

STARDUST

Newsletter of the Royal Astronomical Society of Canada
Edmonton Centre



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Photo: Howard Gibbins

The Queen Elizabeth Planetarium in Coronation Park officially opened on 22 September 1960. The building has recently been added to the "A" list of Historic Resources by the City of Edmonton. See article, page 4.

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Stardust Articles to Stardust may be submitted by email to mward@interbaun.com or aaquisto@macewan.ca or edmpresident@edmontonrasc.com. Submission deadline is the last day of the previous month (e.g. for the May issue submit by 30 Apr). Preferred format is MSOffice OR OpenOffice OR AbiWord OR plain text. For alternative forms of delivery, call Michael Ward (editor, 439-3584) or Orla Aaquist (assistant editor, 486-8661).

Editor's Message

Greetings from the new editor. A new challenge, which I am, so far, enjoying. The format and layout are perhaps not as fancy as you have been accustomed to of recent years. No matter, I hope you are thinking, as long as it contains all the information that it is supposed to. That is my goal, at least for the immediate future. Content takes precedence over presentation. Eventually I hope to have more time to devote to appearances. Please bear with me.

Upcoming Events, Meetings, Deadlines

October 17	October General meeting (Thanksgiving 10 Oct): guest speaker Andrew Lowe (see abstract below)
October 17	Deadline for fall expenditure proposals
October 25	Council Meeting, Grant MacEwan rm 5-238, 7:15pm
October 31	Submission Deadline for November issue
November 1	Council Meeting, Grant MacEwan rm 5-238, 7:15pm: expenditure proposals
November 14	November General Meeting: Members' Night
November 29	Council Meeting, Grant MacEwan rm 5-238, 7:15pm
November 30	Submission Deadline for December issue
December 12	December General Meeting: guest speaker Robert Hilts on the chemistry of Titan

Andrew Low's talk is "Asteroid Discovery and Follow-up using the Internet". **Abstract:** The resources of the Internet have made it possible to remotely discover, follow-up, and recover new asteroids. In my talk, I will discuss my own personal experiences over the last five years in this exciting field, including:

1. Using on-line plate resources to find old images of asteroids in need of orbit updates.
2. Using on-line CCD scans to discover new asteroids in archival data.
3. Using remotely-controlled telescopes to discover new asteroids in real-time.
4. Downloading computer programs and data to assist with asteroid research."

President's Report *By Orla Aaquist*

Since September, Centre activity from my perspective has been pretty quiet.

Michael Ward has taken over the publication of Stardust, so all I had to do was be on hand in case he had any questions. Last month's newsletter had 7 sheets (14 pages) of text, and I thank all the contributors; in fact, in order to squeeze everything in, I had to narrow the margins and decrease the font size. This led to a bit of 'financial crisis' when Mark MacDonald, our new distribution person, reported that the newsletters weighed in at 38 grams (8 grams overweight). Consequently, we had to pay 85c per mailing. This month, Michael has kept the page count down to 5 sheets by reducing the font to the point that some of you may need a magnifying glass, and placing the 1-inch margins 2 inches beyond the edge of the page.

I have almost finalized the guest speakers for this season's general meetings. So far I have confirmed times from Robert Hilts and Chris Gainor. Robert will talk on the chemistry of Titan at the December meeting, and in February, Chris Gainor, currently at the University of Alberta, will talk about the Avro-Apollo connection. I have also arranged a presentation by Ian Sheldon of Supernova 1987A fame for our March or May meeting. A few weeks ago, Dr. Ann McDougall, Director MEAS, Department of History and Classics at the University of Alberta approached me to solicit RASC support to bring Dr. Jamil Ragep to Edmonton as part of the Distinguished Visitor program. Together with the Telus World of Science, we hope to host a special presentation in the Margaret Zeidler Star Theatre on the history of Islamic Astronomy sometime in March, which may happen to coincide with our March general meeting. Finally, I also sent an email to our esteemed National President, Peter Jedicke, to convince him to visit the western centres, similar to his predecessor Rajiv Gupta, who visited us in April of 2004. Peter's reply indicates that such a visit may not coincide with one of our general meetings.

On September 29, I attended Luca Vanzella's SCT collimation clinic at TWOS where we collimated the C8 abused by my astronomy students at Grant MacEwan College. With Luca's guidance and the ingenuity of the six participants, the collimation went from confusing, to pretty good, to really terrible, and, finally, back to pretty good.

