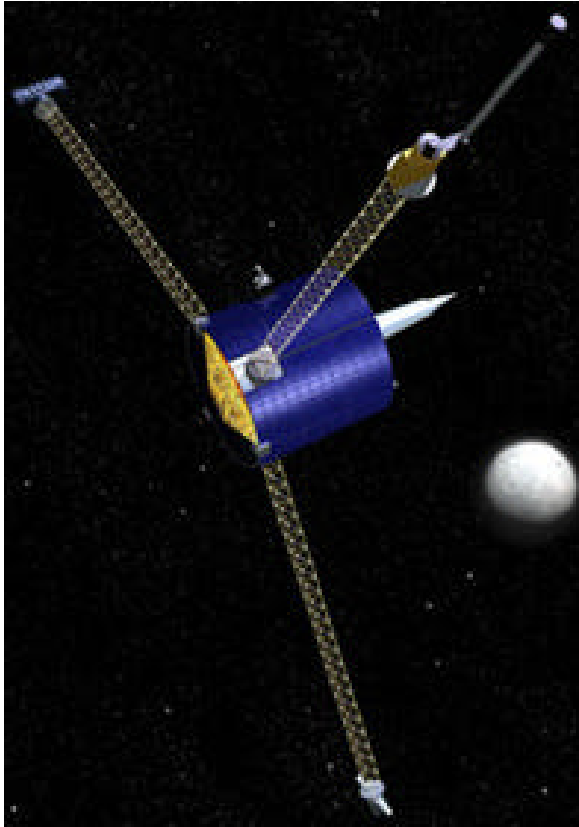




Back to the Moon!



Lunar Prospector will launch to the Moon, Jan 5th, 1998. Within a month it will begin returning answers to long-standing questions about the Moon, its resources, its structure and its origins. Prospector will accomplish these goals during its primary one-year polar orbiting mission. Using a complement of five instruments, the mission will yield important science results at an unprecedented low cost. The first and most exciting data returned will answer the question first raised in the early seventies and underscored by the 1994 Clementine mission: Is there water in the form of ice in some polar craters? The significance of this information for further exploration of the Moon and future utilization of Moon resources is great.

Lunar Prospector is the first competitively selected and third to launch in a series of missions in NASA's recently implemented Discovery program. This program was developed to produce frequent, low-cost missions to explore the Solar System. Lunar Prospector is a simple and reliable spin-stabilized spacecraft. It rotates around its own central axis in order to control its orientation en route to the Moon. Prospector is small -- when full of fuel, the spacecraft weighs only 295 kg (650 lb). That's about a quarter as heavy as an average-sized car! It will carry a small payload of only five instruments. Like all Discovery missions, Prospector progressed rapidly from development to completion and testing phases -- the entire process was accomplished in a period of only 22 months. One of the features that

speeded the process along is the fact that, where feasible, the spacecraft was manufactured from "off-the-shelf," flight-proven hardware. From an engineering perspective, a spin-stabilized spacecraft like Prospector is inexpensive to design and simple to operate. During its one-year polar orbiting mission, Lunar Prospector will have the exciting and exacting task of sleuthing some of the Moon's remaining mysteries, including whether or not water ice is buried inside the lunar crust. Besides water, Lunar Prospector will look for other natural resources, such as minerals and gases, that could be used to build and sustain a future human lunar base or in manufacturing fuel for launching spacecraft from the Moon to the rest of the Solar System.

Lunar Prospector, using its Gamma Ray Spectrometer, will collect a large amount of scientific data that will help researchers understand the chemical composition of the lunar surface. Some of the spacecraft's prospecting tools, or scientific instruments, will also measure the Moon's magnetic and gravitational fields, enhancing our current understanding as well as potentially enabling future mission scientists to design more fuel-efficient journeys to the Moon. In addition, Prospector will carry a special instrument, called an Alpha Particle Spectrometer, that will sniff out small quantities of gases that leak out from the lunar interior. Collectively, the scientific data that Prospector will send back to Earth will help researchers construct a more complete and detailed map of our nearest planetary neighbor, the Moon.

