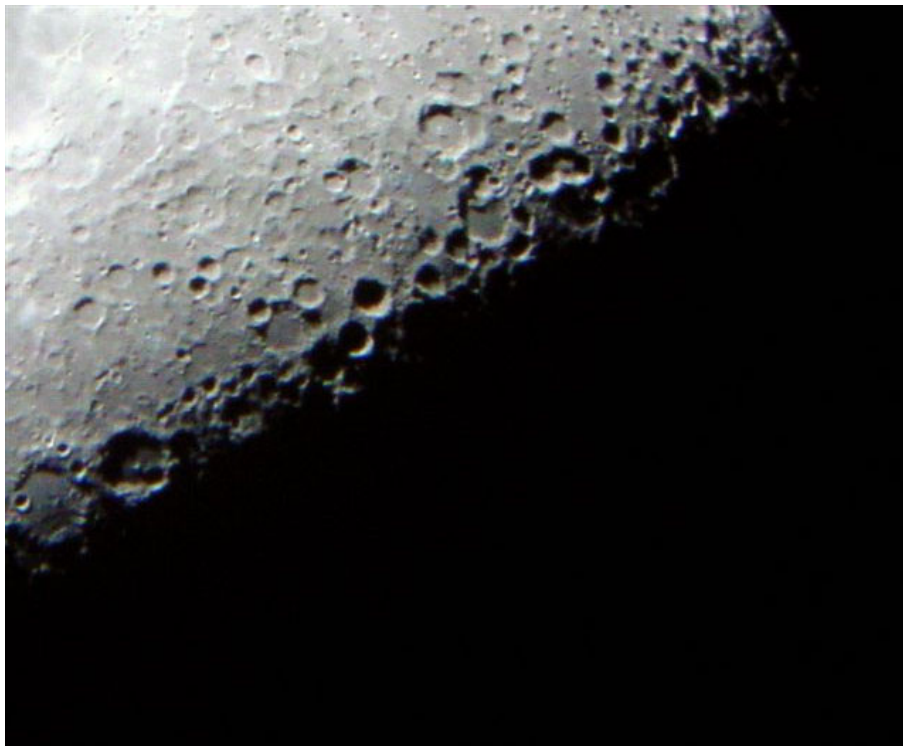


SRfnews



<http://victoria.rasc.ca/>

this month

Constantine Thomas

Cassini at Saturn.

This talk summarizes the exciting discoveries made by the NASA Cassini orbiter (currently orbiting Saturn) and the ESA Huygens Lander that landed on Titan in February. I will be talking about Saturn, its rings and its satellites as revealed by new imagery. I will also be presenting some of the latest images returned by Cassini from the recent Titan and Enceladus fly-bys in February.

Constantine was born in London, England and was interested in astronomy and the planets since he was four years old. He is a planetary scientist with a B.Sc in Exploration Geophysics from University College London and a Ph.D. in Planetary Science from Lancaster University in the north of England. Constantine has been living in Canada since 2003—he came over to work as a post-doctoral researcher at the Institute of Ocean Science near Sidney where he was modeling the internal structure of Callisto and Europa and the possible thickness of any oceans under their icy surface.

Check out: <http://saturn.jpl.nasa.gov/home/index.cfm>



Contact Us On-Line

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On the Cover!

The x came back

This is the first time I used my digital camera on a telescope. The 'X' is there!
Thanks Bill and Joe for the tip off.

I used a Sony DSC-S85, 4.1 megapixel camera in the automatic mode at 200 ASA film speed. Brian sold me a mount that screws on the lens that mounts the camera to the telescope focuser. In the camera adapter, I can place a telescope eyepiece and take pictures afocally. In this case, I used an Omicon 25 mm Plossl. The telescope was my Orion 100mm, F9, ED. I stopped down the objective to about 50mm to cut back the brightness of the moon. I took pictures earlier but did not see the fully illuminated "X". I waited until about 11:45 P.M. and shot this picture when it was nicely visible.

Guy Walton

It was fun to watch the X develop. I noticed the first illumination of the very center at around 2030hrs. By 2115 there was a full X but it wasn't really bright for about another half hour. I took this shot around 2230hrs hand-holding my wife's Canon Powershot S50 up to a 7.5mm Speers WALER in my 6" Dob. By this time, I noticed that the N.E. arm of the X had started to elongate and fracture along the edge of the crater it illuminated. By 2300 I had lost the view in the tall trees.