Council met on September 27 at Grant MacEwan College. The following items were discussed not necessarily in the order presented here. (1) The 2006 Budget, prepared by Sharon Tansey and Cheryl Salava, was presented and some animated discussions resulted. Cheryl Salava presented the Treasurer's report. The General Account has \$27,452 and the Casino Account has \$65,143. Subtracting the 2006 operating budget leaves about \$41,000 in the Casino Account to last until the next casino. (2) Cheryl reported that she has submitted the last piece of paperwork for our charitable status to CCRA for approval, and on October 3 I called Ottawa to confirm that everything was in order. The Charities Directorate estimates that we should have our charitable status returned to us by November. (3) The 2006 RASC Calendars are now available, and Council decided to sell the calendars for \$10 to members, giving us a profit of 96c per calendar; enough to cover the extra cost of mailing last month's Stardust. Bruce McCurdy has control of the sale of the Calendars. Give him a call. His contact information is located on page 2 of this newsletter. (4) Michael Ward was officially appointed to Council and became our new Editor, replacing Sherry Campbell. (5) Shelly Sodergren, our PR person, reported that TWOS has activated a message system for the Observatory Deck phone. We can now leave announcements and record messages when the Deck is closed. (6) Krista Stefan introduced Council to the first draft of our new Bylaws. Some animated discussions arose. Council decided to hold a special Bylaws Council meeting to examine and discuss the text in greater detail. This meeting was held on Tuesday October 11 following a lively email debate among council members. More on the Bylaws next month ... perhaps. (7) Council approved the

spending of \$250 towards securing facilities for the George Moore's Workshop next year. (8) Howard presented a webpage update to Council describing new capabilities of the site, including the possibility to set up an RASC discussion forum and keeping Council minutes and other Centre related information in a members' only area. (9) Sharon Tansey announced that Sheldon Helbert joined the Finance Committee, replacing Mark MacDonald. (10) Cheryl Salava reported on the recommendations by the Finance Committee regarding time limits for payment of invoices and for spending on expenditure proposals. The following motions arose from the recommendations.

1. The Finance Committee moved that a 6 month time limit be placed each invoice, and unless the Treasurer is notified in advance with a reason for delay, payment of the invoice is the responsibility of the individual submitting the invoice.
2. The Finance Committee moved that each expenditure proposal must be spent within 6 months of approval, and unless the Treasurer is notified in advance with a reason for delay of spending, the funds allocated for the expenditure proposal are returned to the unallocated portion of the Casino Account.

It was agreed that these motions should be published in Stardust to inform the members, and here they are. The September 27 Council meeting was the longest this year lasting from 7:30 to 10 PM. I thank the council members who stayed till the bitter end.

A Brief History of the Queen Elizabeth Planetarium By Howard Gibbins

In 1958 a proposal was put before Edmonton City Council to build a permanent civic memorial to mark the visit of Her Royal Highness Queen Elizabeth II and Prince Philip in July of 1959. Originally there were three projects proposed: a 30.8 metre (94 foot) trilon which would symbolize the three levels of government, a fountain, and the park itself.

Alderman Mitchell proposed that an observatory be added onto the list. This proposal must have been liked by the majority of council as neither the fountain, or park options were ever mentioned in subsequent documents. A third option was conceived of by S. Frank Page (Assistant Secretary and editor of "Stardust" the newsletter of the Royal Astronomical Society of Canada - Edmonton Centre) in approximately November 1958 when he suggested that a Planetarium be constructed due to the expected interference of city lights.

A committee subsequently was struck consisting of Professor E. S. Keeping, Professor Gads, Mr. Franklin Loehde, Mr. F. Jersen, Mr. D. Rosenfield, and Dr. Earl Milton to draft a proposal for submission to Edmonton City Council. On December 21, 1959 Mr. H. J. McKim Ross of the Montgomery Branch of the Royal Canadian Legion made a motion that was passed unanimously supporting the project in principle. In March 1959 the Planetarium proposal passed the hurdle of the City's Finance Committee with an estimated cost of \$110,000.

On Monday March 9, 1959 the proposal to construct a planetarium in Coronation Park was approved by City Council by a margin of seven to four. During the Queen's visit in July of 1959 Mayor William Hawrelak made the following dedication speech in Coronation Park:

Your most gracious Majesty, we most humbly pray that you may be pleased to be assured of the sincere and enduring loyalty of the people of the City of Edmonton. Your devoted subjects desire respectfully to extend to your Majesty and to His Royal Highness Prince Philip, a most cordial and enthusiastic welcome to Coronation Park. You have now set foot on an area of Canadian soil that was named in honour of your coronation as Queen and Sovereign of the British Empire. We trust that the character of the welcome the Citizens of Edmonton extend to you here will be in keeping with the spirit of your visit. In commemoration of this Royal Visit in the year of our Lord nineteen hundred and fifty-nine, it is the wish of your loyal and devoted people to erect a building of masonry, brick, and stone at this location. A structure that will serve during the years ahead as a practical and pleasurable monument to perpetuate the memory of this great occasion. The aesthetic value of this Planetarium will soon give the development of the Canadian parkland, an additional beauty dedicated to the welfare and convenience of our citizens. May it always be in keeping with the spirit in which you come to us, friendly, warm hearted and sincere. We respectfully request of your Majesty's permission to name this building The Queen Elizabeth II Planetarium. In your presence today we humbly demonstrate our allegiance, our gratitude and our affection.

