Regulus

The Newsletter of the Royal Astronomical Society of Canada - Kingston Centre -- December 2006

Coming up…

RASC-KC Meetings

Stirling Hall Theatre A, Baader Lane, Queen's University Kingston, Ontario.
Friday December 8th 7:30-10:00pm Regular Meeting
Meetings are co-sponsored by Queen's Physics and include astronomy lectures open to the public.

KAON Public Observing

Queen's Observatory Ellis Hall, 4th floor from 7:30pm to 9:30pm
Saturday December 9th

Members Observing

Floating period: the first clear night in the dates shown at 7pm Dec 11-22 Lemoine Point CA-South
Contact Ken Kingdon

AstroYak

Friday December 15th 7pm-
At the home of Kevin Kell and Kim Hay outside Yarker

Good to the Last AstroYak

All RASC-Kingston/Belleville members are invited for a social chat session; feel free to bring along guests. We provide coffee, tea and other refreshments. If it is clear, I am sure we will go outside for a bit to check out Comet Swan (it's getting very dim!) among other items, and for tours of the Starlight Cascade Observatory and its new little buddy. See you there!

Shown in this photo, courtesy of Kevin Kell's Gallery that is accessible to members (see sidebar below) of the Kingston Centre of the RASC, is the Starlight Cascade Observatory Observatory itself. Story on page 4.

Members Photo Gallery now online!

A **new benefit of membership** is the members image gallery located at http://130.15.144.99/rasc/gallery2/ or just look for the link off the main home page of the RASC-KC . Register an account, get it activated by the webmaster and upload up to 20 mb of your best images to share with the world and other astronomers. You can even manage your own album!

Kingston Centre of the Royal Astronomical Society of Canada
Box 1793 Kingston Ontario K7L 5J6
http://www.rasc.ca/kingston
Infoline:613-377-6029
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Banquet 2006 is now history, on to Banquet 2007!

For those of you who could not attend the Banquet on November 4, 2006, it was a wonderful time.

Diane Torney pulled off an excellent evening at a new venue, The Christ Church hall, which is fully accessible. It is a large hall, with lots of room and a wonderful four season display of quilted images that sparked and touched your imagination.

We had a bar, for which Diane was also bar keeper, and a dinner that was very delicious, put on by the church workers. We started with salad and juice, followed by roast beef dinner with roast potato and vegetables, and then tiramisu as dessert. We then progressed into the guest speaker talk by Ross Kilpatrick, Emeritus Professor of Classics, Queen's University, whose talk was on "Gustav Klimt and the Stars: A Dionysian Iconography for 'The Kiss.'"

It was a most entertaining talk, and a very interesting way in which astronomy can tie into art. The use of the Coma Berenices in the hair piece of the women in "The Kiss," is a tell-tale sign of the two arts coming together. If you want to see a picture of "The Kiss," visit the following link.
http://www.magma.ca/~alexxi/klimt/1klimt.htm

Our speaker entertained us, and after a gift of star names, a tie of "The Kiss" was presented by Diane: Very appropriate. Door prizes where handed out in abundance, and then our awards ceremony progressed. The 2006 Winner of the A.V Douglas Award is John Hurley. Congratulations, John; well-deserved. Our Novice Astronomy Observer Award winner was not at the Banquet. We will present the award at the Friday meeting. So, it will be a surprise until then, except for those who attended the Banquet.

The evening wrapped up early after 9:00 pm, and it was an excellent night. Thank you again Diane for doing a wonderful job on organizing and putting the Banquet 2006 together.

Kim Hay
President
RASC-Kingston Centre
http://www.rasc.ca/kingston/

RASC-KC Logo Christmas Tree Decoration Raffle - donated by Hank and Di Bartlett

If anyone wants a ticket and they cannot get to a meeting they can mail a toonie ($2) per ticket or $5 for 3 tickets to me at the address below and I will put there name on the ticket(s). **The draw will be at the December meeting**. The only problem may be pick up of the ball for the dinner if they live at a distance. We cold mail it but cannot guarantee it won't get broken, it is up to the individual to take the risk. The draw is in support of the Big Bang-quet fund. Mailto: Hank Bartlett, Box 270 Newburgh Ont K0K 2S0

Kevin Kell on KAON

A real cold and wet gross night for astronomy and yet at the same time we had 40 people show up for tours and talks. Terry Bridges led off with Mike McDonald up in the dome, showing off the 16" telescope and driving it around the dome (which was closed).

