Orbit

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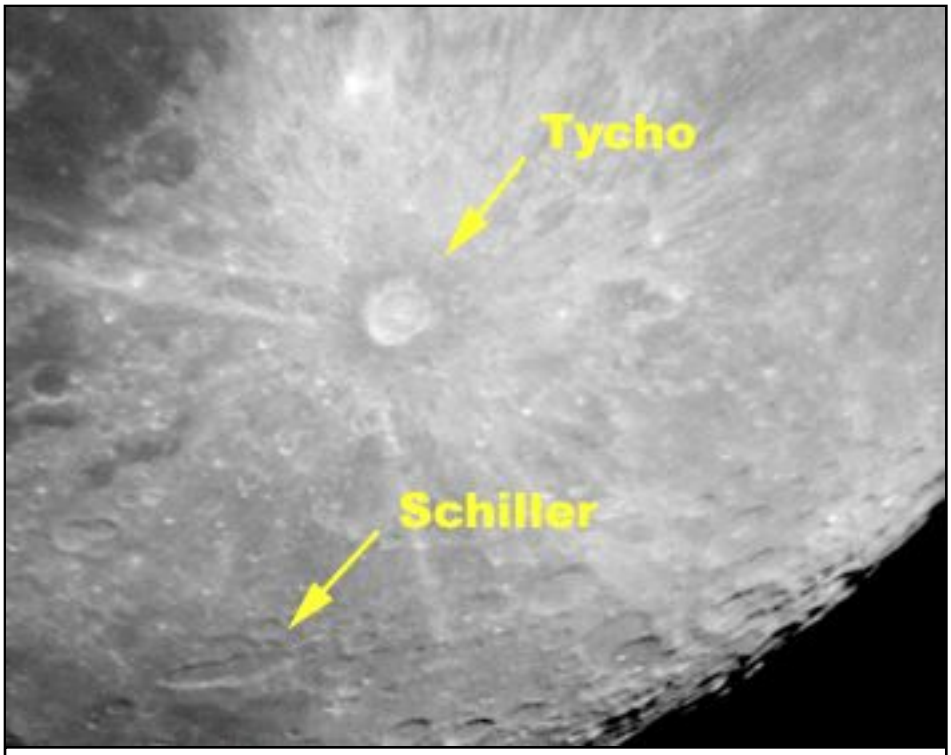

This photograph, taken by Bob Botts, shows the crater Tycho and another crater, Schiller, which is interesting because it is very elongated. The photo was taken with a Nikon CP995 through a 14 mm Tele Vue Radian eyepiece mounted on Tele Vue Genesis refractor. Schiller is one of two interesting, but quite different elongated craters in the area of Tycho. To see another picture and learn more about these craters turn to page 12.

Geology and/or Astronomy - Part 1

by Ev Rilett

Over the past year I've discovered a new hobby. Rocks, minerals and Geology!! As a new member of the Gemini Club my first series of articles is going to touch on a smattering of my rock knowledge along with my intermediate knowledge of astronomy. (Did you guess? I'm also an astronomer). Combining the two may seem bizarre but they do have a definite relationship, if precarious at times. The common areas are on meteors, comets, tektites and meteorites. In part 1, I will deal with definitions. Parts 2 & 3 will entail specifics and examples, Part 4, just for fun, will be on crater impacts.

METEORS - (Shooting Stars)

These are very tiny bits of debris from the size of pebbles down to sand and even dust particles. Each defenseless particle has its own gently rolling orbit and in essence the Earth with its respective screaming orbit, bowls them down.

*See **Geology** on page 2.*

A Few Reminders:

by: Scott Barrie

This is the month of the Messier Marathon, so if we are lucky enough to get a clear night on a weekend you'll probably find other members gathered at the observatory trying to hunt down the M objects.

Michael Spicer is working on a study of Saturn and is keen to get observations from as many people as possible. There's more information to be found elsewhere in this issue.

There will be a special meeting of the Hamilton Centre membership at the Hamilton Steam museum on Thursday, March 28. Details have been mailed out to all current members. If you need more information, please contact a board member.

Finally, please remember that any material to be distributed at general meetings must first be approved by the board.

***Geology** cont'd.*

Meteors occur in two classes: 1) sporadic meteors, more commonly known as shooting stars, which constitutes debris from the solar system; and 2) as Meteor Showers, always associated with a specific comet. eg: Orionids Meteor Shower is a direct result of debris from Halley's Comet.

