

Event Horizon

Volume 1 Issue 7

May 1994

Editorial

As you all probably know, this past week we were treated to an annular eclipse of the sun. Many of our members called in sick for work (a few even took legitimate holidays) to observe the spectacle. From Hamilton the moon appeared off centre from the sun during the eclipse. Some of our members, wanting to be as close as possible to the centre line of the eclipse, travelled to Point Pelee. While we in Hamilton enjoyed perfectly clear skies during annularity, those in Point Pelee were clouded out. I am sure there is some statement about the harsh reality of the world in which we live, but I cannot find it.

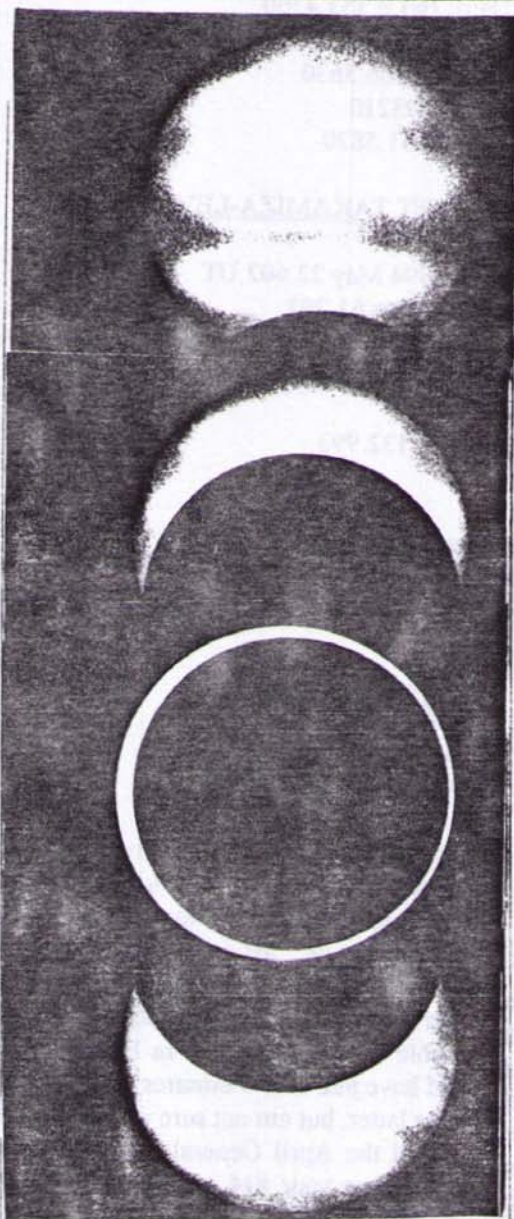
Eclipses are traditionally said to have strange effects on both people and animals. Dogs howl, pigs squeal and bats come out. I think that "computers malfunction" should be added to the list. Ever since the eclipse, when I wanted to put together the newsletter, my computer has resisted me at every turn. In the past few days I have been tempted to give my computer a more realistic experience of the flight sims it runs, that is, I was going to throw it out the window.

I apologize for the form, or lack of, in this newsletter, hopefully I can get the "corrupted FAT" out of my computer. (I did not even know it had fat in it, let alone corrupted fat.)

Enough complaining. I have to re-assemble this newsletter.

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Photographed by Ann Tekatch

Chair's Report

Another busy month! The night after the last meeting was supposed to be our trip to Point Pelee, but despite extensive organization, nature intervened and we called off the trip that morning due to clouds. We also had our first true snafu - we thought we had the Spectator Auditorium booked for April 8, since we asked for the second Friday of each month but ... we didn't! So we had a quick change of venue. Apologies to anyone who showed up and missed the meeting. (It was our fault, not the Spectator's).

Jim Winger kindly donated two books for the Hamilton District Engineering and Science Fair in the name of the HAA. We thank Dave Currey for his help in delivering the prizes (in what turned out to be a very time-consuming ceremony).

