

Nova Notes

The Newsletter of the Halifax Centre
of the Royal Astronomical Society of Canada



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PO Box 31011, Halifax, Nova Scotia, Canada B3K 5T9 www.halifax.rasc.ca halifax@rasc.ca



Astrophoto of the Month

Aurora, Oct. 3rd—Darren Talbot

No one could argue that Darren has become the Nova Notes Photographer of the Year for 2002, with 2 covers in a row! (*If only we gave out an award for that!!*) This Aurora image was taken on October 3rd at the St. Croix Observatory. Darren is always quick to share his astro images by posting them to his website, as he did last month when he once again captured a bright Aurora from the city on the morning of Sept. 4th. Watch the Centre's email list for his next set of great astro photos.

This Issue...

Astrophoto of the Month	1
As heard on hfxrasc@rasc.ca	2
eyesUp!	3
Sept. 2002 Meeting Report – Paul Heath	4
Herald–Bobroff Astroatlas – Michael Gatto	6
Uranometria 2000.0 – Craig Levine	8

The toothpaste 4-out-of-5 Astrophysicists recommend – Walter Zukauskas	9
Lunar Explorations – Graeme Hill	10
Astro Ads	10
Saint Croix Observatory Information	11
Meeting Announcements	12

As heard on hfxrasc@rasc.ca...

If you're a member with email, why not become part of the Centre's email list? The list is a great resource for people looking for other members to observe with, for reminders of upcoming astronomical events, or for sharing information. Members who observe at

St. Croix usually post a notice to say if they'll be out that night. Log on to our website (www.halifax.rasc.ca) to get signed up and you too could participate in lively intellectual discussions, or at least read them!

The Right Star Atlas?

While waiting for my new telescope, I've been browsing through different catalogues and magazines, which is a dangerous thing, hard on the wallet!

I always thought a starmap on the computer is the way to go. But I'm a little worried to take my computer out in those damp, humid Nova Scotia nights. I think the laptop wouldn't have survived the first night at Nova East.

Which star atlas is the best one to get? I'm leaning towards the "Sky Atlas 2000" Or is there something better out there?

- Herbert (design.fort@ns.sympatico.ca)

The Right Star Atlas?

I found starting with the sky charts in Terence Dickinson's *Nightwatch* was a big help to find a lot of not-so-faint fuzzies. I also have Sky Atlas 2000. This is good to 8th magnitude. For more detailed charts, I have been using ECU (Earth Centered Universe). So far I have found this to be a good combination to find what I am seeking.

- Paul Heath (pheath@hfx.eastlink.ca)

The Right Star Atlas?

You won't go wrong with Sky Atlas 2000. I have both it and several other charts including *Nightwatch*. I find the others including the Mag 6 Star Atlas do not have enough faint stars. As for the laptop –

they are tougher than you think. I haul mine all over the place for CCD imaging and have had no troubles. For visual work though, nothing beats a good atlas, laptops are too bright.

- Blair MacDonald
(b.macdonald@ns.sympatico.ca)

The Right Star Atlas?

Laptops tough? Perhaps, but mine didn't survive Nova East and I didn't use it except for the two presentations! (yes, I've had it apart and no dice, and warranty is over :-). That being said, I would still use one in the field – my Compaq has been somewhat of a lemon anyway.

- Dave Lane (dlane@ap.stmarys.ca)

The Right Star Atlas?

I find the Sky Atlas 2000 charts have the right sized field of view for use at the eyepiece – it's very easy to orient yourself. You might want to take the time, like I did, to "connect the dots" of the constellations. This made it much simpler to use.

You might also want to pick up the Orion "Deep Map 600". It's printed on plastic, and when you just want to sight-see, it's a good guide to 600 of the brighter objects in the sky. It's also handy for when you forget your observing list at home...

I like the Uranometria set for reference, but the three volumes cost about US \$150

and are a little heavy to lug around. You'd also hate to get them dewed up. (See review in this issue). I use that set and Software Bisque's "The Sky" software both pre-and-post observing. Dave's "Earth Centered Universe" is also very good. (Dave – does it include information on Venus?) :-)

- Craig Levine (clevine@hfx.eastlink.ca)

The Right Star Atlas?

The Sky Atlas 2000 second edition is an excellent choice. The new version has black stars on a white background which makes it much easier to see in the dark, and the laminations keeps it from falling apart in the dew. I have an older version with the black background that was not as easy to use and at night, you needed a fairly strong red light to read it and that would ruin your night vision. Still good as a desk version though, If anyone is interested I will be selling it off. Interested parties can contact me off list if they wish.

James P Crombie
(jpcrombie@pei.eastlink.ca)

Editor – I also through my 2 cents in on this exchange for the lesser known Herald Bobroff AstroAtlas, so it seemed fitting to include a review of it, as well as Craig's excellent Uranometria review in this issue. See pages 6-9.



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B3K 5T9

Articles on any aspect of Astronomy will be considered for publication.

Nova Notes is published bi-monthly in February, April, June, August, October and December. The opinions expressed herein are not necessarily those of the Halifax Centre.

"Letters to the Editor" or letters to our resident expert "Gazer" are also most welcome.

Contact the editor at the following:

Michael Gatto
michael@allura.com
453-5486 (Home) 482-1013 (Work)

Nova Notes is also available as a PDF file on our centre's website at www.halifax.rasc.ca

Material for the next issue should reach the editor by Nov. 22

eyes Up!

eyes Up! is a forum for observing news from Centre members. This is where you can see what your fellow members have been looking at for the last two months and share your own latest discoveries.

News may include observing reports, observational project status, witnessed daytime or nighttime astronomical phenomena, new equipment reviews, or any other notes of observational interest.