Kim Hay gave a great talk about occultations including results of the recent Phocea asteroid occultation. Brian Hunter showed his equipment used in recording occultations, his lo-light video camera, GPS time inserter and computer.

Followed another 45 minutes of current astronomical events pulled off the Internet and other miscellaneous topics.

A second tour of the observatory followed with lots of people hanging around to chat and ask questions. This was good because during the talks the crowd was extremely quiet. Kevin Kell mostly just sat around and updated the centre laptop while it was on the Internet.

Our next open house/public observing session is on Saturday December 9th, 2006 from 7:30-9:30pm. We made note of a special public observing session for the total lunar eclipse on Saturday March 3rd, 2007.

The Centre displays were set up and most of the 50 handouts were gone by the end of the night.

Gus Johnson's List of Star Chains

(adapted from his letter of 1985, March 30, which appeared in Regulus May, 1985)

Revised by Leo Enright, November 2006 to include the 2000.0 coordinates for some of the stars that are not listed according to Bayer Designation or Flamsteed Number and for some other objects.

To assist further in the location of these star chains, the Uranometria 2000.0 Chart Number is given for the star chains and the areas in which they are found.

(NOTE: The star designations used in some cases by Gus Johnson included their numbers as given on the charts of Norton's Star Atlas. For stars without Bayer Designation or Flamsteed Number, Norton's charts showed many stars' numbers from the star catalogues of FGW Struve, Otto Struve, and S.W. Burnham, and others . Unfortunately the charts of our more modern star atlases, such as SkyAtlas 2000.0, Uranometria 2000.0 and Millennium Star Atlas, do not have any designation for these stars, though the HD number may be found in Sky Catalogue 2000.0.)

1. In Ursa Major, north of the stars Zeta UMa and Eta UMa in a gentle curve. (See U49.)
2. The Pleiades Cluster has several chains, the most notable near the star Alcyone. (See U132.)
3. The famous "Kemble's Cascade" is rich with stars, and runs about 3 degrees North and West of the cluster NGC 1502 in the constellation Camelopardalis. (See U18.)
4. One runs southwest of the star 13 Lacertae (R.A.: 22h 44m; Dec.: + 41deg 50'). (See U87.)
5. A four-star chain is seen about 1 ½ degrees from the famous "Garnet Star", Mu Cephei. (U57)
6. The star Struve 385 (R.A.: 3h 29m; Dec.: + 59 deg 55') in Camelopardalis is about central in a chain running North and South. (See U38 and U39.)
7. The open cluster M35 in Gemini has an obvious chain. (See U136 and U137.)
8. Near the "twin double stars" Struve 2470 (R.A.: 19h 17.9m; Dec.: + 34deg 45') and Struve 2474 (R.A.: 19h 8.2m; Dec.: + 34deg 35') both about 2 ½ degrees NE of Gamma Lyrae, there are two chains, both of which have about 5 stars. (See U118.)
9. Near the star Burnham 975 in Lyra, there is a five-star chain. (See U117.)
10. In Taurus, making an isosceles triangle with the star Zeta Tauri and M1 (the Crab Nebula) is a star chain running approximately away from Zeta, with a triangle at the end of it. (See U136.)
11. In Sagittarius, in M24, in the main dark lane at the apex of two curved star chains is a triple star. (It may be an optical alignment, rather than a "physical triple.") (See U339.)
12. In a telescopic field, there is a long star chain near the star Delta Sagittarii (R.A.: 18h 21m; Dec.:– 28deg 50') and NGC 6624 (R.A.: 18h 23.6m; Dec.:– 30deg 20') . (See U378.)
13. About 3/4 of a degree East of M103 in Cassiopeia (at R.A.: 1h 28.6m; Dec.: + 60deg 45'), there is a tight five star chain. The second star from one end is a double star of approximately equal magnitudes and oriented perpendicular to the direction of the chain. (Use medium to high power to view this double.) (See U16.)
14. A star chain is in the Open Cluster NGC 752 (R.A.: 1h 58m; Dec.: +37deg 40') in And.
15. In Scorpius (at R.A.: 17h 25m;Dec.: –35deg.) there is a four-star chain running approximately North and South, and nicely seen in binoculars. (See U376.)
16. The open star clusters, M30 in Capricornus and M41 in Canis Major, have star chains. (For M30, see U345 and U346. For M41, see U318.)

