

AURORA



Volume 26, Number 7

The Royal Astronomical Society of Canada - Windsor Centre

March 2001

Brightest Supernova in the Last Few Centuries

by Juliana Grigorescu



As we enter into the new millennium it's time to review what we have done so far and what are our plans for the future. We now know a lot about our own stellar system (Solar System); we were able to create technologies and send spacecraft and robots to our Moon, to the planets and satellites, asteroids and comets. We discovered laws to explain the motion of bodies (Kepler's, Newton's, etc....) and the electromagnetic waves (Einstein gave us a hand on it) We know more about the universe and its evolution.

Thinking of the future, we hope to be able to colonize our Solar System, to discover the mechanism of the universe, and "maybe" to create a better world here, on Earth (less pollution, more people at RASC). Some of us think about getting a more powerful telescope. Good luck! And we keep looking up in the skies to our beloved galaxies,

nebulae, stars, planets, natural or artificial satellites, meteors, etc. And sometimes supernova explosions...

The brightest observed supernova since 1604 was Sanduleak's Supernova. On February 23, 1987 the Canadian astronomer Ian Shelton (University of Toronto) and the telescope operator Oscar Duhalde, both working at the Las Campanas Observatory in Chile saw a strange bright spot on a photographic plate of the Large Magellanic Cloud. Checking the plate taken the night before they noticed that only a faint star appeared in that place. They walked outside to take a look: and there it was - the first supernova visible from Earth in almost 400 years. What a day!

The supernova was named after its discoverer, Nicholas Sanduleak of Case Western Reserve University. Sanduleak 69°202 was a blue supergiant 20 times more massive than the Sun and about 100,000 times brighter, situated 167,000 light-years away in the Large Magellanic Cloud. SN 1987A9 (as it is called) got as bright as mag 0.7 (as bright as Procyon in Canis Minor). Various elements appeared in the explosion like gamma rays and neutrinos. Theoretically neutrinos come surging out a star prior to its actual explosion. Therefore, they should have arrived on Earth before the supernova was visible. And that is what happened. The day before the supernova, underground detectors in Kamiokande II in Japan and Ohio recorded 19 neutrinos, a bonanza in the world of neutrino "hunting". Prior to exploding the star blew off a lot of material which collected in inner and outer rings of material. Even if the specialists expected a red star instead of a blue one, they now believe that it had been red for perhaps a million years, but 100,000 years ago it shrank, thus changing its colour.

The supernova of 1987 was a major event. Are we ever going to see one naked eye? Likely candidates include Betelgeuse, the variable red supergiant in Orion, Antares, the red supergiant in Scorpius, and Eta Carinae in Carina. And this could happen 400 years from now or, even tomorrow.

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Calendar of Events

Our next meeting...

Tuesday, March 20, 2001
8:00 p.m.
at
St. Stephen's Church
Howard Road, 1.4 kms. south of
Hwy # 3

Main Speaker...

Phil McCausland

Topic...

"The Tagish Lake Meteorite"

Activities...

Venus at Greatest Brilliancy - Thursday February 22, 2001 at magnitude - 4.6

Zodiacal Light - Look for the zodiacal light after evening twilight for the last half of March

Spring Equinox - Tuesday March 20 at 8:31 a.m. Eastern Time

Messier Marathon - Saturday March 24, 2001. Location to be determined

Venus - Look for Venus in both the morning and evening skies on March 26 and 27

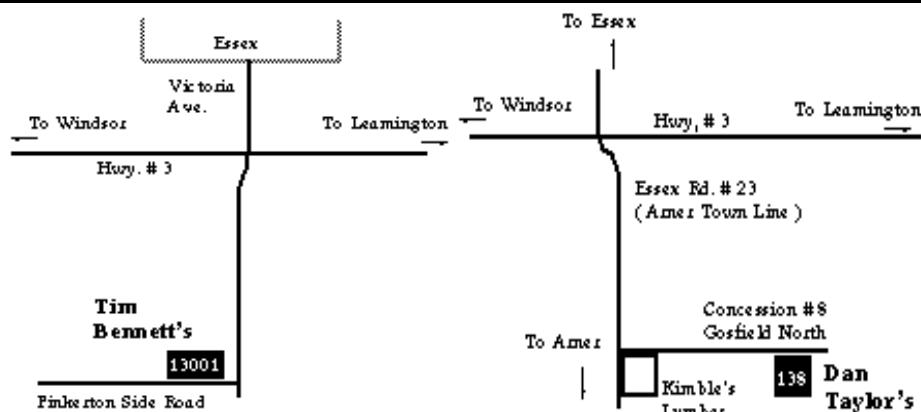
Observing Nights

Frank Shepley's.....Last Quarter Moon

Dan Taylor's.....New Moon

(please call before showing up)