"The Year Round Messier Marathon Field Guide" by Harvard Pennington—Review by Paul Heath

This book is a great resource for anyone thinking of doing their Messier hunt or a Messier Marathon (an observing session where all 110 Messier objects are observed in one night). Also for any of us in the middle of our Messier hunt, this book has great tips on finding the Messier objects.

The book is a step by step development toward a Messier Marathon. It begins by describing a Messier Marathon, how it began, what it is and how to do one. It goes on to learning signposts in the sky then preparing your telescope. It has great hints on viewing tactics and learning how your scope sees the sky.

It has very good finder charts for the Messier objects and the eye piece drawings and telrad views make confirming the Messier object very easy. There are hints and things to watch for to avoid errors in your personal Messier hunt. For example; confusing M103 with NGC 633, both look the same and are very close in the sky.

Overall I highly recommend this book for anyone who is thinking about starting their Messier Hunt or planning to do a Messier Marathon.

SC—OOOOHH!—Paul Heath

SCO's rain-washed skies were awesome tonight (9/12/02). Darren T., Paul G., Johnny M., and myself were later joined by Graeme H., and Martin F., to gather up some faint photons.

The transparency was superb, with the limiting magnitude at 6.0 – 6.2 (Darren). M33 was naked-eye and Comet Hoenig and the Helix nebula were very easy binocular objects.

We arrived just in time to catch a –8 mag. Iridium flare. The crescent moon showed a lot of detail with Johnny's lunar filter. Wrinkle ridges were clearly visible in Mare Crisium and Mare Fecunditatis at 50X in the 10" dob. While Johnny and I sought and found Comet Hoenig in binos, Paul G. chased down a couple of Palomar's with the 17". M81/M82, M51, M13 were all sharp and clear even before moon set. After moon set we really got into it.

Johnny got Barnard's E dark nebula in Aquilla, in the 10" and I think I now know what I need to look for to see a dark nebula. Once found the 'E' was easy to follow and was readily visible in my 7X50 binos. M13 took all the power the 10" could throw at it and then dazzled us at high power in the 17". The propeller was very sharp and a dusting of pin point stars showed behind the blades. An O111 filter gave us knots and twists and clumps all through the Veil Nebula.

Stephan's Quintet showed three clear fuzzy blobs at the zenith in the 17". Andromeda finally gave up both dust lanes at 100X in the 10". It filled the view in the 17" as did M110. M33 was the star of the night. At 50X in the 10" the brightest of the 4 NGC – H11 regions was sharp and clear. In the 17", with a 13mm, the other 3 - H11 regions were easily discernable. Tonight was the most detailed that I have seen M33. A truly wonderful sight. Despite dewing up, which we zapped with the hair dryer, we carried on. While Graeme and Paul used an O111 to catch good detail in the Helix Nebula with the 8" and 12" dobs, I sought out the star field for asteroid Ceres. Although I feel I found Ceres (a star not on my finder charts in Cetus) the dew had done in my paper. Was not able to complete a star field sketch.

With soggy charts and dripping scopes we shut up SCO at 01:00 .

Double Rainbow—Craig Levine

As Lynne and I were taking our two dogs out for a walk just after 7:00 P.M., the clouds departed in the Northwest, and the sun shone brightly through the broken ceiling. Directly above us, a downpour spilled out of the dark clouds still above. Looking in the direction directly opposite the Sun, a very bright rainbow with a very apparent secondary bow was superimposed over the grey sky! Much of Roy's talk from a few months ago came back to me then. I also managed to take several shots with the digital camera, capturing the vivid spectrum in high resolution. The secondary had faded somewhat from the time I first saw the bows and when I took the first shot, after running into the house and back out with the camera. An extraordinarily bright gift to cap off a great day.



Lunar Images—Michael Gatto

This digital image was taken on October 2nd at 5:30 A.M, with the moon was just over 3° away from bright Jupiter (inset). The close up image shows Mare Humorum on the terminator – lower left, with crater Mersenius (centre) and the shadowed Gassendi lower right.

Goto—Pat D'Entremont

I think that I shall never be
A gazer who is goto free;

Who jumps from star to star with joy
With monster scopes, like Steve and Roy;

Who points his dob most anywhere
And recognizes star fields there;

Who shows his Messier List completed
And no one thinks that he has cheated;

Who knows every square inch of sky,
And still observes when batteries die.

Meade makes scopes for fools like me
But Steve and Roy are goto free.

(Apologies to Joyce Kilmer)

eyesUp! or Surf's Up!—Roy Bishop



After posting a request to the list for submissions, I received the following "astro" photo from Roy, with the following humorous explanation...

Here is a photo for possible use in Nova Notes.

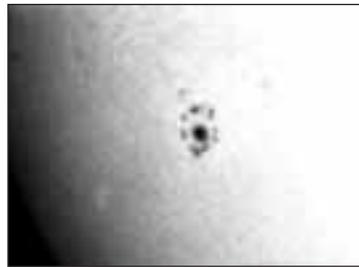
There are two astronomical aspects to it:

- (1) the water is there because the Moon has produced a high tide;
- (2) the person on the windsurfer is the Honorary President of the Halifax Centre.

The water is Minas Basin and the dark cloud is a few thousand Sandpipers. A couple of ships are on the horizon. The title "Dad sailing 8/02" was given by my daughter who took the photo.

Sunspots—Michael Boshat

2 images of the old and new sun spot groups, with a nice "bull's eye" spot near the west limb! Images taken with a modified B&W Quickcam attached to the prime focus of my 10 cm, f/10 Maksutov. Both images were taken on Aug 31st, the first at 12:30 UT, and the second at 13:45 UT.



