NOVA NOTES

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THE NEWSLETTER OF THE HALIFAX CENTRE OF THE RASC
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NOVA NOTES, the newsletter of the ***Halifax Centre of the Royal Astronomical Society of Canada***, is published bi-monthly in January, March, May, July, September, and November. The opinions expressed herein are not necessarily those of the *Halifax Centre*. Material for the next issue should reach the editor by **October 31, 1992**. Articles on any aspect of astronomy will be considered for publication. "Letters to the Editor" or to our resident expert: "GAZER" are also most welcome. The editor can be reached at:

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Inside This Issue...

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Editor's Report

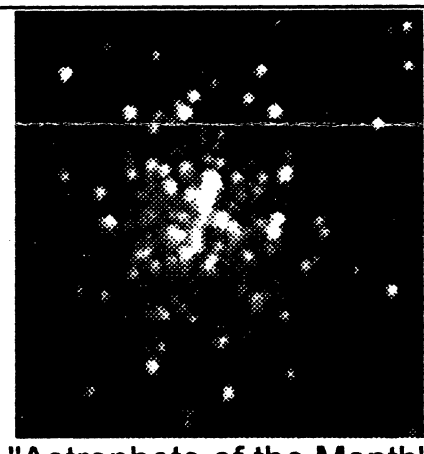
What a busy summer. It went by so fast and I have nothing concrete to show for it. First there was the GA, then Stellafane, then my new job, then Nova East; it just goes on and on...

Yes, a new job ... I have changed jobs over the summer and am now being paid to do astronomy during the day! Yes, an amateur astronomer's dream come true. I'm now the Technician at the Department of Astronomy at Saint Mary's University. Does that make me the "Godfather of the Halifax Centre" like Randall Brooks was so named?

To change the subject to more serious matters, one item that our president did not mention in his report (see the next article) is that the executive of the Centre will be badly in need new blood come next year's term starting in January. A few of the key executive members are reportedly going to step down after this year to concentrate on other Centre business such as the GA and Nova East so if you would like to "jump in", now is the time! All executive meetings are open to the general membership. Please drop in or contact a member of the current executive. Ω

President's Report:
by Patrick Kelly

I hope that the summer went well for all of you. I have had numerous astronomical events to attend over the summer. First was the General Assembly (GA). Dave wrote a summary in the last issue of *NOVA NOTES*, but he neglected to mention that we brought back two prizes in the display competition! Dave won the award for "best instrumentation display" with his MICRO-GUIDER, while I brought back the prize for the best "non-observational display" with a selection of astronomical stamps and first day covers (I suppose the word will get out sooner or later that there



"Astrophoto of the Month"
The Hercules Cluster (M13)

David Lane and *Joe Yurchesyn* took this image with an SBIG ST-6 CCD Camera using the 16" telescope at the Burke-Gaffney Observatory, St. Mary's University. The amazing thing about this image is that not only was it only a 30 second exposure, but it was taken in the city of Halifax through haze and with a Gibbous moon! CCD's are wonderous!

was only one entry in my category, which doesn't bother me in the slightest!). There will be a detailed write-up in the next **BULLETIN**, so I won't add anything else, except to say that we had a great time!

As you are aware, Halifax will be hosting the GA next year, and those of us who are making the plans, are going to be looking for some help from the rest of the membership. Why not make it easy on yourself and volunteer now! Mary Lou (865-0235) is the chair of the GA committee so contact her before she contacts you!

After Terence Dickinson's talk in April, John Reppa of the *Cape Breton Astronomical Society* asked me if I would be willing to give a talk at this year's **Highland Star Party**. I sort of hummed and hawed, but then, feeling honour bound as centre president said "Yes". I'm glad that I did! As I wasn't able to go up for the whole weekend (as a result of still settling in to the new house), I went up on Sunday and arrived there around supper time. After getting the tent pitched, I had a chance to chat with those who had weathered the bad weather of the previous day. As it turns out they had over two dozen amateur astronomers there over the weekend, although not all at any one time. That is an excellent turnout for a relatively new star party. They also deserve credit for designing one of the best star party T-shirts that I have seen in a long time.

