ORBIT

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From the President

Les Nagy, President, Hamilton Centre

Many neat things are happening. We have sent a probe to Pluto, landed on Titan, and have retrieved comet dust to the Earth. All of these and many other things were just fantasies when I was young. When my parents saw I had a spark of interest in astronomy, they went out of their way to find the best way to nurture my interests and so I became involved with the Royal Astronomical Society of Canada, Hamilton Centre.

I still remember that first night. I got home from school and my mother said she had a surprise for me. She had arranged for me to attend a meeting of the RASC Hamilton Centre and someone was coming to pick me up. I was both excited and a little nervous. A knock at the door and there was John Hudak, a person who would become a good friend and mentor for many years. I had never been to McMaster before and the first look inside a lecture room full of people who were all "serious" adults made me even more nervous. After I had been to a number of meetings and started getting comfortable with my new friends, I was

Cont'd pg 5

INSIDE THIS ISSUE

From The Editor

Ev Rilett

Leo the Lion, one of the most dramatic constellations in the sky does not have much lore surrounding him. It has often been considered the nemean lion that Hercules destroyed. Also coinage was stamped depicting the lion in many cultures, because of his mightiness and association with royalty. I'll concentrate on the brightest star in Leo, Regulus, hovering a mere half degree from the ecliptic. Because of this position we will often see the moon and planets come close to Regulus and occasionally occult the star.

"Regulus", *"The Little King" , "The Lion's Heart", "the Kingly One", "The Star of the King", "Regia" or "The Royal One".* By any other name, is almost always associated with royalty. Tycho called the star *Basiliscus* evidently from the Roman title *Basilica Stella*. The modern name *Regulus* given by Copernicus, seems to have no certain connection with the famous Roman general Regulus, whose heroism so inspired the Romans during the first of the three great struggles with Carthage.

Both Leo (and the 'Dog Star', Sirius of Orion in the winter sky) were believed to contribute to the heat and storms of summer; Aratus refers to this ancient tradition when he writes:

> *"Most scorching is the chariot of the Sun*
> *. . . when he begins to travel with the Lion.*
> *Turbulent north winds then fall on the wide sea*
> *With all their weight; no time is that*
> *For oar-aped barques; broad ships be then my choice;*
> *O helmsman! Keep the stern before the wind!"*

Giving approximate millenniums (1 millennium = 2000 yrs): Between 4000 to 2000 BC Regulus (Summer Solstice in Leo) was regarded by the ancient Persians as one of the four "Royal Stars" of Heaven, the other three being Aldebaran (Vernal Equinox in Taurus), Antares (Autumnal Equinox in Scorpius), and Fomalhaut (Winter Solstice in Aquarius). Due to precession, they have since past into history and lost their positions. The following Cardinal Points from 2000 BC to 1 BC, became Aries the VE, Capricorn the SS, Libra the AE, and Cancer the WS. This is the zodiac still in use today by Astrologers. It is two thousand years out of date. The current Cardinal Points from 1 AD to 2000 AD are Pisces the VE, Gemini the SS, Virgo the AE, and Sagittarius the WS. From 2000 (approx. 27??) to 4000 AD the Cardinal Points will become Aquarius, the VE, Taurus the SS, Leo the AE and Ophiuchus the WS. The cardinal points are north, south, east and west and do not move on the ecliptic. Through precession, the

Cont'd pg 3

SCHEDULE OF EVENTS

Hamilton Steam Museum located at **106 Parkwood Crescent, Hamilton, ON L8V4Z7**, *hosts our General Meeting on the 1st Thursday of each month*
February
2 – General Meeting – Speaker - TBA
4 – Lunar Night Public Night
9 – Board Meeting –@ 8.00pm Canadian Finishing Systems 3455 Harvester Rd, Unit 20-22 Burlington ON L7N 3P2
18 - Saturn Welcome Back Night @ Observatory
March
2 – General Meeting
9 – Board Meeting - TBA

THE HAMILTON CENTRE OBSERVATORY:

From Highway 6 North of Hamilton.

