

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 February, April, June, August, October, and December. The opinions expressed herein are not necessarily those of the *Halifax Centre*. Material for the next issue should reach the editor by **March 18, 1994**. 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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EDITOR/PRESIDENT'S REPORT

Well, this is my first report as both *Nova Notes* Editor and your new Centre President. I will try to use this column to keep you abreast of "what's going on" in the centre, including what your "executive council" is up to behind its open doors! Remember, you are always welcome to sit in on and participate in a council meeting.

First of all this is the first issue of *Nova Notes* to not be printed by the NS Museum. This change was decided primarily to make the production schedule more timely. The normal previous "turn-around" was about 3 weeks. This made it very difficult for your editor to put timely information into the newsletter (that is, make it a "news" letter, not a "history" letter), like meeting information, current astronomical news (like this issue's Hubble pictures), etc. I hope the new format is as nice as the old format. Notice that I have changed a few fonts, too. I have volunteered my services to assist the National Publications Committee to produce a "mockup" of a new publication (a combined Journal and Bulletin). In this process, I will be learning to use "Pagemaker", a desktop publishing program. I will probably use this program to produce future issues of *Nova Notes* making it even more fancy.

Congratulations are due to **Paul Gray** and **John Reppa** for completing their Messier list. Their documentation is being sent to National Office so that they will receive their "official" national RASC certificate.

We have begun the planning for a public observing session during the May 10th Annular Solar Eclipse, which passes right through Nova Scotia. This session will be conducted with the Saint Mary's University's Astronomy and Physics Department.

If you would like to come and help or just help with the planning, please let me know. We will be purchasing a large quantity of eclipse viewers (about 1,000) to hand out to the public.

Well that's all I can think of for now. Until next issue... Ω

OUTGOING PRESIDENT'S REPORT by Patrick Kelly

It seems hard to believe that my two year sentence, I mean term, as Centre president is over. Some of you may recall that my decision to "run" for president was brought about as a result Mary Lou leaving the post to head up the committee to organize the General Assembly. At that time I had said that if no one else would, I would do it, and then having people hold me to my word! I have learned a lot of new things as a result of the experience (and had some fun along the way).

Most outgoing president's reports have some sort of list of highlights of their accomplishments or the goals that they had set when they took office and how well they think that they did at it, etc. I find myself in the rather interesting position in the sense that when I volunteered I did not have a list of objectives or an agenda that I wanted to see carried through. I saw my role over the last two years as more of a "caretaker" president who was simply there to keep things

working smoothly so that the people organizing the G.A. could concentrate on their work. In that respect, I think that I did reasonably well.

The society itself has also undergone some changes over the last two years which have had an effect on centre operations. One of the most noticeable changes has been the introduction of two new publications, namely the Observing Calendar and the Beginner's Observing Guide. I will be closely tied to these developments, since the "handbook" vice-president's job now includes all society publications. Another major item that came up during my term was the membership survey. It makes for interesting reading and I am sure that there will be quite a few changes in the near future both in the centre and at the national level to reflect the comments made.

Lastly, and this is tied to the general membership survey, I just checked the centre's membership database, and while there will undoubtedly still be some late renewals coming in, at this point we have forty-four members from last year who have not yet renewed. In general, we (and probably most Centres) face a sizable turnover in membership from one year to the next. While it is nice to see that we are attracting new people, the fact that a lot of people join for only one or two years is something I think needs more looking into. There could be many reasons for this, including membership fee increases, changing hobby interests, a feeling of not getting their money's worth, inability to attend meetings or something else. Since our database of former members goes back quite a few years, I plan on arranging for a separate survey to go out to former members to find out why they did not rejoin.