For more information see: <http://lunar.arc.nasa.gov/projects/>

Editors Note: As we go to press, the launch of the Lunar Prospector was delayed from January 5 to January 6.



The Centre

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

Newsletter Submission Info:

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 Gagne
Treasurer: John Hurley
Editor: Kevin Kell
National Council Rep: Susan Gagnon
Librarian: Brenda Shaw
Honorary President: David Levy

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:
listserv@astrotech.stmarys.ca

In the body of the message put:
subscribe rasclist 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 January 9th A possible visit from the RASC National President Doug George or Laura Gagne and Brenda Shaw on the Newly formed Youth Group



Friday February 13th
A possible visit from the RASC National President Doug George or Laura Gagne and Brenda Shaw on the Newly formed Youth Group

Friday March 13th TBA
Friday April 3rd*
Friday May 8th TBA
Friday June 12th TBA
Friday July 10th
Friday August 14th 2nd Annual BBQ Dinner Meeting
Friday September 11th
Friday October 2nd*
Friday November 13th Annual General Meeting
Friday December 11th
* 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).

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.

Contributions are more than welcome. Submitted material may be edited for brevity or clarity. Copyright 1998. All rights reserved. Permission is granted to other publications of a similar nature to print material from Regulus provided that full credit is given to the author and to Regulus.



From The Editor

The plan was to redesign the newsletter for this first issue but after a wild New Years, the publishing deadline has snuck up and appeared out of nowhere. Looks like we'll be sticking with this design for a little while.

Submissions and feedback from you, the reader, continue to be low, and few and far between. Luckily there is topical "filler" material readily available from the Internet these days.

1998 promises to be a banner year for the Kingston Centre. Many of our 1997 initiatives are paying off bigger than we could possibly imagine. The ATM group has finished the first telescope and well into the second with plans for a 3rd to be completed by the end of the year. The Observing Group has been up and running since August of 97 with good turnouts (and bad weather!). The Youth Group has hit the ground running and we should be seeing 20-30 people being educated in the sciences and astronomy.

The Current 1997/98 Membership list is included in this issue. Please remember that this list is meant to be an aid for you to contact other members. Please do not distribute this list to anyone outside the Kingston Centre Membership.

SLIDES, SLIDES, SLIDES.

In an effort to compile a library of instructional and promotional slides, the Kingston Centre has begun sourcing out professional 35mm slide sets. However, if we are going to promote amateur astronomy to the public we must not get involved in over-kill. Presenting "Hubble" like slide shows at schools and public events like Astronomy Day may mislead novices into believing they can view such images with the eye.

This is where we turn to you, our membership, to provide slides that show people what we really see. What we need are images that we can honestly tell people they too can duplicate, and view much as they look in the slides. Be it full sky, galaxies, nebulas, or constellations, from novice to the best you wish to offer. All slides will be gladly accepted and compiled in sets. After being categorized, listed and cross referenced, sets will be available for use by members for showing at schools, cubs, brownies and public events, etc. All slides will become property of the Kingston Centre and those donating may be asked to sign a standard release form.

Slides should be marked with the following:

- a/ image and date.
- b/ exposure information.
- c/ photographer (optional).

Duplicate images may be returned or used in other sets, i.e. comet shots, one set may be a collection of various comets, as well as sets of each comet on their own. A set of all major constellations could be complimented with seasonal sets

more appropriate to the time of showing.

Slides may be mailed to Hank Bartlett, P.O. Box 270, Newburgh On. K0K 2S0, to Kevin Kell PO Box 2033 Kingston, On. K7L 5J8, or brought to a meeting. Be it one, two or twenty, any amount will help us reach out and promote our hobby to others who are interested. Help us encourage them to stop and take the time to view the night sky, before that view is obscured more than it is now. Remember "share the view"!