As they collide and enter the Earth's atmosphere the friction causes them to burn up and we see the beautiful brilliant streaks in our skies. However, they do not land and therefore, I will discuss them no further.

COMETS

Comets are essentially huge dirty snowballs in space. They are composed of mud, dust and ice. Halley's Comet (astronomers refer to all comets with a Name; eg: "Halley's" Comet - after its discoverer/s') is potato shaped and 10 km. long. Comets are suspected of coming from the outer reaches of our solar system in a place known as the Oort Cloud, which surrounds our solar system like a great sphere. They follow circular orbital paths within this sphere and it is believed that there are literally millions and millions of comets residing here.

TEKTITES

Small, glassy minerals created from the melting of surface rocks by an impact of a large meteorite.

METEORITES

Metallic or stony bodies that enter the Earth's atmosphere and impact on the ground.

CRATERS

When any impact occurs, they leave an impression in the surface of the landscape, from micro-impacts (found on grains of sand) to the massive craters such as the Barringer crater in Arizona. In these massive impacts the large meteorite itself is swallowed by the Earth. The lighter material is thrown and displaced into the atmosphere. Some will fall back in the form of spokes or "rays" radiating from the crater. The heavier material, also displaced, will fall much sooner and in a more confined region forming a rim around the hole.

In Part 2, I will talk further of Comets and Tektites.

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From the Eyepiece

by: Mark Kaye

What a month February was! I put on quite a few kilometres and had a great time. Unfortunately on my travels, the only observing that I managed was a brief stint of 0.6 Angstrom solar observing before a cloud bank rolled in and some binocular and naked eye observing from the base of Big White in between snow squalls.

Apart from that, the only other observing that I did was of the newly discovered Comet Ikeya-Zhang. It is low in the west right now, under Mars and heading up past M33 and M31 over the next few weeks. When I observed it, it was at about magnitude 4.5 with a half degree thin spike of a tail. Hopefully it will continue to brighten and become a fine comet in the coming months.

Comet Ikeya-Zhang © Gerald Rhemann

Taken on March 3, 2002, by Gerald Rhemann, of Germany this comet image was found at Spaceweather.com. (www.spaceweather.com/comets/gallery_iz.html).
To see more of Mr Rhemann's astro images visit his web site at: "www.astrostudio.at/defaultNets.htm"

Add that to watching years of lobbying paying off with the re-introduction of Skeleton to the Olympics and I had a good month.

As part of the RASC speaker exchange program, I visited three centres. I flew into Edmonton first and gave the talk at the Planetarium of the Science Centre. Quite the forum for a talk, comfortable chairs, the Zeiss dumbbell idling in the foreground and a friendly crowd.

Next it was off to Kelowna and the Okanagan Centre. This is one of the four new centres of the RASC. The membership comes from three city centres, Penticton, Kelowna and Vernon. This young club is in the process of incorporating so that they can build their own observing site. Members are out scouring the countryside for suitable mountain top locations. It should be an exciting time.

I was lucky enough to be put up at Jim and Bitten Tisdale's place and they took very good care of me. Avid skiers, they took me on a two day tour of Big White on the two off days I had in my busy speaking schedule.

Then it was off to Penticton to speak to the Okanagan Astronomical Society. I was beginning to hit my stride with my talk by now. I have lived with a phone pole through the house for 12 years now, but I still get a kick out of watching the reaction of people who see the pole in place for the first time. The final stop of my tour was Prince George. This is the RASC's newest centre, but the club has been around for a while. They own an impressive observatory with a 0.6 metre Cassegrain telescope in a large dome attached to a building large enough to hold centre meetings in. The observing site is out of the valley and reasonably far away from the city lights. A very fine facility. It was not their regular meeting night, so they called a special meeting and booked an Auditorium at the University of Northern British Columbia. The meeting was well attended. My stay in Prince George was far too brief.

Then it was back to the real world. It seems like such a dream now. Especially the skiing part. People in Ontario call any little bump a mountain, so it was fabulous to ski at a mountain that one spends more time on the hill than on the lift and the snow depth is measured in metres rather than centimetres. I really enjoy getting out to other centres, visiting with all the fine people that make up the RASC and seeing what other clubs are doing. We are all so lucky to be part of such a large and diverse organization as the RASC.

