



## Have We Got Time?

The 4th annual Kingston Public Lecture in Astronomy will be held at 8 p.m. March 20, in Theatre D of Stirling Hall, Queen's University.

**HAVE WE GOT TIME? by Dr. Richard Henriksen**

Time is among the most familiar of things and yet remains also among the most strange. This is partly because `we', scientists and non-scientists alike, use the word time in many different ways for very different things. But there are also deeper reasons for the strangeness of time, reasons which lie at the heart of our attempts to understand the world. In this talk I will present an astrophysicist's catalogue of various `times' and comment on their implications using demonstrations where possible. The lecture will be intended for a general audience. Refreshments will follow in the foyer.

### LUNAR PROSPECTOR FINDS EVIDENCE OF ICE AT MOON'S POLES

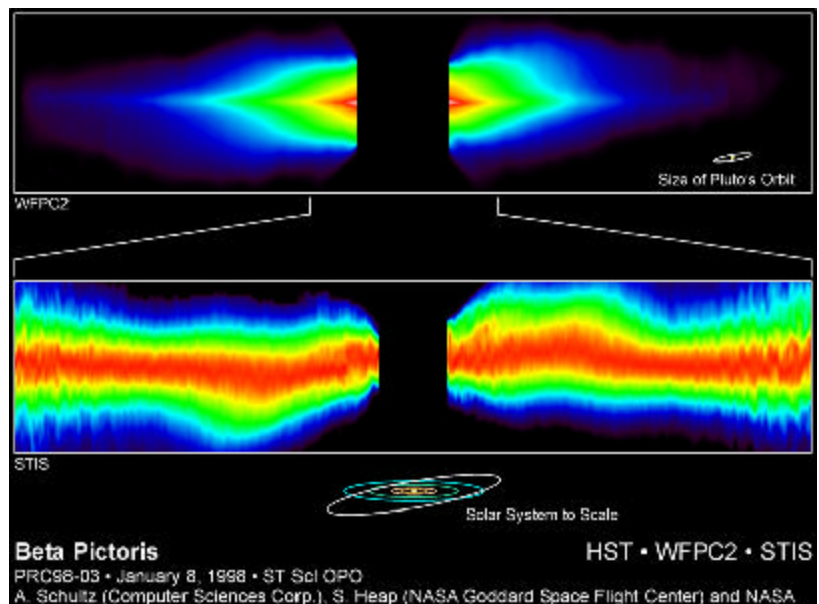
There is a high probability that water ice exists at both the north and south poles of the Moon, according to initial scientific data returned by NASA's Lunar Prospector. The Discovery Program mission also has produced the first operational gravity map of the entire lunar surface, which should serve as a fundamental reference for all future lunar exploration missions, project scientists announced today at NASA's Ames Research Center, Moffett Field, CA. Just two months after the launch of the cylindrical spacecraft, mission scientists have solid evidence of the existence of lunar water ice, including estimates of its volume, location and distribution. "We are elated at the performance of the spacecraft and its scientific payload, as well as the resulting quality and magnitude of information about the Moon that we already have been able to extract," said Dr. Alan Binder, Lunar Prospector Principal Investigator from the Lunar Research Institute, Gilroy, CA. Lunar Prospector is scheduled to continue its current primary data gathering mission at an altitude of 62 miles (100 kilometers) for a period of ten more months. At that time, the spacecraft will be put into an orbit as low as six miles (10 kilometers) so that its suite of science instruments can collect data at much finer resolution in support of more detailed scientific studies. In addition, surface composition and structure information developed from data returned by the spacecraft's Gamma Ray Spectrometer instrument will be a crucial aspect of additional analysis of the polar water ice finding over the coming months.

Additional information about the Lunar Prospector mission can be found on the Internet at URL: <http://lunar.arc.nasa.gov>

### Astronomers Have Found A New Twist In A Suspected Protoplanetary Disk

A telltale new warp uncovered in a vast, thin disk of dust encircling the star Beta Pictoris may be caused by the gravitational tug of a bypassing star or companion brown dwarf, say Hubble Space Telescope astronomers. These conclusions are based on unprecedented detail in Hubble images taken with the Wide Field and Planetary Camera 2, which reveal the dim outermost reaches of the disk, which are 7 billion miles from the central star.

Though other Hubble teams have seen a warp in the inner edge of the disk and attributed it to the gravitational tug of unseen planets, the new WFPC2 images show that the warp in the outer edge of the disk is too great to be easily explained by the effects of planets, say researchers.