The Queen Elizabeth II Planetarium was designed to be the main focal point of Coronation Park. The building itself was designed by the architect R.F. Duke, and constructed by R.V. Coombs Construction Limited. At the time of its construction, and for a few years afterwards, the Planetarium was the only structure in Coronation Park. Coronation Pool was started in 1967 as a Centennial project and was opened in 1970. The Coronation Arena was opened in 1970, and the Commonwealth Lawn Bowling Club was

constructed between 1975 and 1978. The last bit of construction within the area of Coronation Park was the Edmonton Space Sciences Centre which was finished in 1983, which has gone through a number of renovations and additions since then.

The first Director of the Planetarium was Mr. Ian McLennan, a member of the Edmonton Centre of the Royal Astronomical Society of Canada. He served in this position from August 22, 1960 to October 31, 1965 when he moved on to become the director of Strasenburgh Planetarium in Rochester, New York.

The official opening ceremonies were held on Thursday September 22, 1960. Mayor Roper dedicated the building, and a message of congratulations from the Queen's Secretary was read by Chief Justice C. J. Forward of the Alberta Supreme Court. Professor E. S. Keeping represented the University of Alberta and presented a sixty-eight pound fragment of the Bruderheim meteorite to the planetarium. The fragment was made the centre piece of the building's astronomical display. Also present was James Harrington of Leduc, then president of the Edmonton Centre of the Royal Astronomical Society of Canada.

With the opening of the Queen Elizabeth II Planetarium on September 22, 1960 it became the first such public facility in Canada. The second public planetarium on Canadian soil was opened February 11, 1966 in Montreal.

During Mr. McLennan's directorship much of the work at the planetarium was done by volunteers of the Royal Astronomical Society of Canada. Eventually though a full time lecturer and receptionist had to be hired.

Mr. McLennan was succeeded in his position by David Rodgers who took over on November 1, 1965 and who's short term of office lasted until July 31, 1966 when he was appointed as Director of the H. R. MacMillan Planetarium in Vancouver, British Columbia. During Mr. Rodgers' directorship the planetarium produced its most successful shows. The popularity of this attraction can be seen in the fact that the 25,000th person saw a show on July 4, 1966. In 1967 an attendance record of 33,500 was reached. Shortly thereafter a staff position of technician was added. The person hired for this position was William Cable.

The next director was in fact Mr. William Cable who took over on August 2, 1967 and was in the position until 1973. During Mr. Cable's directorship the involvement of the Edmonton Centre of the Royal Astronomical Society of Canada was reduced considerably. In addition attendance dropped from the 33,000 in 1967 to 12,500 in 1972. Mr. Cable left the planetarium in 1972.

Mr. John Hault took over as director on January 5, 1973 until the planetarium closed on December 31, 1983. He then moved on to become the director of the Edmonton Space Sciences Centre.

In late 2004 two separate applications were submitted to The Historical Resources Development Board by Dale Nosko and myself. With the assistance of Mr. Robert Geldart these proposals were put forward to the board and passed by the Historic Resources Review Panel on May 31, 2005. According to an e-mail received from Mr. Geldart "They agreed that the Planetarium is worthy of being on the A list!" The next step was for the applications to go before the Edmonton Historical Board which happened in late June. They also agreed that the building should be added to the "A" list. The next, and last step was for The General Manager of Planning and Development Department to pass the application which happened in late August. He subsequently sent a letter to Community Services saying that The Queen Elizabeth II Planetarium has been added to the "A" list of historic resources with the City of Edmonton.

Saskatchewan's Summer Star Party 2005 By Graham Budd

For those of you that were unable to attend this year's Saskatchewan's Summer Star Party, you probably missed the season's premier event, along with three excellent nights of observing under the preserve's clear dark skies.

If you have not visited the Cypress Hills Inter-provincial Park, it is located about 30 km south of Maple Creek, Saskatchewan, about an 8 hour drive from Edmonton by way of Medicine Hat. The park itself is a great place to bring your family. Tucked amongst the lodgepole pines you will find hiking trails, mini golf, tennis, picnic grounds, a large lake and a good size resort with several restaurants. Accommodations at the resort include hotel rooms and various condo style residences, the latter of which are pet friendly. If the kids become bored during the day, a very unlikely possibility, day trips to Fort Walsh or to the wild bird sanctuary are readily available. On the way home be sure to stop at Curran's bakery in Maple Creek for some of the best cinnamon buns in Canada.

This is the third year that I've attended SSSP and my experience confirms the historical weather maps in the RASC observers handbook, that suggest less than 30% mean night time cloud cover. Other than an hour or two of aurora, all three nights were clear and dark.

The observing area itself is located in a large camp ground called the Meadows which is 1460 m above sea level. There have been a lot of changes at the Meadows over the last 12 months. Prior to 2005 it was basically a large open field with picnic tables and some outhouses. During the winter months, power, water and lighting were added along with multiple RV sites. I must admit to some scepticism to see lighting added to a dark sky preserve, particularly inside the observing area. Fortunately, my fears were unfounded as the organizers received permission to turn off all the lighting for the duration of the Star Party. Further, as most of the RV sites were taken by Star Party participants, stray light was pretty much a non-issue during observing hours. On the positive side, it was great to be able to park our RV within 100 yards of my scope in the event unfavourable observing conditions developed.