Aurora—Sherman Williams

There was quite an active auroral display seen by a few of us here in the Valley the evening of Sept. 7th between about 10 P.M. and 1 A.M. They were most active in the first part of this period. The most striking aspect for me was the delicate shimmering that pretty well involved most of the northern half of the sky. To the eye, pale red hued patches were visible, also bright greenish patches waxed and waned. I did not take any photos but there are some photo samples of the activity on the Spaceweather aurora gallery.

Thickening cloud and waning activity ended further observing shortly after 1 A.M.

You may forward your submissions for eyesUp! to Observing Chair Dave Lane, or the Nova Notes Editor Michael Gatto by email, mail or phone:

Email dlane@ap.stmarys.ca
Phone 902.826.7956
or
Nova Notes Editor
Email michael@allura.com
Phone 902.453.5486

September 2002 Meeting Report

Paul Heath

Our meeting began with some serious arm twisting, hence myself as "scribe".

Standing room only, 49 in attendance, with 8 prospective new members. Mary Lou opened with a welcome to Glyn George from the St. John's Centre. She continued on the benefits of membership for the visitors present and a brief intro of the executive. Kudos to Barry Burgess for his photo of last years Leonid fireball being chosen for the cover of the 2003 Handbook, as well as November's RASC Calendar page.

Steve Tancock presented a brief "Ferengi" moment and then reviewed the furnace repairs at St. Croix. A new set of start-up procedures will be posted at St. Croix.

Requests for nominations of next years Executive should be presented to Dave Chapman before next meeting.

Our first talk for the evening was by Steve Tancock, "Rigs and Jigs from Steve's Astroworks" Steve presented a number of items that he has developed to help him construct telescopes as well as a number of innovations for observers. The first was a spraycan jig that allows one to spray paint the inside of a DOB without reaching inside. Next was a pair of tension spring turnbuckles for adjusting the tension of a Dob's altitude bearings. Next, an extended round sander pole and a router jig for cutting varied size setting circles was shown. A slip-mount camera adapter was a big hit. It allows for rapid digital photos with-

out changing eyepieces or needing to refocus. Next was a laser collimator alignment bracket for testing the alignment of laser collimators, one is mounted at SCO in the warm room. The next jig was an eyepiece socket sizer. Steve then showed his hand-made laser collimator, which sells for about \$40. Last was a jig that allows one to determine the focal length of a telescope's mirror, a hands-on optical bench.

Overall a well presented and well received talk. Great toys Steve! If you need a gizmo for an observing problem, check Steve's Astroworks first!

Our next speaker was recently repatriated Paul Gray. He spoke on his astro adventures in Maryland and Pennsylvania. Paul started by reviewing his search for an astronomy club within the light pollution of the Washington, DC – Philadelphia corridor. He chose the DelMarVa Star Gazers, near Dover, Maryland. This group stargazed at a site across Chesapeake Bay from Baltimore. With slides, Paul reviewed a mirror grinding weekend and star parties he attended. He also spoke on his handbook talks for the club and showed photos of an amazing auroral display at a star party. His move outside York, Pennsylvania required him to find a new club. Paul joined the York County Astronomical Society who yearly put on the Mason-Dixon Star Party, of which Paul showed some video. While there, he also edited their newsletter. He concluded by showing some video from our own Nova East star party this year, highlighting the rocket launches and star talks, a great talk and awesome photos.

We broke for high-calorie snacks and diet drinks.

We opened the second half of the meeting with an entertaining and heartfelt presentation by Daryl

Dewolfe. Daryl spoke on the "public" persecution of the SLIMEBALL observers. (A slimeball observer is an observer who will at times elect to go observing instead of the monthly meetings—or worse—leave during the middle of a meeting to go observing!) The full membership was finally revealed – Gary Weber, Johnny McPherson, Michael Gatto, and Darren Talbot. In recognition of their surreptitious observing, Daryl presented the membership with Tweed ball caps with S.O. (slimeball observer) embroidered on the back of the hats.

Calum Ewing told us about a red LED "Swat" toy flashlight that can be obtained at the local "Dollar Store". It works great for chart reading and can clip onto a pocket.

Pat d'Entremont did our What's Up segment. Pat began his talk with the upcoming (Sept.23) Autumnal Equinox. During the Equinox the sun rises due East and sets due West, and the day's length is equal to the night's length. Pat discussed the Harvest Moon and with ECU showed why the autumn full moon closest to the Autumnal Equinox only rises a few minutes apart on the days surrounding the Equinox, hence its usability by farmers harvesting into the twilight. An animated discussion ensued on why there was a slight discrepancy in the day-night length at the Equinox. An explanation that atmospheric refraction of the solar disc at the horizon accounted for this slight difference in the day-night time length was put forth by Dale Ells and Dave Tindall. Pat continued What's Up with a note on the many sunspots on the solar disc. Look for Mira in Cetus while it is at its brightest. It will fade below naked eye visibility by November. Mare Orientalis is again visible on the lower limb of the moon due to libration. Pat also commented on earth's "second moon", the Apollo 12 upper

stage booster that has recently been captured into earth orbit.

Paul Gray did our handbook talk on Telescope Exit Pupils (pg. 44-47). With the use of the chart on pg. 47 Paul explained how the exit pupil (the disk of light that actually enters your eye) is determined by the f-ratio of your telescope, and how age (by how large the pupil of your eye will open) limits the effective area you will be able to take in. By drawing a line from the left bottom corner of the chart up to your telescope's f-ratio, then extending a line up from your eyepiece focal length. You can then determine the actual exit pupil for your eyepiece/telescope combination. Based on age considerations, you will then be able to tell how much of the exit pupil your eye is actually viewing. Paul also highly recommended reading Roger Clarke's Visual Astronomy of the Deep Sky, which includes a lot of excellent information on observing. Paul also described how the eye works and why averted vision lets one see fainter detail, an excellent report.