## The Centre

The Newsletter of the Kingston Centre of the Royal Astronomical Society of Canada

**Newsletter Submission Info:** The deadline is the Friday before regular meetings in odd numbered months. The preferred method is E-MAIL, then disk, lastly paper (I hate retyping... too many mistakes happen). E-mail: <kell@cliff.path.queensu.ca> Fax: 1-613-545-2907 (with cover page to Kevin Kell) Post: Box 2033 Kingston Ontario K7L5J8 Canada ascii or most major word processors (WP6.1 for windows preferred) via E-mail or 3.5" DOS floppy disk

Our Web page can be found at:  
<http://www1.kingston.net/~rasc>

### Officers and Executive Council

- President:** Peggy Hurley
- Vice President:** Bill Broderick
- Secretary:** Laura Gagné
- Treasurer:** John Hurley
- Editor:** Kevin Kell
- National Council Rep:** Susan Gagnon
- Librarian:** Brenda Shaw
- Honorary President:** David Levy

### Committee Chairs:

- Observing Group: Tom Dean
- ATM Group: Tom Dean
- Youth Group: Brenda Shaw & Laura Gagné

To Send E-mail to all members of the Kingston Executive, address it to: <rascexec@cliff.path.queensu.ca>

To join the National E-mail List, send a message to: <listserver@astrotech.stmarys.ca>

In the body of the message put:  
subscribe raslist Your Name (Center)

**Centre Location:** RASC - Kingston Centre, PO Box 1793, Kingston, Ontario K7L 5J6 Canada  
Approx Lat: 44 deg 14 min N Long 76 deg 39 min W

## Upcoming Meetings



### 1998

- Friday March 13<sup>th</sup>** March's meeting will be Kendra Angle presenting her science fair project.
- Friday April 3<sup>rd</sup>\*** Mark Kaye 30 years of astrophotography
- Friday May 8<sup>th</sup>** Telescope Tuneup night. Some quick lectures on care and cleaning of scopes, collimation

crude & refined and a workshop on your scope (bring it in!)

**Friday June 12<sup>th</sup>** Peggy Hurley "Summer Solstice celebrations and traditions"

**Friday July 10<sup>th</sup>**

**Friday August 14<sup>th</sup>** 2<sup>nd</sup> Annual BBQ Dinner Meeting at the home of Mark Kaye

**Friday September 11<sup>th</sup>**

**Friday October 2<sup>nd</sup>\***

**Friday November 13<sup>th</sup>** Annual General Meeting

**Friday December 11<sup>th</sup>**

\* special meeting dates due to holidays

Regular Meetings of the Kingston Centre are held on the 2nd Friday of each month (unless noted otherwise) at 20:00 local time in **Room B-201, Mackintosh-Corry Hall** at Queen's University (parking available off Union Street at Frontenac).

### FIREBALL REPORT LINE: 545-6000 ext 7608.

Regulus is published 6 times per year. Views and opinions expressed herein do not necessarily reflect the official position of the Royal Astronomical Society of Canada or its officers and members.

**Subscriptions:** Members of the Kingston Centre receive Regulus as a benefit of membership. Non-members may subscribe for \$15 per year.

Advertisements are free to members of the Centre. Commercial advertising is \$25 per half page, \$50 for full page and must be camera ready copy.

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## From The Editor

I've located several NASA paper model kits that we had suggested for the youth group. I was planning on starting with the 1/37<sup>th</sup> scale Cassini spacecraft Saturn probe. The plans are 6 pages long and need to be printed on heavy cardstock and there are 17 pages of instructions. They require a minimum of 5 hours to construct and young types will need adult supervision (exact-o knife needed). Youth Group Members will be getting one of these to work on as part of the program. If any other "normal" :) Centre Members want one, contact me and make you a copy (shouldn't be more than \$2 - mailing costs extra!) of the plans & instructions.

### The A Vibert Douglas Award History

1985 David Stokes	1986 Larry Manuel
1987 Hein van Asperen	1988 Leo Enright
1989 Ruth Hicks	1990 Denise Sabatini
1991 Bill Broderick	1992 Ian Levstein
1993 Christine Kulyk	1994 Kim Hay
1995 Peter Kirk	1996 Kevin Kell
1997 Judith Irwin	

Changes/corrections of address received (I pass any I receive on to the Centre Treasurer who passes them on to UTP) since the master January list was published:

**Brenda Shaw:** New address

**Jim Temple**

**Dick Adduci**

Old Email Address:

New Email Address:

**Rev Anderson Bakewell:**

**Don Timperon** New Address: Borden ON L0M 1C0

**Sue Knight Sorensen** Glenburnie, Ontario K0H 1S0

**Carol Shepherd** Seagrave, ON L0C 1G0

**Walter MacDonald** New email

Other misc stuff: Canadian Tire is selling a Pioneer GPS (Global Positioning Satellite) receiver for \$130. Almost cheap enough to be an Impulse buy!

## Astronomy Day - Saturday May 2nd, 1998

-by Cathy Hall

Saturday May 2nd is International Astronomy Day! As in previous years, the Kingston Centre will be hosting displays on astronomy at the Cataraqui Town Centre.

We will have telescopes, poster displays, special displays, and lots of free handout material on astronomy for

the public!

For those interested in helping out, please contact me at (613)-xxx-xxxx, or by e-mail at <xxxxx@xxx.xx> We are interested in a variety of telescope types, colourful displays and models, and any astronomical photos you may wish to display to the public. If you just want to stop by and chat with the public for an hour or so, that's great too! Astronomical attire is encouraged!