The organizers of SSSP do it great job as evidenced by the near record turnout of 270 participants. Thursday opened with the usual early bird weenie roast followed by a great evening of observing under mag 7 skies. Sagittarius was resplendent and I enjoyed some great views of the Lagoon and Eagle Nebulas followed by the last two objects I needed to complete my Messier certificate, M 25 and M 75.

Friday is reserved for opening ceremonies along with short 10 minute presentations on a variety of topics including one by Denis Fell, who entertained the audience with what Mars holds for us in 2005. Later that night, we had another clear warm evening as Richard Huziak led his popular binocular star walk observing workshop. This is an excellent event for everyone, but most particularly for kids or those new to astronomy. The aurora did make a brief appearance for about an hour or so but not enough to spoil an otherwise near perfect night.

Saturday is a busy day at SSSP with the swap table in the morning and the major presentations later that afternoon. Alan Dyer got things started with an outstanding presentation on the use of time lapse photography with a digital camera. As most of you know, he is a very accomplished speaker and presenter, and he created quite a stir showing what can be done with one of today's modern digital cameras along with a tripod and a clear view of the Milky Way. If we get the opportunity, it would be worthwhile for us to ask him to visit the Edmonton RASC and repeat the presentation. Alan was followed by Paul Campbell who shared his passion for the AAVSO SID program with the audience. The keynote speaker this year was Ivan Semeniuk from the Discovery Channel, who took us on a tour of seven worlds in seven days, a historical look at how the ancients viewed our solar system.

Later that afternoon, everyone headed up to the Meadows for one of the most popular events, the evening walk around social. All the scopes are set up and participants wander amongst them asking questions and taking pictures. One of the scopes attracting a lot of attention was a portable 8 inch Newtonian that packed down into a small box that could be carried onto an airplane. All that and a Barry Arnold mirror as well. See Greg at the Science Shop for details.

The evening's viewing was highlighted by a very unusual aurora. It stretched across the sky from east to west which at first looked like a jet trail. On closer observation, it became clear we were viewing an aurora the likes of which I had never seen before. Alan Dyer got some great pictures that no doubt you will see in publication. Over the next hour or so, it gradually dissipated presenting us with another wonderful night. My only minor complaint is that the seeing deteriorated somewhat as evening wore on. In anticipation of the drive home the next day, we packed it in around 2 am, although many participants pulled their third all-nighter in a row.

So, for those of you looking for a well organized star party with lots of things for the family to do during the day, be sure to mark your calendar for August 24 – 27, 2006 and remember to make those reservations early, as they fill up quickly. By the way, as an added bonus, there are few mosquitoes in Cypress Hills.

Will I be able to see such and such? By P. Campbell

One of the more commonly asked questions I get at the observatory is: "Can I see such and such on my farm, backyard or camp site with a such and such telescope?" I've always found that hard to answer because people are so different, with different abilities, skills, and interests. My usual answer is: "You never know until you try."

I really do feel that there is a lot of truth to that statement. Many a time I've been more than surprised when a seemingly impossible observation is made. It's amazing how good people can get at observing. Yet, I've recently been criticized for giving that answer since it was apparently no help at all to that individual. I've been thinking a little bit more about that and I think that people would like to have a definite yes or no answer. If you take a math question that definitely has an answer, but math doesn't seem to apply to individuals. But what if you turn an individual into a math question? Then you could have your definite answer.

Thinking more about this, I thought of an equation similar to the Drake equation. The Drake equation is one used to estimate the number of intelligent life forms using radio communication. The first term in the Drake equation is an estimate of the number of stars in our galaxy and is the only term for which we have a reasonable answer. The rest of the terms are best estimates made by astronomers with no hard numbers at this time to back them up.

Like the Drake equation, the "Will I see it?" equation has, as its first term, something which can be measured with reasonable accuracy. Warren Finlay has generated some excellent Edmonton area maps showing the Bortle Number. All other terms would be estimates based on the observer's abilities.

The equation is: **N(bn) * F(ba) * F(rh) * F(lw) * F(bs)**, where...

N(bn) This is the term for the Bortle Number. The higher the number the darker the sky. Dark skies improve your chances of seeing faint things.

F(ba) This is the Barry Arnold factor. Since the Edmonton region has long known that Barry makes the perfect mirror, a Barry Arnold 8" mirror with a normal secondary could be used as a standard and have a value of one. The observer must estimate how well his equipment stands up against this standard. Many (not all) Meade and Celestron telescope would score poorly against this standard, while some of the better-built refractors may score higher by virtue of not having a central obstruction.