The weekend of May 6, 7, and 8 was occupied with the "Spring Leisure Expo '94". This took place at the Mountain Arena and we had a chance to display our wares. The banner created by Patricia Marsh was on display and the Tekatch Bausch and Lomb wonderscope attracted a number of inquisitive folk, but a repeat of last year's attendance figure of 7,000 people did not occur and for the most part exhibitors were left to talk to each other! Thanks to all the HAA folk who

Inside This Issue

- | | |
|---|---|
| <input type="checkbox"/> EDITORIAL | <input type="checkbox"/> OFF THE BEATEN PATH |
| <input type="checkbox"/> CHAIR'S REPORT | <input type="checkbox"/> COSMOLOGY DISCUSSION GROUP |
| <input type="checkbox"/> TWO SPRING COMETS | <input type="checkbox"/> GREEK IN THE ROUND |
| <input type="checkbox"/> UPWARD SKYBOUND | <input type="checkbox"/> QUANTUM CONDITIONS IN THE |
| <input type="checkbox"/> BURFORD STAR PARTY | COSMOS |

contributed, including Dave Fleming, Stephen Sheeler, Charles Baetsen, Richard Petrone, Ev Butterworth, Patricia Marsh, and Ann Tekatch.

It's official - we are now a registered non-profit organization. Our number is 0984661-21 - look for it everywhere! Those of you who have been waiting to make hefty donations can now get out your chequebooks and start writing!

Kudos to Patti Baetsen and Ev Butterworth for putting together our first "Astronomy for Kids" evening on May 16th. If you are interested in helping out, please get in contact with them. This is a very worthy project and it deserves our full support. Since we are unsure of the attendance, it would be a good idea to have a few extra hands available!

By the time you read this, the great eclipse of 1994 will belong to the ages. I invite you to share your experiences with other members of the center by writing up a quick note for "Event Horizon".

Doug Welch

Two Spring Comets

Currently in the night skies, there are two relatively bright comets visible. The first one Comet McNaught-Russel (1993v) reached perihelion on March 31. It has been visible in the night sky for over month now. It is an example of how nature can surprise us. It was predicted to be of about magnitude 11, but unexpectedly brightened to 6.5! This makes it almost a naked eye object. Unfortunately there is no tail visible (at least not from earth's vantage point). The other comet, Takamiza-Levy (1994f) is now about magnitude 8.7. It is visible in the morning and according to reports it appears as a slight central condensation with a faint fan-shaped tail. Below are the orbital elements for both comets. These

values can plugged into software like ECU, so you can plot the position of each comet when you want to view it.

COMET McNAUGHT- RUSSEL (1993v)

T = 1994 Mar 31.0940 UT
Peri. (w) = 353.4760
q = 0.86760 AU
Node = 166.3630
e = 0.993210
Incl. = 51.5820

COMET TAKAMIZA-LEVY (1994f)

T = 1994 May 22.602 UT
Peri. (w) = 61.791
q = 1.35790 AU
Node = 306.903
e = 1
Incl. = 132.993

Charles W. Baetsen
524-0148

Upward Skybound

Finally, the big month has arrived. I hope everyone is ready for it. The kids and I are. The Annular Solar Eclipse is about to mesmerize us all. Here in the Hamilton/Toronto area we should see just under 3 minutes of annular totality. If you are able to travel to a site in Buffalo, you could have just over 6 minutes. I'm hoping for the latter, but am not sure yet. If you all attended the April General Meeting, then you all have your #14 arc Welder's Glass and are prepared for the spectacle of the year. If you read your Event Horizon for April, then you know how to prepare yourselves. Good luck with anyone who tries photography, and the best viewing to us all.

Let's see. Can anything else compare with this activity this month. Of course it can. May 24/25 will afford a Partial Lunar Eclipse if anyone is going to

be in the USA. It will begin 9:18pm EDT and progresses for 3 hours. Comet Tempel 1 will swing past the Virgo Cluster shining at 9th magnitude. It will be at the limit of 10X50 Binoculars, but easy in a small telescope. However, the challenge will come in trying to pick out the comet from all those other small fuzzies belonging to the Virgo Cluster, called galaxies.

Mercury - will be visible for the last half of the month in the evening sky. The best night to look for it will be the 30th.

Venus - is high in the evening sky now and will reach 23° above the western horizon at sunset at mid-month.

Mars - is in Pisces, difficult to see in the southeastern dawn sky. It rises near the beginning of twilight.