Michael Falk spoke briefly on his son Dan's book, "Universe on a T-shirt". It can be obtained at Chapters bookstore. Dave Chapman deferred his talk on the library's new purchases until next meeting.

Anthony McGrath spoke on the HRM's Planning Process and the position paper on Light Pollution that he developed for the Halifax Centre. The position paper will soon be posted as a link on the Halifax RASC web site. Mary Lou thanked Tony for the timely and excellent work done on the Position Paper. Next month's RASC meeting will be on October 18th. Our speaker will be Francis LeBlanc from the Moncton Centre, and his talk will be "Spectroscopes and Stellar Classification". ★

Herald–Bobroff Astroatlas

Michael Gatto

The first few years I spent observing I had 2 tools for locating objects in the night sky, the Wil Tirion *Bright Star Atlas* (BSA) as well as custom charts printed from the computer program *Starry Night Pro*. This was a successful combination but it did have some drawbacks. A lot of time can be wasted printing your own charts by setting up different parameters, and depending on how you set everything up, certain types of objects, or objects of certain magnitudes may be switched off entirely. More bothersome than that, I found I was spending a lot of time printing out 5-6 maps to use that evening, and once at the telescope having no flexibility to allow for local conditions. More and more I found myself penciling in fainter objects on the BSA, which led me to finally conclude I needed a printed star atlas to use in the field. One atlas I had heard about was an Australian publication called the *Herald–Bobroff Astroatlas*, written by David Herald, an Australian astronomer, and Peter Bobroff, a computer programmer and amateur astronomer. Philip Harrington called the *Herald–Bobroff Astroatlas* the "...closest thing to a perfect star atlas yet." (*StarWare*, second edition, pg. 149.) After some additional internet research I decided to take a chance and order one.

Overview

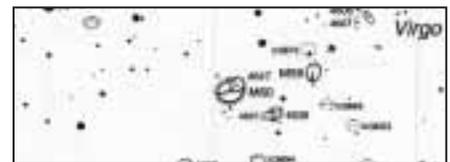
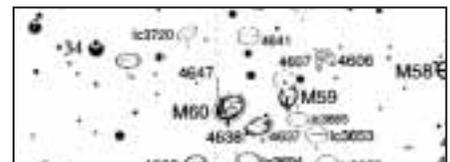
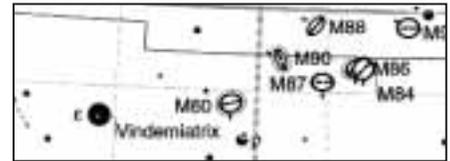
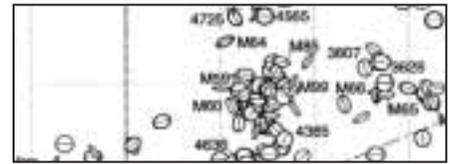
When it finally arrived I was a bit taken aback, it was larger than I imagined and heavier! The coil bound edition is approximately 13" X 19", and about 3/4" thick. Objects are printed in black on a white, moisture resistant paper that really is standing up well to the dew. The information is arranged in the following way. There is a lengthy introduction that contains information on all types of

object plotted including their inclusion parameters, the source data catalogues used, exceptions, and how to use the atlas itself. After the intro we get into the charts.

A series: These charts are single, whole sky charts that show the distributions in the sky of all objects plotted. Each type of object gets its own chart, plus some other variations, totalling 12 charts. These are not really helpful to the visual astronomer, but are more of a "snapshot" of the many different objects in the sky.

B Series: This set will look familiar to people who have used Wil Tirion's *Bright Star Atlas*. 16 charts cover the whole sky and plot stars to magnitude 6.9, and the brighter non-stellar objects. Compared to the BSA there are less non-stellar objects here (the entire Messier catalogue is not represented) but the scale is much larger. This set is great for finding the showpieces of the sky, as well as the constellations, and would be great for binocular observers. The second set of B charts is identical to the first but have North and South reversed so you can use the charts while facing North and not have the text upside down. The third variation of B charts is something very different but very useful. All non-stellar objects are removed and magnitudes of ALL stars to mag 6.9 are listed. Imagine the handy Sky Transparency chart around Polaris in our *Observer's Handbook*, except for the whole sky!

C Series: This set of charts is really the bulk of the work, here we get stars to mag 9.0 and deep sky to mag 14. All objects are reportedly plotted regardless of the complexity of the area of the sky. The charts are a generous scale of approximately 38° of declination by $\sim 30^\circ$ of right ascension. This scale requires 98 charts to show the entire sky. The scale of the charts is large enough to have enough familiar naked-eye stars to "hop" from, but detailed enough not to get lost in the eyepiece. The charts are also arranged from one page to



A full size example from all charts, from A – E, centered on M60.

the next in descending minutes of right ascension – when you run out of right ascension, you drop down another 38° and start again. At the bottom of the charts are dates and times for when the centre of the chart will be on the meridian for optimum viewing. The usual star magnitude scale is present in the margin, but there's a twist – a total number of stars is given for each stellar magnitude shown on that chart. Also in the margins are the numbers to find the neighbouring charts, especially helpful for changes in declination. Ahhh — but what about those areas of the sky that are crowded, say like the Coma–Virgo region, are these charts sufficient to get around those areas? Not really, that is what the D series of charts is for.

D Series: This set of charts is for those areas of the sky that are just so congested they really need a larger scale. This full sky is not covered but there are 42 charts that represent the most

crowded areas at varying scales that change depending on what is needed to represent the area. Some of the areas covered are Cassiopeia, Cygnus, Sagittarius, Scorpius, Orion (belt and sword), a full page map of the Pleiades with stars down to mag 13, and of course the Coma Virgo region with its multitude of galaxies. The Coma-Virgo area is so congested that there are even E series of charts at a scale of 1° per 1.5"! Most of the other E charts, and all the F charts deal with Southern objects like the Small and Large Magellanic Clouds, and the Carinna Nebula that are not visible in Northern latitudes. (Don't forget this book is Australian in nature.)

