Regulus

R.A.S.C. Kingston Centre Newsletter
1989-04/89-05 Edition

The Societies many thanks go out to Terry Dickinson for his wonderful informal talk given at the Centre02-10 meeting. A good gathering of people braved a rare blizzard to see a slide show of Terry's recent Tour of Australia. They were not disappointed. The photos included many superb shots of the Southern skies, an absolute treasure trove of fine deep sky (or near sky, for that matter) objects. Sorry about all that snow, but it is winter here after all.

Sky and Telescope new News Notes section is a fine edition to their magazine. It is certainly evident how much at the forefront of technology the field of astronomy is. Two sub-articles caught my attention this 89-02 issue (130a-131b). "Seeing Is Believing" showed a photo of accelerated electrons in the Earth's magnetic field. Here again is that wonderful helix pattern that seems to sprout up everywhere. Nicely proved some old theories too. The research done here by the NASA Geophysics people is along similar lines to what their southern military cousins are doing. I love it when astronomical projects get results like these. Goes a long way towards proving that Defense budgets-could be better spent on scientific research.

But before we get to smug. Read the preceding article about Mount Graham. I do hope that just because the University of Arizona has got the right of way to build atop this fine peak 120km northeast of Tuscon, they do not run in and crush every living thing on the mountain top. Surely there is a way for both the telescopes and the creatures that live there to co-exist. Great care has to be taken to make sure that the ecology of the area is not upset. I always get the impression that there has to be a winner (U. of A.) and a loser (US Fish and Wildlife) in situations like this. That prevents the two sides from co-operating and finding a workable solution.

Astronomers have to be careful. It is all very well to say that fighting light pollutions will save everyone money. It is another thing to get people to believe you, and to implement necessary measures. Astronomers also have to be sensitive to other interest groups when their spheres come in to contact. If not, we will not be listened to when we ask to have the night time sky returned.

I have, as promised, acquired a 2400 baud modem. I currently have a mail slot on the Jankins BBS and my horizons are expanding all the time. I can easily accept any articles over the phone. If you have software that supports XModem, we can talk talk very easily. I hope to tie into Compuserve someday to see what is happening there. Any help from more experienced people would be greatly appreciated. Phone 613-353-2313 for arrangements for me to talk with your computer. Even ASCII transmissions would be faster than retyping your letters. Is not this technology wonderful (it already as spawned a whole new area of expletives for me). I would like to thank all of the people who have given me such positive feedback on the last newsletter. It is most encouraging.

Upcoming for the Centres meetings:

89-04-14 Denise Sabatini (of S&T fame): Mayan Astronomy
89-05-12 Walter MacDonald: Computer Astronomy

Hope that we have a good turnout and generate some good observational reports. Meetings are at 20:00 EDT at Queens, Macintosh-Corry, room D-214. Deadline for next issue: 05-10. Any articles from anyone will be considered, and letters to the editor about any relevant topic will be greatly appreciated. Send them to:

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or

Computer
613-353-2313 (Voice)
2400-8-N-1

MK

A Brief Observing Report

There were some very good nights for observing in December and early January. However, the two major meteor showers of this time of year were somewhat disappointing. After having about four consecutive splendid nights for observing, we had nothing but total cloudiness for the maximum of the Geminid shower (88-12-13/15). On the night of 89-01-03 when the Quadrantids were at their maximum, the sky miraculously did clear, and I (Leo Enright) was able to observe for about an hour at almost exactly the time of the predicted peak of maximum. The numbers I recorded were only about 15, down considerably from what I had been expecting, based on my observations of the shower in recent years. True, there was a Moon in the sky, but it was a small crescent in the southeast and interfered very little. What was interesting was that there were several bright sporadic meteors, mainly coming from the south and possibly part of another unknown shower. The Quadrantids were, overall, well worth observing, since a good number of those seen were quite bright. Only my expectations for total numbers were disappointed.

Two consecutive comet discoveries, the last one announced in 1988 and the first one in 1989, were made by the same person. A Japanese amateur, who observes with 15 cm. binoculars, discovered these objects in the morning sky.