As the time of my public talk neared, the clouds began to break up and John and I went up to the plateau to have a look at what was upwind of us. Clear sky! By the time that we got to the amphitheater it was perfectly clear. The talk that I gave was on the Solar System and I had a full house. The park staff there actually go around to each of the campsites after supper to tell people what will be going on in the amphitheater that evening! I answered a large number of questions afterwards as well as giving an impromptu planetarium show. You have no idea of the thrill I experienced to be able to give a planetarium show from the middle of several hundred people and being able to use the sky instead of a dome (Boy, do the stars ever look sharp!). I just wish that I had an arrow that could point things out a bit better than the old quartz halogen flashlight.

Back at the campsite, the sky was as black as I had ever seen it. John found me staring at the sky, in utter amazement of the large black hole in the Milky Way near Deneb. It looked like someone had spilled black ink on the sky there. As I found out later, it is often called the Northern Coal Sack. I had never even noticed it before, but that night it seemed to jump right out at you. And, of course, I hadn't brought either a telescope or a pair of binoculars! I hope that a lot of you who have a chance will consider going next year (as long as you also show up for NOVA EAST!).

I hope that you all liked the "Reach for the Stars" competition that we had at the June meeting as much as I did. I am certain that we will be having a similar event next June. If the format stays as amateur versus professional, the pros are going to have a run for their money next year as Cameron Reed, their star player, won't be here next year. He and Laurie have moved to Michigan where he will be teaching Physics at a small private college. In addition, he will be responsible for running the planetarium there (although the idea caused him some panic until Laurie assured him that she would give him all of the help and support that he needed). At the June meeting we presented Cameron and Laurie with a certificate of appreciation, which we dubbed the Gemini Award, since it was to recognize the contributions that both of them have made to the centre. I am sure that I speak for the entire membership in thanking them and wishing them well. Hopefully, they will make it back to Halifax on occasion (perhaps for next June's "Reach for the Stars!").

You should have received a renewal notice with this issue (except for life members and those who are already paid for this year). Please take the time to send it in as soon as possible, so that we can get as many people as possible sent of to national office. This makes life a lot easier for us as well as them, especially since Rosemary Freeman (the national Executive Secretary) has to personally mail out back issues of the *Journal* and **BULLETIN**.

That is all that I can think of for now. Clear skies until next issue! Ω

Letter to the Editor

Dear Editor:

With the advent of fall and easy accessibility of Triangulum for observing, I would be very interested in hearing from anyone who has observed **Cr 21**.

In November 1987, I was hunting for the faint galaxy **NGC672** in Triangulum, and while 672 eluded me that night I did come across a neat little group of stars near the position of the galaxy. at the time I had no idea what it was but a year later *Uranometria* made it into my hands it appeared that the group must be **Cr 21**. However, in the atlas **Cr 21** was plotted about 10 minutes north of a small semi-circle of stars that looked just like part of the group of stars that I had identified as **Cr 21**. Were there two clusters in the neighbourhood? Try as I might I have never spotted a cluster just north of the group plotted in *Uranometria*.

The Shape of the cluster reminds me of a fat 16th century sailing ship and I think of it as the boat cluster. It is described in Luginbuhl & Skiff's book as a circlet of stars and a doubtful cluster. The Webb Society's handbook also calls it a doubtful cluster, and Harrington's book on observing with binoculars mentions it as looking like a golf putter. None of these books mention two clusters close to one another and all the descriptions fit the object I have observed. I think the **Cr 21** in *Uranometria* is just misplotted but would like to have that confirmed. I would really enjoy hearing from someone else who has seen it and even exchange a sketch with them.

The listed coordinates of **Cr 21** in Luginbuhl & Skiff are in 2000 coordinates: α = 1h 50.1' δ = 27° 10'. It is found on charts 92 and 128 in *Uranometria*.

I did find NGC672 a couple of nights later using averted vision. Ω

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Nova East 92 Report:
by Doug Pitcaim, Observing Chair

Well, tempus fugit indeed. Was it really six years ago that Glen Roberts, Mary Lou Whitehorne and myself cajoled everybody else into trying Fundy National Park out as a site for the Halifax COW (That's Camping Observing Weekend for all you newcomers) Remember those maps Glen drew up? The rather erroneous ones? Then Glen had the audacity to not even show up? Ah the photons he missed...