Setup time for telescopes and displays in the mall will be from 8.00 a.m. to 9.00 a.m.. The mall opens at 9.30 a.m. and the displays will be on all day, until 6.00 p.m.. We will be advised of our exact location in the mall in late April, and I will inform those with displays of those details when they are finalized.

Weather dependent, we hope to have an evening observing session. Details will be provided a bit later, and also posted for the public at our display.

If you are planning to help out, or contribute material, please let me know as soon as you can. As of the March meeting, we have a 7 week countdown... We encourage as many as possible to participate! Astronomy Day is always a lot of fun - and a great opportunity to spread the word about astronomy and our R.A.S.C. Kingston Centre activities!

## From The Secretary

**Subject: minutes: February 13<sup>th</sup>, 1998**

Meeting called to order at 8:11 pm

### General Assembly:

This year the General Assembly of the RASC will be held in Victoria BC. If you did not receive a registration form in the mail (because you did not attend last year's GA), but would like one, then contact Laura and she would be happy to provide you with one.

### Gene Shoemaker:

Gene's lifelong wish is about to come true. He said that he always wanted to go to the moon, but he was unable because of a medical condition. Gene trained the Apollo astronauts and worked on the unmanned missions to the moon, including the recent Clementine mission, but he never had the chance to "hit it with (his) own hammer". Gene's ashes will be flown aboard the Prospector mission and will crash-land on the surface of the moon following the mapping mission. Gene will be the "man in the moon". Remember him whenever you look at the moon.

### Educational Slides:

Hank Bartlett is putting together slide sets to be used for public education talks. He needs donations from members of slides from several categories. He has prepared a list of possible contributions, but will accept anything you are



willing to donate. This could include : murphy shots, planets, galaxies, comets, star party slides, telescopes/telescope making.....etc. Please give your slides to either Hank or Kevin. Distant members who are unable to attend meetings can send them to Kingston Centre PO Box 1793, Kingston Ontario, K7L 5J6. Please include a short written explanation of your subject matter.

#### **Ellis Hall Observatory:**

Laura has made arrangements with Queen's University to use the telescope in the observatory following our monthly meetings. The telescope has been booked for the months of March, April, May, and June. Other dates will be booked later. Dress warmly, the dome doesn't keep out the cold!

#### **Observing Site:**

We are always looking for good observing sites. Member Ken Kingdon told us about a site 3 miles west of Enterprise Ontario. It is on the tower road, on a hill where there is a microwave tower belong to Bell Canada. Ken has asked permission from Bell to use the site, and it was granted. If you wish to try this out, just let the owners of a house on the road know so that they won't be wondering what you are doing there. The site provides an excellent view of the north and west. The next nearest light is at Algonquin Park, so it is very dark! Ken and Steve Manders have been to the site and recommend it. Thanks, Ken and Steve!

#### **Guest Speaker:**

Doug George, member of Ottawa Centre and National President, spoke to us about CCD imaging. He brought slides of his work both on film and with the CCD. The difference was amazing. Images are so much clearer and there is so much more detail in the CCD images. It was a fabulous talk and the images rivalled those of David Malin! Since the average CCD camera costs around two to three thousand dollars, most of us will still be using film, but he does make the CCD imaging look easy.

#### **Eclipse Filters:**

Judith and Dieter will have Mylar eclipse viewers available from the 20th of February for viewing the eclipse on the 26th. Henderson school will be viewing the eclipse from 1:15 to 2:15. Anyone interested in helping Dieter with this event should contact him or just drop by Henderson school with your equipment (solar filter is a MUST).

#### **Youth Group:**

The first youth group meeting will be on Saturday February 28th at 2:00 pm. We need people to bring their telescopes to show to the youth. We will be discussing the different kinds of telescopes which are available and we would like to have a few there to show people. There will also be an observatory tour following the meeting. If you would like to help supervise then please contact Laura <xx@xxx.xxx> or Brenda <xx@xx.x.x>. We need all the help we can get.

#### **President's Report:**

General Assembly - we had 165 registrants at the GA and the centre made about \$3000 profit from the event. Kim Hay has requested that the money be used for the telescope making group and the library. We need speakers for our meetings. If you would like to do a talk this year, please see Peggy. Kendra will present her science fair project in March, but we need people for the other months. Don't be shy.

#### **Telescope Makers/ Observing Group:**

The mirror grinding is going well. The last meeting saw three grit levels achieved. All of the actual grinding is done and now the polishing will begin. On the 8th of March we will be polishing the mirror with cerium oxide. If you would like to help, or just want to see how it is done, then contact Tom Dean. Tom requests some star charts (field charts) to be purchased which will be lent out with the telescopes. The three club scopes are easy to use even for beginners and can be borrowed for one month at a time. See Tom to borrow the telescopes (members only). Other projects for the telescope making group are barn doors and mounts.

#### **Newsletter:**

Submissions for the next issue of the newsletter need to be in to Kevin within the next two weeks.

#### **Treasurer:**

We have a balance of about \$6000 in the bank currently. We have approved a budget submitted by the telescope making group for about \$900. Donations to the centre are always appreciate, and tax receipts will be issued upon request.