The president's position is now safely in the hands of Dave Lane, who does have an agenda of items that he would like to see put in place (*Ed - I do???*). I wish him all of the best during his term. For my part, I will join Joe and Mary Lou in the special heckler's seating section

which is reserved for "Former Presidents and Chief Yahoos". If nothing else we will keep Dave on his toes, occasionally remind him that our solar system does contain Venus and hopefully support him in whatever ways that we can. Ω



**MEETING
REPORT:
NOVEMBER '93**
by David Turner

On November 16th, I posed the following question to the students in my first year course in introductory astronomy, "What season is it?" This was followed by the usual amount of nattering, and more than one individual was heard to grumble, "I didn't know there was going to be a quiz today." After a few students offered an uncertain reply of "Autumn?", I explained that this was "a trick question", which resulted in a few anxious suggestions of "Winter?", "Spring?", and even "Summer?". I then explained that there had been a New Moon on November 13th which had been accompanied by a partial eclipse of the Sun, and that the Full Moon on the morning of Monday, November 29th, would be accompanied by a total eclipse of the Moon (it was cloudy here, unfortunately). At this point I repeated my question, "What season is it?" More puzzled looks.

The answer to the above question is "eclipse season", a period of roughly a month occurring slightly more frequently than twice a year, during which eclipses of the Sun and Moon are possible (this is a period when the line of nodes of the Moon's orbit points towards the Sun). The November 19th meeting of the Halifax Centre fell almost exactly in the middle of this eclipse season. It might be worth sponsoring a contest to identify the last time at which two such momentous occasions coincided or, indeed, the next time this will occur. Because eclipse seasons slowly regress through our calendar while Centre meetings seem destined to fall on the third Friday of each

month, I am sure that this would prove to be an interesting exercise.

The November meeting of the Centre actually began with Pat Kelly introducing the new ruling junta for 1994, consisting of most of the old ruling junta with the addition of Blair MacDonald to the ranks. The new version of the Beginner's Observing Guide (BOG) was then flogged to the membership, and I gave a brief announcement concerning the remarks given above. This was a reasonably well-attended meeting, with nearly 50 people in attendance.

There was no main speaker for the November meeting, which was designated as Member's Night. The main part of the meeting began with the reintroduction of Handbook studies, and Pat started the series rolling with a discussion on finding planets — Uranus and Neptune in particular — using the Handbook charts in conjunction with star-hopping. He followed this with a brief discussion of the computer database he has developed to contain the contents of his observing diary.

Clint Shannon then took the floor to talk about his computerized and electrically-controlled Meade telescope and its use in the field, with details on the various practical problems that he has encountered. A demonstration of its use was given with the assistance of Dave Lane. There were many questions concerning the cost of such a system, which was a "mere" \$3500 when Clint made his commitment. Dave Lane's follow-up talk on his software package "The Earth Centered Universe" had a natural tie-in with Clint's discussion, since the software can be used to control computerized telescope drives.

... about his computerized and electrically-controlled Meade telescope and its use in the field ...

The next speaker was Dave Chapman, who talked about his experiences in writing articles for the McDonald Observatory's Stardate

announcements on American Public Radio. Dave has written a number of pieces that were made into Stardate productions on compact disk (for pay, of course), and he played a couple of these — *The Sky is Falling*, and *A House of Comets* — for those in attendance. Following him was Paul Gray who made a presentation on light pollution with the help of a new slide set from the International Dark Sky Association.

The next speakers also presented slide images of various types. Dave Lane showed slides taken directly from his computer monitor of CCD images acquired at Nova East. Roy Bishop showed some of his always-interesting collection of slides, this time from Starfest, including shots of road signs and individualized license plates relating to the event. Finally, I showed my own slides of sunrise sequences taken from my deck in Cole Harbour and a long sequence of slides of the aurora borealis which were duplicated from photos taken by Wilf Meier of the Sudbury Astronomy Club when he was living in Yellowknife. The last set of pictures brought a number of "oohs" and "aahs" from the audience, as well as a suggestion from Paul Gray that some of the photos should be turned into Christmas card jackets (which I did manage to do for a few lucky people on my Christmas list). The subsequent period of refreshments was shorter than usual due to the lateness of the hour. Ω



**MEETING
REPORT:
DECEMBER '93**
by David Turner

The pre-Christmas meeting of the Centre on December 17th was a special event which did not feature a main speaker. Dave Lane (incoming "head honcho") chaired the meeting in the absence of Pat Kelly, and the first item of business entailed re-taping some of the Christmas garland dangling in front of the projection screen so that it would not block slide

images. There were only a few dozen in attendance.