F(rh) The Rick Huziak factor for experience. Anybody who knows Rick realizes that Rick has been observing since he was conceived. His first words were to complain about the white light. While Rick sets a very high standard, it is possible to come close fairly quickly by practice, practice, practice. In short, observe as much as you can. It's amazing how much experience you get by experiencing something. The observer must estimate, as a percentage, his experience factor compared to Rick Huziak.

F(lw) The Larry Wood factor for seeing faint objects. Everyone knows that Larry has incredible eyes and I can think of no higher standard to compare to your own eyesight. Many a time I've thought that Larry was lying about seeing something, only to have it

proven to me later in a photograph. If Larry is lying at least he does it convincingly. Estimate, as a percentage, your ability to see faint objects as well as Larry Wood can.

F(bs) This is the (well, everyone knows what BS stands for) factor. Sometimes out and out impossible things are seen. It should be noted that this is not necessarily a deliberate attempt to deceive on the part of the observer, just a desire so strong to see something that the observer sees something which is not there. I can cite Percival Lowell and his observations of the canals of Mars. Other times the observer can be more devious. The observer should estimate their character as compared to Milli Vanilli.

Multiply all the factors together and if the answer is greater than 1, then you will see the object/event. If it is less than 1 then you have no chance. Some may not heed my advice and try to observe the object/event anyway. I say go ahead. I would encourage you to prove me wrong as many times as possible.

The Planets: October 2005 by Murray D. Paulson. *Photo by the author: multiple images stacked and optimized with Registax; taken Sep 18, between 7 and 8.45UT, 5" refractor at f/60, Phillips ToUcam..*



Mars is upon us, and the view even now a month in advance of the opposition is great. October is generally a good month for observing, so I heartily recommend that you get out and catch it while you can. November may come in like a bear and steal away those nice views of the red planet with a wreath of clouds.

Last month Mercury was in superior conjunction with the sun, and that means that it is now headed into an evening apparition. The ecliptic is so turned over in the fall and Mercury is sitting below it, a serious double whammy, so your only chance of seeing it over October and early November is using setting circles or a Goto scope in the daytime. Mercury arrives at the greatest elongation on Nov 3, 5 days before it's dichotomy on Nov 8. Early in the month its disk is at 5" and shines at magnitude -0.2, and it slowly increases in size to 7.23" at dichotomy and fades slightly to 0.0 magnitude. If you were placed in the southern hemisphere, you just might glimpse M4 only 2 degrees south of it while checking in on the dichotomy.

The ecliptic has laid Venus slowly into the twilight, and I have been watching it low in the west in the twilight glow. The great brilliance of the planet makes it shine through the glow, giving you a fleeting glimpse in the early evening before it is lost, eleven minutes after sunset. As we slide toward the Martian closest approach on Oct 30, coincidentally Venus expands and heads to its Greatest elongation around the same time. You can witness Venus's dichotomy on Nov 1-2, which coincides with the greatest eastern elongation. This is quite unlike Mercury, which is also undergoing elongation and dichotomy over this same week, but 5 days apart. Venus will shine at Magnitude -4.4 and show you a 25" half-disk at this time. On Nov 5 a 2 day old moon passes below Venus, and you can use the magnitude -4.4 beacon to help find the ghostly moon. This is a repeat of the Oct 6 event.

I have been watching Mars over the last month, and it has been a great sight. The south polar cap has dwindled to a mere speck, and the North cap is tilting away from us. You can see the North polar hood, a brightening on the north end of the planet. As we roll into the final weeks before opposition, you will see the gibbous phase give way to a full disk. As of the last weekend in September, the Gibbous phase was still quite striking. On evenings when the atmosphere is still, the features are quite distinct, but you do have to give your eye some time to catch the details. Despite all you see of clearly defined features on images of Mars in magazines and on the web, they are just well crafted artifacts of image processing. With a well trained eye, you can see most of it, but the first time out, the subtle details will elude you, so keep trying, and the details will come. Don't expect to see much with a short look in the eyepiece; a 30 second glance won't give you the chance to catch the good moments. In any five minute session, the seeing generally can go from ok to awful and back to good. Give yourself lots of time.

What is the best planetary telescope? Refractor? Newtonian? Cassegrain? Well, the best is the one you have, and the one you use. If you optimize it a bit, it will do even better for this opposition. If you have unlimited money, get a big refractor or Maksutov or a Takahashi Mewlon. If not, collimate your scope, or pick up a good Newtonian with a small secondary and a good mirror. See Barry Arnold about that one.

Once the scope is under control, the next item is the eyepiece. You need lots of power for Mars. I push my 90 mm scope up to the 200x to 300x range when the seeing is good. I push my 130 mm and 12.5" scopes up to 500x and more. Did I mention that you need lots of power? Use a barlow if necessary, and see where the power advantage breaks down. You want to be just below that threshold. The seeing has to be there, or you are just looking at the pink fuzzy tennis ball on close approach. Now, these high magnifications introduce another issue: you need wide field eyepieces to catch Mars for even a short time, or you must use a tracking mount... Equatorial or Poncet. Ah, what the heck, it's only money!