Object Symbology.

The most immediate difference one will see compared to Tirion-based star charts are the way the symbols are used to represent the objects. Some are represented quite differently visually, but more than that the authors have attempted to cram all kinds of information specific to that particular object into the symbol. In general, the brightest objects are represented with thicker lines than the fainter ones. For galaxies the following information is displayed in the symbol; the position angle, inclination, morphology (9 variations) and the size. For stars the spectral class is indicated if known for each star by reversing out a small white tick from the star "dot" that travels from top (the Blue-ist) to the bottom, (the reddest). The amount of information crammed into the galaxy symbols and the planetary nebulas in particular, in my opinion are like a good idea gone haywire. Some of the symbols are becoming familiar and with time maybe they will prove more useful. The symbols can be decoded at a desk, but are not so useful in the field, especially while observing when the maps are often upside down to match the view in the eyepiece.

A full size scan of the C chart showing M101, M51 and the handle of the Big Dipper.

Modifications

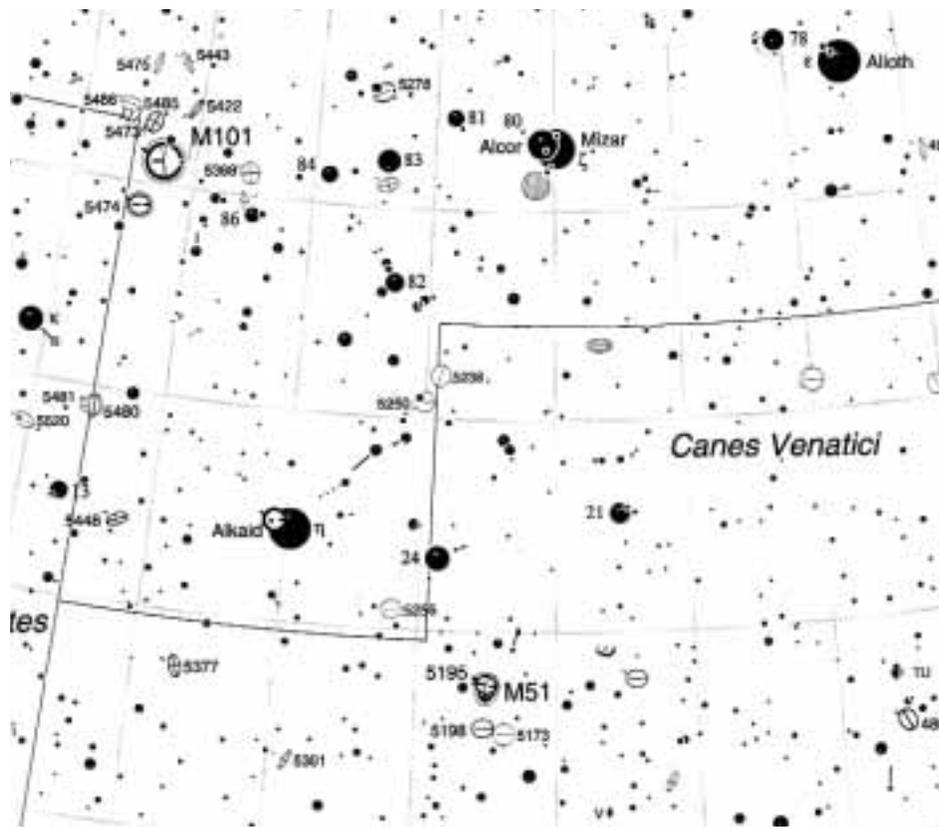
As I stated I wanted to use the atlas at the eyepiece, but I found the book as delivered too large and cumbersome if you are not using a table. Taking a cue from Paul Evans who had his copy of the *Bright Star Atlas* coil-bound for easier use, I decided to make myself new laminated card-stock covers, and have the book rebound into 3 smaller coil bound volumes. The A-B charts, the C charts, and the D-E-F charts. Now the individual sets are much easier to deal with all for the additional cost of around \$35. Also for ease of use in the field I wrote all the objects for the Finest NGC's and the Herschel first 400 in the margins of the appropriate charts for easy reference.

Conclusion

The *Herald Bobroff AstroAtlas* is a great star atlas and is proving itself as a valuable tool at the eyepiece. It's like having three atlas in one – the ease of use of a *Bright Star Atlas*, with the expanded scope of a *Sky Atlas 2000*, and the extra detail of a *Uranometria* for those difficult

regions, all in one book at a lower price. I am no longer wasting time printing individual charts every time I want to go out, now I can pick-up-and-go knowing that I have detailed maps for virtually every object visible to mag 14, and beyond where it counts the most. While the object symbol's extra information may not always be practical in the field, that in no way detracts from its usefulness as a good field atlas for finding the objects. The *Herald-Bobroff AstroAtlas* is great to either grab-and-go for a quick scan with binoculars, or detailed hunting of faint fuzzies, for me it's a great fit. ★

I wasn't able to locate a Canadian distributor but there is a U.S. one at <http://www.lymax.com/>, selling the atlas for \$89.00 U.S. A better alternative would be to go through the Canberra Astronomical Society at http://msowwww.anu.edu.au/cas/hb_astroatlas.html and buy one direct from the author Dave Herald. All-in, delivered it came to just over \$100.00 Cnd. Another review is available at <http://www.astroleague.org/>



Uranometria 2000.0

Craig Levine

I received my copy of the brand-new and extensively revised star atlas *Uranometria 2000.0* (Second Edition) this week, just published this month (November 2001) by Willmann-Bell. It comes in three volumes (which can be purchased separately) : Volume 1 covers the northern hemisphere down to -6° , Volume 2 covers the southern hemisphere to $+6^\circ$, while Volume 3 is a field guide to the non-stellar objects contained in the charts – over 30,000 of them. This third volume is worthy of purchase on its own as the object detail it contains is extensive, with many positional corrections undertaken for this edition.

