Orbit

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Happy New Year!

This photograph of the sun setting over the Zambesi River was taken by Ray Badgerow on his African Eclipse Odyssey.

2001: An African Eclipse Odyssey

by: Raymond Badgerow

I suppose that this is better late than never. As you may know I travelled to Zambia for the June 21st total solar eclipse. Just like my trip to Turkey back in 1999 ,I travelled with the Calgary Centre and Civilized Adventures for my safari to Africa.I arrived in Lusaka after 2 days with little sleep as we settled into our hotel,the Ndeke. Unfortunately, I had a bad sandwich on the flight to Lusaka and was laid up for several days,although I did go into the city for a few hours.

On eclipse day, we got up early and headed through the deserted streets of Lusaka to our prime site, a small village known as Malambanyama. The government of Zambia had declared Eclipse Day a national holiday so there was no one around at all. The journey took four hours as we travelled to the northwest of Lusaka, passing several chasers on the way.

*See **African Odyssey** on Page 5.*

Editorial:

by: Scott Barrie

Happy New Year everyone. I hope you all had a happy and healthy holiday season. I'm sure that some of you found some new toys under the tree.

It always seems hard to get much observing in around this time of year. There are so many other commitments making demands on our time and then, when we are able to free up an evening, it's almost invariably cloudy. There have been a few clear nights lately though, and even though it's been cold, I've managed to get out a little bit.

Our family made our annual trek north for New Years and while the moon was intrusive and the weather wasn't as observer-friendly as last year, we did manage to get in a couple hours. And a couple of hours under those skies is always time well spent.

I hope you all have healthy and happy 2002 and I hope to see you all out under the stars.

What's In Orbit

by: Ev Rilett

I hope everyone had a safe and happy holiday season. With the season being so busy, I hope some of you had the opportunity to observe. It seems that the "Explore the Universe" Certificate Program is a welcome package and there's been a fair bit of enthusiasm surrounding it. So without any further ado, I'll spend some time writing about, and at each general meeting talking about, some of the observable objects from each of the categories in their appropriate seasons. I encourage everyone to take it on. It is a wonderful way for new members to learn their way around the sky in just a short time period. Our experienced observers can refresh and help those new members.

There are many available reference sources: the Observer's Handbook, computer Software programs, the internet and of course fellow astronomers. Make use of them all.

1. Constellations and Bright Stars

Taurus – the bull – Look for the Hyades, (also on the list) an arrow shaped cluster of fairly bright stars and that will be the bull's head. The bright star is Aldebaran the alpha star. When you look at this star see if you can distinguish its colour.

2. Luna – the Moon

See if you can pick out the moon's _ phase (approx 7 days old) within 18 hours of the exact phase time.

3. Solar System

Saturn – the jewel of the planets. Can you pick it out from the background of stars? Can you distinguish its colour? In binoculars what is the shape? You'll need a telescope to see the rings. An awhhhhh for sure! Can you find any moons? Saturn has 1 bright moon, Titan and 5 others more difficult to detect.

4. Deep Sky Objects

Orion – M42 – Orion Nebula. This is the brightest nebula visible in the northern hemisphere. It is huge and has beautiful tendrils. This is a stellar nursery and there are 4 baby stars in the middle of this nebula called the trapezium. A fine object enjoyed by everyone and photographed by all astrophotographers.

*See **What's in Orbit** on Page 5.*

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The Leonids from Torrence Barrens

by: John Grimmett

And now for my report on the Leonids expedition to Torrence Barrens. Steve Barnes and I packed up our gear in Burlington at 17:00 Saturday and with the constitution of riverboat gamblers, headed for Muskoka and the famed Torrence Barrens dark sky preserve.

Two hours and fifteen minutes later (214 Km) we arrived at what can best be described as a crude turnout at the side of a very challenging twisty road through the Muskoka woods. The site itself is not hard to Find but I must admit, to having felt more than a little lost even though there is really only one road to follow in the area.

Changing direction about every couple of hundred feet is indeed enough to screw up even the best internal compass.

A word of advice for those who may wish to visit this site. Upon your first visit, arrive during daylight hours to get the lay of the land as it can be quite a mystery after sundown. The site itself is well marked with a large sign but this only marks a small "parking area" adjacent to the road.

Upon arrival we proceeded to scope the place out and discovered that there is a very crude "goat path" which heads east into the trees from the uneven granite slab which serves as the parking area.