NOTE: My personal addition to this list would be a favourite of mine — a slightly curving chain of stars running from the Open Cluster Stock 2 (R.A.: 2h 15m: Dec.: + 59deg 20') to NGC 869 which is the more westerly member of the Double Cluster in Perseus. The Double Cluster, of course, is naked-eye from a reasonably dark site, but the star chain is binocular. (See U37.)

New Members

Several students of the Observational Astronomy for the Novice Course that ended in November have opted to become members of RASC, Kingston Centre. We welcome John Curley, Berta Beltran Lizarraga, Sharon Blackwell, Kathleen and Hugh Makepeace, Jane Thelwell, Annetta Simpson, Sue and Neil Ainsworth, and Cindy Abeles.

The Last AstroYak

Astroyak is intended to be a social gathering to chat about astronomy, have coffee and sit by the fire. We found that we do not get to do a lot of this activity at the regular Friday meetings nor at the Wendy's gathering after those meetings. General turnout is anywhere from 3 to 10 members.

This is the 3rd and final year for regular Astroyak sessions, held monthly at our home. Unfortunately circumstances have arisen that have caused us to cancel this after the final session on Friday December 15th, 2006. We've had fun and hope you have as well!

Directions

>From Kingston and the 401 take Highway 38 north for 10 minutes until you see the turn left for Yarker sign. Follow that road for approximately 5 minutes and turn right (north) onto Colebrook Road.

We are located at 76 Colebrook Road just east of Yarker. There will be two blue driveway lights on, red Christmas house lights and lots of parking space. If you get lost you can call us at 613-377-6028 and get some more directions.

All RASC-Kingston/Belleville members are invited for a social chat session and feel free to bring along guests. We provide coffee, tea and other refreshments. If it is clear I am sure we will go outside for a bit to check out Comet Swan (its getting very dim!) among other items, tours of the Starlight Cascade Observatory and its new little buddy. See you there!

Kevin Kell at Starlight Cascade
Observatory and Gardens
outside Yarker Ontario Canada

Notions and Motions

Elections took place at the Annual General Meeting held 10 November 2006. Most of the Directors retained their positions on the Board of Directors, including Kim Hay as President, Arlyne Gillespie as Vice President, Kevin Kell as Treasurer, David Maguire as Librarian, and John Hurley as National Council Representative. Doug Angle stepped down as Editor of Regulus and was replaced by Joe Benderavage. The position of Secretary remains vacant, but the Board of Directors have moved that it needs to be resolved at the next meeting on 8 December 2006.

Various committees retain vacancies that will hopefully be resolved soon. The committees accepting volunteers will be named at the next meeting.

Any new ideas from the membership as to whom might make a good speaker would be most welcome, as would input regarding agendas for upcoming meetings.

One concept that has surfaced is that of holding Members' Nights for all of the 2007 meetings. Members who plan to speak would agree to do so two months in advance, in order to allow that information to be printed in Regulus, and on the website.

Will there be a tutorial in 2007 on the running of the roboscope? Find out when at the next meeting.

