

Event Horizon

November 2001

Volume 9 Issue 1

Leonid Meteor Shower (Storm?)

The following article is based on the November 2001 NAMN Notes. NAMN Notes is a monthly newsletter produced by the North American Meteor Network, and is available both via email, and on the NAMN website at:

www.namnmeteors.org.

If the weather is clear on the night of November 17/18 join your fellow HAA members at our Binbrook Conservation Area observing site. It will be a lot of fun and if

this year's predictions for a meteor storm are correct it could be the "sight of a lifetime".

Stewart Attlesey

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The Leonids

These meteors are debris from Comet 55P/Tempel-Tuttle that burn up as they hit Earth's atmosphere. The shower consists of particles that have been shed over many orbits by the comet. The comet shed some of the particles, you will see as meteors, hundreds of years ago.

The Parent Comet

While living in Marseilles, France Ernst Wilhelm Liebrecht Tempel discovered the comet on December 19th, 1865. Tempel was born in 1821 in Nieder-Kunersdorf and discovered a total of 13 comets in his lifetime.

Horace Parnell Tuttle of Harvard College Observatory, Cambridge, Massachusetts independently discovered comet Tempel-Tuttle, on January 6th, 1866. He went on to a

total of 4 comet discoveries, and 9 co-discoveries. The most famous of these comets is 1862 III Swift-Tuttle, the parent of the Perseid meteors.

The Early Leonid Observations

There are many old descriptions of the Leonid meteors, going back over 1000 years, long before their cometary origin was known. One of the first recorded instances of the shower occurred on October 12, 902. We now know, due to calendar allowances, that this was the Leonids. The Leonids of November, 1833 sparked the current birth of meteor astronomy as we know it. This storm was widely observed in North America. In 1866, another meteor storm occurred. Sir Robert Ball wrote: "Such was the occurrence which astonished the world on the night between November 13th and 14th, 1866. The meteors were distinguished not only by their enormous multitude, but by their intrinsic magnificence.

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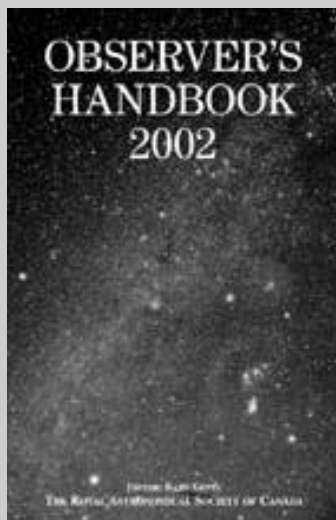
Cosmology Discussion Group

We will be discussing the Fox TV's Apollo Moon Hoax show. For reading material on the subject call Larry at (905) 529-1037 and you will be sent the literature. We were unable to obtain the original show on video. For part of our meeting we will discuss topics for our spring meeting.

As always, refreshments will be provided. Everyone is welcome.

The meeting is Saturday, November 24th, 2001 at 8pm. It will be in room B148 of McMaster's Burke Science Building.

Observer's Handbook 2002



It is time to order your Observer's Handbook once again. If you want one, be sure to get your order in soon. Cost is \$15.00. Email margw@icom.ca, call (905) 627-7361, or sign up at the club meetings.

HAMILTON AMATEUR ASTRONOMERS

Event Horizon is a publication of the Hamilton Amateur Astronomers (HAA).

The HAA is an amateur astronomy club dedicated to the promotion and enjoyment of astronomy for people of all ages and experience levels

The cost of the subscription is included in the \$25 individual or \$30 family membership fee for the year. Event Horizon is published a minimum of 10 times a year.

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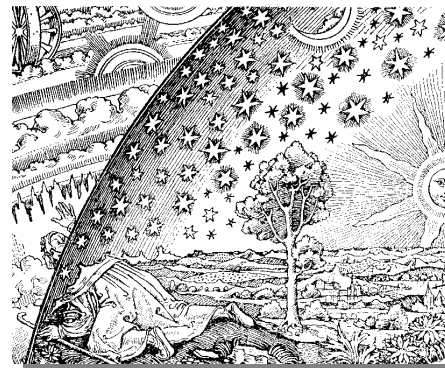
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Leonids...

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I shall never forget that night... It would be impossible to say how many thousands of meteors were seen, each one of which was bright enough to have elicited a note of admiration on any ordinary night."

Observations Last Century.

In 1933, no storm was observed.

In 1966, however, a brief storm was observed on November 17th over the central and western United States. A peak rate of about 40 meteors per second was reached at 5.54 a.m. local time. This works out to 2400 meteors per minute, or a ZHR of 144,000! The ZHR, or Zenithal Hourly Rate, is a measure of the number of meteors that an observer would see on average, per hour, with the unaided eye. This rate assumes that the observer is out under a dark sky with the radiant, the area in the sky where the meteors seem to come from, directly overhead.

In 1998, a surprise shower of fireballs was seen. This unexpected bombardment of fireballs happened about 16 hours before the predicted peak of the Leonid shower! It must be remembered that, in spite of all kinds of predictions by professional researchers, we still do not know everything about meteors!