Maps



Tim's House (776-8901)

Dan's House (776-4493)

Calendars

Windsor Centre members who wish to purchase the 2001 RASC calendar should buy it through Frank Shepley for \$12.00. Not only will you save a couple of dollars but the Windsor Centre will also get a portion of the proceeds. See Frank at any meeting to get your copy.

Submissions

Aurora is published monthly except for August. The September, November, January, March, May and July issues are full newsletters (usually 6 pages) with a number of member submitted articles. The October, December, February, April and June issues are short flyers (2 pages) with one short article. Submitted articles can be of any length from a paragraph to multiple pages. I can scan pictures and/or diagrams (both prints and film) to support your article and the originals will be returned to you.

Submission deadline is the 1st of the month. I will accept Emails at the address below, floppy disks, or written submissions.

Editor: Steve Mastellotto

Email: smastell@wincom.net

Membership

The Windsor Centre of The Royal Astronomical Society of Canada meets on the 3rd Tuesday of every month (except July and August) at St. Stephen's church. In addition to regular meetings the centre hosts a number of observing nights, a picnic and a December social. Members receive a copy of the Observer's Handbook, the RASC Journal, a subscription to SkyNews magazine and access to the Centre's library and telescopes.

Membership is \$40.00 - 1 year, \$80.00 - 2 years and \$120.00 - 3 years. Life memberships are also available.

Contact Frank Shepley at (519) 839-5934 or visit our website at: www.mnsi.net/~rasc for more information.

2000 Clear Night Reports by Tim Bennett and Dan Taylor

My definition of clear nights differ from others because I do mostly deep sky observing. To be counted as a clear night there must be at least 50% of the sky clear from clouds and the zenith must be clear 1 hour after sunset and midnight. With the increase in light pollution from Essex if it is hazy enough to limit deep sky viewing it is counted as a cloudy night.

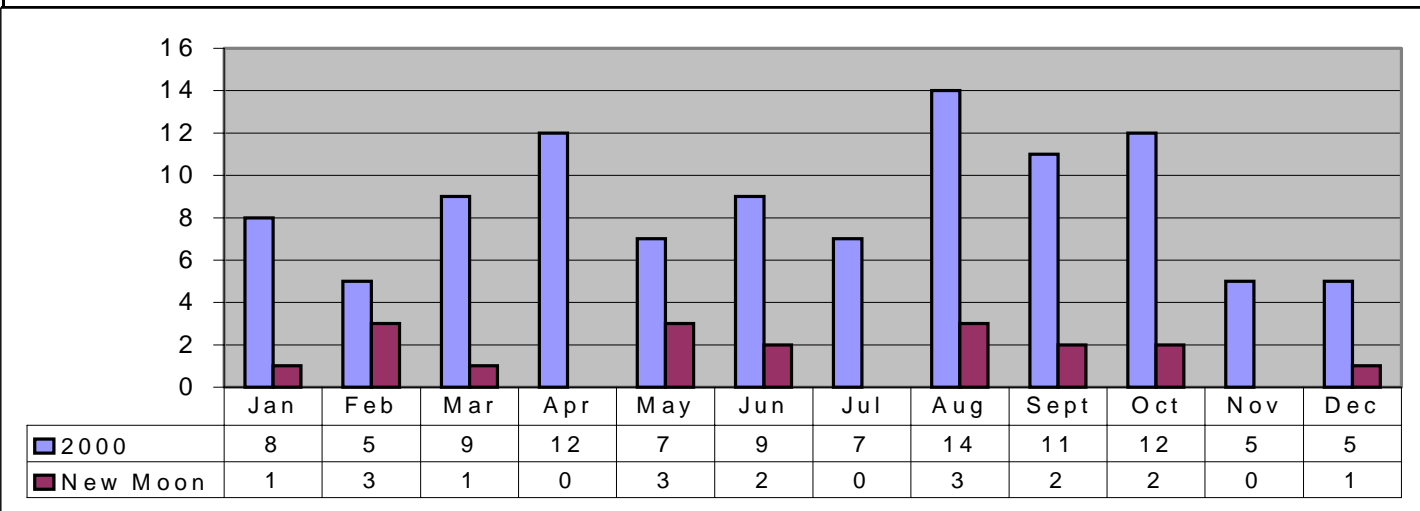
Since most of deep sky viewing is done around new moon I also keep track of the clear nights for five night period (two nights prior, new moon and two nights after) at new moon. Over the years I have noticed that late summer and early fall seem to have the most clear nights around new moon and first quarter. Late spring and early summers clear nights tend to fall around full moon.