#### **Secretary:**

There are several newsletters from other centres being circulated at the meeting. There are very interesting articles about observing as well as other things in them. They are worth a look at. Copies of the newsletters will be available in the centre library.

#### **Fire Balls:**

Tom Dean will be in charge of the Fireball network in the absence of Judith Irwin. If you or anyone you know sees a fire ball - call 545-6000 ext 7608.

#### **Observing Reports:**

**Meeting adjourned 10:31pm**

## **From The Treasurer**

A five year budget summary:

	1993	1994	1995	1996	1997
Revenue :	\$4546	\$4480	\$7095	\$4312	\$10520
Expenses:	\$4078	\$3742	\$6123	\$4770	\$8724
Surplus \ ( deficit )	\$ 468	\$ 738	\$ 972	\$(458)	\$ 1796



As you can see in the last five years the Centre has operated at an average surplus of 11% of Revenue. We have had a good year this last year because of the GA. The Telescope Makers Group is planning on adding telescopes that members of the Centre can use. We are also working on adding to our slide collection so that we can use them at our meetings and for members who want to give talks to the public can use these if they do not have their own. With the help of the membership through donations and hard work we can do many things with this that will help people discover the wonders of the night sky for a very long time. Thanks, John Hurley, Treasurer, RASC Kingston Centre

## Youth Group News

The first meeting was held on Saturday February 28<sup>th</sup> at 2:00 in our regular meeting room at Queen's University. We had a good turnout. The next regularly scheduled meeting is Saturday March 28<sup>th</sup> at 2:00pm at Queen's University. Canadian Tire is selling the Binocular Observing Platform (aka inflatable boat) for \$15. Get yours soon!

## ATM Group News

Next meeting: Sunday March 29<sup>th</sup> at 14:00 hrs at Tom Dean's Place. 2<sup>nd</sup> session of polishing of the mirror will commence as well as design work on the rest of the scope (now that the focal length has been fixed). Here are some web links to barn door trackers or motor driven mounts.  
<http://www.aegis1.demon.co.uk/gallery/scotch.htm>  
<http://www.u-net.com/ph/mas/projects/scotch/scotch.htm>  
[http://www.u-net.com/ph/mas/projects/scotch/hdm/heavy\\_duty\\_mount.htm](http://www.u-net.com/ph/mas/projects/scotch/hdm/heavy_duty_mount.htm)

The 8" Fitzgerald has had some work done on the secondary mirror mount. The 10" Douglas now has a power distribution system for accessories.

## Observing Group News

If any of this information is incorrect, let Tom Dean <[dean@legasys.on.ca](mailto:dean@legasys.on.ca)> know ASAP. We are looking for 2 or 4 more new sites and then will start rotating back to previous ones. If you are interested contact Tom. Some of the criteria are: not more than 45 minutes from Kingston proper, lots of parking (5-8 vehicles), a place to go inside if the weather is bad and show slides, drink coffee and chat. We are also looking at moving the session to the weekend \*before\* the new moon as opposed to after... This will allow

the moon to set earlier and give us more darkness.

## 1998 Observing Schedule

### Friday March 27<sup>th</sup> (at or before dusk)

The home of Peggy and John Hurley (Sharbot Lake). From Kingston & the 401 Highway. Head north on Highway #38 for approx 65 km. Go through Harrowsmith, Hartington, Parham and Tichbourne. Go past Crow Lake Road (on your right), go past St. George Lake (on your left), go past Shibley Road (on your right). You are very close now. Xxxx

April: To Be Announced    May: To Be Announced  
 June: To Be Announced    July: To Be Announced

**Syracuse Summer Seminar** The summer seminar is August 14 - 16. Our new president is Arnis Sprancmanis and he can provide more details nearer the time.

**StarFest** Thursday-Sunday August 20-23 NYAA sponsored Canada's largest star party held in Mount Forest (west of Barrie). See the website for details:  
<http://www.interlog.com/~nyaa>

## National News

From: Peter Jedicke <[pjedicke@fanshawec.on.ca](mailto:pjedicke@fanshawec.on.ca)>  
 Subject: "FLASH MINUTES" of National Council meeting held 1998-02-14



## ROYAL ASTRONOMICAL SOCIETY OF CANADA Motions of National Council 1998 02 14

Note: the following is presented merely to foster discussion and rapid communication within the Society. This list of the motions considered at the meeting of National Council is completely unofficial and is the responsibility of the National Recorder. For official purposes, wait for the completed minutes in a few weeks.

### MOTION 98101

It was moved by Mr. Attwood and seconded by Ms. Gagnon that the minutes of the meeting of Council of 1997-10-18 be accepted.

The motion was CARRIED.

### MOTION 98102

It was moved by Dr. Turner and seconded by Dr. Garrison to accept the list of unattached members as circulated, with corrections to spelling.

MOTION 98102 was CARRIED by special resolution.

### MOTION 98103

It was moved by Mr. Jedicke and seconded by Mr. Kaye that Messier Certificates be awarded to Mr. Chris Fleming (London) and Mr. Randy Klassen (Vancouver).