Take Concession 7 East eastbound, cross Centre Road.
Continue on 7E, keep going past railroad tracks, to near end.
Observatory driveway is on the right just before the stop sign.

From Mississauga or Milton.

Britannia Road past Highway 25, Guelph Line, Cedar Springs Road to End. South 1 Block on Milborough Townline to Concession 7 East.
Our gate is on the south side of the last lot (south west).
The observatory phone number is (905) 689-0266.

YOUR BOARD OF DIRECTORS

President - Les Nagy - 905 388 1011 – president (at)hamiltonrasc(dot)ca
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LIST SERVERS

Check out our newest addition of communications. We have a **new website** found at http://www.hamiltonrasc.ca/new . Also, we have a new forum linked from the new homepage including an interactive calendar which members can contribute to, found at the following: http://www.hamiltonrasc.ca/forums
Les Nagy will be making improvements to their appearance and function as the weeks go on.

There are two list servers available for members to receive and contribute with informative conversation. Our local centre list. Get in touch with Mark Kaye (see Board of Directors List) and he will sign you up.

There is also the national list. Members must go the national web page to sign up for. http://www.rasc.ca/computer/rasclist.htm

PUBLIC EDUCATION

Public Education is very important at the Observatory. Among other events, our Centre is involved with Girl Guides, Scouts, and other groups interested in a guided tour of the night sky. We generally give a brief discussion, a slide show or other visuals, and then a tour outside with two or three different scopes. This gives the guests a chance to decide for themselves which type of telescope they like best.

It is wonderful to see the look on a child's face the first time they look through a telescope. Also, if you know of a group that may be interested in an evening under the stars call for a booking.

Call a board member to find out more. Your help is always welcome.

MONTHLY SWAP MEET

Feel free to bring in any astronomical items you no longer need in your collection. It might be just what someone else is looking for. A table will be set up each month for items to be swapped that evening. So, clear out that closet space and make room for some new, slightly used astro ware.

LOCKS HAVE BEEN CHANGED AT THE OBSERVATORY

- If you are a Key Holder please make sure you get your new key from John Williamson.
- If you are interested in becoming a key holder, you must be a member in good standing for one year, sign a release form and take a short Observatory Security Training evening.
- Please forward any questions you may have to Board Members.

26,000 yr. cycle, it is the stars on the ecliptic path which change.

Babylonian tablets record observations of Regulus dating from about 2100 BC and it was through a study of such records, and those of Spica that the Greek astronomer Hipparchus detected the Precession of the Equinoxes, about the year 130 BC. The longitude of Regulus had changed by some 28 1/4°, or nearly 2 hours of right ascension, since the first observations had been inscribed on the clay tablets of Babylonia, slightly over 2000 years before.

The Explore the Universe Certificate Program

Carl Rousell

The RASC offers several observing programs for the amateur astronomer. These programs provide an excellent means to structure your observing sessions, and the prepared forms make it an easy matter to record what has been seen. By filling in the appropriate spaces, information needed to make the observations more meaningful and memorable is always at hand.

Many people who pursue the Explore the Universe Program do so as an introduction to the night sky. 55 observations out of an available 110 are needed to receive your certificate, including:
constellations and bright stars……....12 of 24
the moon.....……..……...16 of 32
solar system.....…….. 5 of 10
deep sky objects.....…... 12 of 24
double stars.....…….. 10 of 20

"The Beginner's Observing Guide", authored by Leo Enright and available through the RASC's publications office, is the recommended text. It is a very good entry level book to observational astronomy. There are six pullout sky charts, with the dates and times when each is best used printed right on the maps. Topics covered range from finding the north star, position and brightness, to individual chapters on the planets, moon, meteors and more.

For those who have been involved in the hobby for a while, and have specialized in one area or another, completing these observations is a way to maintain and improve visual skills, and continue to see more of the sights the sky has to offer. This was my reasoning for starting the program. I had found it too easy to forget the recreational aspect of our hobby.