Submitted by Hank Bartlett & Kevin Kell

From The Secretary

Subject: minutes: December 12, 1997

Meeting called to order at 8:07 pm

Announcements:

Judith Irwin has beautiful photos by world-renowned photographer David Malin for sale. The proceeds go to helping to renovate the Queen's Observatory. 8x10 photos are \$20 each and 11x15 photos are \$45. For more information check the Queen's Observatory website.

Dieter Bruekner has greeting cards for sale. They have a really nice picture of Hale-Bopp taken by Vic Smida. Contact him for information on prices/ordering.

The A. Vibert Douglas Award:

This is the highest award given by the Kingston Centre for outstanding service to either astronomy in general or the centre. It is named for one of the centre's founders, Dr. A. V. Douglas who was the first astronomer at Queen's University. She did much to further astronomy in Kingston both for amateurs and professionals. Dr. Douglas was a woman to be admired. This year's recipient is certainly deserving of the award as she carries on the spirit of Dr. Douglas. Dr. Judith Irwin has been the liaison between Kingston Centre and the Physics Department at Queen's. She has given wonderful talks to the centre about her research and was a featured speaker at the General Assembly this past June. Dr. Irwin acts as our sponsor, ensuring us a place to meet and is actively involved in our centre especially helping to educate the public about astronomy through observatory open houses and the newspaper column "Stargazer" in Kingston this week which she writes with her husband, Dieter Bruekner. We are all very proud of her and congratulate her on receiving this award.

Guest Speaker:

Dr. Tom Dean gave us an interesting talk about the building of the centre's new 8" telescope by the amateur telescope makers group. The telescope was named the "Fitzgerald



Memorial Telescope" in honour of the late husband of Marion Fitzgerald, who donated most of the parts. The remaining parts were donated by Dr. Dean and Doug Angle. For more information about the telescope, see last month's minutes (he gave a shorter version of the talk to the eight of us that were present for the snowed-in November meeting).

The amateur telescope makers will be meeting Sunday December 14 at Dr. Dean's home. Anyone can join the group. No experience is necessary. Contact Tom Dean for more details. The group expects to meet twice monthly. Come out and lend a hand. Our current telescope being built is an 8" f-5.

Future plans include building an array of telescopes of different sizes, mounts and focal lengths. Barn door construction is also being considered. Everyone is welcome to come out and learn about making telescopes or other devices.

Youth Committee:

Our centre has been given a grant to begin a youth committee which will focus on careers in astronomy and related sciences. Brenda Shaw and Laura Gagne will chair the committee and several members have volunteered their services. Our first executive planning meeting will be in early January and at that time advertising will begin in local high schools, colleges and universities. The target age group is 13-24 and membership is free and open to the public. This is a service of the Kingston Centre to the community.

Observers' Group:

The next meeting of the observers' group will be at the home of John and Peggy Hurley on Friday January 30th. February's meeting is on the 27th of the month at the home of Kim Hay.

The meeting was adjourned at 10:25

Subject: November 14, 1997 minutes

Meeting called to order at 8:15

Announcements: The meeting was informal due to the fact that it had been considered cancelled due to the snow storm that day, however some things of interest were discussed.

Our proposal for the grant to start our youth group was accepted and we will receive \$5000.00 for this purpose. Brenda Shaw and Laura Gagne will act as co-chairs for the group and will be assisted by John Hurley and Cynthia Romak. There will be a meeting at a future time to form the group and draft the advertisements. The age group will be from 13 to 24 years old and membership in the RASC is not

required. This initiative is part of our commitment to public education, especially among the youth (see mission statement).

Doug George has been contacted regarding being our January speaker. He has not yet confirmed. Dr. Richard Schmude is expected to be the speaker at our December meeting.