Joe Benderavage

Profile

Kevin Fetter, one of our members, has gradually raised the consciousness of fellow members at Kingston Centre to the importance of satellite observation. He has done so with reports, videos, charts and drawings so persistently that he cannot be ignored, especially when he abandons his laconic style for a more lavish description of the International Space Station, and the different degrees of its reflected glory. He freely gives very useful advice, such as "This satellite orientation is stable, so it won't be flashing. What you should hopefully see, at the time posted in the chart, is a slow moving point of light. So don't look for flashing, look for a slow moving point of light." Or reportage: "... I hope to see the newest geo sat, in a transfer orbit, before they adjust its orbit, to park it over the equator, where I can't see it from my location." But this one, everyone can identify with: "Well so much for hoping for another clear night, not! I hope others, had clear skies, and got some observing in. I try every chance I get, as this summer and so far fall haven't been good."

Perhaps we could adopt that last bit as our K.C. logo. Artificial sattelites will be in the news in 2007 as the world celebrates the 50th anniversary of the launching of the world's first sattelite, Sputnik, into orbit.

Remember the "Ghost of Christmas Past"? Here's a reminder from the December 1981 : January 1982 issue of Regulus. I don't know if December 14 and 15 are still valid dates 25 years later in December 2006. Supporting diagrams for Terry Hicks, "an enthusiastic attendant at our meetings," follow on the next page. –Ed.

The earliest time of sunset

Every year the earliest sunset occurs nearly two weeks before the winter solstice and the latest sunrise nearly two weeks after. Using the times of visible sunset for Kingston 44°14'.0N 76°30'.0 W on December 14th and 15th, 1981, as an example, this article will attempt to explain the reason for this occurrence. Note: allowing 16' for semi-diameter and 34' for horizontal refraction the sun's upper limb will appear on a visible sea horizon i.e., sunset, when its true zenith distance is 90°50'.0 For those interested, the actual mathematical calculations appear at the end of this article.

Kepler's first two laws of planetary motion are: (1) the path of a planet around the sun is an ellipse, the sun being situated at one of the foci (2) the rate at which the line joining the planet to the sun sweeps out areas, is constant.

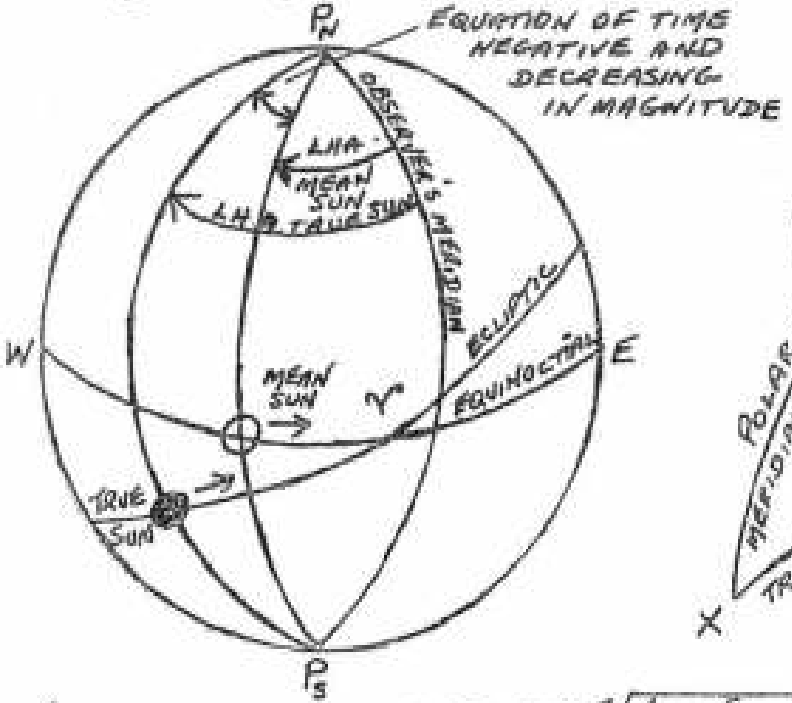
These laws dictate that the motion of a planet in its orbit about the sun will be most rapid at perehelion (early in January for the earth), its closest approach to the sun, and its slowest at aphelion, its farthest point from the sun. Thus to an observer on earth the sun appears to move in the ecliptic (apparent path of the sun in the celestial sphere) at a varying rate. The local hour angle of the true sun (LHATS) does not, therefore, increase at a uniform rate and it does not give a practical unit of time measurement, a measurement which must be uniform.