Volumes 1 and 2 are a vast improvement over their predecessors. A great deal of attention to usability was put into these works. First, each volume has 4 full page finder maps at the very beginning, covering the areas depicted on the detailed charts inside. Stars to magnitude 5 are plotted, along with constellation boundaries and figures, and the Messier objects. The area covered by each detailed chart is overlaid, along with the chart number.

Next, each volume has a set of 22 maps that cover the entire celestial sphere – a bright star atlas down to magnitude 6.5. The constellation boundaries are displayed, as well as the detailed chart boundaries and numbers, along with the Bayer, Flamsteed, named stars, and Messier objects.

The main charts go down to magnitude 9.75, offering over 280,000 stars on 220 maps. Each map covers two pages resulting in a chart that's 18" by 12". The scale is 1.85cm per degree of declination. Stellar cartographer Wil Tirion and his partners have done a masterful job in creating

charts that are clear, clean and easy to read. The stars are depicted in smooth magnitude tapers, eliminating the unwieldy and confusing “binning” that has made other older atlases confusing to use in the field. Referring to the improved usability mentioned earlier, a number of improvements have been implemented: a dark tab along the right-hand edge of each chart tells you at a glance what area of declination is covered. These are keyed to the finder charts at the beginning of each volume; at the right hand side of each chart legend at the bottom of each chart are the constellations covered (up to four), in order of decreasing area displayed, with the primary one in large, bold type; and lastly and most important, all adjacent charts in all directions are displayed by bold arrows with white type-face telling you what chart number to refer to. There is a slight over-lap between charts as well, with major objects duplicated beyond the normal chart boundaries so you know that the adjacent chart has a showcase object on the boundary. The index for the two chart volumes lists proper star names, Bayer stars, Messier objects, and NGC/IC objects. All NGC/IC objects are plotted.

There are also 26 detailed charts that cover crowded areas of the sky and complex galaxy clusters. These charts have a limiting magnitude of ~ 11.0 .

The Deep Sky Field Guide is an impressive work. Positions for objects refer to the most recent research (extensive bibliography is included), and in many, many cases position data was extensively rechecked and corrected by the authors. One of them, Murray Cragin, detailed the painstaking two year process for me in an email just prior to publication. He rechecked positions carefully for $\sim 25,000$ objects, and took notes. In the notes, he details nearby stars and their positions, as well as nearby non-stellar objects too faint to be included in the charts (these ~ 1000 objects are listed as “challenge” objects, and will be of interest to those of you

lucky enough to own large aperture telescopes or CCD camera equipment). All objects, notes, and data chosen for this project were picked with the amateur observer in mind, hence, object extent excludes faint components that can only be detected by mainline professional observatories. As an example of detail that is of interest to me, the information for globular clusters includes: R.A and Dec (confirmed on DSS images compressed at only 10x); Name; Total visual magnitude; Brightest star visual magnitude; Horizontal branch visual magnitude; Diameter; Concentration class; Notes. (for much more detail on what is presented for the other object classes, go to www.willbell.com where six .pdf files cover the highlights and detail offered).

The catalog is ordered in ascending chart number, arranged by object type, and the lists are ordered by right-ascension. The index covers all catalogs used for object data, allowing the user to search for an object based on several names, depending on which catalog they're referencing.

I've had conversations with club members on the long-term viability of paper-based star charts, and opinions vary from those who say the paper-based chart is doomed to those who won't have anything to do with electronic charts. I regularly print detailed custom charts for my night's adventures, but unless I have a portable computer with a ready power supply and a screen that won't kill my dark-adaptation, I'm limited to hunting for targets on the charts that I printed. I believe that there is a middle ground, a place for both digital and print charts. For research and quick reference, the computer can't be beat, though I still find the print-outs to be somewhat wanting, though they are customizable. I like the feel, attention to detail, and tangibility of a solid star Atlas, and I usually have my *Star Atlas 2000.0* in the field with me, along with my printouts.

Will I use *Uranometria* in the field?

The set is heavy and cumbersome, but the detail included is invaluable. The second volume comes with three acetate overlays that allow you to measure distances and angles, and the third sheet lets you overlay circles that measure the field of view for eight eyepiece fields of view ranging from 15' to 3°, as well as a Telrad reticule. This alone guarantees their place near to me when observing. For hunting beyond my set targets and for untangling complex fields, I'll use this from my home observatory, and probably put them in the trunk of my car when I observe away from home, just in case I need a handy authoritative reference.

So what exactly is plotted in non-stellar objects?: 25,985 galaxies; 671 galaxy clusters; 1647 open clusters; 170 globular clusters, 377 bright

nebulae; 367 dark nebulae, 1,444 planetary nebulae, 14 star clouds, 260 radio sources; 35 X-ray sources; an unlisted number of Quasars, over 6,300 variable stars, and an unlisted number of double stars (the last six object types are not referenced in the field guide, as it is focused on DSO's)

Positives: detail; number of deep sky objects; authoritative positional accuracy painstakingly checked by hand; 3 atlases in one; the Field Guide is worth it as a stand-alone reference work; objects chosen for visual observer with a lifetime's number of objects for the CCD photographer as well; much easier to use in the field than SkyAtlas 2000.0; comprehensive; binding allows pages to stay open without weights.