At first glance the parking area could serve as an observing site (our first plan) but the proximity of the trees would obscure a good deal of eastern and northern sky from this slab area. Exploring the "little goat path" on foot revealed that it led to a very large exposed granite ridge which gently slopes to the edge of a small lake. The road is only about 50 to 75 yards long and ends where the smooth granite of this slab area begins. The granite slab area is an ideal observing location. A slight bulge in the center of the slab provides a raised area which affords nearly a 360 degree horizon and where it is obscured it is only 15 to 20 degrees off the horizon.

The skies at this site on Saturday evening can only be described as spectacular with virtually no light domes visible. The moon had set by the time we arrived so the only visible light was a very minor dome to the ESE which must have been Gravenhurst and an even smaller smudge to the NNW which must have been Torrence or Bala. WOW, what a milky way! I would give the seeing at 20:30 a 7 and the transparency an 7.5 - 8.

Steve and I set up our equipment for some planetary and deep sky and found that the reputation of this site is well deserved. Both Saturn and Jupiter were holding up under 300+ magnification with great contrast and quite steady. M13, great! M33 great! M42, WOW! In fact everything was

Photo by: Steve Barnes
Taken on October 28th 2000, this image of Jupiter was shot through a 12" Meade LX 200 @ f/20 using a barlow.

awesome at this point (observer's euphoria, I want to live here, forever). Our plan was to do some casual observing and photography until the rest of the expected crowd arrived after midnight. Around 2300 - 2330 the rest of the "gang" began to arrive which included some folks that we were there to meet as well as a wide assortment of others from all over the area including other amateur astronomers, local residents, bush partiers, curious onlookers, etc. This had to be the most widely known impromptu gathering that I have ever seen, with the attendant problems. Many of the people at this site knew little or nothing about dark site etiquette which led to some angry jeers and shouts when someone violated one of the unstated rules. It is amazing how annoying a simple flashlight can be when you are really dark adapted, and at this sight, you are really, truly dark adapted.

As it turns out, the "goat path" that I mentioned can be tackled by the average car if care is

*See **Torrence Barrens** on Page 6.*

EXTRA! EXTRA!
READ ALL ABOUT IT!

Greek in the Round

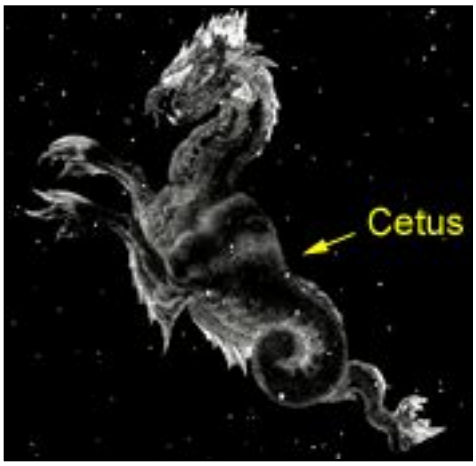
by: Ev Rilett

Have you read your Horoscope today? Here's a little something to cogitate. We all know that due to precession the stars make subtle changes over the course of many, many years. The ecliptic is no exception.

While the stars have been whirling around we now have a different zodiac to look at. Two thousand years ago, when the zodiac was made up, astronomy and astrology were one subject. They have since separated and gone there "separate ways".

The 12 zodiac figures with which we are all so familiar are based on the star patterns and times of two thousand years ago. You can now astound all your friends and those astrological believers with this bit of information.

So here it is, the news you've all been waiting for...



THE CURRENT ZODIAC

ARIES	April 18	May 12
TAURUS	May 13	June 20
GEMINI	June 21	July 19
CANCER	July 20	August 8
LEO	August 9	September 15
VIRGO	September 15	October 29
LIBRA	October 30	November 21
SCORPIUS	November 22	November 29
OPHIUCHUS	November 30	December 14
SAGITTARIUS	December 15	January 17
CAPRICORNUS	January 18	February 14
AQUARIUS	February 15	March 10
PISCES } & CETUS }	March 11 March 13 & 14	April 17

• Ophiuchus (the doctor) now holding a substantial time slot of two weeks, was the first new constellation to enter the ecliptic path since the zodiac was created.

• Cetus (the Whale), is the newest constellation to have entered the Ecliptic path, and its two day run interrupts the region which Pisces dominates.

• Scorpius will likely drop off the Ecliptic path.

• Because of precession, the sun on the day of the Vernal Equinox is now well into the constellation Pisces. The first point of Aries will continue to shift and in another few hundred years it will move into the constellation Aquarius, and the real Age of Aquarius will begin.

A. Muse

African Odyssey: cont'd

We set up in an open soccer field next to the school,and the sky was perfectly clear! Our group distributed several backpacks of school supplies to the headmaster of the school, as the school was damaged by floods several months earlier.