Now we have to start talking to all those places about getting someone from out there back here to speak in exchange...

Clear skies!
MK

The Observatory by the Lake
http://www3.sympatico.ca/mark.kaye/

The Stars Were Strange

A Report on the 2002 Winter Star Party in the Florida Keys

by: M.J. Spicer

The Southern Cross Astronomy Club has sponsored an annual Star Party in Florida for 18 years. It is held in the Florida Keys - West Summerland Key, to be exact. Warm enough for astronomers to wear shorts during the long, dark February nights of observing. The air is so steady that astronomers regularly use 3mm Radian eyepieces for planetary observing. In that sky one can see Canopus, the Southern Cross, the Jewel Box, Centaurus A and the Omega Nebula without flying to Chile or Australia. Orion, Jupiter, Saturn, and Leo parade overhead in summer conditions! After all, it's Florida!

A select group of mainly American astronomers populates the week-long Star Party. Attendance is limited to 600. There's a steep registration cost and plenty of "incidentals". Six to seven inch Astro-Physics refractors abound. Go-to dobsonians of up to 36" diameter rise from the grounds like skyscrapers in the dark and lie like battleship guns during the day. This is the Tele vue eyepiece crowd. Meals are catered. Dogs are not allowed. Cute grass-roofed cabanas and the tents of telescope salesmen litter the site.

Ah, glorious wealth!

I fingered my envelope from Fred Heinrich of the Southern Cross Club confirming my advance registration. The sea and warm Florida sand beckoned. It was cold on 8 February driving to the Hamilton Centre meeting at the Steam Museum. I wore my Star Party registration badge like a mithril coat under my jacket. Flying south the next day, I remembered the winter Olympics would be on TV during the Star Party, if I pined for snow.

In South Carolina I joined Mark Hornbeck, driver of our hotel-on-wheels and Steve Prewitt our astrophotographer. The 900 mile trip to the Keys was a scenic tour on wheels, with the passenger-side tires riding the shoulder of the highway. I wore tennis shorts and ate bananas en route, in preparation for a tropical life.

On Sunday 10 February we arrived at our rented lot adjoining the Star Party site, thus wisely avoiding lights, noise and crowding. Our site was a large oceanside plain looking south with no obstruction down to sea level. To the east and west we had unobstructed skies down to about 5 degrees. Behind us, to the north loomed our 36 foot camper, blocking any light coming from visitors' cars. Temperature: 82 by day and 68 at night. We had water, power, and sewer provided on site, and a fully equipped 36' camper. The local grocery sold Canadian beer; the local pizzeria and Chinese food places delivered. It was heaven!

We set up two 11" computer-controlled Celestron Nextstars and an 8" Ultima SCT over an outdoor carpet designed to provide a smooth landing place for dropped items. Camper tables held computers, accessories and eyepiece cases. Each scope was carefully collimated to near-perfection - easy with 3 SCT owners. Steve Prewitt loaded his cameras with one of the new red-sensitive super slide films. We waited for darkness.

It's hard to describe alien skies. Old familiar constellations seem different when hoisted up to the zenith, and winter constellations without the snow and cold fingers feel strange. Crickets chirp in a warm breeze instead of the biting wind cracking trees at the Powis observatory. The little palm on the beach can't hide all the southern constellations you have trouble recognizing. Puppis, Antlia, Centaurus and Lupus for starters.

We had prepared observers' manuals with maps of the sky for easy reference and lists of objects to see in each new constellation. It was a good time to find the southernmost objects on the Messier and Caldwell lists. There was an appulse of two 6th magnitude stars by Jupiter, and comet Ikeya-Zang to see. The manuals saved a lot of note taking, as objects listed could be checked off as we saw them. Particulars of each observation we recorded by Dictaphone - a handy legal adaptation.

Astronomers may claim that the best sites are on high mountains free of atmosphere. Let them have their cold vacu-

ous sites. The balmy air of the Florida Keys stands virtually still at night and permitted us to observe and film Jupiter and Saturn overhead at up to 900 power with almost perfect clarity while standing in T-shirts and shorts.

Magnification so great that the planets were no longer too bright; detail so clear that the cream and purple swirls of bands stood out, and Mimas wasn't hard to see at all. Air so clear and calm that perfect airy disks were visible on faint stars. We would have wept for joy but there was so much to see and so little time!