Negatives: cost (about US \$150 for all three volumes); weight; acetate overlays are included in only the second volume; amateurs with larger scopes might wish for a fainter limiting magnitude; M42 region did not get a detailed chart treatment

Conclusion: If you have a computer-based sky atlas and use it extensively you can probably make do without this set. If you want a paper-based atlas that is much more portable than your desktop computer and is more detailed than your Sky Atlas 2000, this will not disappoint you. If it's in your budget, you will want this on your shelf and near to your telescope when observing. Those who are into CCD imaging or have telescopes with apertures greater than eight inches (20cm) will definitely want to have this set nearby at all times. ★

The toothpaste 4-out-of-5 astrophysicists recommend!

Walter Zukauskas

Nowadays, professional journals in astronomy are rather "august" volumes, jampacked with scholarly articles dense with data tables and graphs. No frills, no extras. Back in 1902, the *Astrophysical Journal* (vol. 16) carried its share of scholarly articles too. However, it differed from its modern number in one significant way – it carried ads! Not "notices", not "announcements", just plain "ads".

We've seen commercial announcements before in astronomical journals. Our own *JRASC* tells of products sold by the RASC. The *Astrophysical Journal* has told us of the latest University of Chicago books, or of Perkin-Elmer's latest optical products. But these inserts were always dignified,

restrained, and pretty closely tied to the subject at hand. Not so the 1902 ads.

The usual suspects, not surprisingly, had their notices. Kodak had one. So did Bausch & Lomb. Weston Standard reminded us of the superior qualities of their voltmeters and ammeters.

A little less directly related were the ads sponsored by Thomas A. Edison, Jr. for his Magneto-Electric Vitalizer which aided "the cure of disease by electricity". Horsford's Acid Phosphate was claimed to be "The Thinking Man's Tonic" – with obvious application to readers of the *ApJ*. And an astronomer stuck to the end of a telescope at Yerkes or Lick Observatories would be relieved to know that Dr. Deimel Underwear had a product right up their alley. "During every season and in every climate it means good health and solid comfort."

Then there were ads for toiletries, toothpaste, and disinfectant. For tonics and medicines. Ads for travel, and for apparel (to wear while traveling?), and for food (to eat while traveling?). Ads for stationery supplies, and for

typewriters. Furniture, pianos, and organs were put forth. As were reading materials, and photographs. And insurance – of course. All the necessities of life taken care of.

Yes, all. The *Journal* also included an ad for an "Art Calendar" featuring "four graceful poses from life; figures ten inches high, reproduced in colors. Highest example of lithographic art". The illustration shown was "the Alton's 1903 Fencing Girl" – and she was a beauty. Just heavenly.

Altogether in this one issue of *ApJ* there were 26 pages of ads! And they undoubtedly helped pay the way for the young journal. Printing for a circulation of a couple of hundred astronomers could put a publisher out of business but for crass ads and for the more genteel grants and donations. Conveniently, the "ad pages" in the *Astrophysical Journal* weren't numbered. When binding the journal issues together for posterity, you could remove these less seemly pages without loss of continuity. ★

Lunar Explorations

Graeme Hill

These images are of the region around Theophilus, Cyrillus, Catharina, and Rupes Altai, and progressively “zoom in” to the point where you’re looking at just the multi-peaked floor of Theophilus. In the wide(st) field image, a 480 km long Altai scarp can be seen as a series of shadows forming a long arc in the top right quadrant of this image. With an average height of 1000 m this scarp, known as Rupes Altai, forms a portion of a frozen shockwave left behind from the massive impact that formed Mare Nectaris billions of years ago. The next image centers on a portion of Sinus Asperitatis just east of Theophilus and displays in order of bottom most to top most (northern most to southern most, respectively. Lunar east is to the left in all images.) the trio of craters Theophilus, Cyrillus, and Catharina. Asperitatis is a lava plain littered with craterlets formed by debris that rained down after the impact that created Theophilus. The small crater near the center is Madler, and has a diameter of 28 km.

Zooming in once more you’re now looking at the fine trio of craters that are

Theophilus, Cyrillus, and Catharina. Being nearly identical in size (100 km, 98 km, and 100 km respectively) these make for great comparisons of different eras in the Moon’s history as they are quite clearly at different stages of erosion: Catharina is very old and has no visible central peak in this image—even the small craters within Catharina are flooded by ancient, frozen lava. While Theophilus on the other hand has plenty of detail along the interior of its walls, and a very prominent set of central peaks, four in fact. Cyrillus is somewhere in between. Its floor and walls display lots of detail and it does have a set of three mountains making up its central peaks, but they are more washed out and rounded when compared to Theophilus’ peaks and terraced walls.

Zooming in on Theophilus: Being the youngest crater in the triad (and a very young crater in general, around the same age as Copernicus...the crater, not the man.) it displays the most amount of detail in and around it than do the other two. While the walls loom 1200 m high above Sinus Asperitatis to the east they run nearly flush to the surrounding terrain in the NW and W and support the walls of Cyrillus along the SW rim, they also tower 4400 m above the craters floor. In the center of the crater lies a peak that rises about 1400 m above the floor, and upon closer inspection this peak is actually a set of four mountains that are very tightly arranged. ★

Images – Sony Cyber-shot (1.3MegPix) hand held with different eyepieces and Ep+barlow combos, using a 200mm F/6 Synta Dob.



Astro Ads

For Sale by the Centre

Celestron Ultima 8" Schmidt-Cassegrain Telescope

- excellent condition
- includes deluxe tripod and wedge, DC-powered RA drive, deluxe carrying case, Telrad and 50mm finders, 1.25" star diagonal, 35mm B&L and 15mm RKE eyepieces, and Celestron 2x Barlow.