Newfoundland centre has requested that we do a speaker exchange with them which will be funded by National. They have specifically asked for either Dr. Judith Irwin or Dr. Martin Duncan and will be sending someone who will be speaking about ancient astronomers from the Newfoundland area (astro archaeology). They wish to do this in March.

Brenda Shaw needs a slide of Orion for a friend of hers who will be doing a short clip on cable 13 about the constellation.

Guest Speaker:

Dr. Tom Dean spoke about the construction of the new club telescope. It would be best if he would be kind enough to repeat at least part of his talk when there are more members present as everyone would be interested in hearing about the new telescope. The following is a summary of his presentation: The new telescope was finished in October and saw first light last weekend at the home of Doug Angle. It will be named the "Fitzgerald Memorial Telescope" in honour of the donors. It took approximately 80 hours of polishing to complete the mirror blank which has a deviation of 1/12 of a wavelength of green light. (1/10 of a wave is the commercial standard, so this is quite extraordinary). The telescope is an 8" reflecting telescope on a Dobsonian mount. It is mounted in a fibreglas tube and is painted white and light blue for better visibility in the dark. It is light weight and comes apart into two components which fit in most cars. Dr Dean built the eyepiece himself using some of the assorted lenses which were included in the donation and he is currently constructing a starsight finder, similar to a telrad, which will be mounted on the telescope. The method of collimation is similar to the other club telescope, but it is recommended that unless you know exactly what you are doing you should not attempt to collimate the secondary mirror yourself. The brass screws can easily be stripped and then the secondary will be useless.

Telescope Making Group

The telescope making group will be starting on another 8" telescope using another blank that was part of the Fitzgerald donation. It will have a smaller focal length (which means the tube will be shorter). Dr Dean will be teaching a new grinding technique which uses a metal "hog" similar to a



trailer hitch. The grit is applied to the metal post and the glass is rubbed against it to form a rough parabola. Fine grinding is done using a plaster cast of the glass covered in ceramic tiles. Anyone interested in working on the new telescope should contact him. No experience is necessary.

Meeting adjourned 9:40pm
Have a nice day :-)

From The Treasurer

Nothing new this issue.

National News

Not much new... the minutes from the October 1997 National Meeting are now available on the National Web Page:

<http://www.rasc.ca/minutes/>

Membership & Promo items can now be ordered directly from Bonnie at the National Office and they now take credit cards!

BBS News

The pictures from the Mars Pathfinder mission continue to accumulate. If you don't have internet access, a computer, modem and telephone line will let you at these local resources. Also listed are the next 2 months of *good* MIR passes. Please remember that the further into the future the predictions are, the less accurate they will be. In addition MIR often changes its orbit, requiring a completely new prediction run.

LTLSTN SatTrack V3.1 Orbit Prediction

Satellite #16609 : Mir (Mir 18)

Element Set Number: 134 (Orbit 67814)

Element Set Epoch : 02Jan98 11:54:29.230 UTC

Orbit Geometry : 378.35 km x 389.71 km at 51.654 deg

Ground Station : Kingston, ON, Canada --- FN14SG

Time Zone : EDT (-4.00 h)

VISIBLE PASSES:

Date (EDT)	Time (EDT) of			Azimuth at Peak			Height at PK	Vis
	Rise	Peak	Set	Ris	Pk	Set		
Sat 10Jan98	05:00:12	05:05:22	05:10:32	230	140	61	64.2*	389 NNV
Sun 11Jan98	05:37:08	05:42:18	05:47:27	256	337	58	41.8*	390 NNV
Sat 17Jan98	07:43:44	07:48:54	07:54:11	301	31	122	87.3*	386 NVV
Sun 18Jan98	06:44:37	06:49:40	06:54:50	303	24	107	46.2*	388 NVV
Mon 19Jan98	07:21:25	07:26:28	07:31:45	298	218	133	55.0*	386 NVV
Tue 20Jan98	06:22:11	06:27:21	06:32:31	302	39	117	71.5*	388 NNV
Thu 22Jan98	05:59:45	06:04:48	06:10:05	300	221	128	69.5*	388 NNV
Fri 23Jan98	05:00:24	05:05:33	05:10:51	302	25	113	59.0*	389 NNV
Fri 30Jan98	21:04:25	21:09:42	21:15:00	240	351	59	80.3*	391 VNN
Sat 31Jan98	20:05:11	20:10:21	20:15:31	224	142	62	47.8*	390 VNN
Sun 01Feb98	20:41:52	20:46:54	20:52:11	251	331	58	51.6*	391 VNN
Mon 02Feb98	19:42:23	19:47:33	19:52:50	235	140	60	81.7*	390 VVN
Wed 04Feb98	19:19:34	19:24:44	19:30:02	246	335	58	62.6*	390 VVN