To overcome this difficulty, a Mean Sun is introduced, this being an imaginary body which is assumed to move in the celestial equator at a uniform speed around the earth and to complete one revolution in the time taken by the True Sun to complete one revolution in the ecliptic.

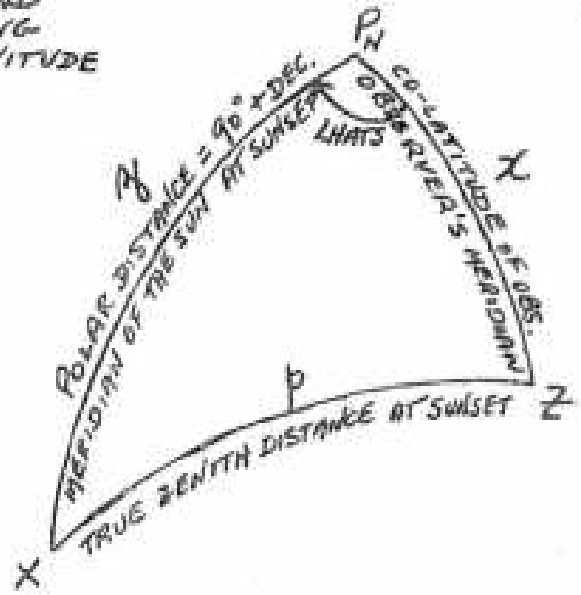
Although this assumption of an imaginary Mean Sun makes the ordinary clock possible, the same assumption also gives rise to a problem. In the case of sunset, for example, we are observing the True Sun and measuring time by the Mean Sun. It is necessary, therefore, to be able to connect mean solar time with apparent (true) solar time. The connection is known as the Equation of Time, defined as the excess of mean time over apparent time (Ref. Admiralty Manual of Navigation Vol.III (1954)). At times during the year the Mean Sun will be "ahead" of the True Sun and at other times the opposite situation holds. (Please see the following diagram.) The greatest value of the Equation of Time is just over 16m22s. On only four occasions during the year do the Mean Sun and True Sun lie on the same celestial meridian with the resulting Equation of Time having a value of zero. These dates are about the 15th April, 14th June, 1st September and 24th December.

The accompanying calculations show that, at sunset, on the 14th and 15th December the local hour angle of the True Sun is respectively 66°40'.0 and 66°36'.1. This difference of 3'9 of arc, equivalent to approximately 16 seconds of time (1 minute of arc equals 4 seconds of time) is entirely due to the changed declination of the sun in the interval between two sunsets. If no other factors entered the picture, sunset on the 15th December would be 16s earlier than on the 14th. However, at sunset on the 14th and 15th December the equation of time is respectively negative 5m7s and negative 4m38s (approx). This indicates that time as determined by the Mean Sun has gained 29s on apparent solar time during the interval. Thus the nett change in the mean time of sunset is 13s, the later time being on the 15th December. This is in agreement with the calculations for G.M.T sunset which follow. (Time equations in the Nautical Almanac are G.M.T). The cumulative effect of these day by day events results in sunset occurring at the time of the solstice about 3 minutes later than its earliest time. It is of interest to note that in the calculations following, the Equation of Time is automatically taken into account when the Greenwich Hour Angle of the True Sun at sunset is converted to G.M.T when using the almanac.

Declination figures were obtained using the approximate time of sunset, GMT 2128, as the argument for both days. No reportable differences in results would accrue for a "second approximation" using a more precise time. A small degree of uncertainty exists in the last figure of some quantities. This is principally caused by the rounding off policies followed by the compilers of the Nautical Almanac.