In 1999, a storm of Leonid activity was observed from western Asia,

Europe, and Africa, with a ZHR of about 3700.

In 2000, rates were not as high. Three peaks were observed, but with a ZHR of only about 130, 290 and 480.

Predictions for This Year

There are a number of models predicting the activity of the Leonid meteors this year. It will only be after the event has occurred that we will know which model best fits the activity seen!

According to the Armagh Observatory website at <http://www.arm.ac.uk/leonid/encounters.html> the following peaks are predicted:

1. November 18, 5.01AM, ZHR 2,500?, Visible from N. & Central America (Debris shed by the comet in 1767.)
2. November 18, 12.31PM, ZHR 9,000, Visible from Australia & E. Asia (Debris shed by the comet in 1699.)
3. November 18, 1.19PM, ZHR 15,000, Visible from W. Australia, E., SE & Central Asia (Debris shed by the comet in 1866.)

You can see from these times that North America only gets 1 peak at night. Of course, the Leonids will be visible all through the night at lower rates than pre-

dicted for the peaks. For us, at the 5:01AM peak, the radiant will be about 50 degrees above the horizon. It will be close to new moon for the Leonids so get out to a dark site to increase your meteor rates!

More detail can be found on the Armagh website at <http://www.arm.ac.uk/leonid/info2001.html>.

Other models predict that the peak visible to us will occur within ½ hour of the times shown above with a ZHR up to 4,200.

Where in the Sky Should You Look?

The Leonids (LEO) will have a general radiant at RA 10h 12m, Dec +22, which is about 2 degrees down to the right of the star zeta Leonis, the star called Adhafera, up in the 'sickle' of Leo. No matter where in the sky you see them, if you trace back the path of a Leonid meteor, it will seem to come from this area.

These are very fast meteors, with a velocity of about 71 km per second. Get comfortable in your lawnchair, and center your gaze about 50 degrees up in the sky. As these meteors are very fast, the fainter ones may be difficult to detect for beginning observers. If you concentrate on one direction in the sky, instead of moving all over, you will have a better chance of seeing more meteors,

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Treasurer's Report

Barbara Wight

The financial statements for the year ended October 31, 2001 have been published in this issue of the newsletter. As you will notice, this year resulted in a surplus of \$760. The main reason for the surplus is due to the fundraising activity of the Messier Marathon. The balance of the surplus is interest earned on a bond that matured. This also resulted in our investment account decreasing by the bond principal of \$1,000, with the funds being deposited into our bank account.

The increase in membership dues this year resulted in the revenues covering the expenses, therefore there is no deficit for the first time in a few years. Thank you for your continued support, and any input from the membership is always welcome.

HAMILTON AMATEUR ASTRONOMERS BALANCE SHEET AS AT OCTOBER 31, 2001 (Unaudited)

ASSETS	Oct 31 2001	Oct 31 2000
Bank	2127	355
Investments	2000	3000
Inventory	300	0
Prepaid Expense	77	80
Total Current Assets	4504	3435
Fixed Assets -Equipment	1287	1287
Total Assets	<u>5791</u>	<u>4722</u>

LIABILITIES

Accounts Payable	94	0
Deferred Revenue	445	230
Total Liabilities	<u>539</u>	<u>230</u>

EQUITY

Opening Balance	4492	4609
Current Year	760	-117
Closing Balance	5252	4492
Total Liabilities and Equity	<u>5791</u>	<u>4722</u>

Prepared by Barbara Wight, Treasurer

HAMILTON AMATEUR ASTRONOMERS INCOME STATEMENT AS AT OCTOBER 31, 2001 (Unaudited)

INCOME	Oct 31 2001	Oct 31 2000
Donations -Membership Fees	1540	1475
Donations -Other	235	266
Raffle	0	136
Messier Marathon	490	0
Observers Handbook/Calendar sales	464	442
Interest Income	368	0
Total Income	<u>3097</u>	<u>2319</u>

EXPENSES

Newsletter printing	369	350
Newsletter postage	435	348
HAJA	0	13
Meeting and Observing Expense	112	173
Promotion	84	161
Observers H/B/Calendar cost of sales	468	442
Insurance	667	610
General Administration	22	162
Post Office Box rental	80	77
Donation Expense	100	100
Total Expenses	<u>2337</u>	<u>2436</u>

SURPLUS/DEFICIT

	<u>760</u>	<u>-117</u>
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Prepared by Barbara Wight, Treasurer

The Night the Sky Danced

It seems like a long time since we last had a good aurora. But it was worth the wait! On the evening of Monday, November 6th, I check the aurora web page of the US National Oceanic and Atmospheric Administration - as if they administered the ocean and atmosphere! - and noticed that the auroral oval had greatly intensified and was extended to the south. It looked like a pretty good display was headed our way. Tempting fate, I decided to send out an e-mail to alert HAA folk. Next, I convinced Bob Botts that we should head out to the country. I anticipated that we might get something around midnight, if we were lucky.

We knew we were in for a treat when we could see the sky filled with aurora while we were still on Highway 403 in Hamilton! A beautiful corona was overhead and there were large patches of deep red along with the more usual green streamers. I phoned everyone whose numbers I could remember and told them to get outside NOW!!