Winter time has no set pattern.

This year I've had the least amount of good observing nights since joining the Centre.

Note: On the chart below July's report is from the 12 to the 31 since I was at the G.A. in Winnipeg.

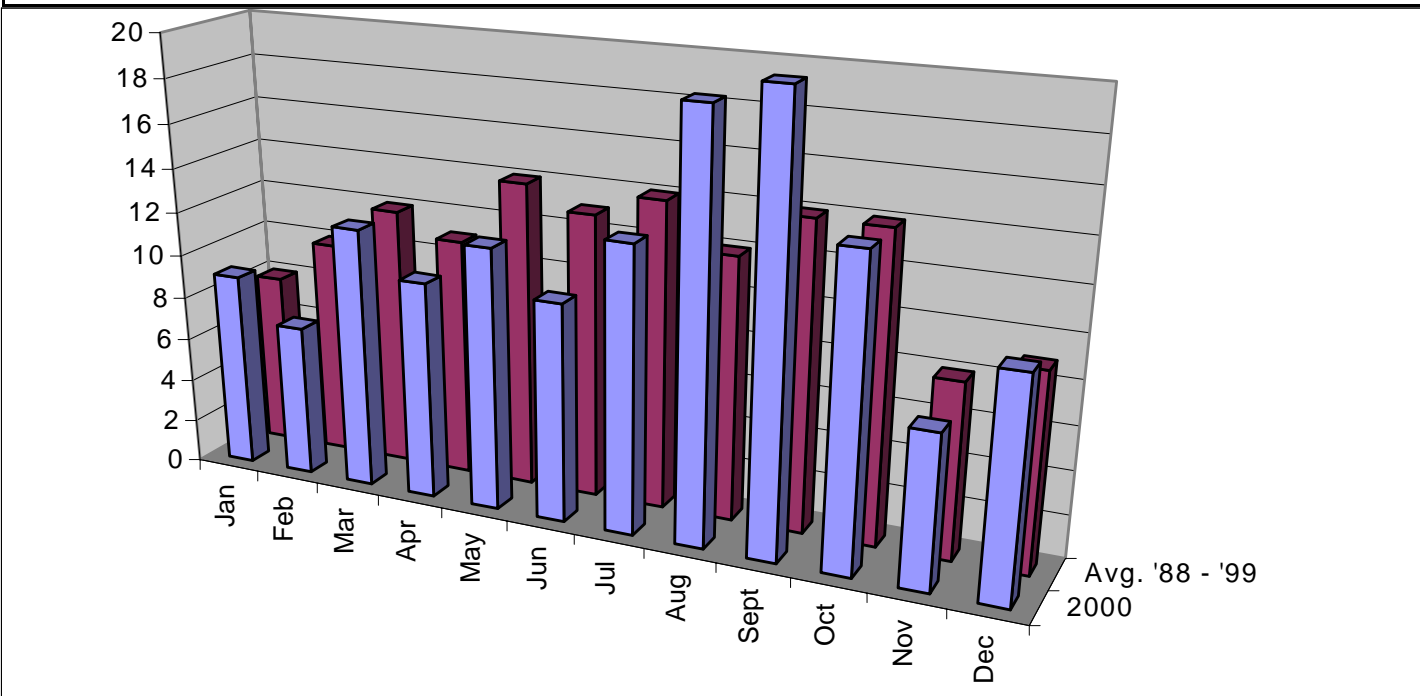
Tim Bennett



The following data was taken by and large from my home in southern Essex County. My definition of a clear night is as follows: 80 % or more clear skies for an hour, between sunset and midnight.