The nights were not all perfect. It rained once and we took the opportunity to explore the vendors' tents, look through large dobsonians at the invitation of other astronomers, tour the islands and visit Key West. Al Nagler was there touting the new P-N 101 refractor and I bought a few Tele vue eyepieces after he inspected them and confirmed their optical perfection. There were talks each day by respected authors such as Steve O'Meara ["Steve, would you autograph my Messier Book?"]. I was asked to speak about the 2002 Saturn Study, and not a few Americans expressed support for this kind of work.

There was a lengthy Star Party "door prize" draw for a Meade 8" go-to scope and 49 other items including several big Nagler eyepieces. Steve Prewitt won the Palomar Digitized Sky Survey - dozens and dozens of CDs. A friend of ours won a 9mm Nagler eyepiece. Me? Nothing but a headache from squinting into the bright sun watching the numbers being drawn.

This six minute guided shot of Orion was taken by Steve Prewitt at the Winter Star Party.

What did we learn from our trip to Florida?

American Astronomers. You couldn't find a more friendly and helpful bunch. They seem to have awfully expensive equipment that they invite you to use all night, any night. I'll never buy a 24" dob or a 7" AP refractor when I can drive to friends' houses and use theirs. Star parties are an excellent time to borrow 2" filters, Naglers or Panoptic eyepieces to try out on your own scope.

If I had one criticism of American astronomers it is that they are usually "space tourists" who seldom observe, make notes or return completed Saturn Studies.

Meade Eyepieces and Filters. Beware. Optically the Series 4000 eyepieces are fine and the Meade filters are generally good. But Meade filters don't always fit non-Meade eyepieces and non-Meade filters may fall out of Meade eyepieces. Imagine, proprietary obsolescence from Meade! A word to the wise: try Meade stuff out before you commit to buying.

Southern Sky Objects. The Southern Cross is tiny and not nearly as good-looking as the Northern Cross, Cygnus. Canopus is so bright it lays a carpet of light across the surface of the sea. There really is an Achernar shining at the end of the River Eridanus and it's a long way across the sky from Alpha to Proxima Centauri! The splendour of Omega Centauri and the dark rift across Centaurus A is worth a trip to Florida.

The new Nextstar GPS telescopes. They worked beautiful-

*See **Stars** on page 6.*

***Stars** cont'd.*

ly, except when the electronics froze up. Striking the hand controller sharply does not improve telescope performance but does mollify frustration, temporarily. Optically the Celestron 11" Nextstars are at least as good as Meades. But control of Celestron Nextstar GPS scopes is unreliable. The chip responsible is in the hand controller. Nextstar owners please note: Celestron now has a replacement hand controller for your GPS scope - just contact support@Celestron.com to exchange your defective hand controller for the new upgraded one. (Update 26 February: Celestron says it doesn't have an upgraded hand controller. Well, it should develop one to replace the fault-prone one GPS users are stuck with.)

Digital Sky Voice. You'd think that having the computer talk to you and follow your spoken aiming commands would be great for only a couple of hundred dollars. Well, it wasn't great. The program would not work with Celestron GPS scopes (it works with Meades). The "voices" were irritating to guys working quietly in the warm darkness, dictating and speaking to each other in low tones.

Advance Preparation. Never observe without a list of things to see. For a week-long star party, make a small booklet you can easily read by red light at the scope. When observing in dew conditions, a plastic cover saves a lot of trouble.

Fire Ants. Not to make light of US terrorism, but we felt safe until Steve was attacked by fire ants. The little beggars raise eight inch anthills. The tiny red ants identify the individuals who step on their homes. They find that unlucky photographer, swarm up his legs, and on command all bite at the same time. To access prey they relocate and build an anthill directly below the photographer's telescope (under the carpet so they won't be seen). They follow him into the camper and bite him when he sits down. For future access they nest inside his telescope's hardshell case, under the foam. Apparently they prefer to inflict their irritating little burning-itching wounds on Americans.

The Winter Star Party was an excellent vacation experience, a holiday from the winter blues without leaving the telescope unused at home. Observing was superb on clear nights. Steve Prewitt took a series of photographs showing a black sky with stars below magnitude 10 (see accompanying photograph). Vendors offered low prices on a wide selection of astronomical products and were willing to let you return anything you didn't want to keep. How can you beat that?