The motion was CARRIED.

### MOTION 98104

It was moved by Mr. Vanderberg and seconded by Mr. Kaye that an NGC Certificate be awarded to Mr. Douglas Stuart (Thunder Bay).

The motion was CARRIED.

### MOTION 98105

It was moved by the Finance Committee that the budget be accepted as presented.

The motion was CARRIED.

### MOTION 98106

It was moved by the Finance Committee that (a) the Society bear the entire expense of Northcott lectures; (b) the honorarium paid to Northcott lecturers be increased to \$600, and be reviewed if the Hogg lecture honorarium is increased; and (c) that the travel expense cap of \$500 for Northcott lectures be removed, and replaced instead with a strong suggestion that economical excursion airfares with a Saturday layover be used.

The motion was CARRIED.

### MOTION 98107

It was moved by Dr. Gupta and seconded by Mr. Vanderberg that the 1999 Calendar be printed at a larger size; that the suggested retail price be set at \$13.95; that the price to retailers be increased to \$7 and that the price to Centres be retained at \$8.

The motion was CARRIED.

### MOTION 98108

It was moved by Dr. Garrison and seconded by Mr. Kaye

that the Light Pollution Committee be asked to present a detailed proposal explaining how the goals of the Committee can be realized, and that this proposal be presented to Council at the 1998 General Assembly, and that consideration of the budget for the Committee be delayed until the 1998 General Assembly.

The motion was CARRIED.

### MOTION 98109

It was moved by the Awards Committee that the Service Award be granted to Ms. Sandy Ferguson (Saskatoon), to Mr. Dave Lane (Halifax), and to Mr. Roger Hill (Hamilton), and that the Chant Medal be awarded to Mr. Bert Rhebergen (Hamilton).

The motion was CARRIED.

### MOTION 98110

It was moved by Mr. May that the meeting adjourn.

The motion was CARRIED at 15h07.

This list presented by Peter Jedicke, National Recorder.  
1998-02-16

## BBS News

LTLSTN SatTrack V3.1 Orbit Prediction  
Satellite #16609 : Mir (Mir 18)

### VISIBLE PASSES:

Date (EDT)	Time (EDT) of Rise	Peak	Set	Azimuth at Peak	Height Elev	Vis
Sat 14Mar98	02:55:28	03:00:37	03:05:54	84.4*	383	NNV
Mon 16Mar98	02:32:14	02:37:24	02:42:34	60.6*	383	NNV
Sun 22Mar98	04:35:48	04:40:57	04:46:07	53.2*	382	NVV
Mon 23Mar98	05:12:14	05:17:17	05:22:26	44.8*	381	NVV
Tue 24Mar98	04:12:34	04:17:44	04:22:54	83.1*	382	NVV
Wed 25Mar98	03:13:02	03:18:04	03:23:14	44.1*	383	NNV
Thu 26Mar98	03:49:21	03:54:24	03:59:33	58.5*	382	NNV
Sun 29Mar98	20:37:30	20:42:39	20:47:49	85.2*	387	VNN
Tue 31Mar98	20:14:17	20:19:26	20:24:36	59.1*	387	VVN
Wed 01Apr98	19:14:37	19:19:46	19:25:04	68.7*	387	VVN
Mon 06Apr98	22:18:04	22:23:14	22:28:24	55.2*	386	VNN

These are only the best passes... about 20% of the total available. In the last column N=not visible, V=visible for that section of the pass: rise, peak, set.

The following Kingston BBS's are RASC support boards:  
 \*Observatory East (Mark Kaye) 613-353-6495 FidoNet 1:249/109  
 2400-28800 bps 8N1V.34  
 \* StarStream (Kevin Kell) 613-546-6403 FidoNet 1:249/112  
 14400-28800 bps 8N1V.34  
 \* Moonlight Cascade (Kim Hay) 613-353-7369 FidoNet 1:249/133  
 2400-28800 bps 8N1V.FC

## Submissions from Members

Is anyone is interested in a daytrip to Toronto? I'm trying to organize a group to go to Toronto and visit the Science Centre and then the Dunlop Observatory. David Dunlop Observatory gives a 1.5 hour tour at dusk and weather permitting we would be given a chance to peek through the largest optical telescope in Canada (74"). Tentatively set for Sat April 25, 1998. Dunlop charges \$2.50 for adults and \$1.50 for seniors/children. Contact David Pianosi @ 613-



xxx-xxxx

## Fireball Group Submitted by Tom Dean

There was only one call on the line during January, and we had one report submitted by a committee member (thanks Kim!). Susan Phillips has been looking after the phone line during February, and Kim Hay is checking the line during March. We are always on the lookout for volunteers to help. Please contact Tom Dean <dean@legasys.on.ca> if you are interested. If you observe a fireball please report it to the hot line (545-6000 ext 7608) or to the web site at <http://www.astro.queensu.ca> (click on fireballs).