The eclipse was very spectacular as there were several prominences easily visible to the naked eye,and I saw the entire 360 degree sunset this time round. The eclipse reminded us of a "flower in the sky" with the intricate coronal streamers extending several solar diameters from the disk. I may even have seen shadow bands this time?. Totality lasted some 3m37s,and ended with a spectacular diamond ring,this was followed by spontaneous cheers and applause from everyone. This was followed by the traditional champagne and group photo.

The day after the eclipse we travelled to South Luangwa National Park to begin our safari adventure. We stayed at both Wildlife Camp and Kafunta River Lodge and observed the diverse and rich wildlife that inhabits this part of Africa. We observed elephants,giraffes,hippos, lion,baboons,warthogs,crocodile,impala,and much more.

The food and accommodations were excellent and the skies were dark and clear. We indulged in a star party one night where we observed such things as Mars, Omega Centauri,Eta Carinae,and even Centaurus A(with binoculars). It was very disorienting, but I got used to seeing the Southern Cross every night.

After our safari adventure we departed for Victoria Falls,and saw one of the great natural wonders of the world. Many of our group indulged in the activities offered by the local area such as helicopter flights, ultralight, white water rafting and more. One member of our group, Glen Hawley, was brave enough to bungi jump over the Bakota Gorge some 111 meters down. On our last night there we had a special dinner with dancers at the Boma Restaurant.

Total Solar Eclipse - Feb 26, 1998
Composite of 3 exposures made through a Meade ETX90 mounted on a Losmandy GM8. Photo by: Steve Barnes

The next day we flew back to Harare and had one last dinner together as a group at the Bronte Hotel. The next day most members of our group went home after doing shopping in Harare.I went on my own extension the next morning as a group of six ,including myself departed to the Save' Valley Conservancy in SE Zimbabwe. We stayed at Senuko Safari Lodge for a week and saw the rare painted wild dogs and black rhino. In fact , 3 of us ,myself included took part in a rhino tagging operation. Following this we left for a freebie as we stayed at Big Cave Camp in the Matobos Hills NP, near Bulawayo. I had a last minute shopping spree on our way out of the city as we began our journey home.

Ray Badgerow

M42 The Orion Nebula This photo by Steve Barnes was taken on Fuji SuperG800 film through a 12" meade LX200. It's a composite of one 15 minute and one 45 minute exposure. Guiding was done by an SBIG ST-4.

taken. This makes it possible to drive to your chosen observing site on the big slab but it also makes it possible for the "yahoos" to drive in with lights blazing during open shutter times. Many ruined shots this night, I'm afraid.

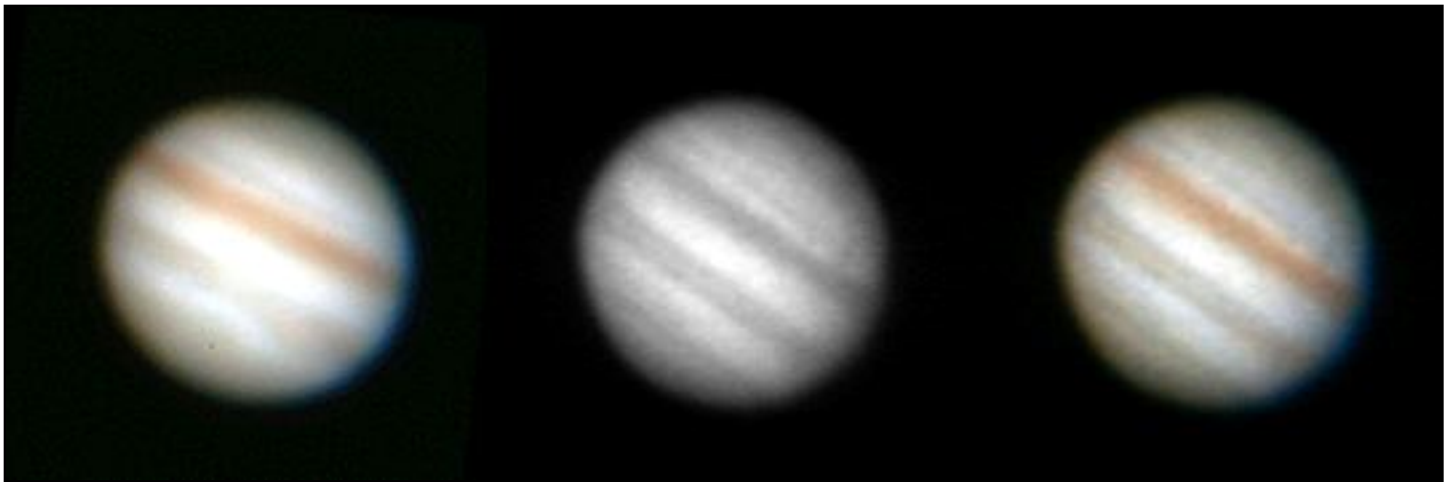
Steve and I observed many stray meteors during the course of the evening but things really started to get organized around 2330 with the rapid arrival of two gigantic fireballs moving east to west in rapid succession. These beauties covered easily 100 degrees on the sky with bright red/orange heads and long green tails. Easily the best display I have seen in several years. This seemed to almost operate as a fanfare for the coming display. Over the next 5.5 to 6 hours we counted well over 600 targets which ranged from tiny, faint streaks which provided a barely visible hint of their presence to spectacular, brightly coloured spears of light which lingered for several seconds after the head had faded. The real "crowd pleaser" for me and most of our group was a relatively brief streak which flared in the northern sky to the brightness of a photo strobe and left a trail which was actually visible 3 to 4 MINUTES! after the flare faded. We actually watched as the trail "essed" in the atmospheric turbulence. Cool!