Even though winter months have more dark hours before midnight they typically have the lowest counts. Last year was no exception. August and September surpassed their historical averages otherwise it was a typical year. In looking over the 13 years of records I noted the high count, 22 - October 1992 and the low, a paltry 3 - January 1999.

Clear skies, Dan Taylor



A Halloween Mystery by Dan Taylor

Tuesday October 31st 2000, Halloween night, we observed the last Halloween of the millennium. Many of you may have read the newspaper accounts of a mystery object over Windsor on the aforementioned night. I would like to report to you my version of what was certainly the same object.

As is customary in our house Carol, my wife, loaded the younger children in the car, and as is customary in the rural tradition, drove them trick or treating to our neighbors. That left yours truly to guard the home, and dole out candy with my four-legged affable companion, Terra our gregarious big furry dog. We don't receive many trick or treaters here, just a half dozen or so neighbor children. Usually I set treats on a folding table on the front lawn, which, for those of you who have been here know, faces north.

What a night. Crystal clear skies, Venus and the waxing Moon were framed poetically in the trees to the southwest. As previously stated we only receive a few children so I was able to do a little lawn chair astronomy. Time even permitted me to take some slide shots of the Moon and Venus. It was a few minutes past 6:15 PM that the night truly became memorable. From the northeast my eye caught a slowish moving glow, turning to see, I was startled by a bright green light. It was somewhat brighter than Venus was, but not greatly so. At the initial point it was in southern Perseus or northern Taurus at about 15 degrees of elevation. Traveling east to west clear across my northern sky in approximately 15 seconds, it disappeared from my view in a cluster of trees across the road. By that point I estimated it traversed about 100 degrees! Just before passing behind these trees it threw a few trailing "sparks". It was about 5 degrees in elevation when I lost it. No lasting trail was noted.

The next day I was surprised to see a report in the Star that, a fellow had seen what to his mind was a UFO! He reported erratic stop and start motions as well as some other UFOish characteristic (it took off straight up!) The following evening a further report indicated by way of a knowledgeable witness that it was likely the international space station (ISS) the individual even supported this with internet garnered data on its coincidental passage time.

I however, drew a different conclusion.

There are several reasons why it was neither a UFO (obviously, after all they are too busy writing their alphabet in wheat fields) or the ISS. Most orbiting spacecraft take advantage of the Earth's rotation and launch in some vector of west to east trajectories. As was noted above this object was traveling east to west. Moreover the ISS path is inclined about 51 degrees to the equator, generally southwest to northeast, hardly the east-west I saw.

Subsequent reading led me to identify a possible source. A Leonid report from Perrie Martin of the Ottawa centre also mentioned North and South Taurids. The North Taurids peak on November 12 but have a broad plateau from October 27 to November 27 which easily falls into the time period.

While watching its marathon streak across the sky, somewhere in my mind I was recalling a spectacular event documented in the 1970's. On August 10, 1972 a vacationer actually filmed a daylight grazing meteor as it streaked over the Grand Teton mountains of Wyoming. These are a very special class of meteors and often produce spectacular sights. In essence, the Earth and these objects briefly share an encounter in their respective orbits about the sun. Both apparently survive the encounter. This moreover, is what I believe is the nature of the event I witnessed.

Then perhaps..... was it a witch racing to her coven on all hallows eve?