Jupiter - moves from Libra into Virgo late in the month. It is now up all night and is easy to observe, in binoculars or telescope. Be sure to watch this planet. It is always a marvel and keeping track of its four major satellites is fun. Don't forget about Comet Shoemaker-Levy 9 which will collide with huge planet in July.

Saturn - in Aquarius rises about 3 hours before the Sun and is in the southeast at sunrise.

As always open observing at the Kinsmen Park in Beamsville will be held:

May 14 Saturday / June 11 Saturday
July 9 Saturday / August 12/13 Friday & Saturday

The night of **August 12/morning 13 Fri/Sat** is the peak night of the **Perseid Meteor Shower**. Don't miss this event. Mark it on your calendar now. Bring a chaise lounge chair, thermos and blankets for this event. Lie back and enjoy.

"Wish Upon a Star"

Ev Butterworth - Observing Director
632-0163

Burford Star Party ~ Saturday, June 11, 1994

Enjoy an evening under the dark skies of Burford with our hosts, the Faubert family. Bring your telescope, binoculars, or eyeballs - whatever you've got - and we'll enjoy views of Jupiter, the Milky Way, messes of Messier objects and anything else we can think of!

Plan to arrive between 8:00 and 8:30 p.m. To get to Burford:

Take the 403 west of Brantford to Rest Acres Road exit. Turn right on highway #53. Continue to the next set of lights and turn left at the lights onto Maple Ave. South. The Faubert farm is about 3 - 3.5 kms. on Maple Ave. South between 7th. and 10th. Lines.

Don't miss this opportunity to observe under dark skies. It will be good practice for anyone planning on going to Silent Lake Provincial Park and a great experience for any of you who've never had the chance to look through a telescope.

If the weather is iffy - call me first to confirm.

See you there!

Ann Tekatch
575-5433

Off the Beaten Path

This is the first of a series of articles exploring some of the lesser known deep sky objects visible every month. Many of these objects are visible in small to medium scopes, but are often thought to be "challenge objects". Spring is traditionally known as "Galaxy Season", however there are many other types of objects visible as well. Spring and early summer are also good times to see various planetary nebulae. Probably the most famous planetary nebula, the Ring Nebula (M57), is a good spring object. I know, this article is supposed to be about those not so famous objects, but this is a good object to warm up on and it demonstrates my point - there is more than just galaxies in spring.

In Hydra there is an interesting planetary called "The Ghost of Jupiter". It is located 1.8 degrees south of Mu-Hydrae. This planetary, known as NGC3242, consists of two shells, an inner elliptical one (that looks like an eye) and a fainter outer spherical one. The Ghost of Jupiter has a high surface brightness (with an integrated magnitude of 9.0) which means it can stand magnification well, so enjoy it! According to my observing notes last year, it really does look like Jupiter.

Another good spring planetary is NGC6543 in Draco. This is a very obvious planetary in an 8" scope, but can be seen quite nicely in smaller scopes as well. It is located about half way between Delta and Zeta Draconis. Again the surface brightness is high (integrated magnitude of 8.5) - so use high magnification to see its shape. In photographs it appears like two ovals superimposed on each other with one rotated almost 90 degrees from the other.

A real good challenge object is the interacting galaxies called "The Ringtail" (NGC4038/4039) in Corvus. Last year I tried to see this in a 12" scope outside of Waterdown (with the city to the south) but

I was unsure whether I saw or imagined it. It appears as a backwards question mark in photographs, but to me it was just a blob at the edge of perception. This is definitely a dark sky object. According to Burnham's Celestial Handbook, it has an integrated magnitude of 11.0, so it is not impossible.

So on the next clear night, be adventuresome and go off the beaten track. Enjoy the new scenery.

Charles W. Baetsen
524-0148

Finally, GOOD news from the Government!

We recently received notification from Revenue Canada that we have been granted registration as a charity effective November 1, 1993. Our official registration number is 0984666-21 and tax receipts for donations will be available shortly.

For more information, contact

Ann Tekatch, Treasurer
575-5433 (home)
527-9153 (office)

Cosmology Discussion Group

Our next meeting will be Saturday, May 28, 1994 at 8:00 p.m.. We hope to be able to use the Planetarium (Room B149) in the Burke Science Building at McMaster but we can't be certain at this time if it will be available. Please contact Bill Tekatch at 575-5433 to confirm prior to May 28th.