Paul Gray gave a brief presentation on the recently refurbished 10-inch *i/6* Halverson telescope on its Dobsonian mount and in its new blue paint job. Mary Lou Whitehorne showed a few slides of star fields photographed through a telephoto lens which was piggybacked on Clint Shannon's telescope, and Dave Lane introduced the Centre's new brochure. Paul Gray was back to report on some recent celestial events, namely the Geminid meteor shower, the total eclipse of the Moon (a dark one), and visible planets in the night sky (skipping Saturn for some reason) — based mostly on second-hand reports due to heavy cloud cover locally — and to discuss prospects for upcoming events like the Ursid meteor shower, the Quadrantids (which peak at a poor time this year) and other possible new showers, Comet Encke, and the nova in Cassiopeia. Paul also described the telescopes available for loan by Centre members, including the Halverson telescope, the Celestron C8, the 5-inch "Green Machine", and the 3.5-inch Questar.

At this point Mary Lou took the floor to initiate audience participation for a round of *Good Heavens*, an astronomy question-and-answer game for all ages. The banter associated with this game provided the usual number of amusing episodes, and also the usual number of snide comments as Graham Miller began to find flaws in some of the "supposedly correct" answers.

... continued the Handbook study series by discussing the Handbook's planet visibility chart, which is useful for illustrating the locations of the planets in the night sky ...

Mary Lou also continued the Handbook study series by discussing the Handbook's planet visibility chart, which is useful for illustrating the locations of the planets in the night sky as well as for highlighting

conjunctions and other planetary configurations. This generated an interesting explanation from Roy Bishop to the question of why the initials RLB appear in the lower right hand corner of Handbook charts. Want to know the answer? THEN TRY COMING TO ONE OR TWO MEETINGS! Ω



**ACTION ON THE
PLANETARIUM
FRONT!**
by Mary Lou Whitehorne

The Nova Scotia Planetarium Advisory Committee has, at long last, a completed Phase I feasibility study. NSPAC is now working to secure funding so that we may proceed with Phases II and III of the study.

Phase I of the study identified a preliminary facility concept; assessed the potential markets for this facility; developed realistic estimates of potential revenues, capital and operating costs; and, preliminary operating results.

The preliminary concept for the proposed planetarium complex involves a 32,000 sq. ft. facility that includes the planetarium star theatre, an auditorium, classroom space, exhibit gallery, lobby and reception areas, administrative and workshop areas, a gift shop, small restaurant, Challenger Learning Center (CLC), and an observatory. The star theatre itself will be 17.5 metres in diameter with a tilted dome and seating capacity of 125 - 150.

For those of you who may not know what a Challenger Learning Center is, it is a hands on, space flight simulator in which groups of people experience the excitement and challenge of a space mission. Challenger Centres came into being as a living memorial to the seven astronauts who died in the Challenger accident. It is a totally immersive experience and a powerful educational tool. There are only two such facilities in Canada, one at the Ontario Science Centre and the other at the Edmonton Space & Sciences Centre. A third will be going in the H.

R. MacMillan Planetarium in Vancouver and there is no reason not to believe that the fourth won't be right her in Halifax!

The market analysis looked at three different market sectors in making attendance estimates: schools, general public, and tourists. Both schools and public were broken into "local", meaning within an hours drive of metro, and "other", meaning more than an hours drive away. The schools were further divided into elementary, junior high and senior high levels. After all this playing around with numbers we are looking at an annual attendance of 24,000 - 25,000 from the schools; 30,000 - 40,000 tourists; and around 25,000 public; giving a total projected annual attendance of about 80,000. These figures apply only to the planetarium and do not include visitors to the Challenger Learning Center or to the exhibit gallery.

Capital costs have been estimated to be around \$9 million; operating costs and revenues work out to an annual operating deficit of about \$69,000, so the planetarium will have to mount an annual fund-raising campaign to make up the difference. Revenues are, of course, extremely sensitive to attendance and if the annual attendance was in the high end of the estimates, then the facility would turn a small profit every year. I should note that the 80,000 visitors is a mid-range figure; the high end is well over 120,000 visitors per year.

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Other items in the Phase I study are basic staffing and organizational structure for the facility, plus a brief look at themes and programming to be offered. Themes, programming and content will be developed further in Phase II, along with a basic architectural concept for the facility. Phase III consists of putting it all

together in a nice, glossy package with a few pretty pictures so that folks can more easily visualize the planetarium complex.