Contrast is important with Mars, so the eyepieces should not degrade the image. Simpler optics tend to deliver better contrast, like Orthoscopics and similar designs. Plossls can be very clean, and I have enjoyed the images through 3 mm Radians. The Abbe orthoscopics from Zeiss are the stuff of legend. At \$2500 for a set of 4, they sure are! Strangely enough, my mainstay for planetary observing with my 12.5" Dob was a 4.7 Ultrawide with all 8 elements. No simple design here, but it worked. I do admit that the contrast is better in my Takahashi 5 mm and 2.8 mm orthos, but you do need to track! (Presto gonzo!)

Filters will improve the contrast of various phenomena on Mars. A red filter will improve the contrast of the maria to the ruddy desert features. With a smaller scope, 6" and under, I recommend using an orange (Wratten 21) filter. It doesn't dim the image much, and improves contrast. Yellow, green and blue filters enhance atmospheric phenomena, from ground hazes and frosts with yellow, to clouds with the blue filters. In blue, you seldom see the surface of Mars. The longer the wavelength, the farther down in the atmosphere you penetrate. The last word on filters though, is that some of us prefer to see the un-filtered image, and in time you get good at discriminating the colors of the clouds and other things. Filters do get you the final edge on things, but the esthetic is not as pleasing. The

first time I saw Mars with Calgary's 8" f/15 refractor (opposition '99) I was struck by the little white clouds that were visible in the eyepiece. I would not have seen them through a red filter.

Mars starts October at magnitude -1.8 and will show you an $18.8''$ gibbous disk. The side of Mars visible just after 11 pm will show Solis Lacus, a rather conspicuous round "eye" like feature. The Handbook has a nice map on page 189, so take it out with you when you are observing and you will know what to look for. By the middle of October (same time of night), we are looking at the Argyre and Aurorae Sinus region. The third week of the month, we see the Sinus Meridiani region, a rather obvious club feature with a roundish knob on the end. On the week of closest approach, we see Syrtus Major front and center. This has to be the most recognizable feature on Mars, and combined with closest approach, will be a treat. Mars now is at magnitude -2.2 and has grown to $20.16''$. At the Martian opposition on Nov 7, we will be looking at the Mare Cimmerium – Sirenum region, the blankest face of Mars. If you get some great seeing and contrast, you may glimpse some of the cool and subtle features in the north side of the planet. Mars actually brightens to magnitude -2.3 , even though it's disk shrinks slightly to $19.97''$.

One interesting note on Mars is that its rotation period is 41 minutes longer than Earth, so over a 39 day period you get to see the full surface of the planet. The implication of this is that a particular feature will appear at the same spot 41 minutes later each successive night. The long and the short of it is that you get about two rotations of Mars in the "Sweet spot" when it is close to Earth and well placed for observing. Then it shrinks back and you wait another 15 years to see this again. This will be the best opposition of Mars until 2020, so enjoy it! The great altitude in our night sky combined with its size really is unbeatable.

Jupiter is in conjunction with the sun on Oct 22, so you must look to Saturn for another well located planet for your late night enjoyment. By early October, it shines at magnitude 0.3 and the disk is $17.6''$ in diameter. It rises at 1 am, so it will be a late night view. By the Martian opposition, things have improved a bit and Saturn now rises at 10:30 pm (now standard time!) The disk has grown slightly to $18.5''$ and it has brightened slightly to 0.2 magnitude. The rings are tilted back down quite noticeably since last year. So, Saturn is the nightcap for the observing session, but do have a last glance at marvelous Mars. Till next month, clear skies!

Digital SLR Experiences, part 1, By Alister Ling

Surprise seems to be the best word to summarize my experience in the past year with a digital SLR camera. I've been very happy with the results so far, and I know I will continue to get more and more out of it during the next few years; yet not all of it has been as easy as I had hoped. The gremlins in my film camera that I had beaten back with hard fought experience returned because I let my guard down. All the little things I needed to pay attention to or were semi-automatic I now have to be decisive about before taking a picture.

I knew off the bat that next year's model would be better: and of course it is cheaper. But that's the story of electronics, from the first CD-ROMs to the 50-inch plasma and LCD TVs. You have to start somewhere, otherwise you'll miss years of enjoyment. Just make sure that when you jump into fray that what you purchase has the features and capabilities you've been looking for. Considering that I hadn't updated my camera for more than 25 years, I could easily justify the expense.

Photo: A. Ling



Moon over downtown Edmonton

I've always wanted to do time lapse photography. I'm not going to turn into a cinematographer, producing epics like *Koyaanisquatsi*, yet I yearn to capture nature unfolding in its slow and gracefully complex dances. Just that feature required a particular model that could use the timer cable (accessories via extortion!). But now I'm quite happy creating mini-movies.

As predicted by an astronomy friend Derek Baker from Hamilton, the digital camera re-invigorated my love of taking pictures. With film, I had come to the point of saying things like "I already have something like that, so I won't waste film." Since it's only electrons, and they can be recycled easily, just snap away! Just think of all the money I'm saving not having to buy film and get it processed. Ding! Hard drive full. Doh!