About three years ago I started observing the planets as a member of The Association of Lunar and Planetary Observers (ALPO), and to achieve the desired goals proved quite time consuming. Normally I would do about 130 drawings for the year. Starting another observing project might have meant cutting back on my primary interests, but after no deep sky work for so long, I thought I would give it a go anyway.

As far as time commitment, it took twenty-one nights over the months of March'05 to October'05 to work through the list. Most of the observation were done around my planetary timetable, except when I was nearing the end of the program. At this point I worked solely on the RASC material till it was finished as I did not want it going into the new year

The end result was 116 planetary drawings submitted to the ALPO, and 55 for the RASC certificate. So although planets dropped a bit, overall more log entries were made for the year. It seems as though the second project gave more energy for astronomy. Also, I feel the quality of my ALPO observations has improved from working through the RASC list.

Many of the observation for this program can be accomplished with the naked eye or binoculars. It had been a while since I had done anything without the use of a telescope at medium to high power. I started doing naked eye colour estimates for Mars (I saw nothing out of the ordinary here), and tried for improved colour and magnitude estimates for Uranus and Neptune using 10X50 binoculars.

I have started the Messier Program, and it will probably take about two years to complete. So if you are looking to relax, wanting to see more, or improve you observing skills, the RASC observing programs may be what you are looking for.

Ken Lemke's Original Theory

Ken Lemke

There has been much discussion about the lack of clear skies over the past couple of months. Blame has been passed from people who have bought new telescopes, to the cloud gods, to the astrological charts to the Clear Sky Clock being set wrong and numerous other causes and blames.

Ken Lemke has shed a new theory on the matter, spoken with great enthusiasm. "We are not having a horrible cloudy session, we are passing through a nebula". I love your theory Ken. What could be more exciting than that.

"The Book Nobodies Read by Owen Gingerich"

Colin Haig

In a somewhat obscurely related note, I've just finished reading "The Book Nobody Read" by Owen Gingerich. I thoroughly enjoyed it. Its the tale of his 30+ year quest to make a census of Copernicus's De Revolutionibus, which was the famous book that caused the epicycles to be tossed aside in favor of a heliocentric solar system model.

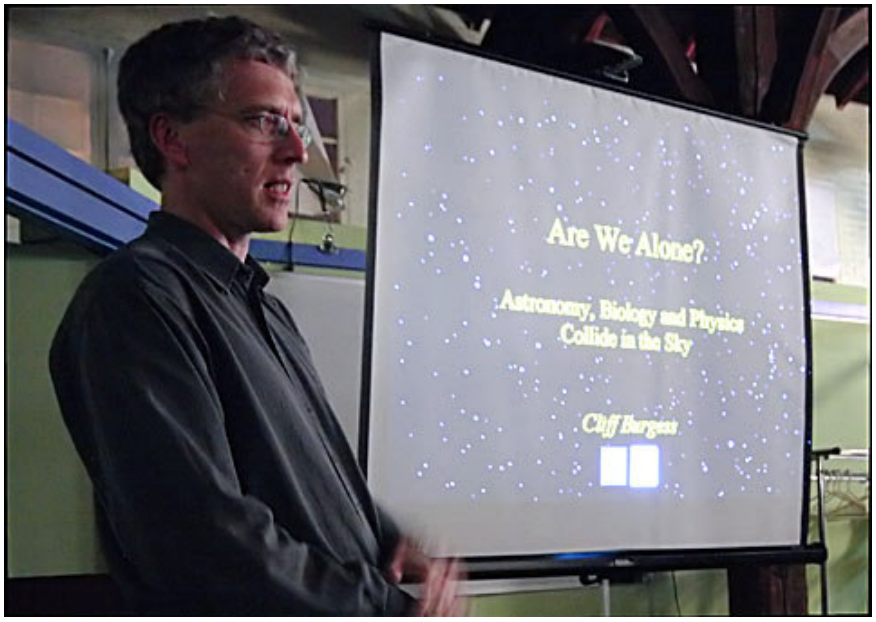
The 600+ copies have traveled around the world, some have been censored by the Inquisition, and all kinds of other mysteries abound, including mysterious annotations in the margins by various astronomers including Tycho Brahe and Johannes Kepler. As it turns out, even though the book made the Index of Prohibited Books, the astronomers in the late 16th century knew things weren't right with the Earth-centred model, but they wouldn't speak out due to the Inquisition. But, Mar's retrograde motion, and more epicycles helped, but the old model's predictions could still be off by 10 degrees+. Kepler really dove into all of this and got it sorted out by taking Copernicus's work an ellipse further.

