



Winnicentrics

The Journal of the Winnipeg Centre of the Royal Astronomical Society of Canada

Iridium Flares

by Stephen Smyth

When the person I observe with first told me about Iridium flares I was a little skeptical. I was already familiar with spotting satellites since it is common to see faint, slow-moving specks (generally in the 4th to 5th magnitude range) during the course of an observing session devoted to other, more distant objects. But what Marlene told me about flares caused by Iridium satellites just did not seem possible: “There is a website (heavens-above.com) which predicts Iridium flares. If you provide your location it will generate a list of flare events for Winnipeg for the next 7 days. The website will tell you where to look in the sky and at what time. If you follow these instructions, you will see a satellite suddenly appear in the sky. It will become as bright as mag -8. It is so bright that you can witness a flare during the day. The event will last about 10 seconds after which there will be no trace of the satellite at all.”

My first thought was that Marlene must be exaggerating or that she was confusing satellites with meteors. I knew that the largest and brightest artificial satellite is the International Space Station (ISS). It is big (over 60 meters long), it is close (orbits 350 to 370 km above the Earth) and it is highly reflective. Yet the ISS would not normally be brighter than mag - 3. At mag -8 an Iridium flare is a full 100 times brighter than the ISS! So how can another, smaller, more distant satellite be so very bright? Well, there is an explanation.

The Iridium satellites were launched to create a global satellite phone network. There are 66 of them, all of which are in a polar orbit. This means that their tracks roughly follow lines of longitude as they orbit the Earth going from the North Pole – to the South Pole – and back. Each orbit takes about 90 minutes, enough time for the Earth to rotate a bit, ensuring that the next orbit will cover a different slice of the planet.

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Deadline for the next issue is

Members Observing Nights

Glenlea Observatory

Saturday March 12

8:00 p.m. to ???

Your hosts: Scott and Gail

Saturday April 9

8:00 p.m. to ???

Your hosts: Stephen and Lindsay

Come one come all to our Members Observing Nights, weather permitting.

We will take a look for Saturn and Jupiter as well as work on our observing certificates. As always, the 12" will be operational and coffee, tea and hot chocolate are available in the warm room.

News In A Minute:

A big thanks to Jim and Mary Hrichishen for donating their microwave to the Observatory. Popcorn can be done in 3.75 minutes! We also have a brand new electric kettle.

Bob Gow is selling a telescope, an 8" LX90 GoTo SCT in excellent condition. Asking \$1900 or best reasonable offer. Call Bob at 453-1324 to see it.

The website is up for the Saskatchewan Summer Star Party 2005, being held August 4th to 7th at the Cypress Hills Interprovincial Park - and now Dark Sky Preserve! Check it out at <http://duke.usask.ca/~ges125/rasc/starparty.html>

We have tons of opportunities this spring to show the public the wonders of the night sky. If you haven't been to one of these before, you don't know what you're missing!

UPCOMING PUBLIC EVENTS

Wednesday March 16 7:00 p.m.
Fort Whyte Centre

Fort Whyte Centre is a dark site that is not far from the city. The moon will be up, along with Saturn and if we stay late enough, we will look at Jupiter. If you would like to bring your telescope out to help with this let Scott Young know at scott_young@manitobamuseum.ca

Friday March 18 7:00 p.m.
Beautiful Savior Lutheran School, 52 Birchdale Avenue

This is just a couple of minutes from downtown, off Lindale Drive in Norwood Flats. We will have about 35 students from grade 1 to grade 6, plus parents and teachers. The 1st quarter moon will be up, as well as Saturn and hopefully we will also be able to see some double stars and point out some of the constellations. This will be a great opportunity to show the sky to some very young people, and plant some seeds of interest. Let Gail know if you would like to help with this at 794-2624 or wgail@mts.net

Saturday April 16 is **ASTRONOMY DAY**

The daytime part of the event will be at Polo Park. We shall have an indoor location on the second deck near a passageway to the upper parking level where there will be a space reserved for telescopes and solar viewing. It all happens on Saturday April 16 from 10:00 a.m. to 6 o'clock p.m. Members using this opportunity to introduce our passion to the public will be asked to select a shift from 10:00 till 1:00, 1:00 to 4:00, or 4:00 to 6:00 plus teardown. As usual, anyone is welcome to attend for longer but we do need to ensure that the whole day is adequately staffed.