The list to date has been:

Sept/97: Don Cropp	October/97: Tessa Clarke
December/97: Laura Gagne	January/98: Tom Dean
February/98: Susan Phillips	March/98: Kim Hay

## COLD EH??

by E. Kliptic

Really now, we are members of RASC and first and foremost WE ARE CANADIAN!

There is no such thing as too cold for observing, well at least not before either your clock drive or focuser lock up. In fact the viewing should only get better, I heard that on that record setting day of February 3, 1947 in Snag, Yukon it hit -63c. Apparently it was so cold that the air thinned to .1 atmospheric density and it was so clear that if you could have gotten a shutter to would work you could have reduced exposure times by 50%. Cold eh!

To observe in the rugged Canadian winters you just have to be prepared. Be Canadian. First you must gauge the degree of cold. To do this reach out your doorway and spit at your hand, if it is freezes before reaching your hand it is cold out, dress appropriately, eh.

First place all equipment outside and allow cool down to occur while you are bundling up. So let's start with the basics, you know that fashion thong underwear you got for Christmas, NO. Let's face it that is like accident insurance, there just isn't enough coverage. Good cotton briefs or boxers are best, the important part is the next layer nothing beats good old fashion red cotton rib knit two piece long underwear (although "teal" could be substituted if you are looking to make a fashion statement). Male or female you now have a good body hugging base that will provide excellent warmth, and breathing for dryness. We all know that for foot warmth nothing is better than Dad's old gray flannel socks you used to make puppets out of when you were a child. Don't you feel the warmth just reading about it.

At this point resist the urge to have a nice hot chocolate or coffee, keep the reservoir empty!

Outerwear is of course more diverse and fashion driven. Given the recent restrictions on the trapping of Canadian flannel, I prefer a pull-over to a shirt. And try substituting a bulky scarf with a turtleneck dickey, these can easily be rolled up and down as needed. You can all make your own choices here but I still say keep it two piece, stay away from the snowmobile suits. You could wear jeans but if you have those longies under good snow pants don't defeat them with binding tight pants. Comfort will extend your viewing time greatly. Wow I'm starting to sweat!

Now we get to the three H's, hooves, head and hands! Those sock puppets need a good warm footing (pun intended) and here is how to get it. Make sure your boots are one half to one whole size too big depending on the kind of insole you intend to use. Traditional thick felt insoles are great but take longer to dry out and require a larger heavier boot. State of the art foil clad insoles on the other hand are just as warm and thinner. There is a great deal of headgear out there, toques are great but being a traditionalist I prefer the good old mountie hat. Now before you cry animal rights, artificial fiber (and we all know that these petroleum based products are pollution free and born of an inexhaustible resource) is my choice but that is for allergy reasons. No curling up or popping off your head these hats are secure, warm and the ear flaps keep your walkman phones from cold welding into the ear canal. Last but most important are your hands you need warmth and enough dexterity to write and operate complex buttons and knobs. How can it be done? Well if it is not too cold I am willing to endure some bite and were those cute little stretch gloves you can pick up for \$.99. If you choose white you can actually see your fingers and this can be very important as they become too numb to locate any other way! For colder nights and longer duration's nothing is better than convertible mitt/gloves. These gloves allow you all the freedom you need and good warmth in between.

Well there you are dressed and ready to go, did I say GO? Oh, Oh, this is were the two piece suit comes in handy. Putting on those gloves just told your bladder you're going out, I told you not to have that warm drink eh.

Red Green may advise you to seal arm and leg openings with duct tape (the staple of Canadian engineering genius) but I wouldn't advise it if you plan to undress again.

Well, that is it you are ready! Let's make it a Messier Marathon.



A few quick tips:

- \* do not hold that frozen metal clad led flashlight in your mouth as you write, experience talking here.
- \* liquid heat? Keep that thermos under the 2 litre size, bladder capacity decreases as temperature drops. Perhaps some good energy junk food would be a wiser choice, garfields, chocolate and other sugars.
- \* to avoid cold welding your eye to the eyepiece, try drilling the center out of an old pair of sunglasses.
- \* as much as 50% of heat loss is through your head keep it covered eh!
- \* back to liquid heat, Dr. Mc Gillicudy's "Fireball" is just what it says, but use it sparingly, it has been known to blur focus and fog judgment.
- \* don't stand still, keep that circulation moving. Disco works well, but make sure you are alone ( the younger set may substitute the macarena).
- \* breathe away from your equipment.
- \* street light a problem? Try a pair of red coloured sunglasses, that is of course if you can find any of these sixties gems. Yes, light pollution does look better through rose coloured glasses.
- \* **last of all, "share the view!"**

## TIMING OF ECLIPSING BINARY EE CEPHEI

By Ray Berg Crown Point, Indiana

Most eclipsing binary variable stars have a period of several days to a month and an eclipse duration of only a few hours. Algol is a good example. One of the notable exceptions is the long period binary EE Cephei which goes for 5.61 years between eclipses that last for about 25 days. Last October, EE Cephei was scheduled to begin an eclipse and I elected to monitor this unusual event to determine the exact time of minimum and to compare that to the published predicted time based on the last eclipse in 1992. The periods of binary star systems are not necessarily constant and can change for a number of causes, such as mass transfer between the two stars, the gravitational influence of a third star, or various other reasons.