About the only manifestation of "Murphy's Law" was that as the estimated maximum of 0400 approached the quality of the skies began to deteriorate at an alarming pace. At first there seemed to be a moderate haze developing in the area and some of our distant visual clues faded from view. This haze seemed to clear slightly around 0300 to 0330 when a slight breeze moved through the area, whew! This breeze turned out to be the famed "ill wind" and soon a layer of ground fog began to creep in and our celestial markers began to fade (or develop ugly halos) one by one. By about 0400, the fog had become quite bothersome although it didn't obscure most of the brighter meteors which continued to dazzle the assembled gallery for another couple of hours.

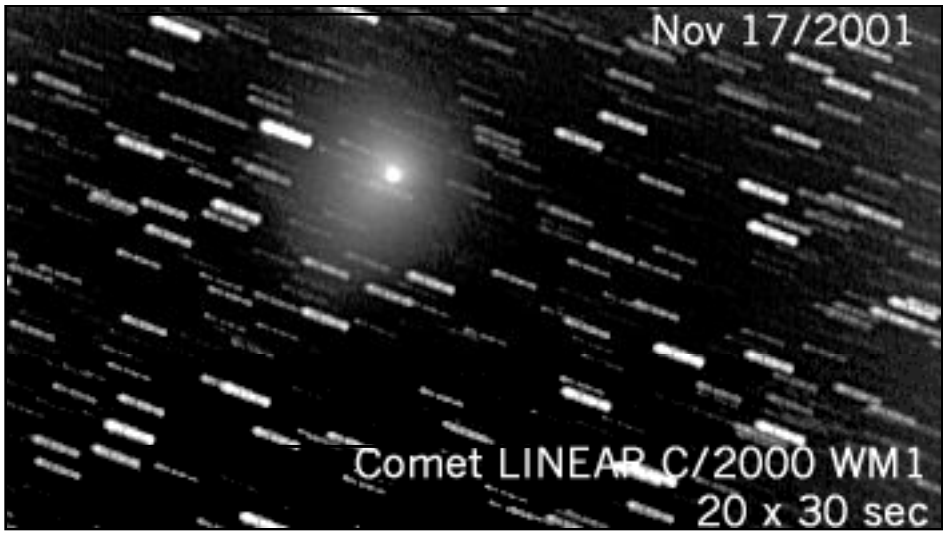
By about 0530, after just over ten hours at this magical site, I packed up my frozen, ice covered gear (and my frozen, ice covered companion) in the car and Steve and I headed back down the "long and winding road" which was now shrouded in thick fog (fun, WOW!) hoping to get to a travelled road and relatively good visibility asap. No such luck. The fog conditions prevailed to some extent, all the way home to Burlington, sigh. All in all a very pleasant, although quite chilly, evening (and morning) was enjoyed by all and the photo lab is now going to tell us how we did in saving this really miraculous event for posterity.