If the evening is clear, we expect to gather at the Odena at the Forks from 8:30 p.m. till whenever, and share with our visitors celestial targets of opportunity.

Pi Kinewabum Anonguk
(see next page) More speakers may be added, so watch the website closer to the date.

Some billeting is available on a first-come-first-served basis. Contact Jeff Kerr at 636 - 2982, email: j.kerr@mts.net to make arrangements.

PI KINEWABUM ANONGUK
(COME, LOOK AT THE STARS!)



A Celebration of Astronomy

May 6 & 7, 2005

Hosted by - Rolling River First Nation

**Working with Manitoba Association of Rocketry (MAR) &
 Royal Astronomical Society of Canada - Winnipeg Centre (RASC - Wpg)**

Friday, May 6

- 11:00 a.m. – 1:00 p.m. – Rocket launches - mid power & high power - Rolling River First Nation – at the “T” – by ECI physics students and MAR. BBQ Hot Dog Lunch on site.
- 6:00 – 7:00 p.m. - Hamburger BBQ for astronomers - Lake Audy campground
- 8:00 - 9:30 - Meet the astronomers – come and see telescopes and talk informally with RASC - Wpg. Members – Lake Audy campground.
- 9:30 – 12:00 midnight – Pi Kinewabum Anonguk – Come, Look at the Stars! – Lake Audy campground. Please leave vehicles at the campground/bison enclosure junction. This will ensure night vision – free from car lights – for the observers.
 - Laser Tour of the Stars – an Aboriginal view of the constellations - Dan Thomas
 - Telescope Tour of the Stars & Planets – an opportunity to look through a variety of telescopes – hosted by RASC – Wpg and local amateur astronomers
 - Hot chocolate will be available in the picnic shelter.

Saturday, May 7

Southquill Hall, Rolling River First Nation

- 5:00 - Traditional drumming and dancing.
- 6:00 - Traditional feast

Little Saskatchewan River Valley – RRFN - Car caravan will leave from Southquill Hall at 8:30

- 8:00 – 12:00 midnight – Pi Kinewabum Anonguk – Come, Look at the Stars!
 - Come and see various telescopes and talk informally with amateur astronomers
 - Laser Tour of the Stars - an Aboriginal view of the constellations - Dan Thomas
 - Telescope Tour of the Stars & Planets – an opportunity to look through a variety of telescopes – hosted by RASC – Wpg and local amateur astronomers
 - Campfire & hot chocolate

EVERYONE WELCOME!

The following members are working toward their:

Messier Certificates:

Eugene d'Auteuil 41
 Murray Rennie 19
 Lindsay Price 32
 Kris Keller 39

Explore the Universe:

Terra Jentsch 30
 Stan Runge 13
 Lindsay Price 78
 Timothy Kennedy 32
 Judy Starr 22
 Ray Starr 21
 Sandy Shewchuk 17
 Eugene d'Auteuil 12
 Murray Rennie 6

Herschel 400's

Stan Runge 98
 Sean Ceaser 133
 Mike Stephens 92

Finest NGC's:

Sean Ceaser 67
 Mike Stephens 76

The following members have completed their:

Explore the Universe

Gail Wise
 Janet Pollock
 Janice Low
 Mike Stephens
 Lindsay Price
 Ralph Croning

Messier Certificates

Kevin Black
 Alan Sherlock
 Mike Stephens
 Rick Turenne
 Gail Wise
 Ray Andrejowich
 Stan Runge
 Bernie Plett
 Sean Ceaser
 Mike Karakas

Finest NGC's

Kevin Black
 Stan Runge
 Gail Wise

We have the following
 new members

Ed Rajfur, West St. Paul
 Peter Toth, Selkirk

Welcome to our Club!

a key (\$10.00 deposit required).