For those of you who wish to attend next year's Winter Star Party 2-8 February I advise contacting Fred Heinrich at 6165 Wiggins Road, Live Oak, Florida 32060, (Email: heinrich@atlantic.net) as soon as possible to get on the list.

What's' in Orbit

by: Ev Rilett

Keep your eyes on **Jupiter** and **Saturn.** Both are at an excellent viewing height and are the two brightest objects in the sky next to the moon. Spring is coming and the nights are going to get shorter soon. Enjoy the performance of **Jupiter's moons**. **Saturn's** rings are pretty wide apart at the present time which makes the moons more difficult to see because of the glare from the rings. But test your observing skills and see how many you can spot. And get involved in the Saturn project mentioned elsewhere in this issue of Orbit.

This month we'll continue with our "**Explore the Universe**" program, offered by the RASC Observing Committee and specifically geared to beginners. A brief description: There is a wide range of 110 Observing objects with a requirement of 55 objects to be hunted down. The categories are organized by seasons, and span the **Moon**, **Deep Sky**, **Constellations and Bright Stars**, **Solar System** and **Double Stars**. I will supply the "Explore the Universe Observing Certificate" details by email for anyone interested and you can pick and choose which ones you'd like to chase.

Please come out to the observatory and enjoy the benefits and companionship of the members. Looking forward to seeing you all there.

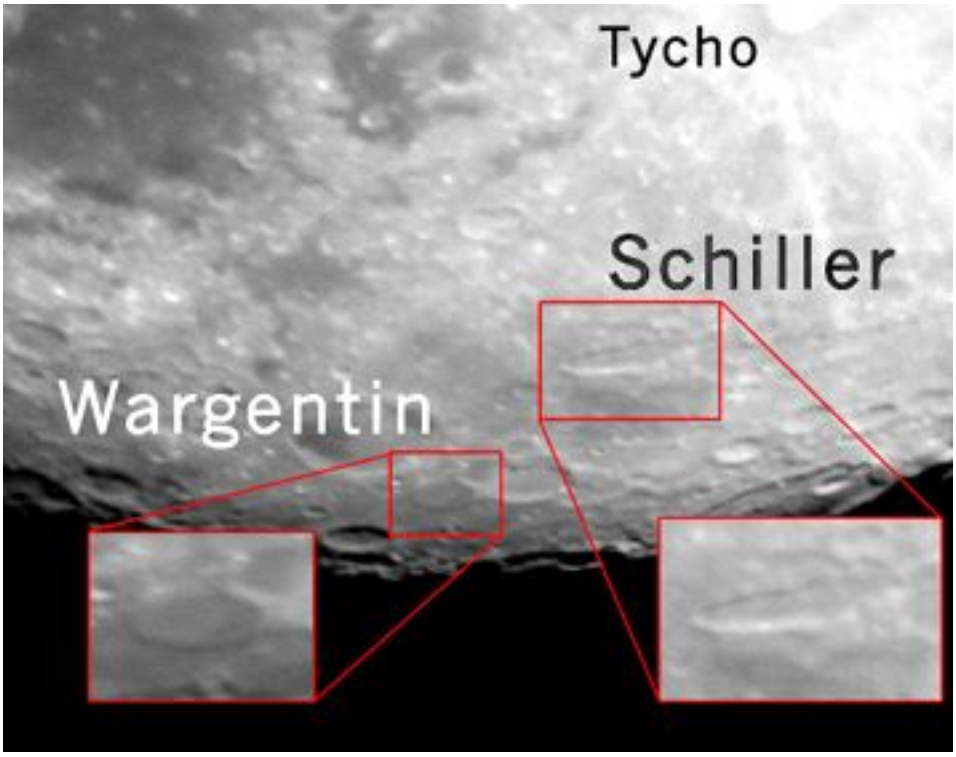


Photo of Wargentin and Schiller by Bob Botts. For details, see below.

Wargentin and Schiller

by: Bob Botts

I first noticed 'Wargentin' when I was processing some images captured with the Nikon CP995 through a 100 mm F5 Genesis. Wargentin became obvious in the images because it appeared convex, compared to all other local craters which appeared concave.