NOTE: $\text{hav}\,\theta = \frac{1-\cos\theta}{2}$



$$\text{hav LHATS} = \sec q \sec x \sqrt{\text{hav}[p+(q\sim x)]\,\text{hav}[p-(q\sim x)]}$$

	SUNSET 14 DEC.	SUNSET 15 DEC.
DECLINATION	S 23°14.'7	S 23°17.'8
P	90° 50.'0	90° 50.'0
x	45° 46.'0	45° 46.'0
q	113° 14.'7	113° 17.'8
$q\sim x$	67° 28.'7	67° 31.'8
$p+(q\sim x)$	158° 18.'7	158° 21.'8
$p-(q\sim x)$	23° 21.'3	23° 18.'2

14 DEC.: $\text{hav LHATS} = \sec 113°14.'7 \sec 45°46.'0 \sqrt{\text{hav}\,158°18.'7\,\text{hav}\,23°21.'3}$

15 DEC: $\text{hav LHATS} = \sec 113°17.'8 \sec 45°46.'0 \sqrt{\text{hav}\,158°21.'8\,\text{hav}\,23°18.'2}$

SUNSET 14 DECEMBER	
LHATS	66°40.'0
Long. W	76°30.'0
GHATS.	143°10.'0
GMT	21-27-33
ZONE TIME	16-27-33 (+5)

SUNSET 15 DECEMBER	
LHATS	66°36.'1
Long. W.	76°30.'0
GHATS.	143°06.'1
GMT	21-27-46
ZONE TIME	16-27-46 (+5)

Keep the Signal

Posted from the RAscals Astronomy List- keep the signal!!
Subject: [RASCals] CHU atomic clock shortwave shut down?
Reply to: RASCals Discussion List <rascals@lists.rasc.ca>
<mailto:rascals-request@lists.rasc.ca?subject=unsubscribe>

One of my Amateur Radio colleagues brought this to my attention
(news as of October, so maybe you saw it):http://inms-ienm.nrc-cnrc.gc.ca/time_services/shortwave_broadcasts_e.html

In summary: "On April 1, 2007, CHU needs to stop operating, change frequencies, or re-licence. Contact radio.chu@nrc.gc.ca or mail CHU
Canada K1A 0R6,"

It appears that due to changes in the world standards for frequency allocation, CHU may have to change frequencies, or go off the air.Anyone who does **Occultation Timing or timing of transits**, likely uses either this frequency or the one around 3.33MHz.
Sometimes this is the only time clock source I can get in some locations, as the other Canadian clock and the American WWV are not audible.
I'd encourage you to drop them a line to let them know how important this time standard is, especially on this frequency.

Best regards,
Colin
------- End of forwarded message -------
Kim Hay
VA3KDH & Amateur Astronomer

Book Review: The Illustrated Atlas of the Universe

A magnificent book entitled The Illustrated Atlas of the Universe impresses on a grand scale, mainly through the agency of its pictures. They are large, interesting and legion. Hardly a page can be turned without revealing a new aspect of the glory of the heavens through astrophotography, diagrams, maps, charts and artwork. Its beauty is relentless.

The images on nearly every one of its 304 pages are printed upon a black background, with captions and legends inobtrusively placed near their respective images. Textual material is printed with white ink, which is not as readily scanned by the eye as is black ink upon white pages. The net effect is that you have to reduce your reading speed. This is just as well, because the majority of this material is so dense and new that you cannot absorb a large amount at one sitting.

My favourite section, "Interstellar Medium" (ISM), contains descriptions and pictures of interstellar particles found in meteorites that predate the sun. But half of all interstellar material in the Milky Way comes in the form of molecular clouds. And the most common molecule is H_2 (molecular hydrogen), in which atoms of hydrogen have been bonded together in pairs.

Clouds of H_2 may contain patches of HII (ionized hydrogen) regions which contain the protons of hydrogen atoms without their accompanying electrons. These ionized areas will glow until they are dissipated by radiation pressure from young stars. Now that I have seen the illustrations herein, I can more fully appreciate the difference between H_2 and HII.

