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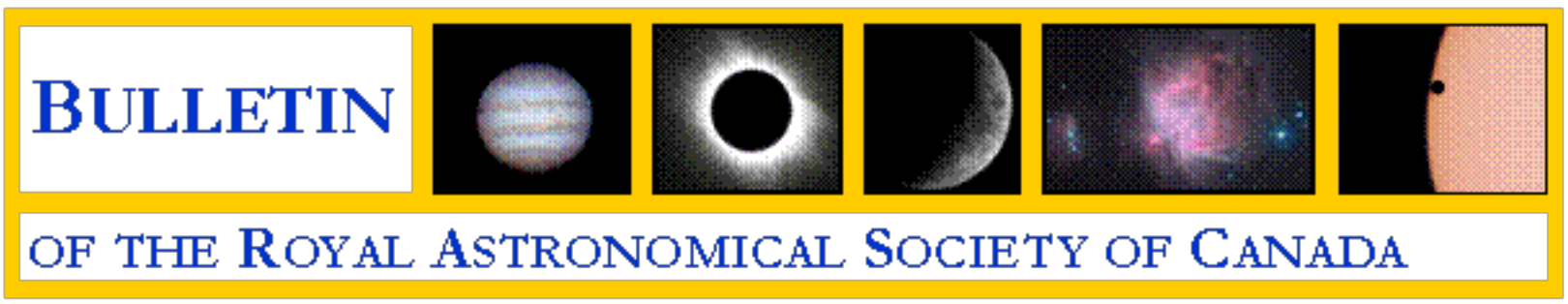


February 2009 - Volume 4, Number 2

Ian Levstein, Editor

We welcome your comments on the ***Bulletin***. Email them to the Editor at bulletin@rasc.ca [1].

Member: ~FULL_NAME~, RASC ID: ~ID~

News @ RASC.ca

New eStore is Now On-line

by **Denis Grey** After more than five months of development and testing, the new RASC eStore is now on-line! Our new eStore incorporates a number of important new features:

- Dual currency support (CAD and USD)
- On-line credit card authorization (no more incorrect credit cards!)
- Quantity discounts for publications applied automatically
- Integrated shipping and handling

Member discounts are now applied when you login to the store using your member account (see below). The new store has been integrated into the overall look and feel of the main RASC Web site. You will find it here [2].

Member Portal Now Operational

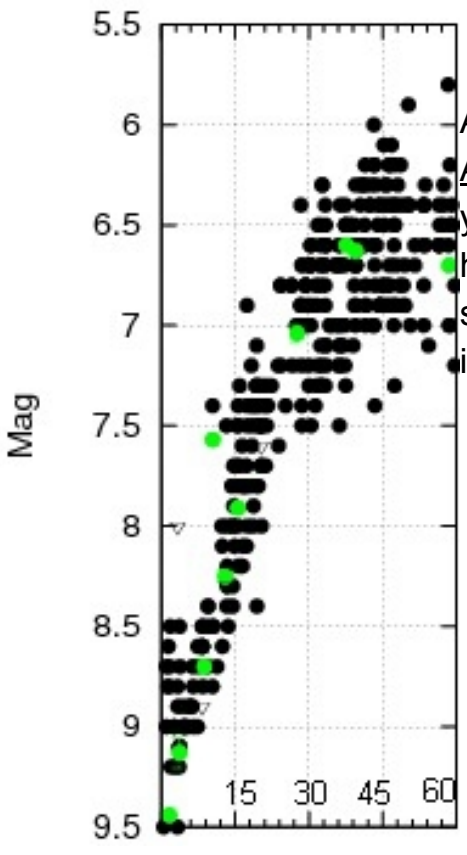
As part of the rollout of the new eStore, your new member account is now waiting for you! Tired of seeing your mailing address as "Port Perrier" instead of "Port Perry"? You can now login and fix it yourself or update your email address to that cool new Gmail account you are using. While you are there, you can also check out your renewal date and assign yourself a personal login ID and password. Try it out today! Click here [2], and use the "Reset my Password" feature to login to your account for the first time. If your email address is out of date or not on file with the National Society, please send an email here [3], and we will update your record so you can login. For more information on the new Member Portal, click here [4].