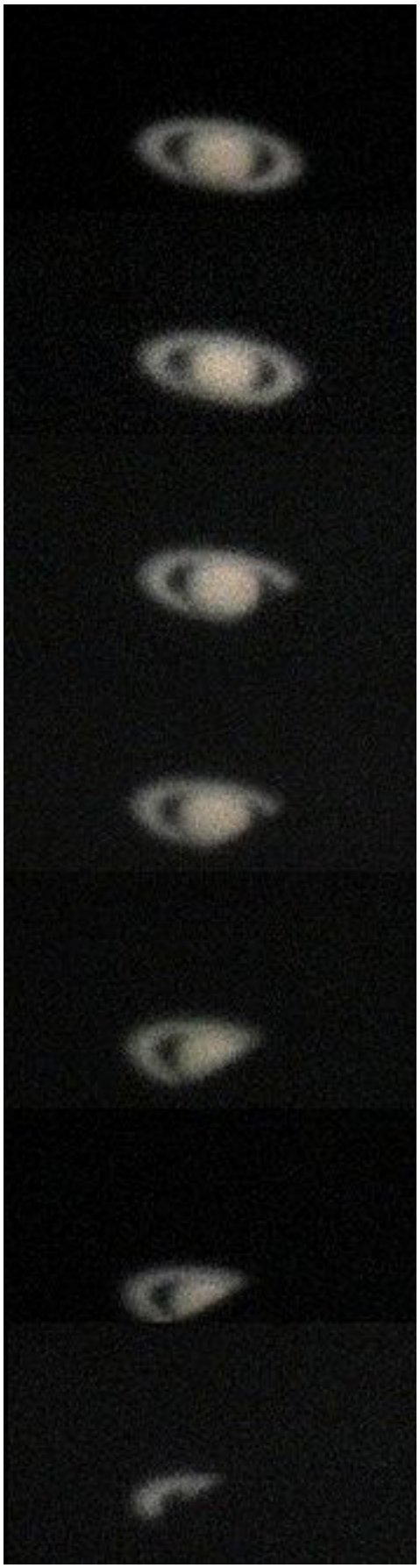
According to Hamlyn's 'Atlas of the Moon'... **Wargentin** [49.6 S, 60.2 W] .... (is) the largest of a very rare type of crater, which is filled to the rim with dark marie material (lava); its diameter is 84 km and its raised floor has numerous wrinkle ridges.... A rarity, breaking the normal rule that a crater's floor always lies below the level of the exterior terrain. The crater Wargentin, 84 km in diameter, is filled to the brim with solidified lava, forming an elevated plateau with wrinkle ridges on its surface."

Schiller, on the other hand, is a much more popular and well known crater, and is a frequent target for amateurs.

"Schiller [51.8 S, 40.0 W] .... (is)...An extraordinary elongated crater, measuring 179 x 71 km, the shape of its wall resembles a footprint. The floor of the crater is smooth, as if flooded with lava. Non-circular formations have complicated structural histories and Schiller, by virtue of its size, is the most remarkable example on the Moon."

Saturn Occultation

The sequence to the right, captured by Steve Barnes, shows part of the February 20th occultation



Coming Events:

March 14, 2002 - Board Meeting at 8:00 at the observatory. Come on out and shape the future of the centre.

March 28, 2002 - Special Members-Only Meeting at 8:00 at the Steam Museum

April 4, 2002 - General Meeting at 8:00pm at the Steam Museum. Program TBA.

April 11, 2002 - Board Meeting at 8:00 at the observatory. Come on out and shape the future of the centre.

May 2, 2002 - General Meeting at 8:00pm at the Steam Museum. Program TBA.

May 9, 2002 - Board Meeting at 8:00 at the observatory. Come on out and shape the future of the centre.

May 25, 2002 - Centre Banquet. Special Guest Matt BenDaniel. Details below.

Directions to Observatory:

From Hamilton or Guelph:
- Hwy 6 N of Hamilton,
- Take Concession 7 East eastbound, cross Centre Rd.
- Continue on 7E, past the rail tracks, proceed to near the end.
- Our gate is on the south side on the last lot (south west).