I also enjoyed the binocular view of the Moon with the Pleiades in the same field of view. I could see the tiny X with my 10x50 binoculars!

Anyone else take a look?

Bill

Check out Bill's image on the next page

Address Change? Information Incorrect?

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Postal Mail: RASC, 136 Dupont Street, Toronto, ON M5R 1V2, Canada

General enquiries: nationaloffice@rasc.ca

The deadline for the next issue of *Skynews* is

March 25 2005

Get your *Skynews* early and in colour. Tell David Griffiths, Treasurer,
that you get *Skynews* on line and we won't mail you a copy



Disappearing Act

Twice now, David Lee and I have watched a star disappear (and reappear). Poof, gone! Ping, it's back!

What were we doing? We were watching an Asteroidal Occultation. "What's that", you say? Aha! That's when an asteroid in the Solar System goes passes directly in front of a star and blocks its light along a very thin path across the Earth's surface. For a few brief seconds, to an observer on that path, that spot in the sky is the brightness of the asteroid (e.g. magnitude 15) instead of the brightness of the star (e.g. mag. 8).

Why are we doing this? Because here's where an amateur astronomer with some specialized (but inexpensive) equipment and a not-very-big telescope can gather true scientific data which the professionals can use. For example, take the occultation David and I just did of the star HIP2421 (magnitude 8.2) by the asteroid (1477) Bonsdorffia (mag. 15.1). The prediction was that the star would disappear (my 8" Meade can't see 15th magnitude) for 4.7 seconds, which, at the known speed of the shadow across the earth of 5.9070 km/s (the orbit is known accurately), gives a diameter of the asteroid of 27.76 km. However, David and I observed that the star went out for a full 6.2 seconds. That means that this asteroid has at least one axis dimension which is at least 36.6 km. long. Is it potato shaped? What is its shape in three dimensions? Only repeated asteroidal occultations will give the answer. Who knows; maybe it'll be worth a flyby at some later date.

So doing this tells us something about the minor planet. But that's not all. There is a very slight chance that if the star drops in magnitude in steps before finally going out, but remains brighter than the asteroid's magnitude, then we're seeing a multiple star system, since only one component was occulted, while other(s) remained visible. From many occultations of that star, we can determine how many stars are in that group (is it a double? a triple?) and what their position angles are. Again, this is information that the professionals would like to have, and typically can't get from direct observation if the companion stars are extremely close together.

But wait, there's more! Another type of occultation is the lunar graze, where the north or south pole of the Moon goes past a star. Because of the crater walls, a star can be occulted by the moon several times as it slides by. Again, poof, it's gone; ping, it's back! By recording repeated lunar graze occultations, we can build a picture of the poles of the moon that we can't see directly and which have not been visited by lunar explorers (manned or unmanned). A few And we can find more multiple star systems have been discovered this way and, no doubt, we will find more.

"So, how can I get into this exciting area of research", you say? The answer

(Continued on page 6)

(Disappear Continued from page 5)

now is a lot easier than it was 20 years ago, before digital shortwave radios, digital camcorders, drop-in eyepiece video cameras, and GPS.

In the old days, you would:

- Get a printed list of the expected path (for example, we expect the shadow to be at 123 0 0 W and 48 12 56 N at 12:34:10 UT; we expect 124 0 0 W ..., etc.)
- Plot the path on a topographical map
- Find the exact co-ordinates of a street intersection inside the path
- Drive out to the site and, using a 30 metre tape measure, determine one or more observing sites across the path, measured from the known intersection.
- Plot these on the topo map to get accurate location(s) and elevation(s)
- Set up each station with a dial-tuned shortwave radio and a boom box with two microphones, one to record the shortwave radio time signal and the other to record the observer
- Find WWV at 5.000 MHz or 10.000 MHz by carefully tuning across the band until you heard the "tick, tick, tick" of the seconds. Position one microphone to record the sound.
- Find the star
- Start your tape recorder
- Stare through the eyepiece, hoping that you wouldn't blink or tear up at the crucial moment
- When the star went out, yell "Out" into the microphone. When it reappeared, yell "Back" into the microphone.
- Reduce your data, estimating what your reaction times were on the "Outs" and "Backs".
- Report in to IOTA (the International Occultation Timing Association)

While this method is still useful, it is Ugly. ! And not very accurate. Because of estimating reaction times, accuracy would be plus-or-minus a fifth of a second, if you were good. With modern gear, we can do better than that.