One of the gems in the book was Professor Gingerich's anecdote about Kepler's astrological dabblings. In one lecture, he showed Kepler had actually cast 2 horoscopes (even though he tried to keep it quiet). The first was for his birthday. The second was for his parent's wedding day a little over seven months earlier. Apparently a very sharp student did the math, and asked the obvious question. It appears our friend Kepler "back-calculated" his conception to his parent's wedding night ;-)

Cheers

DRAKE EQUATION presented by CLIFF BURGESS At the January 2006 General Metering

Our featured speaker was Cliff Burgess of McMaster University. Cliff is a physicist who also has an interest in astronomy. His presentation on the possibility of extraterrestrials and the Drake Equation was very entertaining and thought provoking. It appealed to everyone. Even our young guests Julia Barnes, 9 and Jonathan Hill, 14, were asking questions. How good is that. This talk always inspires great questions and discussions which continued at Kelsey's afterwards. This was my third walk through the equation and it is always a fun adventure.



The Drake Equation - N = N* fp ne fl fi fc fL

The equation can really be looked at as a number of questions…

N* represents the number of stars in the Milky Way Galaxy
fp is the fraction of stars that have planets around them
ne is the number of planets per star that are capable of sustaining life
fl is the fraction of planets in ne where life evolves
fi is the fraction of fl where intelligent life evolves
fc is the fraction of fi that communicate
fL is fraction of the planet's life during which the communicating civilizations live
When all of these variables are multiplied together you come up with: ???

accepted as a member. That was 1974. That was the year that the Starlab project began to take off, the very project which led to the more modest observatory we have now. Unfortunately the grand plans for Starlab fell through when two major funding options didn't work out so we couldn't build the huge facility that was envisioned.

Over the years, many people from my early days have moved on or passed on, but astronomy and the Hamilton Centre have never been far from my heart. In 2009, the Hamilton Centre will celebrate its 100th anniversary, so I can imagine that there have been many people who have felt and still feel the same way I do about all of this. The wonderful, recent events and upcoming developments in astronomy and space exploration remind me of what was just wistful thinking of a younger self, and then later speculated and talked about by my friends over the years in the Hamilton Centre and the RASC.

What I am trying to get at here is that the Hamilton Centre and the RASC have a long history of inspiring people, bringing those who have a common love of astronomy together, and for educating those who yet do not know what astronomy is about. I dare say that the RASC changed my life in a way that nothing else has. I believe that part of the reason the RASC has such a powerful presence is due in part to it being a long lived and historically significant entity. This all comes back to the vote this month on two motions on February 11th at a special meeting of the National Council of the RASC. The RASC needs all of us to step up and vote and get involved. I think it is important.

Winter Skies – Part 3

Ken Lemke

With the current weather we are having, I hesitated using "Winter" in the title, but the calendar says we are still in Winter, so here's some more "Winter" opportunities for your reading and hopefully observing pleasure.

Saturn reached opposition on January 27/06, so on any clear night Saturn I would recommend it as a prime observing target. Can you pick out the Crepe ring, the planets shadow on the rings? How many moons can you see? On page 56 of the February issue of Sky and Telescope is a handy chart to help you identify the moons. As with Jupiter, it is interesting to observe the movement of the moons over time. During the first week of February, Saturn will skim the southern edge of the "Beehive" (M44), a large open cluster which is always a beautiful binocular target. Except for the young, this astronomical pairing is a once in a lifetime event! On pages 62-64 of the Feb/06 issue of Sky and Telescope is an excellent article on observing Saturn.