Asking \$1,300.00

Contact Dave Lane at 826-7956 or dave@nova-astro.com

Mr. Angus Weeks has the following astronomical equipment for sale. You can call him about it at 902-765-8330, or mail him at Box 731, Kingston, NS, BOP 1R0

1- Mead DS 114mm f/8 reflector

- Motors on both axes with hand controller
 - Rigel finder
 - 6x30 finder
 - Electric Focuser for 1.25"
 - Autostar for “Go To”
- \$ 375.00

1- Dobsonian 114mm f/10 reflector

- Orion ‘red dot’ finder
- Celestron 6x30 finderscope
- Double Base (short and tall interlocking)
- Lead shot counterweight
- Sliding tangent arm with long thread adjustment for tracing in altitude 1.25" focuser

\$ 225.00

1- RKE 2.5x Barlow lens (long)

\$35.00



The St. Croix Observatory



The St. Croix observatory. Pictured from left to right, the RAScan, the warm room and the roll-off roof observatory.



The roll-off with the roof partially open.

Part of your membership in the Halifax RASC includes access to our observatory, located in the community of St. Croix, NS. The site has grown over the last few years to include a roll-off roof observatory with electrical outlets, a warm-room and washroom facilities. Enjoy dark pristine skies far away from city lights, and the company of like minded observers searching out those faint fuzzies in the night.

Members' Night

Every weekend closest to the new Moon there is a Members' Night at St. Croix. The purpose of members' night is to attract members from the centre to share an evening of observing with other members. It's also a great night for beginners to try out different scopes and see the sky under dark conditions. For more information or transportation arrangements, please contact the Observing Chairman Dave Lane at 826-7956. *Dates for Members' Nights for the following few months are:*

Fri. Nov. 1st (*Rain date, Sat. Nov 2nd*)

Fri. Dec. 6th (*Rain date, Sat. Dec 7*)

Directions from Halifax

(from Bayers Road Shopping Centre)

1. Take Hwy 102 (the Bi-Hi) to Exit 4 (Sackville).
2. Take Hwy 101 to Exit 4 (St. Croix).
3. At the end of the off ramp, turn left.
4. Drive about 1.5 km until you cross the St. Croix River Bridge.
You'll see a power dam on your left.
5. Drive about 0.2 km past the bridge and take the first left (Salmon Hole Dam Road).
6. Drive about 1 km until the pavement ends.
7. Drive another 1 km on the dirt road to the site.
8. You will recognize the site by the 3 small white buildings on the left.

Become a St. Croix Key Holder

For a modest key fee, members in good standing for more than a year who have been briefed on observatory can gain access to the St. Croix facility. For more information on becoming a key holder, contact the Observing Chairman Dave Lane at 826-7956.

RULES FOR THE 17.5" SCOPE

On Members' Nights the 17.5" scope must be shared by all members. The 17.5" scope can be used by anyone, but all views have to be shared with anyone interested in taking a look.

On non Members' Nights the scope can be used by individuals wishing to work on personal observing projects. Members should try to limit their use to under 45 minutes when other members are waiting to use it. Preference will be given to members who send an email to the hfxrasc list, or call the observing chair on the night they want to go out. If no one else wants to use the scope then feel free to use it all night, but it would be considerate every so often to ask members there if anyone has been quietly waiting to use it.

Please contact the Observing Chairman Dave Lane for more information or to book the scope at 826-7956.

Meeting Announcements

Halifax Centre of the Royal Astronomical Society of Canada

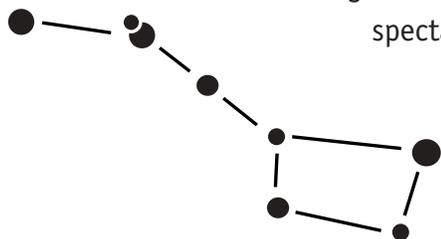


November 15

“Imaging the Heavens”

by Rajiv Gupta

For the November meeting we have a very special treat for the Centre. Not only is it going to be our Annual Meeting, but we are going to have our National President as our guest speaker. Dr. Rajiv Gupta is the Editor of the Observer’s Handbook and the RASC calendar. He is also a superb astrophotographer. His talk will be about imaging the heavens and it is guaranteed to be a visually spectacular presentation. Don’t miss it!



Meetings begin at **8:00** P.M.

Members of the general public are welcome.

All members—but especially new ones—are invited to come to the meetings 20 - 30 minutes early to participate in our new informal “Meet and Greet”. It’s a chance to ask questions about astronomy, the RASC, memberships, or to just say hello.

Room 176 Loyola Building
Saint Mary’s University *(See Map Below)*

The Halifax RASC

Executive meetings

begin at 7:00 P.M.,

and members are

welcome to attend.



Halifax RASC Executive 2002

<i>Honorary President</i>	Dr. Roy Bishop	
<i>President</i>	Mary Lou Whitehorne	865-0235
<i>1st vice-president</i>	Pat Kelly	798-3329
<i>2nd vice-president</i>	Steve Tancock	465-4092
<i>Secretary</i>	Craig Levine	852-1245
<i>Treasurer</i>	Paul Evans	423-4746
<i>Nova Notes Editor</i>	Michael Gatto	453-5486
<i>National Representative</i>	David Lane	826-7956
<i>Librarian</i>	Dr. Michael Falk	422-5173
<i>Observing Chairman</i>	Dave Lane	826-7956
<i>Councilor</i>	Clint Shannon	889-2426
<i>Councilor</i>	Dave Chapman	463-9103
<i>Councilor</i>	John Jarvo	897-0529

Meeting Location

Meetings are held every third Friday of the month, except for the months of July and August. Meetings take place in room 176, Loyola Building (#3 on map) at Saint Mary’s University.

1. McNally
 2. Sobeys Building
 3. Loyola Academic Complex
 4. Loyola Residence
 5. Patrick Power Library
 6. Science Building
 7. Burke Building
 8. Bookstore
 9. Alumni Arena
 10. The Tower
 11. Rice Residence
- P = Parking