But the park was a success story, and the astronomical gurus on the Halifax Executive bowed to our persuasion and Nova East was born. Now, for better or worse, we have a regular annual star party happening at Fundy National Park.

This year we initiated a registration fee. The fee of $10 is optional, but you must pay it to be in the draw for the various door prizes, (purchased from last years fee, or bummed from various suppliers in return for advertising kudos) We had 35 registered astronomers, and friends and family totalled about 75. We have responded to past comments, and this year's spaces in the registration form for comments were almost exclusively positive.

I think the ultimate test of a star party is a clouded out weekend. This astronomical equivalent of a becalmed kite festival will allow the participants to really get to know each other. We gabbed, and prayed for clear skies, and ate, and hiked, and laughed, and examined telescopes, and had a great time, all without collecting very many photons. Sunday night reluctantly cleared for about one hour, and that was it. For the participants, and especially for those brave souls who spent the only clear hour showing the public some sights, the clouds were a disappointment. But we have had at least one clear night for every Nova East weekend so far. Perhaps we just played the odds once to often.

We sold all 36 Tshirts, and then sold another 6 we hadn't printed yet! We have a few left over, contact Pat or myself if you would like one. They are deep purple, with the statement, "The stars rise first at Nova East, then later at Starfest, Stellafane, The Texas Stars Party, Riverside, Mt.Kobau etc., etc."

Incidentally, we are going to change the Park's expectations of us, so that the public viewing will only happen on one night, likely Friday night. Also we are soon to move to a different site at the Park. This will be a higher altitude (Saturday night was clear for the high side of the Park.) and will also be larger. It should accommodate more people, as well as separate the tents, lights and bonfires from the telescopes. Also we are going to move to the Thanksgiving weekend as an experiment the next time the new moon agrees. It will be cool, but bug free, and Oh the foliage!! I'll fill you in in a future issue of Nova Notes.

Was Nova East '92 a success? I think so. People were there from all over. We've got something started here folks. See you there next year.

ps. For planning purposes, next year's Nova East will be held on the August 20-22 weekend. Ω

Halloween Horror Story: "So, Shop Canadian Eh!"
by Daryl Dewolfe

It it June of 1991 and the final decision is made! After sequestering various coins of the realm in caches throughout the hours its now time to order that Thousand Oaks Type II solar filter. I had set my hopes on eons ago. A patriotic impulse strikes and I decide to shop local at the supposed "big time" astronomy store in Upper Canada, even though I had "price shopped" the magazines south of the border.

The call is made. The order is given. "Seven days and you will have it ... no problem," says the voice. "Thanks for the VISA payment." Fourteen post office checking days later, I called again. "Item in transit." SEVEN days later, I called again. "We'll send you another one," says the voice. ONE MONTH late the first solar filter arrives. It was the WRONG SIZE! I returned it to the sender and called to cancel the order. "Give me my refund!" "OK, no problem," says the voice. TWO MONTHS after the initial order, the second solar filter arrives. Its the same size as the first one! So, I returned it and called again to ask for my refund and a different voice said, "Everything will be fixed up, bye." I called THREE months after ordering, FOUR months after, FIVE, SIX, SEVEN, EIGHT, and NINE months after! "Where is my sun dogging refund of two hundred plus clams!" I spoke to the head honchos and several multiple personality type salespeople. I received fifty tons, a pound of apologies, and ad infinitum BS!

On January 28, 1992 the gloves came off!! Consumer and Corporate Affairs (bless their federalist hearts) have become allies in the cause and crank up the heat. Soliciters called. Faxes flying. The air is thick with grape-shot.

On April 26, 1992 a short note and a refund check (not including over $75 in mail and telephone costs) finally arrived. Buy Canadian, Eh! Not from this firm buddy, Beware fellow astronuts - its a jungle in our own backyard.