I would be interested in hearing from anyone who might have been observing the Aurora of 89-01-05 UT. That evening there was a steady glow for most of the night with only two or three spikes observed, but for about five minutes around 04:00 UT.one small spot (about five degrees in diameter and about fifteen deg. above the horizon) became extremely bright and active as it seemed to swirl like a rotating headlight. This short lived feature was most interesting.

The old crescent Moon rising not far from Venus, was an interesting sight on 89-01-03/05, one event that could be observed front indoors (thank goodness!) on three consecutive very cold mornings.

Clear skies and good observing.

Leo Enright

(Apologies to Leo. This arrived the day the last issue came back from the printers. If I had known...) MK

Sky Calendar

April and May are the best times of the year to really go galaxy hunting. Especially May. The gently obscuring plane of the Milky Way is a thin cloud all around the horizon. A beautiful and mysterious sight that is rarely seen from our humid and light polluted skies. Above this wisp is a super window on the extra-galactic universe.

Viewing galaxies is probably, initially, the most frustrating of all deep sky objects. If ones skies have even a slight glow in them from Moon or lamp, most of the galaxies details, or the whole galaxy, will be obscured. A glance through the Messier lists will quickly give one the picture of the night sky in spring. Nothing but galaxies, except for M53, a rather disappointing globular, from M101 to M104. Another problem with galaxies is the light filters that I have used do not really help much. So good skies are a necessity. Once good skies have been established however...

M81/82 are one of the finest pairs of galaxies in the night sky. With a good wide field eyepiece though, another pair of bright galaxies join the view (NGC2976,3077). What a way to look at fine examples of different galaxy styles. A fifth, smaller NGC2787, lies about 3 degrees east.

Moving south and west around the dip of the dipper, there is another group of fine galaxies, and one planetary. I often thought it strange that from the observing site I had in downtown Toronto, I could see the Owl nebula (M97), but never once could I find M33. The Owl is helped by a nebula filter, by improving the contrast. There are many other objects in this area, a good chart is your key.

Another favorite area of the spring sky is in Coma Berenices and Virgo. This is the heart of the Virgo cluster, near the North Galactic Pole. This is the zenith of the Milky way, so to speak. You can follow a chain of galaxies from Ursa Major down south to Berenices hair and beyond. The area around M86/87 is incredibly rich. Here it is virtually impossible not to point at some galaxy or another.

Mercury will reach it is greatest altitude for the spring on 05-01, when it will be low in the evening sky for about 45 minutes after sunset. This is another target for daytime viewing, but be careful, as Mercury never wanders far from the Sun. Venus joins Mercury in the evening sky towards the middle of May, passing within .6 degrees on 05-15/16. Mars and Jupiter continue to do a celestial waltz in the western sky, with the Moon thrown in 04-09/10. By the end of May, Jupiter will be gone, so view it now while you can. And bringing up the rear in the morning sky are the rest of the planets. In late March and early April, it should be possible to see Saturn and Neptune together in one wide field of view. Uranus is slightly to the east. Pluto get to it's highest magnitude (m13.6) 05-04, when it will be a mere 28.7 A.U. away. 04-09 sees the Pleiades covered by the Moon, while in an early crescent phase. 05-23 at around 7:28 UT (3:28 EDT) the Moon passes in front of ZC2617, a 4.7 magnitude star in Sagittarius. May will be a good month to start looking for, and following to it's brightest, Vesta, the ephemerides are in the handbook (152a).

I hope that the weather co-operates.

MK

Rebuilding the Dougias Telescope - Again

Why:

When I first rebuilt the club's 25 cm f5.5 Newtonian, in early 1986, I (Larry Manuel) put the existing assembly in a Dobsonian mount. The result was a workable telescope. In the next two years, the wood in the mount was becoming moldy and the paper sonotube became soft and weak at the ends due to dampness and wear. Due to mechanical instability I bad never seen the club scope collimated.

Inspiration:

The article "Collimating your Telescope - 1" in S&T 88-03 was the best such information I have seen anywhere. I was curious to look through a well built Newtonian and I wanted to know if the Douglas optics were good.