24" ZeroDur Mirror - Free (well, mostly) to Good Home

by **Dave Gamble**, Okanagan Centre The telescope mirror we are about to discuss has not led an ordinary life, nor is it an ordinary optic. The bouncing baby 24" ZeroDur blank came out of the annealing oven in the early 1970's weighing 120 pounds. It was four inches thick and sported a ten-inch central perforation. This singular mirror was fabricated... **[Editor's Comment:]** The Okanagan Centre is offering this 24" mirror and secondary mounting unit to any Centre for nothing more than the cost of shipping. Of course, the mirror comes with quite an interesting story and Dave has written a brief history that you can read here [5]. Contact info is included in this terrific story!

Mira Meditating

by **Alister Ling** One of the enjoyable aspects of observing variable stars from the backyard, is the easy, relatively quiet escape from earthly concerns. As long as the celestial dome is relatively cloud free, it doesn't matter what the phase of the Moon is, or how hazy the sky is. Just set up the scope, follow the chart, look through the eyepiece, and your thoughts and worries melt away. Just you and the sky. U Orionis is a classic, long-period variable of the Mira class, predicted to reach a maximum just fainter than 6th mag by the end of February. Maybe this year it will reach 5.7. During its current rising phase, it will brighten by a half magnitude every 2 weeks... readily noticeable by a beginner. Any planetarium software of value can lead you to U Orionis, a mere one binocular-field south of M35 in Gemini. Still, head to AAVSO [6], click on "Find charts" (for a Newtonian, you want N down and E right; for an SCT with a diagonal, try N up, E right), and choose chart scale "C" to get a 2^{o} field with official comparison magnitudes. When can you detect its orange colour? Watch that change in response to its magnitude.



A 60-day record of visual estimates (submitted to the AAVSO [6]) of the Mira type variable U Orionis, from a few years ago. See it change a magnitude in a month as it hits maximum in late February! Because everyone has slightly different sensitivities to colour, there is a spread in the estimates.

IYA Volunteers - We Need You!

by **Kim Breland**, IYA Programme Manager The International Year of Astronomy is off to a fabulous start, because of the efforts of the Centres and other partners, and all the volunteers from all across the country. We now have some special opportunities to get involved in a more hands-on way at the national level. We're looking for volunteers to do specific tasks related to Facebook, media watching, writing, translating, and assisting with visuals. Full details and contact info is here [7].

Promoting IYA2009 - Help Needed

by **Andrew Fazekas**, President, Montreal Centre Can you help me out with some IYA promotions with which I am personally involved? I am a professional astronomy communicator (The Night Sky Guy [8]) and I have some media venues through which I have an opportunity to promote the RASC's IYA efforts across the country. First, I do a weekly radio Science column for CBC Radio (English) called "Eye on Science." It is heard across Quebec and some parts of Ontario and Atlantic Canada. I plan on doing a monthly edition throughout 2009, starting next Wednesday, that will be IYA-themed. I am looking for: folks I can interview, topics to discuss, and a calendar of events that I can promote. Second, I am the astronomy correspondent at The Weather Network and have a national stargazing show, "The Night Sky," that runs every Friday morning (42m past the hour) and is seen coast to coast. Here again, I am planning on doing an IYA-themed monthly special edition. For this, I am looking for RASCals to submit photos/videos of their public IYA events for broadcast. I'm looking for your astro photos, too. Of course, on-air credit will be given. Finally, I also produce a stargazing video podcast that runs on both my YouTube channel [9] and my Web site. I would love to include what RASCals are up to. At this point I need the RASC community at large to know about my efforts to promote their events to the public, and send me their photos and videos. To my knowledge, these will be the only dedicated, monthly broadcasts to cover IYA events in Canada. Hopefully, we can get the word out and motivate the public to attend all the exciting events RASC has planned. I appreciate any assistance you can provide. Please contact me here [10].