Our topic for discussion will be gravity and general relativity.

Bill Tekatch

Greek in the Round

This month I'll look at Aries, an inconspicuous constellation, located in what was once an important place in the sky. Although it is small and easy to overlook, Aries has been called the "Prince of the Zodiac."

In the lore, Aries represents a Ram. In Greek mythology, it is the fabled Ram with the Golden Fleece. According to an ancient Greek legend, the Ram was sent by the god Hermes to rescue two children - Phrixus and his sister Helle - from their cruel stepmother. Helle unfortunately fell from the Ram's back as they flew across the strait dividing Europe from Asia, but Phrixus was carried to safety. He landed in the land of Colchis, on the shores of the Black Sea, where he sacrificed the Ram and gave its precious fleece to the country's king, Aetes. Later the crew of the great ship Argo, including many of the greatest Greek heroes, set out in search of the Golden Fleece. Ultimately, after many adventures they captured the fleece from King Aetes.

By definition, the first point of Aries has 0 RA. and 0 DEC. Because precession shifts the points position over time, the co-ordinates of all the stars and other objects in the sky also shift. Between 1800 BC and AD 1, the Sun lay in Aries at the time of the Vernal Equinox, "the first point of Aries". It still bears this name, even though the Sun on the day of the Equinox has now moved into the Constellation Pisces. The first point of aries will continue to shift and in another few hundred years the Sun will move into Aquarius.

Giving approx. milleniums (1 millenium = 2000 yrs.) the sun lay in the following constellations at the Vernal Equinox:

B.C. 6000 - 4000 Gemini
4000 - 2000 Taurus

2000 - 0 Aries - Birth of Christ
HALT ASTROL/ASTRON - THE ERA
DID NOT ADVANCE - STAYED IN
ARIES

A.D. 0 - 2000 Pisces
2000 - 4000 Aquarius

At 0 A.D. there was a halt in astronomy and astrology. The creators of myth, ancient gods and religions disappeared. Christianity was established and no one was able to manipulate the celestial vision. Instead of going from Aries into the era of Pisces, everything stayed the same except the apparent motion of the sun which shone and still shines in Pisces at the Vernal Equinox. The sun does not move into Constellations. The Earth moves around the sun and it is due to precession that the sun appears to change position on the ecliptic line.

Astronomers separated from Astrologers when Procession was realized and Astronomy was recognized as a science. Astrologers still use the stars of 2000 years ago (an unchanged ecliptic Zodiac). This means that modern astologers use a zodiacal model that has been outdated for almost two thousand years.

The current Zodiac actually has 14 Constellations. 14 you say!! Next month I'll publish the current zodiac, so you can dazzle your friends and more importantly shock all those zodiac believers out there and hopefully they'll catch on. What do you think?

"Wish Upon a Star"
Ev Butterworth

HAA 1st Annual Summer Star Party

Join your fellow members for a weekend of observing under the incredible dark skies of Silent Lake Provincial Park, 80 kms. north of Peterborough on Highway 28!

Silent Lake offers full camping facilities in a beautiful setting. The park management has agreed to let us use the open spaces of the picnic area at night for setting up telescopes and observing. Camping sites are available elsewhere throughout the park.

Reservations for the July 9-10th. weekend must be made early. The camping fee is \$14.00 per night and a non-refundable deposit of \$4.50 per night must be sent in advance. To register, let me know the night(s) you wish to reserve, your name and phone number. Make your deposit cheque payable to "Hamilton Amateur Astronomers". Campsites with hydro hookups are available - be sure to specify if you need this. Hydro is not available at the observing site.

Registration deadline was May 13, but there may still be time for latecomers! Don't be disappointed - register now!

Ann Tekatch
575-5433 (evenings)
527-9153 (days)

Quantum Conditions in the Cosmos ~ Part 1

Introduction

This presentation is part of a much larger work entitled "Dimensional Analysis of Particle Structure" that originated in 1939 but has come to fruition largely during the last four years. The basic tenet is that all phenomena derive from particle properties and all particle properties derive from their structure. The second tenet is that the Universe was created from nothing and its only metrics are space and time. Thus, the analysis attempts to show that all properties of particles gravitation, electric charge, magnetism, nuclear forces - can be derived in terms of space and time, with no assumed 'fields or influences' added.