The camera has a flexible ISO system, from 100 to 3200. Your choice depends of course on what you're trying to accomplish. Originally, my naïve thought was that the choice was there to give you the comfort of what you were used to with your film camera, or for sports shots, that sort of thing. After a few experiments I found that the digital ISO has a direct analogy to film graininess. I took some twilight shots, 8 seconds at ISO100, 4 seconds at ISO200, 2 seconds at ISO400, 1 second at ISO800 and $\frac{1}{2}$ second at ISO1600, to have equivalent brightness in the pictures. Just like film, the ISO1600 shot was grainy, a direct result of signal to noise ratio. Imagine taking a film shot of twilight with ISO100 for $\frac{1}{30}$ th second: the image would be dark and it would either have to be push processed or boosted in Photoshop. If the brightness of the subject ranged from 0 to 50 and you had to bring it up to

5000 to give it a decent light level, it means that the spot at 45 becomes 4500. If the noise (error) in the camera system is, say, plus or minus 3, the final value after boosting could be anywhere from 4200 to 4800. If the image was properly exposed in the first place, it would have been 4497 to 4503. It's not "grain" in the film sense of the word, but the result is similar.

At least the f/ ratio works the same. It controls the amount of light coming in and the depth of field. But guess what, the 17-40mm lens that was so cool for daylight is an f/4, which means shots of the night sky have to be much longer than 15 seconds at ISO200 (just like film!). Grrr. Competition for my Poncet or do I need to get an equatorial camera tracker? Or an f/1.8 lens? More Ouch.

Another surprise I should have seen coming was that at longer exposures, some pixels are "hot", that is they switch on due to electronic noise, rather than signal. The CCD folks are all too aware of this and have software to remove them, using a dark frame, an image taken with the same exposure but with the lens cap on. Software subtracts the two, removing a large source of noise.

The streetlight filter: photographers are encouraged to use a skylight filter in front of their lenses. Not only does it reduce haze, but it protects the main lens from fingerprints and other indignities. However, it adds a ghost reflection diagonally opposite the center of the frame. Many images of conjunctions of Venus and Jupiter have "extra" stars in the frame, usually causing a spate of excitement about capturing a nova (or two!) serendipitously. For daylight shots, you'll never see the ghosts, but when you have an over-exposed crescent Moon in a modestly dark twilight sky, its diagonal mirror-reversed ghost shows up annoyingly close to the foreground objects in the frame. Thanks to Photoshop it's not hard to recover from these. With my old lenses I never used the skylight filter in order to avoid this problem. Enter the borrowed lens from Valerie. By habit I didn't even check for the filter, and the ghosts of a mess of streetlights show up in the sky. Argh!

The trials and tribulations of digital photography continue next month with a look at focusing issues.

Book Reviews

Celestial Treasury, by Marc Lachize-Rey and Jean-Pierre Luminet. Cambridge University Press: Cambridge, UK., 2001. 207 pages, oversized: 11 x 14". Reviewed by Orla Aaquist.

Celestial Treasury, by Marc Lachize-Rey and Jean-Pierre Luminet examines the history of astronomy from the perspective of writings and images in philosophy, religion, art, and science, often comparing historical documents to our modern views and knowledge. The book is an interesting mix of text and images in an oddly formatted, coffee-table style book, that includes partial pages and foldout pages enabling readers to easily view related material that spans several pages.

In this book, the authors tell a story of humanity's fascination with the night sky. This complex narrative is broken down into four parts: The Harmony of the World, Uranometry, Cosmogenesis, and Creatures of the Sky. In the first part, the authors have collected images and descriptions of the many models of the earth and heaven that philosophers have contrived over the ages. Included are the nested spheres introduced by the ancient Greek and Roman philosophers, the geometric model of Kepler, Descartes' whirlpools, and string theory. Part two, Uranometry, traces the history of star maps, atlases, and globes of various types, from medieval depictions to the modern style atlases first produced by Becvar. The second chapter also describes inventions and developments of astronomical instruments such as the astrolabe and other devices. Cosmogenesis takes us from ancient myths to modern cosmology, and the last section, Creatures of the Sky, portrays humanity's attempt to relate our own existence and other human characteristics to celestial events.

The text is interestingly disjointed, so it doesn't really matter where you start to read, and what is really wonderful is that any starting point is as good a place as anywhere else. The numerous diagrams and image captions, found on every page, and the fold-out pages, paint stories themselves so that it is not necessary to read the entire text in detail to get something from the book. To illustrate the mix of information, on page 141 we see an image from Milton's *Paradise Lost*, which depicts how "God fashioned the world by the manipulation of a pair of compasses", next to a photograph of Albert Einstein giving a lecture on General Relativity at the College de France in 1921; and page 165 shows the structure of DNA next to a 1512 depiction by Gregor Reisch of the creation of Adam and Eve. *Celestial Treasury* is a coffee table book for astronomers. I highly recommend this it for astronomers, amateur or professional alike, at any level.