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

1998 Observing Group Schedule

If any of this information is incorrect, let Tom Dean (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

Friday January 30th 6:00pm (at or near 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

Friday February 27th: 6:00pm (at or near dusk)

At the home of Kim Hay (Perth Road Village) From Kingston & the 401 Highway. Head north on Division Street (aka Perth Road) for approx 25 km. Go past Glenburnie and Inverary and into Perth Road Village.xxxx

March: To Be Announced April: To Be Announced

May: To Be Announced June: To Be Announced

Submissions from Members

DAVID MALIN PHOTOGRAPHS

As part of the fundraising campaign for the Queen's Telescope, the Queen's Astronomy Research Group is currently selling high quality photographs by David Malin.

Those of you who have recently been to the National Gallery in Ottawa, will have seen a couple of Malin's images in the "Photography in Science" exhibition. Malin currently has international exhibitions touring Britain (e.g. Australia House in London), France, and Italy as well as at Museums throughout Australia. Malin is not only a science photographer, but an astronomer at the Anglo-Australian



Observatory (AAO) which operates a 4-m class telescope and a Schmidt telescope at Siding Spring, Australia. His photographic techniques allowed him to discover, for example, low surface brightness galaxies which are now referred to as Malin objects. In artistic terms, he sees his activities as comparable to Ansel Adams in that his photos are simultaneously accurate records of nature and works of self-expression.

Malin has kindly agreed to sponsor our fundraiser. Early in February he will be visiting Kingston to give a public talk. On Weds. Feb. 3/98 Edward Day Gallery will be hosting a reception where his works will be on view. However the photos we currently have on hand will, of course, make excellent Christmas gifts. They differ from posters and calendars in that the printing process is of a much higher quality; Malin has supervised the printing of these photographs.

8x10 inch prints are \$20.

12x15 " " " \$45.

The subjects are the Orion Nebula, the globular cluster 47 Tucanae, the spiral galaxy NGC 2997, and the Horsehead Nebula (this latter is in the large size only). Special orders can be made but may not be available by the Holidays. (However if there is a bulk order for one image, in one size, delivery by Christmas is a possibility.)

Feel free to contact us via the Queen's Observatory (545-2711) or Jayanne English at (545-6000 ext. 4781) about purchasing and pick up/delivery of these photos.

Comet Watch

Comets Currently Visible from

http://encke.jpl.nasa.gov/whats_visible.html

Long-Period Comets: C/1995 O1 (Hale-Bopp), C/1996 J1 (Evans-Drinkwater), C/1997 J2 (Meunier-Dupouy), C/1997 N1 (Tabur), C/1997 N1 (Tilbrook), C/1997 T1 (Utsunomiya)

Short-Period Comets: 29P/Schwassmann-Wachmann 1, 43P/Wolf-Harrington, 65P/Gunn, 78P/Gehrels 2, 103P/Hartley 2

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

You can find this on the web at:

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

Last Updated Sunday, January 04, 1998 at 09:16 AM PST

January 1998

Jan 07 - Venus Passes 3.9 Degrees from Neptune

Jan 07 - Mars at Perihelion

Jan 08 - Comet Hartley 2 Closest Approach to Earth (0.820 AU)