Nowadays, for only a few dollars more, here's what we do.

- Look at Steve Preston's website (<http://www.asteroidoccultation.com/>), see that an occultation path is going over southern Vancouver Island, and print the finder charts
- Think of a nice, dark site (Sandy's place is ideal!)
- Set up and polar align the telescope
- Turn on my camcorder
- Use my digital shortwave radio to select the time signal on WWV (no more fiddling with dials!).

(Continued on page 7)

(Disappear Continued from page 6)

- Plug the radio's output into the audio input on the camcorder.
- Find the star, using my finder scope and downloaded finder charts
- Drop my video camera into the eyepiece and connect it to my camcorder.
- Swing the telescope to a bright star and focus the video camera.
- Return to the star. Kick back with a coffee and watch the equipment record the event.
- Take a lengthy GPS reading to get accurate location and elevation
- Watch the event over and over again (on a TV or in your computer) to get 1/60 second accuracy
- Report in the results to IOTA (the International Occultation Timing Association)

Much more civilized! And significantly more accurate. Also, here's where you can spot something you might have missed the first time around. Did the star fade out or blink out? Maybe it's a double. Did the star blip twice? Maybe the asteroid is two chunks of rock, not one, or has a valley in the middle. Scientific discovery! And, more to the point, it's fun. To me, astronomy where things are changing is always more enjoyable than just looking at static objects.

I wouldn't want you to give the idea that it's video or nothing. Even 1-sec accuracy is valuable for asteroidal occultations. Of the 25-30 people who do this regularly, no more than three are video-equipped. However, it sure is easier!

So the next time there's an occultation event happening in our skies, give it a try. It will open up a whole new world and get your name into the scientific journals (even if only as a footnote).

Dave Bennett

Announcements

Some of us at the Observatory are entering the Times Colonist 10K as a team to support the Centre of the Universe.

RASC members who would like to participate in either the running or walking portions are welcome to sign up to be a member of the "NRC Red Shifters".

In addition to supporting the Heart & Stroke Foundation and a nice outing on Sunday, April 24, you will receive a collector's T-shirt with the team name and CU logo.

To register to walk or run in the 10K, see:

<http://www.eventsonline.ca/events/tc10k/>

or follow the links from <http://www.TimesColonist10K.com/>

Jim Hesser

The Pearson College Astronomical Observatory

Continued from last month

THE OFFICAL OPENING

Everyone who had participated in the observatory's construction eagerly awaited Friday, April 7, 1995. At 5:00 p.m. invited guests began to arrive. Practicality dictated reducing the number from the hundreds who, in one way or another had added their support, down to more manageable proportions—some 45 to 50. This meant that only RASC council members would be invited.

During the first hour, guests mingled with the students enrolled in the astronomy program and were introduced to each other, while enjoying the refreshments that were placed around the room. Around 6:00 p.m. both guests and students repaired to the dining room to join the rest of the college's students for dinner.

After dinner, the guests were shuttled to the observatory in minivans and as the crowd grew denser it became obvious why the numbers needed to be drastically curtailed, there was hardly room to move about as it was. In the warm room, students were downloading NASA images from the Internet for guests to examine and a wonderful air of expectancy grew as the time for the opening ceremony grew nearer.

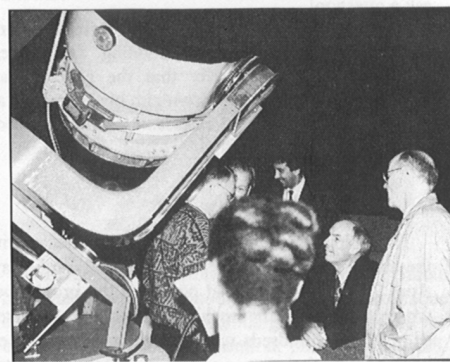
Finally, when everyone was assembled and sardined into the observatory warm room, acting director Jean Godin addressed the assembly with these opening words:

Dear guests and friends. Thank you for joining us tonight. Merci infiniment.

A few years ago, a student from China invited me or, should I say, seduced me into starting astronomy as a new activity at Pearson College. At the time, our terrestrial dreams were small but still open to the whole moving sky. Under the influence of Jack and Alice Newton, these dreams grew.

Jean went on to outline the excellent cooperation the college had received from numerous groups and individuals that had successfully brought the project to fruition. He also commented on the beautiful setting of the observatory.