The aurora was still hanging in there at midnight, although the relatively fully illuminated moon took some of the contrast out of it. Still, it was in my top 5 displays of all time and it was the first time that I was able to alert my kids in time for them to see it, so it was certainly one of the most memorable.

Tuesday evening is almost upon us as I write this and the auroral oval is looking much like it did last evening, so another great display might be in the works. Check that sky frequently, since the sun has been very active recently!

If you are interested in learning about auroras or keeping an eye on auroral activity, I recommend the following links:

NOAA

<http://www.sec.noaa.gov/pmap/pmapN.html>

The Auroral Alarm

<http://angwin.ece.uiuc.edu/~haunma/aurora/>

The Aurora Page

<http://www.geo.mtu.edu/weather/aurora/>

Geomagnetic Activity Warning Lists

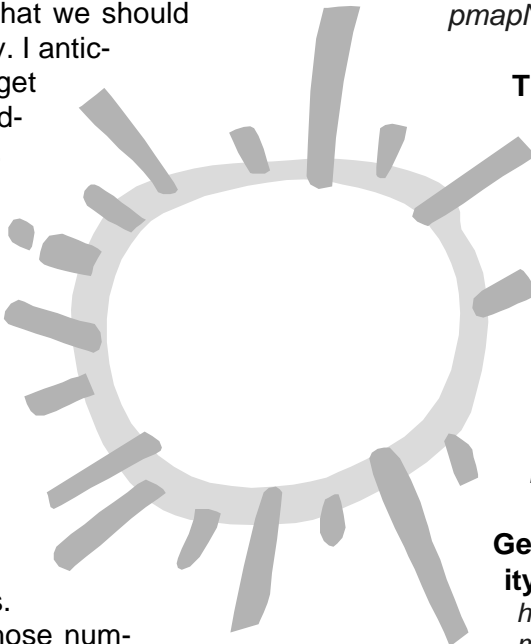
<http://www.ips.gov.au/mailman/listinfo>

(I subscribe to ips-mag-alert, but others like ips-aurora-alert are probably good, too!)

These links and others can be found on the page

<http://dogwood.physics.mcmaster.ca/DLW/Magnetometry.html>

Doug Welch



Leonids...

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especially the fainter ones. A dark sky is important!

A Leonid Checklist

What do you need to observe the Leonids? The following is a basic checklist for those planning to observe this meteor shower:

Warmth and comfort gear:

- A reclining lawnchair so you can lie back in comfort
- A foam mat to put on your lawnchair to insulate your back
- A heavy sleeping bag
- Extra blankets
- A tarp to put over your sleeping bag to keep frost or dew off
- Long underwear and layers of warm clothing
- A warm coat
- Warm socks
- Warm mittens or gloves, and extra mittens
- Warm hat
- A scarf to wrap around your neck and face

- A snack
- A thermos of tea, coffee or hot chocolate

To see what the fainter Leonids look like near the radiant, or to look at Leonid meteor trains:

- A pair of binoculars

No telescope required!

What else can I do?

If you are ambitious you might want to record your observations. Check out the NAMN Observing Guide at www.namnmeteors.org/guide.html

For information on meteor photography, check out <http://www.imo.net/photo/index.html>

For information on video recording, check out <http://www.imo.net/video/index.html>.

HAA Website

You have probably noticed by now that Anthony Tekatch has done an amazing job on the HAA website.

(www.science.mcmaster.ca/HAA)

If you have anything you would like added to the website, such as photos, etc., send Anthony an e-mail at tekatch@idirect.com



CALENDAR OF EVENTS

- November 10, 16, 17
December 7, 8, 14, 15
- November 18, predawn
- Friday, December 14, 7:30pm
- Friday, January 11, 7:30pm

BINBROOK OBSERVING NIGHTS - For confirmation or directions call Ann Tekatch 575-5433, Marg Walton 627-7361, Rob Roy 692-3245

LEONID SHOWERS -A burst lasting perhaps two hours is expected. The maximum rates should occur at 5:00 a.m. EST

HAA GENERAL MEETING - Marcel VanDalfsen will speak about "The Globular Cluster System of the Sombrero Galaxy - M104"

HAA GENERAL MEETING - The meeting will be at the Spectator Building auditorium.

Hamilton Amateur Astronomers

Membership Renewal

November 1, 2001 - October 31, 2002

Name: _____

Address: _____

Province: _____ Postal code: _____

Phone number: (____) _____ E-mail: _____

Type of membership:

Individual \$25.00/year _____

Family \$30.00/year _____

Royal \$50.00/year* _____

Friend \$100.00/year* _____

Patron \$250.00/year* _____

Voluntary Donation: \$ _____

*These levels of membership confer the same rights and privileges as a Family membership. We greatly appreciate the additional financial support our members provide by signing up as a Royal, Friend or Patron member. *All membership dues are eligible for tax receipts.*

Total: \$ _____

Please make your cheque payable to:

Hamilton Amateur Astronomers
P.O. Box 65578
Dundas, Ontario
L9H 6Y6



Membership renewals are due November 1, 2001