The largest molecular clouds are known as giant molecular clouds (GMCs) and about 3000 of them are among the largest forms in the Milky Way. GMCs are anywhere from 100 to 150 light years across, but can be twice as big, having a mass of ten million solar masses. The nearest GMC to us covers much of constellation Orion, and the Pipe Nebula (LDN 1773) in constellation Ophiuchus is among the largest in the entire sky. And all this time I had taken them for granted.

Yet one's learning curve can gracefully build if you examine some of the almost 100 maps and 800 pictures. They will stimulate your imagination to make further projections than you see on the page. For example, now and then, I have had the impression during brief naked-eye observations at moonrise that the moon seemed larger than usual. Now, one of the charts in this atlas reveals graphically that lunar distance from earth varies by 39,000 km each lunar orbit (27.32 days).

But there are perils of publication: Luna 2's lunar impact site that should have been represented on a lunar map has been obscured completely by the book binding, even though Luna 2 was the first spacecraft to ever hit the moon, and Soviet Russia accomplished this feat less than two years after its successful launch of Sputnik. Sic transit Gloria mundi.

The book has ten chapters: Earth and the Moon; the Inner Solar System; the Outer Solar System; the Nearest Stars; the Local Neighborhood; the Milky Way; the Local Group; Universe of Galaxies; Mapping the Sky; and the Constellations. It has a glossary, an index, a catalogue of Universal Records, and a table of planetary satellites, and of the largest asteroids, in the solar system. The section called Mapping the Sky has 16 seasonal sky charts, eight for each hemisphere. Each chart has an apparent visual magnitude scale, deep sky object symbols, a spectra key, a brief synopsis, Messier numbers, constellation names and their alpha star names.

This hardcover book will make a handsome present as a coffee table book suitable for children and adults who need only open this learning tool to become enraptured by its content. As well, libraries large and small would have their reference section enhanced by adding it to their shelves, all five pounds and 13.5" by 10.75" by 1.125" of its dimensions.

Of course, once you are hooked on photos of light echoes, HII regions, and GMCs, then you must wade into Herbig-Haro objects, star formation, gravitational collapse, and proplyds. Once you have crossed that event horizon, you may have to give up on iPods, LDTV, SUVs and other diversions, and devote all your energies to scrutinizing this book; it could change your life. Yes, you must have it: The Illustrated Atlas of the Universe, illustrated by Mark A. Garlick, star maps by Wil Tirion, 2006, Fog City Press, San Francisco.

Joseph Benderavage

RASC-KC Board of Directors

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OAFTN Instructor: Kevin Kell
Observing : Ken Kingdon
Publicity : Steve Hart
Relay for Life: Hank Bartlett
Responsible Lighting: Kim Hay
Sky Is the Limit: Hank Bartlett

Brief Notes from History by Joseph Benderavage

Next year, 2007, promises to be a big year, especially in Russia, as the world celebrates the 50th year of space exploration. On 4 October 1957, Sputnik was put into orbit Soviet Russia as the first artificial satellite. Since then 5,000 more satellites have been launched. The most significant satellite to date is the International Space Station, which is still in manned orbit because much of supplying personnel and materiel to the ISS has been made possible through the delivery system provided by the Russian space program, and by the American space program. 24 Dec 2006 is the 40th anniversary of the successful landing on the moon in 1966 of the Luna 13 lunar craft launched by Russia. It landed near the western limits of Oceanus Procellarum.

But on 11 Sept 1967, Americans successfully landed their Surveyor 5 craft for the first time on the moon at the west end of Mare Tranquillitatis. Two months later, 10 Nov 1967, Surveyor 6 settled down successfully into the Sinus Medii locale. The next landing by anyone was that of Apollo 11 on 20 July 1969 in Mare Tranquillitatis, very near to where Surveyor 5 had landed less than two years earlier. A Russian craft, Luna 15, was launched nearly at the same time, but it crashed several days later in the Mare Crisium on 21 July 1969.