The beauty of the site is especially inspiring. When we drive or walk along The Milky Way, we often observe deer. Some nights, as the slit opens, we can hear owls nearby. During the daytime, the view



Victoria Centre members, Pearson College students, and invited guests inspect the telescope.

(Continued on page 9)

ROYAL ASTRONOMICAL SOCIETY OF CANADA • VICTORIA CENTRE

(Pearson College Observatory Continued from page 8)

of the Olympic Mountains is breathtaking. You might also be interested to know that the observatory is built near a First Nation's archaeological site. The telescope itself sits on an old tower built many years ago by the students of Year 3.

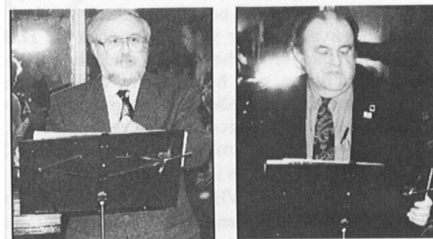
Jean next invited RASC Victoria Centre President Gareth Shearman to the rostrum, who wished the project well and spoke of the Victoria Centre's pleasure at being involved in the building.

After Gareth finished speaking, one of the students in the newly established Pearson College astronomy group, Sanjaya Shrestha from Nepal, added a student's thoughts on the observatory and the program.

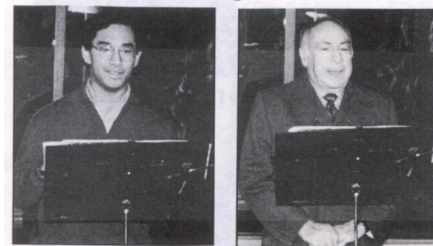
He was followed by Jack Newton, who presented a large sky atlas volume to the observatory library and expressed his pleasure at seeing a dream come true.

The final speaker, James Wallace, of the Wallace Foundation, said how delighted he was at being involved in the project and seeing it come to completion.

The guests were then invited to sign the visitor's book. A notable entry in the book was made by well-known amateur astronomer David Levy.



Left to right: Speakers Jean Godin (Pearson College of the Pacific) and Gareth Shearman (President of RASC Victoria Centre).



Left to right: Speakers Sanjaya Shrestha (Pearson student from Nepal) and James Wallace (The James B. Wallace Foundation).



Jack Newton presents a sky atlas, kindly donated by Victoria Centre member John Howell, to the new observatory library, as James Wallace and Jean Godin look on.

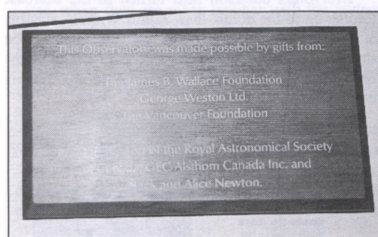
Unfortunately, weather scuttled the next proposed part of the opening ceremony. It had been planned to have a selection from "The Planets" played as the dome slit overhead slowly opened. Rain put a soggy damper on that idea.

Everyone's attention next turned to the staircase leading up to the dome. James Wallace, scissors in hand, stepped forward to cut the blue ribbon stretched across it, then walked up the stairs to be the first to officially open the door to the dome's interior.

(Continued on page 10)

ROYAL ASTRONOMICAL SOCIETY OF CANADA • VICTORIA CENTRE

(Pearson College Observatory Continued from page 9)



One more function remained to be done. Gareth Shearman had the honour of unveiling a plaque commemorating the numerous gifts that had made the observatory possible. Beneath it, pinned to the wall, is a card bearing the emblems of both the RASC and the linked twin circles of the World Colleges.

It reads:

This Observatory was made possible by gifts from: The James B. Wallace Foundation, George Weston Ltd., The Vancouver Foundation, and the support of the Royal Astronomical Society of Canada, GEC Alsthom Canada Inc. and Jack and Alice Newton.

At the conclusion of the ceremonies, everyone was invited upstairs to tour the dome and inspect the telescope and computer equipment. There was one not-so-small detail yet to be resolved. There was as yet no loo, no outhouse, and the road back down was a long one. Sneaking into the bushes in the dead of night was not a very appealing thought, but that problem was soon taken care of and everyone could breathe easier knowing help was close at hand.

THE ROLL-OFF ROOF OBSERVATORY

By October 1998 this latest addition to the observatory site had been completed to house three telescopes, including the 20". That venerable scope had been unceremoniously relegated to obscurity from its pride of place in the dome when Jack Newton's 25" deposed it in Nov. 1996. For nearly two years it sat in its original home—the trailer—until a more fitting abode could be erected.