The Colours of the Stars at Bel Ayr School

by **Dave Chapman**, Halifax Centre On January 27, I presented "The Colours of the Stars" to 44 Grade 6 students at Bel Ayr School in Dartmouth. The week before, I gave them some prep work to do: several questions about stars to warm them up. I also had them make 6 large paper disks with different star names and colours: Aldebaren (orange), Betelgeuse (red), Procyon (light yellow), Rigel (blue), Capella (yellow), Sirius (white). These are the 6 brightest winter stars at our latitude. I also had them make up some spectral class labels: K, M, F, B, G, A; and temperatures: 4200 K, 3500 K, 6600 K, 11000 K, 5000 K, 10000 K. It is interesting that the 6 brightest winter stars each have different spectral classes....

[Editor's Comment:] This is a terrific story, and you can read the rest of Dave's report here [11].

➢ Across the RASC

Sarnia Reaches Out to Children

by **Ron Warren**, Sarnia Centre Sarnia Centre is holding a "Kids Introduction to Astronomy" on March 18 (mid-winter break) at Dunlop United Church. All our members will be helping out in some form. Hopefully some parents will join our club. Our president, **Ralph De Jong**, now writes a monthly astronomy article dealing solely with naked eye and binoculars observing. The article appears here [12] every third Friday of the month in the *Sarnia Observer*. The RASC Web page is listed along with links to our local club.

Observing from the Sunshine Coast

by **James MacWilliam**, Sunshine Coast Centre

M81 and M82, taken from West Sechelt, BC

Neil Sandy and I were viewing independently from our respective backyards here on the Sunshine Coast. We both noticed a comet-like object near M81 and looked over our charts to decide what the mystery object was. The next night, we both checked again for any movement, but it turns out that the object was NGC3077, a nearby companion galaxy of M81. Well, it was fun while the mystery lasted.

In this photo, the three belt stars of Orion can be seen aligned at about a 45^{o} downward angle just to the right of the finderscope, with M42 clearly visible a bit farther to the right. These images were taken with a 6" Newtonian from West Sechelt, B.C. on January 18.

Orion, taken from West Sechelt, BC

➢ The Sky this Month

What's New in the Sky

Readers are encouraged to check out the **Northern Skies** [13] section of the RASC Web site. Thanks to **Gary Boyle** for keeping us all in the know!

➢ Dates to Remember

- **2009 March 29** - National Council Meeting, Toronto
- **2009 April 2-5** - 100 Hours of Astronomy
- **2009 June 19-21** - EfstonScience Star Party, DSP in Gordon's Park
- **2009 July 16-26** - Total Solar Eclipse Tour, China
- **2009 July 17-21** - Stargazing Manitoulin, DSP in Gordon's Park
- **2009 August 14-18** - Manitoulin Star Party, DSP in Gordon's Park

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The *Bulletin* of the Royal Astronomical Society of Canada
is a benefit of membership in the Society.

24" Mirror

24" ZeroDur Mirror

By **Dave Gamble**

The telescope mirror we are about to discuss has not led an ordinary life, nor is it an ordinary optic. The bouncing baby 24" ZeroDur blank came out of the annealing oven in the early 1970's weighing 120 pounds. It was four inches thick and sported a ten inch central perforation.

This singular mirror was fabricated for a Dall-Kirkham telescope being built by Lorenz Scientific Ltd. of Downsview, Ontario, and after a tumultuous life it was freed from its original OTA bonds to become a free agent. In 2006 the Okanagan RASC Centre was able to adopt it for use in the main telescope of its new Okanagan Observatory. Now, over two years later, fate has again stepped in. The short of it is that the mirror is again looking for a new home.

It is understood that the original telescope was manufactured by Lorenz Scientific for installation in a private observatory on Highway 89 by the family which owned Spartan Scientific. From there the history becomes somewhat hazy. Family changes required moving the instrument from its original location and as it was being disassembled the secondary was apparently damaged. It is understood that it was reworked but not re-aluminized, and this suggests that the telescope was never again made operational.