If you would like training on the LX200 Lindsay will be running training sessions, but not on Members Observing Nights. You can contact him at 227-4684 or flprice@mts.net or talk to Lindsay at a meeting.

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Winnicentrics is published six times each year by the Winnipeg Centre, RASC.

Winnicentrics is produced by and for the members of the Winnipeg Centre, and any opinions expressed are those of the author.

If you have comments, questions or concerns about *Winnicentrics*, you can contact any of the councilors or write to RASC, Winnipeg Centre, Box 2694 Winnipeg MB R3C 4B3

Iridium Flares *continued from page 1*

Because there are 66 satellites – distributed in different orbital paths – between them they can provide phone coverage world-wide. The Iridium satellites use antennae with highly reflective flat surfaces that act like mirrors. These antennae are useful for receiving satellite-phone signals, but only if their orientation in space (attitude) is carefully controlled. Because the attitude of the antennae are controlled, it is possible to predict when these “mirrors” are receiving direct sunlight. It is further possible to predict the angle at which the sunlight will reflect off of the antennae/mirrors and whether that light will be directed at the Earth.

The Iridium flares are so much brighter than other, reflective satellites for two reasons. The first is that they are in a low earth orbit (LEO). With an orbital height of 760 km, they can be quite close compared to other satellites, the majority of which orbit at 36 000 km in order to be Earth-synchronous, or remain “parked” in the same location above the Earth. But there are other LEO satellites, including the ISS, which still do not rival Iridiums in brightness. So the second (and main) reason that they are special is that the mirrors/antennae are flat and tilted at an angle that is most likely to catch sunlight and redirect it to a part of the planet which is in darkness. Sunlight reflected from a flat surface is much less scattered and so it is also much, much brighter, at least when compared to sunlight reflected from a typical rounded satellite body. Also, since the light beam is narrowly focused the flares are very short. When you see such a flare you are standing in the path of a beam of reflected sunlight which passes over you along with the fast-moving satellite producing it. These beams of light will always move in a north-south direction since all Iridium satellites are in polar (north-south) orbits.

I decided to trust Councillor Wallace and visited the Heavens Above website. Within 2 days I saw my first flare. I have since asked friends and family who have no interest in astronomy to trust me. At the right time and place I declare, “look up and a bright light will suddenly appear!” and the flare appears on time to the second as predicted. This really impressed my friends and family. Of them, those who were given a scientific explanation for this phenomenon were impressed by the flare; those to whom I did not provide an explanation were impressed by my ability to create a flash of light in the sky.

February 22 at the Portage la Prairie Library *an astronomy info session held by Ken Metcalfe*

I had emailed Ken and told him I may drive down to attend the session and he was most happy to see me there. Attendance was a bit slim despite the publicity, including radio. There were 9 people there including myself. Ken however gave a very good talk and had the complete attention of all who were there. He did a great job of fielding questions of which there were plenty. One youngster named Jason (who might one day turn out to be an avid astronomer) tested the limits of Ken's knowledge. But Ken was able to answer all questions to Jason's satisfaction.

After that we went out to the parking lot to do a bit of binocular observing. I helped out a bit and we got a lot of Oooohs and Aaaahs when people saw craters on the moon for probably the first time in their lives. One lady even said that it would never have occurred to her that astronomy could be practiced with a pair of binoculars. Apart from the moon we showed them a few constellations, pointed out Sirius and also showed them Saturn which showed up as a disk in binoculars rather than a pinpoint of light. If not all, we may have planted the astronomy bug in at least half the attendees.

Ken also invited me over to his place to check out his "tilt component" 5 inch reflector. It was quite a cool scope with the nice quality being that the entire 5" of the mirror is used because there is no central obstruction. After about 15 minutes of observing my feet froze (I wore runners) so I called it a night and headed home. On the drive back there was such a dense fog I had slow down to 40 just to be able to see the road. Needless say, it was a long drive home.

All in all, it was a fun evening. Ken's areas of interest are astrophysics and cosmology. He is doing a lot in the Portage area to promote astronomy and in my opinion is quite an asset to the Winnipeg Centre

Ralph Croning



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