Jan 10 - Lunar Prospector Enters Orbit Around Moon

Jan 13 - 5th Anniversary (1993), STS-54 Launch (Endeavour), TDRS-F

Jan 14 - Comet Taylor Closest Approach to Earth (0.992 AU)

Jan 15 - Comet Shoemaker-Levy 3 Closest Approach to Earth (1.845 AU)

Jan 17 - Comet Tempel-Tuttle Near-Earth Flyby (0.357 AU)

Jan 21 - Mars Passes 0.2 Degrees from Jupiter

Jan 22 - STS-89 Launch, Endeavour, 8th Shuttle-Mir Mission

Jan 25 - Venus at Perihelion

Jan 25 - Comet Wolf-Harrington Closest Approach to Earth (1.141 AU)

February 1998

Feb 01 - Moon Occults Saturn

Feb 02 - Mercury Passes 2.0 Degrees From Neptune

Feb 15 - Voyager 1 Overtakes Pioneer 10 (Farthest Man-Made Object To Leave The Solar System)

Feb 22 - Mercury Passes 1.0 Degree From Jupiter

Feb 26 - Solar Eclipse, Visible from Galapagos, S. America & Carribean

Feb 27 - Moon Occults Mars

Feb 27 - Comet P/1997 G1 Montani Closest Approach to Earth (3.577 AU)

March 1998

Mar 01 - Moon Occults Saturn

Mar 02 - Comet Kowal 2 Perihelion (1.397 AU)

Mar 07 - Venus Passes 3.8 Degrees From Neptune

Mar 10 - Mercury Passes 1.0 Degree From Mars

December 8, 1997 RELEASE: 97-281 NASA FILLED THE CALENDAR IN 1997

From the surface of Mars to a possible newly discovered ocean beneath the ices of Europa, NASA activities were in the news in 1997. Background information and still images are available to news media to illustrate the top 10 NASA stories of the year, with supporting material also available via the Internet and the World Wide Web at the URLs listed.

Mars Pathfinder

One of the most watched events of the year occurred 141



million miles from Earth, as hundreds of millions of people followed the July 4 landing of NASA's Pathfinder spacecraft on Mars, the first landing on the Red Planet since the Viking missions in 1976 and the first ever to use air bags to cushion impact on the surface. Shortly after Pathfinder's landing, the Sojourner rover began its own exploration of nearby rocks and other features. The images from both craft were posted to the Internet, where more than 500 million "hits" were recorded by the end of July.

<http://mpfwww.jpl.nasa.gov/default.html>

Hubble Servicing Mission -- "New" Telescope for the New Millennium

During five days of spacewalks, astronauts flawlessly performed major maintenance and upgrades to the orbiting Hubble Space Telescope, replacing older hardware with two dramatically improved instruments that are helping astronomers probe the universe in greater detail than ever before. Also this year, Hubble uncovered over 1,000 bright, young star clusters bursting to life in a brief, intense, brilliant "fireworks show" at the heart of a nearby pair of colliding galaxies. The Hubble image of the galactic collision was printed on the front pages of newspapers around the world as well as on the cover of Newsweek magazine.

<http://opposite.stsci.edu/pubinfo/PR.html>

and

<http://opposite.stsci.edu/pubinfo/sm97/>

Shuttle-Mir Goes Forward

In 1997, three U.S. astronauts -- Jerry Linenger, Michael Foale and now, David Wolf -- added to NASA's long duration record aboard Mir and to the Agency's ability to gain experience and knowledge unavailable elsewhere. Despite problems on the Mir, NASA Administrator Daniel S. Goldin concluded that Shuttle-Mir has a thorough review process which warrants continued American participation in the program.