Asteroid Rendezvous- NEAR Shoemaker's Adventures at Eros, edited by Jim Bell and Jacqueline Mitton, Cambridge University Press, 2002. Reviewed by Franklin Loehde.

How many of us have not been 'blown away' by special moments in the space exploration saga of the last 40 years? Certainly the majestic orbiting of NASA's NEAR Shoemaker of the asteroid Eros in 2001 fits into that category. Conceived in 1996 as part of NASA's "faster, better and cheaper" response to the US Congress' budget cuts, it delivered outstandingly on February 12, 2001.

This book, forwarded by Carolyn Shoemaker herself, is a variation of the film "Groundhog Day" with the entire project, from conception to final orbit, seen by the many and much-talented who conceived the idea, built the space probe then delivered it to the asteroid belt and Eros itself. The book can appeal to the poet in you, the engineer, the computer software developer and most of all the starry-eyed astronomer in all of us.

Cornell University's Joseph Veverka starts by describing the unique characteristics of this S-type asteroid related to the chondrite meteorites like the famous Bruderheim that appeared over Edmonton in the early 1960's. The NEAR Shoemaker Mission Director, Robert Farquhar of John Hopkins University then describes the unique "slingshot" technique that was to use the Earth itself for a gravitational boost to save on the required fuel. Other members of the team filled in on the geology and geography of this 21 km peanut-shaped asteroid and the book finishes on the truly spectacular orbiting of the 'rock' and the final 'first-ever' landing. Preface your reading of the book by visiting JPL's epic films at <http://near.jhuapl.edu/Images/anim.html>

Worlds Beyond – The Thrill of Planetary Exploration as Told by Leading Experts, edited by S. Alan Stern, Cambridge University Press 2002. Reviewed by Susan Lukian.

As a beginner to astronomy, I found this book fairly easy to understand and very interesting. This book is a series of essays by ten planetary scientists. The scientists begin their essays with an introduction on how they became interested in their particular field and the path they took to their current research. The essays gave glimpses into their research; however, they do not overwhelm the reader with too much detail or require a scientific background to understand. It was like reading a series of ten interesting magazine articles. One of the essays, by Christopher P. McKay, is about what they believed Titan would be like when the Huygens probe landed, and the research they did which led them to those conclusions. Now that the probe has landed, the essay answered questions that I had about how they knew what it would probably find.

I would recommend this book to others as a pleasant Sunday afternoon read. It illustrates the type of contemporary research being done on the Solar System. I would also recommend this to high school students who have an interest in science, but no clear direction in mind.

New Members Report by Pat Abbott

The summer of 2005 saw several new members joining RASC Edmonton Centre.

Eun Ah Lee has, at present, no telescope; she has, however, been able to look through the Observatory telescopes and this has whetted her appetite.

Massimo Tori has been interested in astronomy since he was a child in Italy. He became re-involved after he had lived in Canada and purchased an Orion 8" SkyView Pro newtonian. He has already been out to Blackfoot and Black Nugget to escape the city lights.

Wilbert Wade became fascinated by astronomy after viewing the Perseids. He says he performed the "Tasco Fiasco", but returned the telescope and bought a Celestron 130GT. He is very happy with this and has done a fair bit of observing.

Kevin Dawson went to Mt. Kobau and got to look through many telescopes, including a twin-tube binocular newtonian which he felt was the ultimate in viewing. He has a 9.25" Celestron. He is very happy with the optical tube but says he needs a much sturdier mount. He is interested in all aspects of astronomy, space travel, and rocketry, and in the horrors of light pollution.

Don Kuniski had been saving for a telescope and had been hoping to attend an occasional RASC Edmonton Centre Meeting. Sadly, his health has deteriorated recently and he has had to move into a lodge in St. Paul; as he whimsically puts it, "at the Lodge they lock you in at 10pm, and anyway the place is surrounded by lights!" I am sure that I speak for the whole membership when I express best wishes and the hope that he can once again see the skies in the near future.

Michael Ward has loved astronomy since a child and got his 4.25" Edmund Scientific equatorial newtonian telescope at the age of 12. The telescope is still in good shape except that its mirror needs re-coating. His career is interesting. He had to abandon plans to be a professional astronomer as "I can't add two plus two without a calculator". He ended up in history, but then moved to computers. He is now back teaching history at Grant MacEwan. Although a very recent New Member, he has been persuaded to become our new Stardust editor. Michael is therefore doubly welcome.

John Dorman lives in Leduc and has recently purchased an 8inch f/6 dobsonian. He has observed from his city location and also from my acreage as I live a short drive away. John hails from Ireland and has a business making Celtic Harps. As John is the first *eireannach* (Irishman) that I have introduced, I will welcome him and all new members with a traditional Irish welcome:

Cead mile failte! (a hundred thousand welcomes)

MAP TO THE EDMONTON CENTRE OBSERVING SITE