NSPAC has not been idle while the feasibility study was in progress. We hosted a major CLC presentation in the World Trade and Convention Centre with a number of invited guests. The meeting succeeded in generating a lot of interest in the project and NSPAC now has a couple of new members of its Board of Directors.

NSPAC is also reorganizing as a Foundation and will apply to Revenue Canada for charitable tax status. We will have a new name but we will keep our beautiful, professionally designed logo.

Also with an eye to the schools of Nova Scotia, it is our plan to apply for funding to purchase two "Starlabs", the inflatable, portable planetariums.

On other fronts, we are actively pursuing funding to sponsor the CLC teachers workshop, "Touching the Future." This will eventually lead to CLC outreach activities being done in the provinces schools before the Challenger Center is built. It will also mean developing ground swell of support from the grass roots level for the planetarium and CLC. Also with an eye to the schools of Nova Scotia, it is our plan to apply for funding to purchase two "Starlabs", the inflatable, portable planetariums. These would travel from school to school, leaving behind a trail of trained teachers, and kids hungry for more. Will the political powers be able to ignore the clamour of support rising all over the province?

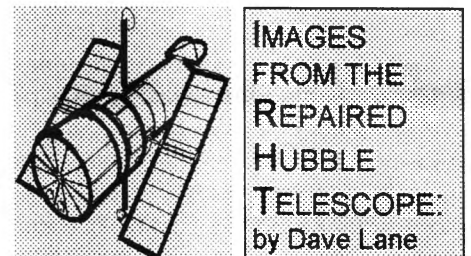
NSPAC has had its own distinct stationery designed and produced, as well as informational brochures. We are also in the process of having a promotional video produced. The script has been written, some of the visuals are at hand while others are on their way to NSPAC, and the well known Mr. Don Tremaine is helping

us with his connections, expertise, and the use of his talented vocal cords.

NSPAC members have worked very hard this past year and I, as Chairman of the Board, owe them all a large debt of thanks. But NSPAC has had much help from outside, too, and this has been vital to our efforts. On behalf of NSPAC, I am pleased to acknowledge the substantial support we have received from the following individuals and organizations:

ARMSWORTHY LYNCH: Barristers & Solicitors
LEVY, CASEY, MacLEAN: Chartered Accountants
Halcraft Printers, Inc.
Ms. Shannon Bell: Pilot Design
Mr. Don Tremaine
Canada/Nova Scotia CO-OP Agreement on Cultural Development

Respectfully submitted,
Mary Lou Whitehorne
Chairman, NSPAC Ω



The images shown on the next page are two of the first six WFPC-II images released by NASA in mid-January following the Hubble repair mission, which was completed in December 1993. The results are truly outstanding. These are negative b/w versions of the original colour images obtained over the "Internet" from the Jet Propulsion Laboratory.

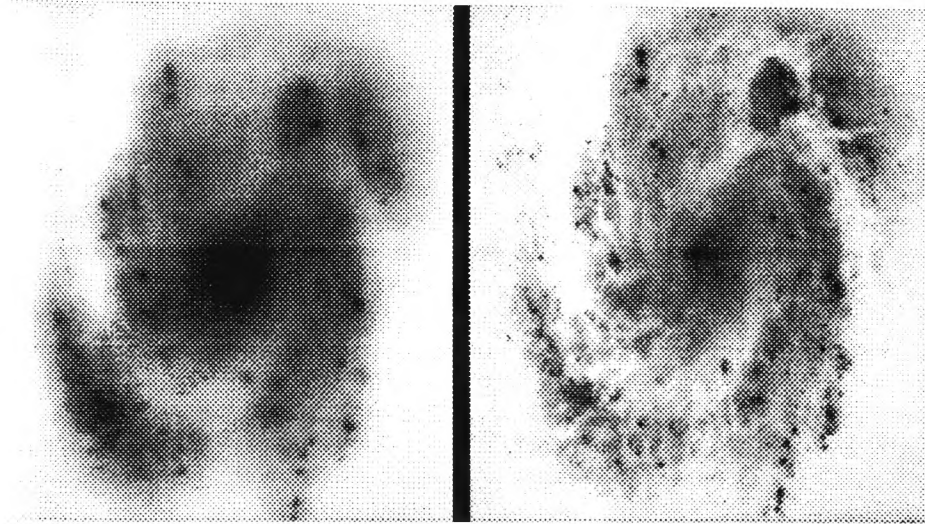
The accompanying text, provided by NASA with each image, is reproduced (edited for size) below.