Windsor Centre Income Statement for October 1, 1999 to September 30, 2000

REVENUE

Operating Income

Associate Membership	14.40
Membership	1,461.67
Life Member Grant	28.80
Donations	1,396.51
Draws and Raffles	209.60
Miscellaneous	6.77
Educational Activities	0.00
Interest and Dividends	0.54
Total Operating Income	3,118.29

Profits Realized

Profits Realized	1,900.00
Total Profits Realized	1,900.00

Merchandise Income

B.O.G.	95.85
Handbook	60.00
Calendar	420.00
Mug	21.00
Pins	20.00
Sky & Tel Stickers	2.00
Total Merchandise Income	618.85

TOTAL REVENUE

\$5,637.14

EXPENSE

Operating Expense

Bank Charges	0.48
General Supplies	77.07
Equipment	3,622.58
Telescopes	25.61
Miscellaneous	468.09
Hall Rental	185.00
Newsletter	264.29
Library	55.08
Total Operating Expense	4,698.20

Merchandise Expense

B.O.G.	89.12
Handbook	50.83
Calendar	299.60
Mug	19.52
Pins	15.81
Sky & Tele Sticker	0.00
Total Merchandise Expense	474.88

Subscriptions

Sky & Telescope	47.04
Astronomy	0.00
Total Subscriptions	47.04

TOTAL EXPENSE

\$5,220.12

NET INCOME

\$417.02

The Double-Exposure of Venus

On March 26 and 27, Venus will be five degrees above the horizon and visible at both sunrise and sunset. Look for it a few degrees to the north of the Sun. On those days, sunrise will be at 5:50 a.m. and sunset at 6:32 p.m.

This will be a fine opportunity for those who enjoy looking for planets and stars during daylight hours. Binoculars are recommended and care should be taken for eye-protection as the Sun is a mere 5 degrees away.

This rare event makes it easy to understand why astronomers of the ancient world, who did not subscribe to the RASC Journal, would believe that Venus was actually two, the morning star and the evening star. The Romans called the evening apparition, Vesper, their word for evening and in the morning it was Lucifer, the bearer of light. Lucifer did not become Satan until much later through an error in scripture interpretation.

Shuttle Launch - February 7, 2001

Space-shuttle Atlantis soared out of the south at 6.13 p.m. on a northeast track toward the International Space Station which moments later, could be seen on its regular orbit, crossing the sky in the northwest.

Atlantis rose on a pillar of orange flame leaving a silver plume that reflected from the setting Sun. The almost-full Moon in the east, seemed to shine a welcome Atlantis, to earth-orbit.

It was a beautiful combination, with the silver colored Atlantis, its multi-colored plume, the setting sun and the rising moon in a twilight sky.

We watched as the two boosters separated and gradually lost momentum while their parent zoomed away on its own power.

Exactly two years previously, we had visited the NASA space center and toured the area where engineers and technicians were assembling the Destiny Laboratory. We walked through the prototype and marveled at the detail of the lay-out. Now the real thing was being carried, again while we watched, to its orbiting home 220 miles above the earth.

By Rod Clark

Stargazers Lament

Why is it when I'm feeling great
had lots of sleep, could stay up late
no interference from my mate
no stars are out?

If I'm weary, the day long and hard,
when I step into my backyard
a perfect sky not a cloud has marred—
the stars are out!

Sometimes I do get it right
and venture out into the night
when all is clear and all is bright—
when the stars are out!

The again my bed is calling,
but this night the stars are falling
so in my observing chair I'm lolling—
shooting stars are out!

My spirit is willing my body weak
yet out I go the stars to seek
ah relief, after just one peek—
the clouds are out.

Martha Pinch

UNIVERSAL SCIENCE

Windsor's Astronomy And More Store

*We are moving! We still have inventory on most items
10% off on all in-stock telescope accessories and binoculars*



Starry Night Pro - List Price ~~\$189.95~~ Special Price \$159.95 - This offer expires February 28, 2001

Starry Night Backyard - List Price ~~\$69.95~~ Special Price \$59.95 - This offer expires February 28, 2001

NEW!!!! Pre-Order - Skywatcher 8" DOB: 200mm (8") F6 Parabolic Reflector C/W Dobsonian Mounting, metal tube, 2" focuser with 1.25" adapter, 6x30 finder, SMA 25mm and SMA 10mm eyepieces, eyepiece shelf, integrated self balancing system. Suggested List Price ~~\$799~~ Extra Special Low Price \$499.99

NEW! In-Stock - Meade LX90: 200mm (8") SCT, Computerized full GO TO, 30,000 object library.
Mail Order Price ~~\$2,899~~ CDN Special Price \$2,699 CDN

Contact Robin Smallwood

Monday - Friday 9:00 a.m. - 5:00 p.m., Saturday 9:00 a.m. - Noon, Closed Sunday

Telephone: (519) 967-1655 Fax: (519) 967-1657

Email: unisci@sympatico.ca

January Meeting Minutes

GENERAL MEETING MINUTES

January 16, 2001

President - Randy Groundwater called the meeting to order at 8:05 p.m.