The Royal Astronomical Society of Canada - Kingston Centre Newsletter Submission Info:

I can take most common formats, although I prefer plain text. Pictures should be sent as image files in attachments separate from the articles. Please avoid the use of capitals, asterisks etc for formatting, as I use the publishing software's formats for this kind of emphasis.
E-mail: lbenderavage (at) sympatico (dot) ca
Post: Joseph Benderavage, 147 Braemar Road, Kingston, Ontario, Canada K7M 4B7

2006 Publication Deadlines

For the month (Deadline)
January 2007 (December 16)

Subscriptions: Members of the Kingston Centre receive Regulus as a benefit of membership. Advertisements are free to members of the Centre. Commercial advertising is $20/quarter, $40/half page, $100/ full page and should be in electronic format. Contributions are more than welcome. Submitted material may be edited for brevity or clarity.

Member's Observing Nights

By Ken Kingdon

These observing sessions are intended for RASC members and their guests and NOT the general public. The public is welcome to attend KAON sessions at Queen's University the second Saturday of each month.

.December

F**loating Period**: first clear night beginning Monday, December 11 right through to Friday, December 22
Meet: 7 pm in the South Parking Lot of Lemoine Point Conservation Area, off Front Road.

Editor's Corner Joseph Benderavage

Doug Angle has been very helpful to me by guiding me through the composition of my first issue. He has an enduring interest in our predecessors, and it was he who suggested consulting archival documents for items of interest. During Doug's editorship, he expanded the inventory of past writings into a miniature portable library, but perhaps more importantly, has helped transfer them into another medium that may be more accessible to members. He indicated to me which was the best software to use for the newsletter format and where to get it. He mentioned other sources that could potentially furnish current newsletter material. I salute Doug and his team of writers and hope I can develop as effective a medium of pertinent information as he has done.

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Kingston Cosmic &Events Calendar November-December 2006
By Kim Hay and Joe Benderavage
For more detailed information, please refer to the **RASC 2006 Calendar** and the **RASC 2006 Observers Handbook** (Available from the RASC National Office, http://www.store.rasc.ca/)

December 3rd Sunday	Moon occults the Pleiades 10:00pm
December 4th Monday	Full Moon 19:25
December 8th Friday	Regular Meeting Night, Stirling Hall Theatre "A" 7:30-10:00 pm
December 9th Saturday	KAON Public Observing Session- Ellis Hall Queen's Observatory * 7:30- 9:30 p.m.*
December 12th Tuesday	Last Quarter Moon 9:32
December 14th Thursday	Geminid meteor shower peak 6:00 am
December 15th Friday	Spica 1.3 degrees of Cresent Moon 5:00 am
December 15th Friday	Astro Yak in Yarker, at the home of Kevin Kell & Kim Hay directions can be found at the members only section on the website http://130.15.144.99/rasc/securemenu.htm
December 20th Wednesday	New Moon 9:01
December 21st Thursday	Winter Solstice 7:22 pm
December 22nd Friday	Ursid meteor shower peak 2:00 pm
December 25th Monday	Christmas Day
December 27th Wednesday	First Quarter Moon 9:48

January 1st 2007	**New Year's Day**
January 3rd Wednesday	Full Moon 8:57 am
January 3rd Wednesday	Earth at perihelion (147 093 602 km) 15:00
January 3rd Wednesday	Quadrantid meteors peak 20:00
January 5th Friday	Moon 1.8° N of Beehive (M44) 5:00 am
January 10th Wednesday	Moon at apogee (404 335 km) 11:00 am
January 12th Friday	Regular Meeting Night, Stirling Hall, Theatre "A" 7:30–10:00 pm
January 13th Saturday	KAON Public Observing Session–Ellis Hall Queen's Observatory * 7:30–9:30 pm.*
January 16th Tuesday	Double Shadow Transit on Jupiter 19:55
January 18th Thursday	Venus 1.4° S. Of Neptune (20° E) 13:00
January 18th Thursday	New Moon 23:01 am
January 22nd Monday	Moon at perigee (366 926 km) 8:00 am
January 23rd Tuesday	Double shadow transit on Jupiter 23:32 am
January 25th Thursday	Moon First Quarter 18:01
January 27th Saturday	Moon 0.9° N. of Pleiades (M45) 12:00 noon