Years later Spartan Scientific closed down and its buildings were emptied of equipment and vacated. Some of the Lorenz telescope parts were saved from recycling and these included the primary mirror and the sophisticated secondary mounting with its actuating motors. These were made available through the RASC National Council and several Centres expressed interest in acquiring the ZeroDur mirror. In the end it was released to the Okanagan Centre and transported across the country to optician **Barry Arnold**'s shop in Edmonton by veteran member **Alan Whitman**.

At this point the writer came into the mirror's life as chair of the Okanagan Observatory project's telescope committee. So, what does one do with a 120 lb., four inch thick 24" ZeroDur mirror with a 10" hole in it? After the committee of five considered the options, it was decided that we would adopt a folded Newtonian approach similar to JMI's NTT design. The 10" secondary flat effectively made constructive use of the light loss from the primary's 10" perforation and the lower, more accessible eyepiece height would be perfect for our needs.

Barry suggested refiguring the f5.6 ellipsoid to an f4.1 paraboloid, but since the mirror had acquired a small fracture about ¼" below the surface on one edge, Barry proposed regrinding to below this level as the first step of the operation.

The telescope was designed around this plan. We began purchasing accessories and the frame of head end of the telescope was built. Since the 24" mirror had to wait for Barry to complete an earlier low expansion project, nothing was actually done on it. Then, early in 2008 Barry decided to close his optical shop and the committee was faced with a dilemma. It seemed impractical to find another skilled optician to undertake the formidable regrinding operation so we turned to locating a different primary. In the end a 25" f5 mirror was chosen to replace the 24", and we were fortunate that our earlier construction and purchases could be worked into the same general design.

And this left us with the hapless 24" ZeroDur mirror which my wife and I went up to Edmonton to reclaim last summer. Returning home, the heavy plywood box with its re-orphaned contents was carefully unloaded onto the basement floor of my shop.

There were echoes of Howard Carter in King Tut's tomb about this. The legendary mirror and myself were alone in the subdued light coming through a small upper window. One by one, the nails were eased from the lid of the coffin, er, plywood box, and finally the lid creaked open. The breath hissed out of me when only a blue styrofoam cover was revealed. Again tension built as this was lifted off, and there it was! Under a layer of protective paper the huge object lay.

Uncovering it, I was face to face with a beautiful aluminized surface, a bit blotched in places, but not abraded or sleeked. On one edge was an area where Barry had removed the aluminizing to explore the fracture. I'm not sure what I had expected, but the ZeroDur material was as clear as water… just beautiful. The fracture seemed inconsequential, a good ¼" below the surface, about 1 1/2" long and no more than half an inch wide.

The large ten inch hole in the centre combined with the enormous 4" thickness gave the mirror a surreal appearance compared to any mirror I had ever used or worked with.

Still in King Tut mode I carefully placed the mirror on its ample edge and with a flashlight backed off until the surface was flooded with light. I halved the centre of curvature and found the mirror was an f5.6. Ellipsoid or not, it was tempting to somehow jury-rig a setup to try it on the sky.

I soon settled down, but not before exploring the subject of small correcting lenses which would be one way for a future owner to get around the ellipsoidal figure. I further concluded that if no one else was interested in acquiring the 24" mirror, Okanagan Centre might hold on to it for a future project. In this case I would suggest simply refiguring the ellipsoid to a paraboloid with a subdiameter polisher, or tool if the correction was too large to polish out. If the small fracture area showed up in the final Foucault test, it could simply be masked off.

The resulting f5.6 mirror could be configured as a traditional Newtonian and mounted as a Dobsonian, providing the mirror's 4" thickness and 10" perforation could be overlooked. It would in effect have the light gathering power a 22" telescope.