This goal is nearing completion, I believe. The analysis can account for gravitation, electric charge and electromagnetism, magnetic moments (including the anomalous electron moment), mass ratios of particles, the observed unbalance between matter and anti-matter in the Universe, Relativity (Special definitely, General possibly), as well as resolving the wave/corpuscle question. This work has been done privately, on an amateur status and the need is now for some person or persons to act as Devil's Advocate(s) and prove that the thesis is untenable. The numerical results cannot be disproved, but the arguments may not be acceptable. The analysis is fully compatible with Quantum Theory indeed it is based on quantum conditions - but the picture it builds is very different from electrodynamics and chromodynamics.

That is why this lecture is offered for presentation, that it may be shot at and disproved if possible. I hope the listeners will enjoy the process and trust that the viewpoint stimulates thought.

Quantum Conditions and Metrics

Space and time, or space-time. We think of them as being smooth, continuous, unending, stretching unbroken in all directions to infinity. To measure space, we make a yard-stick, a tape measure, a ruler, a chain. To measure time, we make a clock, with a pendulum, or an escape mechanism or a resonant circuit. Whatever we use, it is a reference metric of space or time. We measure all distances and time intervals against these references and all velocities against their combination. In physics, we build laws based on these metrics. Manmade laws intended for man's use.

But what does Nature do? There is an old story in the aviation world that according to aerodynamic theory, bees cannot fly. They are too heavy; their wings are too small, too inefficient. But no one has told the bees and they go on flying as they have for millions of years. Something similar occurs in physics. Particles are not aware of our laws or metrics, our measuring sticks or clocks. But they go on interacting. How do they do it? How does an electron know how far it is from the nucleus it orbits? How do the planets know their distance from the sun? How do two bodies know their combined centre of mass? How does a particle know anything about the rest of the Universe?

The answer is simple of course. Particles have their own measuring sticks and clocks. They 'see' the outside world through these metrics. They interact with other particles through these metrics. When a particle 'sees' another particle it measures the properties of that particle in terms of its own metrics. If it has a structure which contains a length metric L and a time metric T with their combination a velocity metric C , then it measures and re-acts to the energy, momentum, mass, etc of the approaching particle in terms of L , T and C . It must also have a Datum Point from which these metrics are measured.

That is the basis of the constant speed of light and relativity. If a particle meets a photon, it cannot be aware of the state of the body which originated the photon. The body may be in deep outer space and the photon may have left it billions of years before. The photon will have traversed

space at velocity C relative to its surroundings but it will be detected at velocity C relative to the particle. So the photon has made several velocity changes but is always detected at velocity C because that is the only velocity the particle knows.

In experiment, we find that at the scale of particles and atoms, quantum conditions prevail. Time and space appear to be discontinuous, 'grainy' instead of smooth and continuous. The reason is that we are seeing evidence of the measuring sticks and clocks of Nature. Without these metrics, there would be no interactions, no regularity to Nature. There would be no Universe. If space and time were smooth and continuous, particles would not be able to measure and interact, because particles are aware of only those metrics. Our Universe is built on those metrics. They are the ultimate reality of our Universe.

John Lawson

Events and Announcements

◆ Cosmology Discussion Group

Next meeting will be on Saturday May 28, 1994. See page 3 for details

◆ June's General Meeting

The next meeting will be held on Friday June 13, at 7:30. The meeting will be a Jupiter workshop, in preparation for July's "Jupiter Splash", or "Jupiter Fizzle".

◆ Amateur Telescope Makers

There will be a meeting on May 15 at Jim Winger's.











◆ Event Horizon Deadline

ARTICLES, ARTICLES, ARTICLES. June 10, 1994

Memories of the May 10 Annular Eclipse

Solar Eclipse - May 10, 1994



1  Time: 11:45	2  Time: 11:55
3  Time: 12:30	4  Time: 12:45
5  Time: 1:10	6  Time: 1:20
sketched by Kayla Marsh age 6	
7  Time: 1:30	8  Time: 1:45
9  Time: 2:05	10  Time: 2:25