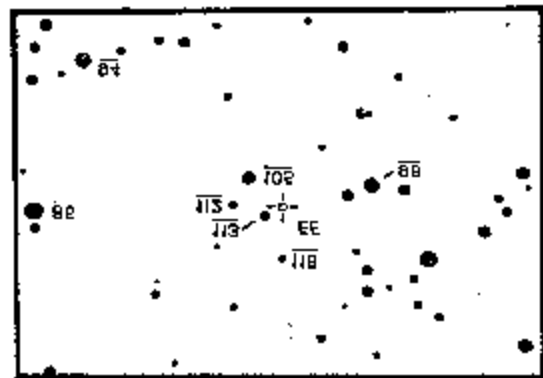
The predicted time of minimum was found in a report by E. Halbach in the Journal of American Association of Variable Star Observers (AAVSO), Vol. 21, No. 2, 1992. This time was given as Julian Day 2450741.49, or at 5:46 PM (CST) on October 19, 1997, with the eclipse scheduled to occur during the interval October 5 to November 4. The normal magnitude range during eclipse of this star is 10.8 to 12.2. Using an 8-inch Schmidt-Cassegrain, it was possible to follow the star down to minimum brightness even during the time of full moon. The magnitude of the variable was estimated every clear night, using the standard comparison



1998 February 26<sup>th</sup>  
Eclipse from Curaco by  
Tom Dean  
50mm lens, 35mm  
camera, kodak slide  
film, 675dpi and  
cropped on Polaroid  
slide scanner.



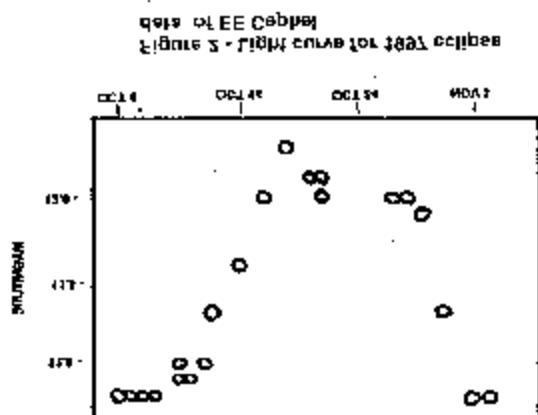
Figure 1 - Magnitudes of comparison stars  
on AAVSO star chart for EE Cephei





stars indicated on the AAVSO star chart in Figure 1. On this chart, the variable is identified with the open circle and the magnitudes of the comparison stars are noted with the decimal point omitted.

I was quite fortunate with having good weather over most of the observing period and obtained 21 data points. A plot of the magnitude changes over time is shown in Figure 2. This



light curve provided the basis to determine the time of minimum, by means of the reversed tracing paper method used by the AAVSO. The time obtained was Julian Day 2450744.5 or 6:00 PM (CST) on October 22 with an accuracy of  $\pm 0.5$  day, indicating that the minimum brightness was 3.01 days late. This is particularly interesting since the published data showed little variation from predicted times for the 1986 and 1992 eclipses. I therefore look forward to comparing my preliminary 1997 findings to the more extensive AAVSO report, due in about a year. If that report confirms that the period of EE Cephei has indeed changed, the next eclipse of EE Cephei can be expected to occur on June 6, 2003.

### Slide Project

Here we are another news letter and Hank is still begging for slides. We have found a Canadian source for American slides but we would still like to have a good library of member slides. There are two important reasons for this approach to our slides library. The most important reason is as I have previously stated, to get the work of our members in the public view so they can relate to the size of scopes and

equipment that the average amateur has and they can afford. The second reason is cost, at \$1-\$2 per commercial slide we could save hundreds of dollars, money saved here could go to other projects of equal or more benefit to our members.

I am pleased to announce this month that I received our first donation. On Feb. 18, I received a package in the mail from Mr. Frank Hitchens of Arden. The set is comprised of 25 slides ranging from full sky, planetary and deep sky objects. Thank you Frank, you have gotten us started. I look forward to receiving more slides (mail to RASC Slides c/o Box 270 Newburgh On. K0K 2S0) in the next month from our talented members.