Next, locate the constellation Gemini (the twins) and aim your scope at Castor (at the head of the Northern twin), and using about 100x, observe a pair of whitish blue suns about 4 arc-sec apart. About 70 arc-sec to the south-southeast is a third, but dimmer (about 9.0 mag) member of the system. Moving to the twins "knee area", there is bright Epsilon Geminorum, and on closer examination you'll find a wide pair (110 arc-sec) of contrasting yellow stars (3.0 and 9.0 mag). About 2 degrees north of Epsilon Gem, sharp eyed observers will spot a small 9.5 mag open cluster NGC 2266.

Jumping over to the other twin (with Pollux at its head), and about the mid-point of the twin is Delta Gem, another fine double; 3.5 8.2 mag at a separation of 6 arc-sec. Observers of the dimmer of the pair report a red to reddish-purple colour. I see red, what do you see? About 2 degrees east-southeast of Delta Gem, is the famous Eskimo Nebula (NGC 2392). When observing this planetary nebula, it is best to use a telescope of at least 8 inches aperture, and experiment with an OIII filter.

Some specific events occurring in the next month:

- After mid-night on the evening of Feb 5 the moon will graze the lower edge of the Pleiades.
- First quarter moon on Feb 5.
- On the morning of Feb 11, a nearly full moon will be about 3 degrees above Saturn.
- Full moon on Feb 12.
- Mars will be just below the Pleiades for about five nights, starting on Feb 15.
- For eastern Ontario, Quebec and the Atlantic Provinces, a waning gibbous moon will occult Spica on Feb 17. Unfortunately for those of us in the Hamilton-Toronto area, we will only catch the tail end of the event. Even then you'll need a good eastern horizon as the moon will only be about 4 degrees above the horizon when Spica reappears from behind the dark limb of the Moon at about 11:06 PM.
- New moon on Feb 27.
- In late February, Mercury re-appears in the evening sky. Look for it

Cont'd pg 7

Hamilton Centre observing weekend…

Roger Hill

I enjoy going to star parties. I've been to Starfest, north of Mount Forest, about a dozen times…once as a speaker. I've been to the Great Manitou Star Party for the last two years, and I attended the Frozen Banana Star Party this past May. I've never made it to the Huronia Star Party, but by all accounts, a good time is had by all. The problem with all except the Frozen Banana event is that they happen in late summer or early fall. Not that this is actually a problem, but in January, it seems like a long way off. I'd like to do something in the Spring. I checked the 2006 Observers Handbook, and found that April 28/29/30 looks about perfect. The spring galaxies should be nicely placed, and the summer Milky Way should be up in the early morning. To this end, I went looking for a place to hold the event. The first area I looked was down on the north shore of Lake Erie. There are a number of campgrounds down there, that have group campsites, some are conservation areas, a couple are Provincially run, and there's even a private ground or two. It was when I checked the Clear Sky Clock, looking for DARK skies that I was disappointed. There is no place on the north shore of Lake Erie where it gets darker than it does at Starfest. And if I'm going to go camping in early May, I want **DARK!**

So, how dark is dark? Well, we use the Bortle scale to describe how dark a site is. John Bortle created his light pollution scale for the February 2001 edition of Sky and Telescope Magazine. Bortle divided light pollution into 9 groups. I'll list them here, as they can be found on the Clear Sky Clock:

Class 8 or 9: Entire sky is grayish or brighter. Familiar constellations are missing stars. Fainter constellations are absent. Less than 20 stars visible over 30 degrees elevation in brighter areas. The Limiting Magnitude is from 3 to 4. Most people don't look up. Examples are downtown Hamilton or Burlington.

Class 6 or 7: Milky way at best very faint at zenith. M31 is difficult and indistinct. Sky is grey up to 35 degrees The Limiting Magnitude is from 5.0 to 5.5. Examples are the Hamilton Centre Observatory and my backyard.

Class 5: Milky way washed out at zenith and invisible at horizon. Many light domes. Clouds are brighter than sky. M31 easily visible. The Limiting Magnitude is from 5.6 to 5.9. Toronto Centres 'dark sky site' at the Forks of the Credit and Cayuga south of Hamilton are examples.