Such a plan would be years off for Okanagan Centre, and if another club wished to proceed with a plan of their own for the 24" we would be glad to cooperate. Both the mirror and the secondary mounting unit would be available for $1,500 (FOB the Okanagan) which is the amount the club invested in transporting the mirror out from Toronto.

If another RASC Centre is interested, please contact Okanagan Observatory chair **Guy Mackie** at guy.m@shaw.ca [16].

Dave Gamble is a member of the RASC Okanagan Centre and has been making and using telescopes since his childhood.

Star Colours

Colours of the Stars at Bel Ayr School

by Dave Chapman, Halifax Centre

On January 27, I presented "The Colours of the Stars" to 44 Grade 6 students at Bel Ayr School in Dartmouth. The week before, I gave them some prep work to do: several questions about stars to warm them up. I also had them make 6 large paper disks with different star names and colours: Aldebaren (orange), Betelgeuse (red), Procyon (light yellow), Rigel (blue), Capella (yellow), Sirius (white). These are the 6 brightest winter stars at our latitude. I also had them make up some spectral class labels: K, M, F, B, G, A; and temperatures: 4200 K, 3500 K, 6600 K, 11000 K, 5000 K, 10000 K. It is interesting that the 6 brightest winter stars each have different spectral classes.

In class, I told them a little about IYA and Galileo and his use of the telescope. I had them report their researched answers to my warm up questions. Then I had them line up with the "stars" in order of brightness. From a table I supplied, I had them stick the right letters and numbers on the stars, and then got to them to reorder themselves in terms of decreasing temperature, revealing the well-known order: Be A Fine Girl/Guy Kiss Me. The basic idea was to understand that stars have different temperatures and astronomers figure this out by examining the colours of the stars.

After that, I handed out the RASC IYA StarFinders and they assembled them. I also had several postcard-sized prints of Blair MacDonald's fine picture of Orion. They easily picked out the blue star (Rigel) and the red star (Beteleguse). I showed them how to dial up 8 p.m. on January 27 to simulate the night sky. They figured out how to find Orion and I showed them how to find Rigel, Betelgeuse, Sirius, Aldebaran, Procyon, and Capella, all starting from Orion. Since it looked like it would be clear that night, I hoped they'd get a chance to test it out! All six stars are named on the StarFinder.

Then we had a Q&A session that, surprisingly, dealt with only planets and moons. I think perhaps that is what they had been studying in their Grade 6 unit. We discussed the demotion of Pluto to dwarf planet, and discussed life on Mars. We discussed why scientists apparently only look for earth-like life forms. Very good questions.

At the end of the presentation, I shuffled a deck of astro-cards and dealt them out, one to each student. There was a bit of a scrum, and I noticed some horse-trading going on. Galaxies were popular! I told them they could collect more by attending more events put on by Astronomy Nova Scotia (ANS).

The teachers sent home an ANS brochure with each student, and I gave the school two copies of "Mary Lou's New Telescope" for their library. One student came up at the very end and said he

and his dad have a telescope at home and use it, so I gave him one of the "Sidewalk Astronomy" booklets.

Links:
[1] mailto:bulletin@rasc.ca
[2] https://secure.rasc.ca/rasc
[3] mailto:store@rasc.ca?subject=Member Portal Info
[4] https://www.rasc.ca/news/new-secure-web-portal-available-members
[5] https://www.rasc.ca/bulletin/2009-02/24-mirror
[6] http://www.aavso.org
[7] http://www.rasc.ca/news/iyavolunteers1_shtml.shtml
[8] http://www.TheNightSkyGuy.com
[9] https://www.youtube.com/user/TheNightSkyGuy
[10] mailto:andrew.fazekas@sympatico.ca?subject=IYA2009 Help
[11] https://www.rasc.ca/bulletin/2009-02/star-colours
[12] http://www.theobserver.ca
[13] https://www.rasc.ca/news/northern-skies
[14] mailto:mempub@rasc.ca
[15] http://www.rasc.ca
[16] mailto:guy.m@shaw.ca?subject=24 Inch Mirror