Did I ever get a solar filter, you ask? I called Thousand Oaks (in California) directly and they delivered in SEVEN days - the correct size, cheaper, and faster. Why? Prevailing wind currents, I guess. Ω

Scheduled Observing

Friday, October 23 at the Beaverbank Site
(cloud date - Saturday, October 24)
Fri., November 20 at the Beaverbank Site
(cloud date - Saturday, November 21)
For information call Doug Pitcairn (463-7196) or Dave Lane (443-5989)

BOOK REVIEW: "The Audubon Society Field Guide to the Night Sky"

by Len Larkin

The list of observing guides for beginners grows each year as yet another author tries to fill that important niche in amateur astronomy. This latest offering, a hefty vinyl-clad pocket book (100mm x 200mm x 25mm), was written by Mark Chartrand, with assistance from an impressive list of contributors. One of the strong points in the Audubon guide is its supurb organization and cross-referencing. That's really important when you consider that there are over 400 text pages, 250 colour photos, and more than 100 star charts! The organization is: Introductory text; Charts (lunar, seasonal, constellation); Photos (constellation, selected deep sky objects, solar system); and Descriptive text (constellation, solar system). A person might start reading about a constellation, then jump to a star chart of the area and finally, pursue some of the excellent colour photos of related objects - all quite effortlessly.

The down side of this publication is its leaning towards the acedemic side of astronomy instead of practical observing. Being mainly channelled into observing, I like having the acedemic part for a quick refresh of the basics, but a beginner will probably get turned off with this stuff. The associated drawings are good (excepting the confusing designations) but some of Chartrand's terms are a bit much. Ever hear of Topocentric coordinates? Every dobsonian user knows them as Alt/Az.

The charts by Wil Tirion reach 5th magnitude and show deep-sky objects. Unfortunately, the selection of objects os not consistant. For instance, the constellation of Cassiopeia shows the esoteric faint nebulae NGC1805 and 1848, NGC185 (a 10th magnitude elliptical galaxy) along with clusters M52 and M103. The binocular clusters NGC457 and 663 were omitted. In Vulpecula, we find M27 and cluster NGC6940 located, but Bricchi's cluster (the Coathanger) is missing!

The descriptive constellation text is heavily weighted toward history and mythology along with some brief info on bright stars and deep-sky objects. The text for any object is basically a verbal listing of data with little hands-on observing information.

Chartrand is not immune to misleading or equivocal statements either. We find: "When binoculars are securely mounted, you can see more distant objects..." - ??? If you want some friendly discussion at a club meeting, just use this quote: "Catadiaptric telescopes, such as the Maksutov and Schmidt-Cassegrain systems, are more expensive than either reflectors or refractors but often perform better." Being an APO Refractor owner, all I can say is Ha! Ha!

The eye-catching part of this book is the excellent collection of colour photos, with works from professional facilities and also prominent amateur astrophotographers such as John Sanford, Lee Coombs, Tony Hallas, Jack Newton, and Rev. Ron Royer. The photos, although small (85 x 95mm), are well printed and are east to locate (constellations alphabetically, deep-sky objects numerically). Because of many contributers, the photos, not surprisingly, are presented in a variety of image scales. On the other hand, the last of consistant orientation of the photos is unforgivable. North can be found in just about every direction, but most commonly to the left or right (rarely towards the top). The final blow to someone trying to obtain useful information from the supurb photos is that several of the best-known objects have been printed mirror-imaged! I found M1, M13, M31, M33, M51, M57, M81, M101 along with NGC's 7635 and 6992 (Veil Nebula) reversed. I'm not saying that reversed prints are bad - a bood of such prints for amateurs who use star diagonals could be very useful; but please, let's be consistant! Mercifully, only one deep-sky photo was mislabelled; the photo labelled M18 is actually nearby NGC6645. Several of the constellation photos were too dark to be of use, and while the direction of celestial north is shown, the photos are still challenging (especially for the beginner).