What was done:

The rotten sonotube was retired to landfill and I built a square tube of 8 mm thick marine mahogany plywood, using brown ash lumber for the corners and bonded with epoxy resin. The finish is polyurethane paint to keep out dew, frost and rot. The inside was painted black, sprinkled with lots of sawdust and then painted flat black again. The mount was rebuilt taller, stronger and similarly waterproofed with epoxy and polyurethane.

Optics:

The primary mirror has had a fairly rough life over the years, but is basically sound. I made no attempt to clean it, other than blow off the dust. The old cell was junked with out qualms, it relied on a 25 cm diameter hose clamp pinching three steel fingers to retain the mirror. This will certainly deform the mirror and hence the image. Luckily, glass springs back when the stress is removed. I bonded the mirror into a Cave mirror cell with 6 big globs of clear silicone rubber, an experiment suggested by Richard Berry's Build Your Own Telescope. I constructed a black paper light baffle ring to go behind the primary cell. This blocks stray light, yet allows ventilation so the mirror can cool.

The original spider and diagonal holder was relegated to the metal recycling bin. The manufacturer had erred on the side of economy, and scrimped grossly on function. I ordered (by phone) a new spider and diagonal from Kenneth Novak and Co. in Wisconsin and it was here in two weeks, excellent service. The Novak parts are marvels of simplicity, ruggedness and precision. The spider arms attach to the corners of the tube (instead of the centres of the flat panels) so that vane tension stiffens, not weakens, the tube.

Results:

Carefully following the S&T article resulted in collimation being attained during construction, no tweaking under the stars was needed. Even the inevitable thumps and bumps of numerous car trips and star parties has not fazed our rugged new scope. It will retain collimation under normal use (a.k.a. abuse). The mirror checks out well with the Ronchi test. On deep sky objects, images are marginally brighter than in Terry Dickinson's 18 cm refractor. Definition and contrast are definitely lower however. Mars showed good detail, as did Saturn. Double stars are not as clear as in my 8 cm refractor (puzzling). The new mount is smoother due to all plastic bearings and new Teflon.

Costs:

Mirror cell	Cave Astrola	35.	
Epoxy	West System	20.	
Spider and Diagonal	K. Novak & Company		75.
Paint	polyurethane	20.	
Plywood	marine mahogany	50.	
Ash	tube corners	6.	
Stainless Steel Hardware	fasteners	20.	
Chest Handles	on scope	9.	
Teflon	alt-az bearings	5.	
5 cm eyepiece modifications		30.	

In addition to buying these parts, I spent about sixty hours building the scope, and dozens of hours in planning and research. If the club has any wish to compensate me for my work, I would like to receive the back issues of Telescope Making magazine, numbers one through twenty nine. Comments or questions on any part of this article can be sent to:

Larry Manuel
RR1 Seeley's Bay, Ontario
K0H 2N0 613-353-2118

Larry Manuel

Editors note: Having seen and used the revamped scope, I would like to thank Larry for the time and effort he has put into the Douglas Telescope.

MK

Book Review: Non-fiction

The Dancing Wu Li Masters, an overview of the new physics by Gary Zukav, published by Bantam. This book was written to explain physics to people that don't have a huge mathematical background. It partly succeeds.

Unfortunately Zukav is very repetitive. He could have condensed his overview in to a much more readable form. I also have trouble with people who want to give physics an eastern philosophy "Zen" outlook. The idea that physics has to be taken on faith is a bit far fetched. I felt that the book didn't really get started until half way though, when the author started to explain relativity, and Bell's theorem, etc.

Zukav's style is very informal and this makes for easy reading. I recommend this book despite its faults, as it does help explain some of the more difficult angles of modem physics.

MK

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This newsletter does not necessarily voice the opinion of this Centre. The editor is responsible for all the views stated within.

Noctilucent Cloud Watch

Recently, I (Denise Sabatini) received a letter from Mark Azlcik of the Edmonton Centre. He is the co-ordinator of the observing network NLC CAN AM. He is requesting that the members of our Centre assist him in observing noctilucent clouds (NLC). Until now there has not been a systematic collection of observations of this phenomenon. He would like to change that this year.