- Dave

**PUBLIC INFORMATION OFFICE
JET PROPULSION LABORATORY
January 13, 1994**

PHOTO CAPTION for Image on the Next Page

This comparison image of the core of the galaxy M100 shows the



dramatic improvement in the Hubble Space Telescope's view of the universe. The new image, taken with the second-generation Wide field and Planetary Camera (WFPC-II) installed during the STS-61 Hubble servicing mission, demonstrates that the camera's corrective optics compensate fully for optical aberration in Hubble's primary mirror. With the new camera, the Hubble will probe the universe with unprecedented clarity and sensitivity, and fulfill its most important scientific objectives for which the telescope was originally built.

At right is the core of the grand design spiral galaxy M100, as imaged by WFPC-II in its high-resolution channel. WFPC-II's modified optics correct for Hubble's previously blurry vision, allowing the telescope for the first time to cleanly resolve faint structure as small as 30 light-years across in a galaxy tens of millions of light-years away. The image was taken on December 31, 1993.

For comparison, at left is a picture taken with the WFPC-I camera in wide-field mode on November 27, 1993, just a few days before the STS-61 servicing mission. The effects of optical aberration in the telescope's 2.4-meter primary mirror blur starlight, smear out fine detail and limit the telescope's ability to see faint structure.

Both Hubble images are "raw"; they have not been processed using computer image reconstruction techniques that improved aberrated

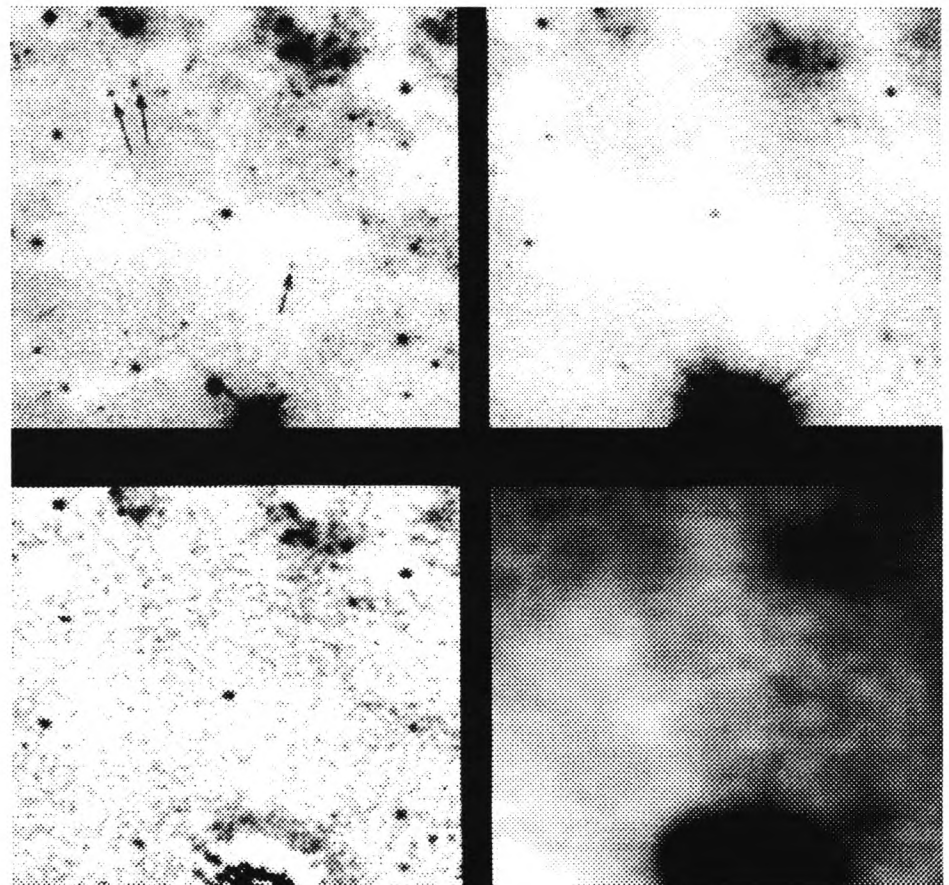
images made before the servicing mission.