In summary, I really like parts of this book. The superb photo collection is easy to access and the book is a handy source of sky-lore. Beginners will find the Moon section very useful with an uncluttered chart and photo for each of the eight phases of the lunar cycle. The monthly sky charts are rather confusing (all-sky maps such as in the *Observers Handbook* would have been better), but the associated text is very good - just like a friend showing you the night sky. I also personally feel that the constellation-per-page charts (found in many books) are more difficult to use than good wide-area charts such as *Sky Atlas 2000.0* or the charts in Terrence Dickinson's *Nightwatch*.

Amateurs (beginners or advanced) wil not find this publication to be the perfect observer's handbook/atlas, but they will find an appealing collection of photos, charts, and sky-lore. Ω

Constellation of the Month: Cassiopeia

by Joe Yurchesyn

According to Greek mythology, Cassiopeia was the queen of Ethiopia. She was a women of great vanity, whose boasting forced Cepheus (her husband and the king) to prepare a sacrifice of their daughter Andromeda to the sea monster Cetus, to appease Zeus. Fortunately, Perseus - riding the winged horse Pegasus - arrived on the scene in the nick of time, slew Cetus, and saved Andromeda. They were married and lived happily ever after. *[I always like a story with a happy ending!]* Of course, all these mythological characters are represented by constellations.

Cassiopeia, the Queen, is an original constellation dating back to antiquity. It is a small constellation dominated by five 2nd and 3rd magnitude stars in a W or M shaped asterism, positioned directly in the

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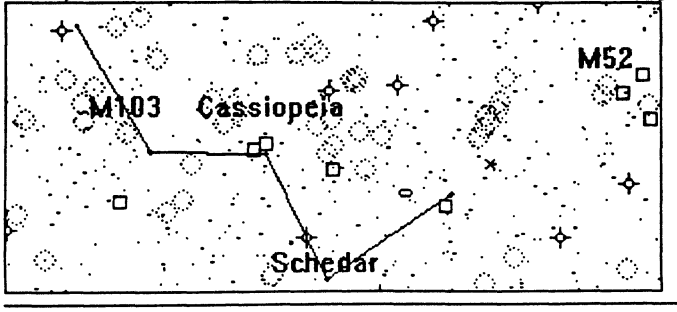
middle of the winter Milky Way between Perseus and Cygnus. Following the Milky Way east, takes you to the constellation Perseus, via the famous Double Cluster (NGC-869/884) - which is just outside Cassiopeia's boundaries. Following the Milky Way west, takes you to the constellation Cygnus, after first passing through the constellation Lacerta. Cygnus, rather than Sagittarius, dominates the summer Milky Way for more northern observers. As it starts to set in the west, with the onset of autumn, Cassiopeia begins to dominate.

Cassiopeia jumps out of the sky, making it a convenient sign post from which to learn the constellations or just to become oriented. Lying in the plane of the galaxy, Cassiopeia is rich in galactic clusters and nebulae. Of some 35 star clusters, the best offerings are M-52, M-103 and NGC-457. *[See "Deep Sky" Issue 8 (Fall 1984) for more details on the star clusters.]* There are also emission and reflection nebulae. Surprisingly, three elliptical galaxies (NGC-147, 185, 278) - all associated with the Andromeda Galaxy - are visible, despite the proximity of the Milky Way.

The heart of the constellation is the five star asterism. Each of these five stars is unique. Alpha is believed to be variable, and has several optical attendants. Beta is an eclipsing binary. Gamma, surrounded by two emission and reflection nebulae (IC 59, IC 63), is erratically variable, due to it being a type Be⁻ blue supergiant star. *[Gamma is one of the Be⁻ stars presently being studied my Mary Lou Whitehorne.]* Delta may be an eclipsing binary, and is an outlying member of the moving Taurus group, associated with the Hyades cluster. Epsilon, at 520 light years, is 2 to 10 times more distant than the other four.

Located near Delta and opposite Epsilon, NGC-457 is one of the best non-Messier star clusters in the northern sky. It shines at 6th magnitude, with 100 stars brighter then 13th magnitude spread across 20'. Some 60 are identified as being true cluster members. At a distance of 9,300 light years and with a diameter of not less than 30 light years, the total star population - allowing for the presence of the common low-luminosity stars - may easily be several thousand.