President asked the membership to review the minutes from the November 21, 2000 general meeting.

Motion #1, 01-16-2001. Susan Sawyer-Beaulieu put forth a motion to accept the minutes of November 21st, 2000 general meeting as printed in the newsletter. Tim Bennett seconded the motion. Motion carried.

Reports

Secretary - Joady Ulrich

Edmonton Centre sent down a Music CD and a Christmas card was sent to Dorothy Hallam.

Librarian - Tom Sharron

Louis Durnbeck donated Astrograph Magazines & Mike Pataky donated donuts for this evening.

Director of Education - Randy Groundwater

Randy asked if anyone has been doing any one on one observing. Someone from the University of Windsor area is looking for a ride. Randy mentioned that he was going to do a presentation at Dougall Elementary School and was to also do a presentation to school teachers in training.

Editor - Steve Mastellotto

Would like articles for the Newsletter. Have several Newsletters available at the table from other centres for members to read.

Phone Committee - Steve Mastellotto

Steve ask for e-mail addresses from members so as to be able to notify of upcoming meetings via the Internet. The phone committee was not active this past month. Rev. Harry Brydon mentioned he liked a phone call for special events. Special phone calling would be discussed at Council Meeting.

National Council Rep. & Treasurer - Frank Shepley

At that national level there was nothing presently happening. The GA is presently being organized. Hosted by London. Frank asked that when renewing membership, to make it easier time wise for him to bring in renewal forms filled in. Frank noted that most renewal forms have been coming off the Internet site. To date the membership is at 115. Frank reported that 2 calendars are left.

Director of Observing - Robin Smallwood

Due to sickness in the family Robin was not able to be present. Randy asked the membership for observation reports of the

Christmas Eclipse of the sun. Randy told of viewing the eclipse from inside the house.

Randy showed a series of slides on M42, Orion Nebula, and birthplace of stars. The 1st slide showed Taurus the Bull & the Pleiades (7 sisters). The 2nd slide was of the Pleiades. 3rd was of Orion & shield. 4th of Orion. 5th of the sword of Orion (very detail photo). 6th was of Orion; from a close location to the city showing the effects of light pollution.

Several members told of their experiences of the Solar Eclipse. Rev. Harry Brydon commented that he used a card and pin hole method.

Business

Randy welcomed everybody back from the holidays. Mentioned that it's been 12 years since he did this job.

Bert Huneault was in London Hospital for a double bypass. Bert is a past president of the Windsor Centre.

The Observatory at St. Clair College was purchased for \$500.00 by the membership. Plans are in preparation for dismantling and storage until a permanent site can be found. The college paper, The Saint ran an article on the R.A.S.C. Windsor Centre and the purchase of the Observatory.

Randy commented on a newspaper article that police detained and then arrested 8 men in Turkey for shooting at the moon during the Eclipse of the Sun.

February 13th 2001 is the date of Council Meeting at Steve Mastellotto's home.

50/50 draw was won by David Panton; \$ 13.50

Thanks to Tom Sharron for preparing the Coffee & Hot Chocolate for break time.

The guest speaker

Susan Sawyer-Beaulieu was introduced by Randy Groundwater, and her topic was on "Backyard Observatories". Different styles of observatories were brought forward in her presentation. Susan showed a series of slides from her own experience in the construction of her observatory. She listed different styles, type, size ranges of observatory possibilities using photos of member structures. Presented were common & uncommon observatory designs, general advantages and disadvantages, styles and features. Sliding and roll-off roofs and rotating roof styles were presented. Assorted books and web sights were discussed on the subject.

Meeting was adjourned at 10:08 p.m.