PHOTO CAPTION for Image Below

This sequence of pictures shows successive steps in optical improvement from ground-based telescopes to the newly improved Hubble Space Telescope. The images demonstrate that the repaired telescope can see stars that could never before be detected.

At upper left is an outer region in

the galaxy M100 as imaged by the telescope's second-generation Wide Field and Planetary Camera. The WFPC-II incorporates modified optics that correct for the aberration of the telescope's primary mirror. This image demonstrates one of the most important servicing achievements -- the ability to detect and measure the light from individual faint stars in distant galaxies. The stars indicated by the arrows have the approximate brightness of special yardstick stars called Cepheid variables in M100. While these specific stars may not be Cepheids, astronomers expect that repeated measurements of hundreds of similarly bright stars spread throughout the galaxy will turn up several dozen Cepheids. By accurately measuring the brightness of these "standard candles," astronomers will use the WFPC-II to determine an accurate distance to M100. When combined with similar measurements for other galaxies, this distance will provide a crucial link in the chain that astronomers use to determine the expansion rate, age and size of the universe.



At upper right in an image taken by the WFPC-I on November 27, 1993, just a few days before the Hubble servicing mission. WFPC-I's resolution represents a significant improvement over what can be seen from the ground. However, images made before the servicing mission revealed only the brightest objects seen in the frame to the left.

At lower left is a panel showing the computer-processed WFPC-I image, using a technique commonly employed to improve Hubble images taken before the servicing mission. Although processing can significantly sharpen up features, they cannot recover faint objects; many stars revealed in the WFPC-II image cannot be seen or measured in the reconstructed WFPC-I image.

At lower right is an image of the same region in M100 taken with the 5-meter (200-inch) Hale telescope at Mt. Palomar in California. The resolution is just under an arc-second, slightly better than typical night-sky conditions for ground-based observing. Ω

**CONSTELLATION OF THE
MONTH: GEMINI**
by Joe Yurchesyn

Gemini is a large constellation dominated by 1st, and 2nd magnitude stars forming two chains that end in small hooks. Lying on the eastern edge of the winter Milky Way, Gemini is surrounded by Auriga, Taurus, Orion, Monoceros, Cancer and the faint constellations of Lynx and Canis Minor. The proximity of the Milky means that galactic Deep Sky objects, such as star clusters, globulars, nebulae, and planetaries, are present, but one bright spiral galaxy is also visible and one Messier object (M35) is present. The declination of Gemini means that, for northern observers, it reaches an altitude of 70° or so, and is well placed for evening viewing throughout the winter.

References to the constellation Gemini and the bright stars Castor and Pollux date back to antiquity.

Separated by 4½°, Castor and Pollux are a sparkling pair that, since remote times, have been associated with associated with twins. In Greek legend, they are the sons of *Leda* and *Zeus* and are referred to as the *Twins*, *Laconian Stars*, the *Spartan Twins*, or the *Laconians Lights*. The twins are also depicted on ancient Greek and Roman coins, being traditionally depicted as two youths on horseback, charging at full gallop or as two heads in classic style. In the Greek culture, the Castor and Pollux are venerated by mariners, and were invoked for protection against storms and the perils of the seas. In the Argonaut legend, they protected the adventurers in their quest for the Golden Fleece.

Castor, the more northerly star of the pair, is designated Alpha Geminorum, the brightest star in Gemini, and is one of the finest double stars in the sky. First discovered in 1678 by G. D. Cassini, W. Herschel announced in 1803 that the two stars were gravitationally connected. This made it the first true physical binary star system to be recognized and it proved that gravitation was operating in the universe in a place other than the solar system. The two stars were at a minimum separation of 6.5" in 1965, and take about 400 years to complete an orbit. At a distance of 45 ly's, the actual separation is around 90 A.U., about 1 solar system diameter. A third star of magnitude 9.1 circles with an estimated period of 10,000 years at a distance of 72.5". Each of these three stars is itself a spectroscopic binary, making for 6 star system!