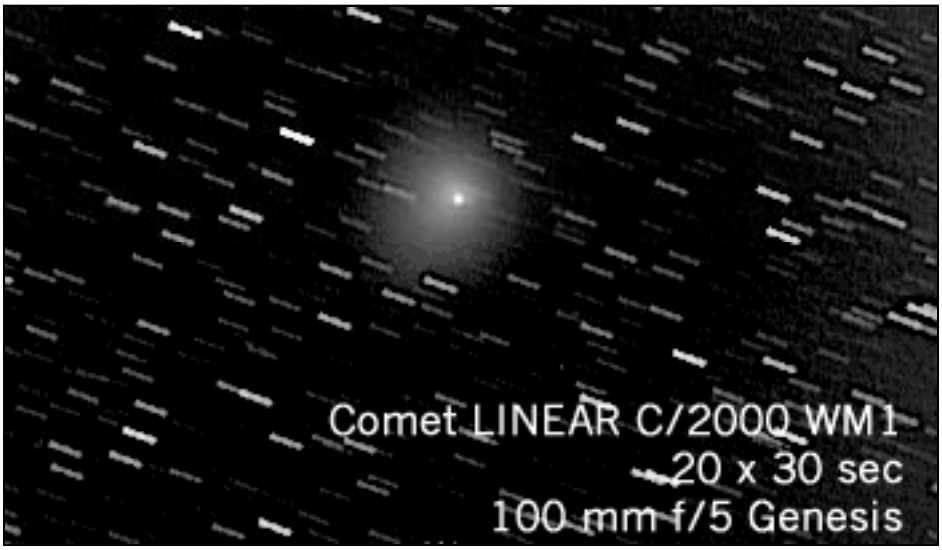
In summation, the 2001 Leonids, two thumbs up! They delivered big time. Well worth the journey and I'd do it again in a minute. The Torrence Barrens, a wonderful resource. I hope to visit this site many times in the future. Steve Barnes even suggested that we try to organize a centre visit to this site during spring or late summer / fall 2002. This is the kind of facility that should be high on our list to promote as the concept is brilliant and needs to be hailed.

John Grimmett



Bob Botts took these images of Jupiter. The one on the right is a composite of the two images on the left. The colour image on the left is a composite taken with a Nikon 995 digital camera through an 8" f/10 SCT using a 3mm Radian eyepiece. The black and white image which provided the luminance layer in the final composite was taken with an ST6 through an 8" f/10 SCT using a 2.5 barlow. Bob claims that those with sharp eyes will notice that the Great Red Spot doesn't line up. (ed. note: Those same people will probably be able to split the double double looking through the bottom of a coke bottle)





Bob Botts has quite a bit of time imaging Comet Linear and these two images show an amazing amount of detail.

Both shots were taken a little while apart apart on November 17, 2001. They are both composites of 20, 30 second images taken through a 100mm f/5 Tele Vue Genesis.

If you closely at the background you can see the movement of the comet.

What's in Orbit *cont'd.*

5. Double & Multiple Stars

Cepheus – Delta 27 This is a famous Cepheid variable. Use tripod mounted binoculars or telescope to see this very pretty pair.

If anyone would like to receive the package by email please contact me. I'll also try to have some copies at the general meetings and of course there's always snailmail. Come out to the site and have some fun. Take care and Clear Skies, Ev Rilett, Observing Director

Coming Events:

January 10, 2002 - General Meeting at 8:00pm at the Steam Museum. **Note the date change**. - Program John Grimmett talks about digital cameras.

January 17, 2001 - Board Meeting at 8:00 at the observatory. Come on out and shape the future of the centre.

February 7, 2002 - General Meeting at 8:00pm at the Steam Museum. Program TBA.

February 14, 2002 - Board Meeting at 8:00 at the observatory. Come on out and shape the future of the centre.

March 7, 2002 - General Meeting at 8:00pm at the Steam Museum. Program TBA.

March 14, 2002 - Board Meeting at 8:00 at the observatory. Come on out and shape the future of the centre.

Directions to Observatory:

From Hamilton or Guelph:

- Hwy 6 N of Hamilton,
- Take Concession 7 East eastbound, cross Centre Rd.
- Continue on 7E, past the rail tracks, proceed to near the end.
- Our gate is on the south side on the last lot (south west).

From Mississauga or Milton:

- Britannia Road past Hwy 25, Guelph Line, Cedar Springs to end
- South 1 block on Milborough Town Line to Concession 7 East.
- Right on 7th Concession, then first driveway on left.
- Our gate is on the south side on the last lot (south west)

From Burlington or Oakville:

- Dundas Street (HWY #5) to Cedar Springs Road
- Cedar Springs Road to Britannia Road
- Left (west on Britannia road to Milborough Town Line
- South 1 block on Milborough Town Line to Concession 7 East.
- Right on 7th Concession, then first driveway on left.
- Our gate is on the south side on the last lot (south west)

Hamilton Centre Observatory
43° 23, 26" N 79° 55, 22" W **Telephone 905-689-0266**

Club web site - http://www.rasc.ca/hamilton/

The Colinisation of Space