From Mississauga or Milton:
- Britannia Road past Hwy 25, Guelph Line, Cedar Springs to end
- South 1 block on Milborough Town Line to Concession 7 East.
- Right on 7th Concession, then first driveway on left.
- Our gate is on the south side on the last lot (south west)

From Burlington or Oakville:
- Dundas Street (HWY #5) to Cedar Springs Road
- Cedar Springs Road to Britannia Road
- Left (west on Britannia road to Milborough Town Line
- South 1 block on Milborough Town Line to Concession 7 East.
- Right on 7th Concession, then first driveway on left.
- Our gate is on the south side on the last lot (south west)

Hamilton Centre Observatory
43° 23, 26" N 79° 55, 22" W **Telephone 905-689-0266**

Club web site - http://www.rasc.ca/hamilton/

2002 Saturn Study:

Michael Spicer is completing a follow-up to a Saturn study that was published by the Journal of the RASC 30 years ago. He is inviting centre members to get involved and complete the attached survey form.

Participation is voluntary and, if you wish, anonymous. All you need to do is observe Saturn in any telescope and estimate the brightness of various parts of its ring system and provide a little information on the date and time, observing conditions and the telescope used. If you provide your name and address a copy will be available to you.

The intention is to submit the results of the study for inclusion in the Journal later this year.

Ignore the February date on the form. Observations up to and including June 30th, 2002 are welcome and encouraged.

Hamilton Centre Banquet

The Hamilton Centre is pleased to be hosting a spring banquet on Saturday May 25, 2002. Our special guest speaker at this event will Matt BenDaniel, an extraordinary astrophotographer. A software engineer with a degree from MIT, Matt also teaches a Telescopic Astronomy course at the Boston Museum of Science. He has had numerous articles and photographs published in Sky and Telescope. To see some samples of his work visit "www.starmatt.com".

Date: Saturday May 25, 2002
Location: The Atrium, 5420 North Service Road, Burlington, Ontario.

Take the Burloak Drive exit off the QEW in Burlington, Proceed North on Burloak Drive. It is the first multi-story office building on the west side of the road (Providence Building) The Atrium Restaurant is on the main floor.

Price: $37.50 (a great deal!)

Agenda: 5:00 - 6:00 Happy Hour (cash bar)
6:00 - 7:30 Banquet
7:30 - 8:30 Guest Speaker

2002 Saturn Study

Royal Astronomical Society of Canada

Observe the Planet Saturn this week in any telescope. On this page, record the information requested, and return the form to M. J. Spicer at the Star Party. This study is primarily a repetition of a 1970 study of the relative brightness of bands and rings of Saturn published in the Journal of the Royal Astronomical Society of Canada. If you wish your name included as a participant, please check that box.

Date observed: _____ February 2002 Time: _____ EST

Temperature: _____ ° F Transparency (1 - 10): _____ "Seeing" (1 - 5) _____

Telescope: Type: _____ Objective diameter: _____ mm

Focal length: _____ mm Eyepiece(s): _____ mm, _____ mm

Your brightness estimate of the indicated features: (10 = black; Ring B = 2.0)

The Planet itself	The Ring System
_____ South Polar Cap	_____ Ring A (outer)
_____ South Temperate Zone	_____ Encke's Division
_____ South Equatorial Belt	_____ Ring A (inner)
_____ South Equatorial Belt	_____ Cassini Division
_____ Equatorial Zone	2.0 Ring B
_____ Ring Shadow on the Planet	_____ Crepe Ring
_____ Other: _____	_____ Planet Shadow on Rings

Optional Information

Your name: _____ Phone: _____

Your Address: _____

(city)_____ (state) _____ (zip) _____

Check here if you wish your name mentioned as a study participant: _____

2002 Observers' Study of Saturn

The Royal Astronomical Society of Canada

Hello, Star Party Registrant,

You are invited to take part in a Study of the Planet Saturn.

Participation is voluntary, and if you wish, anonymous. All that's involved is to observe Saturn in any telescope any day this week, estimate the brightness of the various bands on the planet Saturn, the brightness of various parts of its ring system, and provide a little information on the date and time, quality of the observing conditions, and telescope used. Your contribution should take no more than half an hour.

If you provide your name and address, a copy of the completed Study will be available to you. If you so indicate, your name will be listed in the Study as a participant. The Study will be submitted to the Journal of the Royal Astronomical Society of Canada for publication later this year, as a follow up to a similar study published in the Journal thirty years ago.

I hope you will contribute and provide your completed form at the Star Party.

M. J. Spicer, RASC

2002 Saturn Study

Royal Astronomical Society of Canada