Pollux is actually the brightest star in Gemini, but is designated Beta Geminorum. It is possible that one of these two stars changed brightness in the past few centuries. At a distance of 35 ly's, Pollux is nearly at the standard 10 parsec distance for calculating absolute magnitudes; thus the absolute and apparent magnitudes of this star are nearly the same.

In 1855, a remarkable dwarf-ish variable star was discovered about 6° south and slightly east of Pollux. The

flare mechanism, which repeats about every 100 days and changes the star's brightness 5 magnitudes in less than 24 hours, is believed to be related to mass transfer from a companion red star to a blue dwarf. Being the 4th variable star discovered in Gemini, it was designated *U Geminorum*. It was the first of a rare type of cataclysmic variable stars that came to be classified as type U Geminorum. Although about 100 of these types of star are known, most are faint and only about 20 have been observed with any degree of thoroughness.

The fine galactic cluster M35, visible to the unaided eye on a very clear night, is located 2½° NW of Eta Geminorum and 2,200 to 2,700 ly's distant. It was recorded by Charles Messier in 1764, but may have been discovered as early as 1745. It is an excellent object in a small telescope.

The very rich and distant galactic star cluster NGC-2158 is located about ½° SW of M35. Being 4' in diameter with a total brightness of 11th magnitude, it is inconspicuous in a small telescope. If it were as near as M35, it would rank among the finest of galactic clusters. The richness of NGC-2158 suggests that it is an example of a transition cluster, placing it between galactic and globular clusters. Other such clusters include NGC-7789 in Cassiopeia and NGC-752 in Andromeda. Its distance is estimated to be 16,000 ly's, more than 6 times the distance of M35, placing it far out near the outer rim of the galaxy.

About 2° WSW of M35 is the open cluster NGC-2129. It is about the same size as NGC-2158 and shines at 7th magnitude, due to three 8th and 9th magnitude stars at the centre of the cluster. Other open clusters include NGC-2266 and NGC-2420. They are relatively small faint objects, but still worth the search with a moderate sized amateur telescope.

Two planetary nebulae lie within Gemini. NGC-2392, the Eskimo Nebula, is 9th magnitude with a 10th magnitude central star and 40" in diameter, with a distance estimated to be between 1370 to 3,600 ly's. The

nebula is expanding at about 68 mi/sec, but time separated diameter observations give constant results; leading to speculation that the apparent edge of the planetary does not represent the real boundary, but simply marks the zone where the distance from the central star has become too great to allow the illuminating process to operate efficiently. The nebula has an estimated age of about 1,700 years, making it among the youngest known. NGC-2371/2 is a little larger than the Eskimo and it displays a double lobed structure similar to M76 and M27. Shining at 13th magnitude, NGC-2371/2 has a low surface brightness and is a difficult object.

The galactic plane is a strange place to find galaxies, but NGC-2339 is an Sc spiral of magnitude 12.5 and 2.0'x1.4' in size. For those interested in searching out faint galaxies, at least 5 lie within 1° of Castor.

Just a little something to ponder, when you next gaze in the direction of Gemini. Now!... If I could just figure out the real story on NGC-2158. Ω

Editor's Note: The normal accompanying star chart had to be omitted this issue due to space constraints.



NOTES FROM THE CHAIR
by Paul Gray,
Observing Chair

I hope that everyone had a wonderful Christmas and New Years celebration and that Santa bought some of you new toys for observing.

I would like to remind the membership that the Centre has telescopes for loan, free of charge! They are all equipped with the necessary eyepieces and gadgets. All you have to do is contact me at a meeting, or better yet by phone, a couple of days beforehand, and we will arrange to have the scope there for you to pick up.

This is the time of year when we see who the die-hards observers really

are. It is also when the only major meteor shower until April comes along; the Quadrantids (It is also a wise time to avoid the observing chairman, so that you are not talked into going out to observe this shower at -10°C or less and at 2am or later). Those who have been a member of the Centre for a couple of years will know that this is our third year to observe this shower. In the past, we have had some impressive displays and our interest has increased.