<http://shuttle-mir.nasa.gov/mir24/status/week7/goldin.html>

NASA Satellites Provide Best View Yet of El Nino Weather Phenomena

Pacific Ocean sea-surface height measurements and atmospheric water vapor information taken from independent Earth-orbiting satellites, the Upper Atmosphere Research Satellite, the NASA Scatterometer, TOPEX/POSEIDON, and SeaWiFS have convinced scientists of what they had earlier postulated -- a full-blown El Nino condition is established in the Pacific.

<http://nsipp.gsfc.nasa.gov/enso/>

Cassini Launches to Saturn

The international Cassini mission left Earth bound for Saturn on Oct. 15 atop an Air Force Titan IV-B/Centaur rocket in a picture-perfect launch above Cape Canaveral, FL. With the European Space Agency's Huygens probe and a high-gain antenna provided by the Italian Space Agency, Cassini will arrive at Saturn July 1, 2004.

<http://www.jpl.nasa.gov/cassini/>

X-33 and X-34 Flight Technology Demonstrators Achieve Major Milestones

In 1997, the Agency's quest to reduce launch costs and increase access to space through its Reusable Launch Vehicle Program took a major leap forward. The X-33 technology demonstrator, scheduled to begin flights in mid-1999, successfully passed its critical design review, and the X-34, the smaller and earlier flight demonstrator being developed in parallel with the X-33, successfully passed a design freeze in mid-year.

<http://stp.msfc.nasa.gov/>

Galileo Discovers Icebergs on Europa

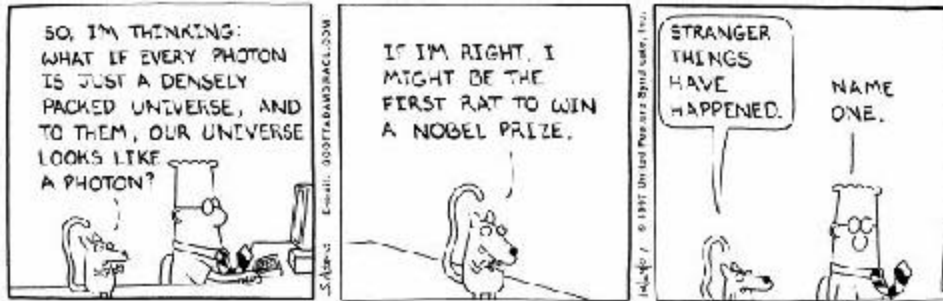
Images captured during Galileo's closest flyby of Europa on Feb. 20 showed features of the Jovian moon, lending credence to the possibility of hidden, subsurface oceans. The findings generated new questions about the possibility of life on Europa.

<http://www.jpl.nasa.gov/galileo/>

Uplifting Year for Aeronautics

To ensure that NASA's work in science and technology sustains U.S. leadership in civil aeronautics and space and improves air transportation system safety, the Agency established technology goals, called the Three Pillars, that will stretch the boundaries of the knowledge and capabilities needed to keep the United States as the global leader in aeronautics and space.

<http://www.hq.nasa.gov/office/aero/>



discovered "jet streams" or "rivers" of hot, electrically charged plasma flowing beneath the surface of the Sun. These new findings will help scientists understand the famous 11-year sunspot cycle and associated increases in solar activity that can disrupt the Earth's power and communications systems.
<http://sohowww.nascom.nasa.gov/>

SOHO Sheds New Light on Active Sun

Scientists using the joint European Space Agency/NASA Solar and Heliospheric Observatory (SOHO) spacecraft have

For the latest news and information about NASA, please visit TODAY@NASA at URL:
<http://www.hq.nasa.gov/office/pao/NewsRoom/today.html>

Kingston Centre Membership List as of 1997 November

Note that these are taken from the UTP membership info (which is often incorrect). Please remember that this list is meant to be an aid for you to contact other members. Please do not distribute this list to anyone outside the Kingston Centre Membership.

□ **NAME**, ADDRESS, CITY, PROV, CODE, COUNTRY , PHONE, **EMAIL ADDRESS**

[edited out of the public version]