The Pearson College Astronomical Observatory was made possible because of the special generosity of the following contributors:

- The Victoria Centre of The Royal Astronomical Society of Canada
- The Galen Weston Foundation (Toronto)
- The James Wallace Foundation (Vancouver)
- Construction Aggregates (Colwood)
- GEC Alsthom (Ontario)
- The Canadian Coast Guard
- The Dominion Astrophysical Observatory
- The Johnston Company (Vancouver)
- Tri-city Auto (Metchosin)
- Corel Corporation
- Sehgal Corporation (Ontario)

Bill Almond

ROYAL ASTRONOMICAL SOCIETY OF CANADA • VICTORIA CENTRE

Volunteer for Astronomy Day

International Astronomy Day (IAD) 2005 is Saturday, April 16 at the Royal British Columbia Museum. Evening/night sky viewing is at the Centre of the Universe.

Let me know if you can help out and when you would be able to help out.:

Friday (time TBA):

- ☐ Set up Friday afternoon

Saturday 10:00 a.m. to 4:00 p.m.

- ☐ Information/Reception Desk
- ☐ Guide (helping the public find activities)
- ☐ Solar observing (with safe equipment!)
- ☐ Solar observer relief
- Interpreters:
 - ☐ Astronomy images and posters
 - ☐ Telescope making
 - ☐ Solar system scale model
 - ☐ Star Lab planetarium assistant (if necessary)
 - ☐ Amateur astronomer's booth
 - ☐ Children's activities
 - ☐ General relief

Take down after 4:00 pm to 5:00 p.m.

- ☐

Evening observing at the Centre of the Universe

- ☐

Thanks, Sandy

2005 GA —Okanagan

Victoria Day long weekend—May 19-23 2005

<http://www.rasc.ca:8080/rasc>

Okanagan Centre members are very pleased to host the General Assembly this year and we look forward to meeting you, and sharing with you, the many fine activities planned for the GA and the unique assets of our region.

*Kindest Regards, Guy Mackie
Registration Committee Chair 2005 GA*



LOOK UP You Won't be Disappointed

Friday 2:00 to 5:00 pm set up

Astronomy Day Schedule

8:30 - 10:00	Set up
10:00 - 4:30	OPEN TO THE PUBLIC
	Walk Through the Solar System
	Displays, Ecliptic Calendar, Posters, etc.
10:00 - 4:00	Telescope Making Workshop
	Astro-imaging Workshop
	Amateur Astronomer's Booth
10:30 - 4:00	Ask the Professional Astronomer Booth
11:00 - 3:30	Children's Activities
11:00—11:15	Star Lab: Tour through Space and Time
11:00 - 4:00	Solar Observing: RBCM court yard
11:30 - 12:15	Multimedia Presentation
12:30 - 1:15	Wizard of the Stars
1:30 - 1:45	Star Lab: Tour through Space and Time
2:00 - 2:15	Star Lab: Tour through Space and Time
2:30 - 2:45	Star Lab: Tour through Space and Time
2:45—3:15	Wizard of the Stars
2:45 - 3:00	Star Lab: Tour through Space and Time
3:15 - 4:00	Multimedia Presentation
7:30 - 11:00 pm	Night Sky at the Centre of the Universe



Upcoming Meetings

April 13
May 11
June 8

Laura Ferrarese and Pat Cote, DAO
Peter Jedicke, President, RASC
Russell Robb, U Vic

ROYAL ASTRONOMICAL SOCIETY OF CANADA • VICTORIA CENTRE

Night Sky Viewing at Schools

Do you want to help with our school outreach program? Do you want the opportunity to learn about astronomy in a fun, non-intimidating atmosphere?

March 11	7:00pm	Rogers School (765 Rogers Avenue)
April 18	7:00pm	Willows School (2290 Musgrave Street)
April 19	7:00pm	Braefoot Elementary (1440 Harrop Road)
May 12	7:30pm	Royal Oak (4564 West Saanich Road)

Let Sid know you are willing to help out with his school program.

Phone: 391-0540
Email: sid_sidhu@shaw.ca

World Wind 1.3—the End of Atlases

The most beautiful software ever created for casual and scientific use.

World Wind lets you use Landsat satellite imagery and Shuttle Radar Topography Mission data to zoom from satellite altitude into any place on Earth. World Wind lets you experience Earth terrain in visually rich 3D, just as if you were really there. Virtually visit any place in the world.