This year, however, was not a good year because the peak was to be in the early afternoon. We expected to miss the display completely. But, we decided to go out anyways on the night before or after. As it went, it was to be clear on January 2nd, so Dave Lane, Blair MacDonald, Jason Adams, and myself ventured forth that evening to Beaverbank to observe from 8:45 to 10:45pm. It was not as cold as in previous years, but there was some high haze to contend with which wasn't there in other years.

... so Dave Lane, Blair MacDonald, Jason Adams, and myself ventured forth that evening to Beaverbank to observe ...

Or goal was not do just "do a count", but to plot all of the meteors that we observed on a sky chart. For the past two years, our group has noticed several sporadic meteors coming from the overhead to westerly direction. We were not alone with these results as some observers in Hungary and France had similar reports.

We plotted all meteors over the two hours and the results showed the following. Individually, 15 sporadics were counted with a total of 7 Quadrantid meteors. This rate of shower meteors is about right given the time from the predicted peak and altitude of the radiant. All observers saw 3 sporadics except for Blair who saw 6; but he saw no shower meteors (not surprising, as he was facing away from the radiant). Jason and myself each saw 3 and 3, while Dave saw 3

sporadics and 1 shower member (Dave was the recorder, so he wasn't able to observe the sky as constantly as the others).

So, are the sporadics from a possible new radiant? Well, with 15 meteors plotted, I can't say much of anything! The plots are being sent to the International Meteor Organization and hopefully other observers around the world also plotted sporadics.

The possibility that an unknown shower exists is actually quite good. The number of recorded meteor showers between January and April is only a small number compared to other times of the year. One explanation for this might be the cold winters in the northern hemisphere - the bad weather hampering observations and stopping many observers from going out at all.

What must be done to continue this project is to get good coverage of the shower in future years. For the next two years, Canadian observers have an excellent chance to do so. In 1995, we can observe 8 hours of the 12 hour peak from coast to coast; which occurs near the time of New Moon. In 1996, we are in an even better position, being able to observe the entire 12 hour (to 1/4 strength) peak. With as little as one station of observers in each of five time zones, we have a chance at obtaining a good plot of the shower's activity curve and its peak ZHR (Zenithal Hourly Rate).

Till the next issue, so long and clear skies! Ω

ASTRO-ADS

Celestron C4.5 Telescope

4.5" Newtonian on "Polaris" equatorial mount. Includes 25mm eyepiece and finder scope. Asking \$500

13mm Televue Plossl EP - \$70
1.8x Televue Barlow - \$70
Eyepiece Proj. Adapter - \$20

Contact Dave Lane (443-5989) to be put in contact with the owner.



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 M4G 2W7 Canada

NOTICE OF MEETINGS AND EVENTS

Date: Regular Meeting - Friday, February 18 at 8:00pm; 7:00pm for the executive council meeting (all welcome)
Place: Lower Theatre, Nova Scotia Museum of Natural History, Summer Street, Halifax. Access from the parking lot.
Topic: Dr. David Turner from Saint Mary's University, Astronomy and Physics will present a talk entitled: **"Stellar Evolution as a Real-Time Phenomenon"**.

Date: Regular Meeting - Friday, March 18th: 8:00pm; 7:00pm for the executive council meeting (all welcome)
Place: Lower Theatre, Nova Scotia Museum of Natural History, Summer Street, Halifax. Access from the parking lot.
Topic: Dr. David Clarke from Saint Mary's University, Astronomy and Physics will present a talk entitled: **"Using Computers in Professional Astronomy"**.

Date: Regular Meeting - Friday, April 15th: 8:00pm; 7:00pm for the executive council meeting (all welcome)
Place: Lower Theatre, Nova Scotia Museum of Natural History, Summer Street, Halifax. Access from the parking lot.
Topic: Dr. Bob Hawkes from Mount Allison University, Physics Department will present a talk entitled: **"The Peekskill Meteorite"**.

HALIFAX PLANETARIUM SHOWS

The Halifax Planetarium, located in the Dunn Building at Dalhousie University, provides shows each week on Thursday evenings at 7pm. Contact the *Nova Scotia Museum of Natural History* at 424-7353 for show information.

1994 HALIFAX CENTRE EXECUTIVE

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