The star Phi Cassiopeia, at the southeast edge of the cluster, shines at 5th magnitude. If it is a member of the cluster, it would be among the most luminous stars known in the galaxy - shining at 275,000 times the brightness of the sun - even brighter then Deneb (@ 60,000x) and Rigel (@ 57,000x). By way of comparison, the sun, at 9,300 light years, would be magnitude 17.3. While not definitely proven, membership in the cluster is supported by radial velocity measurements, polarization studies of the cluster, lack of measurable proper motion, and a spectrum which is that of a highly luminous supergiant. Also located near Phi is HD 7902, another supergiant candidate.



NGC-457 is sometimes called the "Owl Cluster", because the brightest cluster members are arranged in distinct lines and curves outlining the apparent form of an owl, with the bright stars Phi and HD 7902 representing the eyes. Telescopes smaller than 6" show this effect best. I think it resembles a miniature Gemini, and it is always worth a quick look.

The great supernova of 1572 - the most brilliant nova observed in 500 years and one of only four supernovae ever observed in our galaxy - was first observed on November 6th, 1572, and finally faded from naked eye visibility in March of 1574, after 16 months. First noticed by Tycho Brahe on November 11th, when it was brighter than Jupiter, he made naked eye position and brightness observations. His light curve is a valuable record for modern astronomy, so it is now referred to as "Tycho's Star". Tycho's position measurements are sufficiently accurate to determine its location to 30". The position 0h 22m 0.2s RA, +63° 52' 12" Dec, (1950) shows no star today, but faint wisps of nebulosity have been detected. However, observations at radio wavelength have confirmed the existence of a supernova remnant. It is estimated to be about 10,000 light years distant and the expanding shell of gas, as determined from radio measurements, is 7.4' in diameter, or about 20 light years. The average velocity of expansion is 9,000 km/s. This compares to 950 km/s for the Crab nebula. In all probability, the Cassiopeia supernova is surrounded by an equally extensive nebulosity, but conditions may be different, and the cloud remains invisible from a lack of illumination. Fantastic illumination, from the "synchrotron process", in the Crab, causes it to outshine the Tycho's Star remnant by 10 times at radio frequencies. Perhaps the Crab is an example of a supernova remnant which is not the norm?

Just a little something to ponder, when you next gaze in the direction of Cassiopeia. Now!... If I could just figure out a way to "see" in radio? Ω

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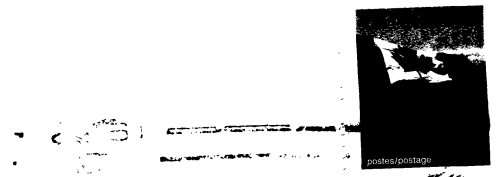

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Notice of Meetings

Date: **Regular Meeting - Friday, October 16th: 8:00pm;;** 7:00pm for the executive meeting (all welcome).
Place: Lower Theatre, Nova Scotia Museum, Summer Street, Halifax. Access is from the museum parking lot.
Topic: **Terry Craig** of Dalhousie University will be speaking on the topic of **Solar Neutrinos**.
Date: **Annual Meeting - Friday, November 20th: 8:00pm;** 7:00pm for the executive meeting (all welcome).
Place: Lower Theatre, Nova Scotia Museum, Summer Street, Halifax. Access is from the museum parking lot.

Topic: Dr. Mike de Robertis of York University will be speaking on the topic of GRAVITATIONAL LENSES
Also, the Annual Meeting business will be conducted.

Halifax Planetarium Shows

The Halifax Planetarium, located in the Dunn Building at Dalhousie University, provides public shows each week on Thursday evenings at 7pm. Shows are given on various topics. Contact the *Nova Scotia Museum* at 424-7391 for details.

Burke-Gaffney Observatory Tours

The Saint Mary's University Department of Astronomy provides public tours at its Burke-Gaffney Observatory. Tours begin in Room L155 of the Loyola Building and are held on the 1st and 3rd Saturday of each month at 9pm in October, and at 7pm thereafter. For further information call 420-5633.

Scheduled Observing Sessions

(see page 4)

1992 Halifax Centre Executive

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