using a digital camera is ridiculously simple..., it's as easy as holding the camera up to the eyepiece of a telescope and depressing the shutter. It helps to have some sort of adapter to keep the camera on axis, but since the cost of failure is zero, you can afford to shoot away until you get it right.

Bump up the magnification with a higher power ocular and you can start to dream about doing some high-resolution imaging. Here's Herodotus from the same night (in colour even).

Here's an aurora image from Bob Botts shoebox.


A panoramic shot from the Mid-Atlantic Star Party 2002 attended by our member and board member Michael Spicer.