Class 4: Some dark lanes in milky way but no bulge into Ophiuchus. A washed out milky way visible near horizon. The Zodiacal light is very rare. There are light domes up to 45 degrees, and the Limiting Magnitude is from 5.9 to 6.2. Examples include the London Centres observing site at Fingal, and Starfest.

Class 3: Low light domes (10 to 15 degrees) on horizon. M33 is easy with averted vision. M15 is naked eye. The Milky Way shows a bulge into Ophiuchus. The Limiting Magnitude is from 6.6 to 7.0. Examples are the base of the Bruce Peninsula, and areas north of Peterborough.

Class 2: Faint shadows cast by the Milky Way are visible on white objects. Clouds are black holes in the sky. No light domes. The milky way has faint extensions making it 50 degrees thick. The Limiting Magnitude is from 7.1 to 7.5. Examples include the areas north of Wiarton on the Bruce Peninsula, north of Parry sound, most of Manitoulin Island, and areas around Bancroft.

Class 1: Gegenschein visible. Zodiacal light annoyingly bright. Rising milkyway confuses some into thinking it's dawn. The Limiting Magnitude is from 7.6 to 8.0 for people with exceptional vision. There are no clear sky clocks in Ontario with this designation. You have to travel more than 100kms north of The Sault to get skies this dark, or go to the Texas Star Party.

If you want DARK in Ontario, you're not going to get it unless you travel. And to get Class 1 skies, you have to travel FAR. I'm not willing to go that far, though. I'd be happy with class 2 skies. Having spent time on Manitoulin under such skies, I can attest that they are much better than what's available at Starfest. If you're looking for a campground, there are three areas to look at: The Bruce Peninsula; deep in Algonquin Park; and around Bancroft. On the drives back from Manitoulin, I've taken the ferry, and once you get off at Tobermory, it doesn't seem to take long to get back…not like the looooong drive around. It is, in a straight line at least, the closest place with class 2 skies.

The next step was to go looking for a campground. There are a few on the peninsula, some national parks, provincial ones, and private grounds. There were two that intrigued me, though. Both are on a First Nations reserve at Cape Croker…right on the borderline between a class 2 and class 3 sky. I emailed the capecrokerpark.com people, asking if they had information. I got no reply…in fact, my email was bounced back.

I then emailed John Nadjiwon at harbourpark.net, asking similar questions. They do indeed have an area that sounds as if it would be ideal for astronomy purposes. The park has a 'pitch and putt' course, and we should be able to camp right next to it. Check out www.harbourpark.net , there are a couple of slide shows. The campground has clean washrooms and hot showers. John was most accommodating, but he warned me to get in touch with him near the end of March to see what sort of winter they've had.

Since there'll be no speakers, no door prizes, no organized events of any kind, you can't call this event a Star Party…it's just an observing weekend. If you're interested in going camping under some pretty dark skies on the Bruce Peninsula the weekend of Friday, April 28, let me know. Hopefully we'll hit the sweet spot between two seasons: Snow and Blackfly!

Roger.hill (at) hiteach.net

low to the horizon in the east. On the evening of Feb 28, Mercury will be about 4 degrees above a very thin waxing crescent moon.

On any evening where the transparency or seeing is not good and the moon is visible, the moon can provide you with an evening of observing pleasure. If you've never done it, pick a crater along the terminator and watch over a period of at least an hour. It is quite a show as the terminator creeps across the crater and the changing shadows reveal different details.

Enjoy the Night Sky

Nov 2001 Aurora

Ev Rilett

I realize I'm going back in history a bit, however I was new to digital photography when I took these pictures and had no expertise at all. The pictures came out of my camera black (I thought I'd failed miserably) and also I had no noise reduction software. I had no idea if I could rescue these pictures. So, they sat on a shelf collecting dust (so to speak) until I just recently tripped over them in my files and having a little more experience now and a noise reduction program, I've finally done something with them. It wasn't quite the failure I'd envisioned. Not to bad for my first try.