Submitted by Hank Bartlett

## Comet Watch

Comets Currently Visible from

[http://encke.jpl.nasa.gov/whats\\_visible.html](http://encke.jpl.nasa.gov/whats_visible.html)

Last Updated: 4 March 1998

### Long-Period Comets

C/1995 O1 (Hale-Bopp) is ~8.7 (3/4)

C/1997 D1 (Mueller) is about 13.5 (2/23)

C/1997 J2 (Meunier-Dupouy) is about 10.5 (2/13)

### Short-Period Comets

29P/Schwassmann-Wachmann 1 is ~14.3 (3/4)

43P/Wolf-Harrington is ~ 14 (3/4)

55P/Tempel-Tuttle is ~ 9 (3/4)

69P/Taylor is ~ 11.5 (3/4)

78P/Gehrels 2 is fainter than 13 (3/4)

95P/Chiron is about 16 (2/4)

103P/Hartley 2 is ~10 (3/4)

104P/Kowal 2 is about 13.8 (3/2)

128P/Shoemaker-Holt 1 is fainter than 14.5 (2/23)

132P/Helin-Roman-Alu 2 is about 16 (2/23)

## Space Calendar

The Space Calendar covers space-related for the coming months. This Calendar is compiled and maintained by Ron Baalke. Please send any updates or corrections to [<baalke@kelvin.jpl.nasa.gov>](mailto:baalke@kelvin.jpl.nasa.gov)

You can find this on the web at:

<http://newproducts.jpl.nasa.gov/calendar>

March 1998



Mar 04 - Moon Occults Aldebaran  
Mar 07 - Venus Passes 3.8 Degrees From Neptune  
Mar 10 - Mercury Passes 1.0 Degree From Mars  
Mar 18 - Venus Passes 3.3 Degrees From Uranus  
Mar 19 - Mercury At Its Greatest Eastern Elongation (18 Degrees)  
Mar 20 - Vernal Equinox (19:54 UT)  
Mar 24 - Moon Occults Venus  
Mar 26 - Moon Occults Jupiter  
Mar 29 - Moon Occults Saturn

#### April 1998

Apr 02 - Mars Passes 1.9 Degrees From Saturn  
Apr 05 - Daylight Savings - Set Clock Ahead 1 Hour (North America)  
Apr 20 - Lyrids Meteor Shower Peak  
Apr 22 - Venus Passes 0.3 Degrees From Jupiter  
Apr 23 - Moon Occults Venus  
Apr 23 - Moon Occults Jupiter  
Apr 24 - Moon Occults Mercury

#### May 1998

May 02 - Astronomy Day  
May 04 - Mercury at Greatest Western Elongation (26.5 Degrees)  
May 05 - Eta Aquarids Meteor Shower Peak  
May 12 - Mercury Passes 0.8 Degrees From Saturn

## Buy, Sell & Trade

**FOR SALE:** COREL DRAW 8 graphics package  
Full version software, Brand new, unopened box, CD-ROM Format, 450\$ negotiable  
Note:., Won during school contest, legal, Selling because a Mac user and software is PC. Includes:  
Corel Draw (Illustration and Page Layout), Corel Dream 3D (3D Modeling and Rendering), Corel Photo-Paint (Photo Editing and Bitmap Creation), Numerous utilities, Plug-in Special Effects Filters, Enhanced CorelTUTOR, 40,000 clipart images and symbols, 1,000 photos, 1,000 TrueType and Type 1 fonts, 750 floating objects, 450 CorelDraw templates, 100\$ credit toward Corel digital stock photos  
System requirements:  
Windows 95 or Windows NT 4.0, Minimum 16MB RAM (32 MB rec.), CD-ROM Drive, Mouse or tablet, Pentium 90 processor (Pentium 133 rec.), Minimum 80MB Hard Disk space to install SVGA  
Contact: Pierre Martin Orléans, Ontario  
K4A 1W1 (613) xxx-xxxx email: <xxx@xx.xx>

**FOR SALE :** Meade 6" f\* Starfinder Telescope  
Equatorial Mount with RA Drive motor and upgrade focuser and corrector. Bought in 1994 new \$1300 with tax asking \$800.

Photographic accessories (all 1/2 price of new with tax)  
Meade 60mm guidescope with mounting rings asking \$80  
Meade Declination tangent arm asking \$80  
JMI Declination motor and hand control asking \$75  
Meade Illuminated wireless 12mm reticle asking \$80  
Camera Adaptor asking \$30  
Home made moto-focus for Newtonian

## News from the Net

### Mars Global Surveyor Flight Status Report 20 February 1998

For the second consecutive month, conditions in the Martian atmosphere have remained calm, and aerobraking progress continues to proceed at a slightly faster than normal pace. As of today, Surveyor is completing one revolution around Mars every 15.7 hours. This orbit period is 93 minutes shorter than that predicted for this time prior to the winter holidays last year.

Aerobraking will resume in September, and Surveyor will reach its Mars mapping orbit in late March or early April 1999.

After a mission elapsed time of 470 days from launch, Surveyor is in an orbit around Mars with a high point of 14,566 miles (23,442 km), a low point of 73.8 miles (118.8 km), and a period of 15.7 hours.

### VOYAGER 1 NOW MOST DISTANT HUMAN-MADE OBJECT IN SPACE

In a dark, cold, vacant neighborhood near the very edge of our Solar System, the Voyager 1 spacecraft is set to break another record and become the explorer that has traveled farthest from home.

At approximately 5:10 p.m. EST on Feb. 17, 1998, Voyager 1, launched more than two decades ago, will cruise beyond the Pioneer 10 spacecraft and become the most distant human-created object in space, at 6.5 billion miles (10.4 billion kilometers) from Earth. The two are headed in almost opposite directions away from the Sun.