These clouds are never seen in the daylight. They are only visible in the twilight when the Sun is 6 to 16 degrees below the horizon. They are rarely seen between 45 degrees, but they may be seen this far south. One theory is that the rising water vapor condenses upon the meteoric particles filtering down from space. The official network season runs from 05-15 until 08-15. However, the best time is roughly between 06-15 and 07-15 during both the morning and evening time windows.

Special equipment is not necessary to detect noctilucent clouds. All that is needed is one, but preferably, at least two checks per night during the above one-month period, or longer, if the watcher wishes. NLC are best seen with the naked eye, though binoculars come in handy to nab some of the fainter clouds. Photographing the cirrus-like forms can meet with breathtaking results, and may also aid in the discovery of NLC due to the sensitivity of photographic film. It is even possible to videotape NLC.

If anyone is interested in joining NLC CAN AM (there is not a membership fee),Mark would be happy to forward to you the necessary information detailing how to observe NLC, plus any additional information they require. At the end of the season, Mark relays to all observers copies of summaries he draws up from all the data received. This is an opportunity for anybody wishing to make a significant contribution to science, in an effort not too straining on time or energy. There is the added bonus of actually witnessing an NLC storm.

References about NLC can be found in S&T 86-11, 87-7, 88-5 and in Astronomy 87-7. The address to write for information is:

Mark Zalcik, #2 14225 82 Street, Edmonton, Alta, T5E 2V7.

This project is another example of how important amateur astronomers are to the scientific community. Denise Sabatini

89-01-04-00:30/03:30 UT

From the Eyepiece

I've learned how to deal with the cold. My very first 50mm scope was given to me in winter. I crawled around in snow using the beast. The scope had a fine lens, but a 30 cm tall tripod of the shaky school. My older brother helped me make a better tripod, but he could not make warmer weather. I used the lens a lot, much to the surprise of my elders. They thought I would lose interest with my new toy. I did eventually, for a short time. The next scope I bought was purchased in winter as well. So was my latest. I have learned how cold it can get in winter, especially at night. On the surface, the winter time would seem to be a good season to observe. The night sky is filled with many famous and beautiful objects. Winter nights always seem so clear. The humidity should be low due to the cold weather. Right? I am beginning to wonder. I have observed on many nights of frustration. This night was definitely one of them. And, I was not even the least bit cold.

Although the forecast low was only -23C, that was almost the temperature when I set up. It looked so clear. The milky way stretched across my high horizons. The glow from Kingston was a low,dull orange. I had brought the scope out early to adjust, and had delivered dinner under subdued light to aid in my dark adaptation. I had prepared a list of deep sky objects that I wanted to search for, after an hours preparation looking through my handbook, charts, and S&T. (This in itself is a mistake. Going out observing prepared is an invitation for cloudy weather.) First I would look at M42. Must not be dark adapted, I thought. It did not look at all impressive. I moved front familiar object to object in a puzzled dismay. I did not seem to be dark adapting well at all. Eventually, I turned to my list. I started out with NGC1058,in Perseus. It was a terrible struggle. I looked and scanned and re-charted and re-scanned. Finally, using averted vision, I found a faint smudge. This was the only object on my entire list that I would find. At magnitude 11.5, this wasn't the faintest object on my agenda either. Most of my quarry were at the Zenith. Working an alt-az mount at the zenith is not the easiest. But the sky should be the clearest here. I puttered around for another hour and

a half, hoping that maybe I would see my next deep sky selection. No Luck. I even went back to M42 to see if it looked any better. It was as if I never got dark adapted. The night ended up with me stomping (quietly) back inside in disgust.

The next day, Larry Manual called to ask if I had been observing. He told me that observers around the centre reported good naked eye conditions, but lousy telescope conditions. I have two theories, and I invite discussion: One- There is so much snow around, that it is bright. It is so bright that one does not adapt to the darkness. Two- The high humidity, although low in respect to summer conditions, is a factor, and the humidity is around in the form of ice. Taking down, I noticed a pall of thin haze as well. Perhaps the effects of furnaces and log stoves is also adding to the poor seeing. All I know is that I did not enjoy my outing to the fullest. At least I was warm. (low -28C)

89-02-22-22:00/23-03:00 UT

Has it really been this long since I was last at the eyepiece of my scope? Sad but true. If it is a clear night, I will step out for a walk, and observe the winter stars. I usually take along the binoculars. Often there is a good reason for not wanting to set up the telescope. A 40 kmph wind at -25C does not prime observing conditions make, especially when there are clouds around anyway. Enough excuses.