World Wind is linked via the web (you'll need a fast connection) so that current and recent satellite information is updated into your Earth model. Using the mouse, you move to any location you wish; zoom in, roll and pan, engage vertical exaggeration, resolution, set labels, specify what information you do and don't want to see—the features go on and on. It also features current events—you could map out the recent tsunami, for example.

<http://worldwind.arc.nasa.gov/>

Be warned, this program ain't small (171 megabytes).... on my dial up it took almost 8 hours—yup, 8 hours to download!

Terry Trees (RASC national email list)

House & Observatory on Pender Island FOR SALE

Keith, a long-time Victoria RASC member who moved to Pender Island 5 years ago, is moving to the dry, dark city of Grand Forks and is selling his house.

Nice older house in Magic Lake. Finished basement with large workshop, large brand new deck, open design on main floor with lots of windows, large open room upstairs, 2 baths and a 13 foot square (169 sq. ft.) observatory off the third floor. Asking \$190,000.

For more info call Keith

Phone: 250-629-6875 (evenings and weekends) or
email: keithr@cablelan.net

WANTED!

By the Victoria Observing Site Selection Committee

LAND!

Do you have a half acre of useless (rocky?) land with

- ☆ no lights
- ☆ road access, and
- ☆ low horizon all the way around?

Do you know someone who does, and who would be willing to sell or lease the area to RASC-Victoria?

If so, please contact Dave Bennett, Site Selection Chair, at

dgbennett@shaw.ca

or by telephone at (250) 727-9509

THANK YOU!

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ROYAL ASTRONOMICAL SOCIETY OF CANADA • VICTORIA CENTRE

RASC Victoria Council

This Month

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Members at Large:
Bill Almond, Jim Hesser,
Ed Maxfield, Frank
Ogonoski, Blaire Pellatt,
Colin Scarfe, Rich Willis

New Members Liaison:
Sandy Barta



Astronomy Cafe

At Bruno Quenneville's
2019 Casa Marcia Crescent,
Victoria, BC.
Call 477-2257 for more information or
directions.
Newcomers are especially welcome.
Come and enjoy!

March 16

Astro Imaging

Third Wednesday of the month
if it's clear at
Bill Almond's
354 Benhomer Drive
478-6718

March 25

New Observer's Group **At Sid Sidhu's:**

1642 Davies Road (off Millstream
Lake Road) at 8:00 PM.
Call 391-0540 for more information or
directions

Astronomy Day

April 16
Royal BC Museum
Centre of the Universe



April 13

April Meeting

7:30 pm
Room 060, Elliott Building, UVic

Yes, We post important,
timely, member-related
news to our email list.

Online information about the RASCVic
and Skynews email lists:
<http://victoria.rasc.ca/>
click on: 'Members Only'

Web Page of the Month



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California Institute of Technology

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- Introduction
- Mission
- Instruments
- Huygens Probe

[MULTIMEDIA](#)
[CASSINI AT SATURN](#)

[MISSION](#)
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[SCIENCE](#)

OVERVIEW - Introduction



Saturn filled Cassini's narrow angle camera as the spacecraft approached in March 2004.

With its stunning rings and dozens of moons, Saturn is an intriguing planet for many reasons. The giant planet has a huge magnetosphere and a stormy atmosphere with winds clocked at about 1,800 kilometers per hour (1,118 mph) near the equator. These super-fast winds, combined with heat rising from within the planet's interior, cause the yellow and gold bands visible in its atmosphere.

Like Jupiter, Uranus and Neptune, Saturn is a gas giant. It is made mostly of hydrogen and helium.



Saturn's rings in true color.

'Jewel of the Solar System'

Saturn's beautiful rings are what set it apart from the other planets in our solar system. It is the most extensive and complex ring system in our solar system, extending hundreds of thousands of miles from the planet. Made up of billions of particles of ice and rock - ranging in size from grains of sugar to houses - the rings orbit Saturn at varying speeds.

There are hundreds of individual rings, believed to be made of pieces of shattered moons, comets and asteroids. Each of the billions of rings particles orbits the planet on its own path.

For centuries, Saturn and its rings puzzled observers. Italian astronomer Galileo Galilei, the first to use a telescope to explore space, couldn't understand why Saturn looked so different in the night sky at different times. We now know this is caused by a shifting in our view of the ring plane. The rings are virtually invisible when they are edge-on to Earth. The rings seem to reappear months later as our angle of view changes.