I set up before sunset, to allow the scope to cool and see if I could find Sirius before Sol set. Jupiter is an easy target as well, being near zenith at sunset. It was easy to find. Question: I can see one of, and gradually as it gets darker one more, of Jupiter's moons while the Sun is still over the horizon. Does this mean I could also find 4.6 magnitude stars during the day? Does the fact that these moons are actually disks, not dots, have anything to do with their visibility. Both Jupiter and Sirius where naked eye before the Sun set. It helps to know where to look, and use binoculars or look down the outside of your scope. I wonder just how faint a star I can see?

This evening was actually a good one for observing. The night was still, and it did not get to cold, or have a lot of frost fall. I did a lot of sweeping in the northwest just to see what I would see. Ursa Major is a fun area to sweep because there are lots of galaxies to chance upon along the way. It is funny how many faint objects that I miss while I scan. I wonder how many comets I have just swept right by because I still haven't developed the proper technique for scanning for faint objects. Still sweeping across a galaxy that one hasn't seen before is a treat.

So, there can be good observing in the winter time as well after all.

89-03-08-23:30 UT

Larry called me, quite excitedly and told me to go look at the Moon, which at the time was about 29 hours old. So I trundled out, quickly, with the binoculars, to look at the baby Moon. What a sight. Not much more than three degrees above the horizon sat this celestial cup, gently shimmering in the thick atmosphere. Because the ecliptic is so very steep at this time of year where the Moon is setting, the lit part formed a smooth earth lit semi-circle. Looking through the binoculars showed a Moon that seemed to be darker in the middle than on the limbs, all of the way around. Was this an illusion created by imagination? I know that almost all of the other side of the Moon is lit, but that the Moon has not an atmosphere to scatter the light around the limb as Venus would. The slight red tinge added the final touches as the Moon quickly, quietly, slid below the horizon.

MK

Book Review: Fiction

People may very well question the validity of reviewing fiction in an astronomical newsletter. I feel that fiction helps define the way that we see the world around us. Science fiction (SF) has come a long way from the days of pulp magazines. Todays authors helps us imagine the not to distant future in controversial ways. SF is a good forum for playing out scenarios that do not ever have to come true.

The book I will start out with is Carl Sagan's Contact by Pocket publishing. This is one of a number of stories that I have read lately that has a contact with other species theme. All have the feeling that if this event where to happen, the first contact alien beings would have with us is the covert world of paranoid governments. The main character is Ellie Arroway, and the story follows her progress from a young girl to her eventual contact with an advanced species and beyond. Of course, along the way there is a good blend of intrigue and science. Also dealt with, where how different groups of people would deal with the news that we are not alone, from flat denial, to fanatic belief. The book kept my interest and though I was personally a bit disappointed with the ending, it was a good way to end the story. Carl Sagan is a respected member of the scientific community and I enjoyed his venture into the world of SF.

MK

Electronic News Notes

This newsletter is now available straight from my desk. If you would like to receive this magazine in electronic form and save the paper that it would have been printed on for better things, call 353-2313 for a copy. Please call after the twelfth day of any odd numbered month. Have ready at least 40,000 bytes of disk space, and have your modem software set to 8 bits, No parity, 1 stop bit. I will call back to your computer and download the newsletter by the fastest available protocol. The electronic method of gathering news can be quite easy, and once you have looked at want you want, it is easy to get rid of want you don't want to keep, and filing what is left takes up a minimum of room. I hope to establish a link with Go Astronomy on the Compuserve network, so hopefully in the future, I will be able to have other tid-bits available to computer using astronomers. Hopefully we also could set up a network for trading astronomical software.

Mark Kaye