

D I S I T A N T *L I G H T*

Rockland Astronomy Club Journal ~ December 2003

SPECIAL RAC EVENT:
JOIN US FOR AN FANTASTIC EVENING OF SATURN VIEWING:
BEAR MOUNTAIN INN 5-11PM SATURDAY DECEMBER 27TH

[\(Click here for more details, page 2\)](#)



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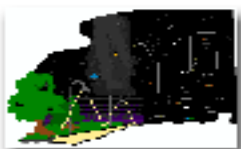
DISTANT LIGHT

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(requires Adobe Acrobat): send an email to Memberships@RocklandAstronomy.com

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Complete and mail the Membership



International Dark Sky Association



Rockland Astronomy Club is proud to be the first astronomy club to become a lifetime member of the International Dark Sky Association, and is a longtime member of the Astronomical League.

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[CLICK HERE FOR RAC MEETINGS SCHEDULE AND ADVISORY COMMITTEE: P. 5](#)

RAC SPECIAL EVENT

Join Us for an Evening of Planetary Viewing as Saturn Nears Opposition Saturday 5-11 PM, December 27th Bear Mountain Inn

Add some fabulous visuals to your holidays by joining us for some hot coffee, donuts, and unparalleled views of the giant ringed gas planet Saturn — still one of the most spellbinding sights in our universe. In addition to Saturn, we'll turn our scopes to other dark sky denizens as it will be just a few days after new moon. Dress warmly and don't miss this fun-filled event!

DIRECTIONS Take Palisades Pkwy North to Bear Mountain Bridge traffic circle; turn right onto Rt. 9W South, within several hundred yards turn right at the traffic light and go to parking lot of the Bear Mountain Inn. Weather permittin, RAC will have a table set up with refreshments and telescopes of various sizes to look through. Check our Hotline 201-768-2238 if weather is questionable.

FOR MORE INFO Visit our web site: www.rocklandastronomy.com ★

RAC MEMBERSHIP APPLICATION

NOTE: Sky & Telescope subscription rates will increase to \$33.00 effective for expiration dates falling in the year 2004.

Name _____

Address _____

City/State/Zip _____

Home Phone () _____

eMail _____

Club members receive this journal, enjoy special prices for annual subscriptions to S&T and ASTRONOMY magazines, discounts to club events and much more.

Type of Membership	Distant Light PDF via email (no print version available).
High School Student	\$10.00
Senior Citizen (65+)	\$15.00
Individual	\$20.00
Family	\$30.00

Make checks payable to RAC and mail with this form to: Rockland Astronomy Club, attn: Memberships, 214 Route 59, Ste. 10-304, Suffern, NY 10901-5205.



Full
Dec 8

Last Qtr
Dec 16

New
Dec 23

1st Qtr
Dec 30

DECEMBER SKYDATA

Highlights

- 1 Dec Venus is 1° north of 2.8 magnitude star Sagittarii.
- 1 Dec 11:00 Mars is 4° north of the Moon.
- 2 Dec 05:00 Jupiter passes 3' north of the seventh magnitude star Tyc269-918-1 in Leo.
- 3 Dec Comet 2P/Encke passes 1° east of the binary star 70 Ophiuchi.
- 5 Dec 14:00 Asteroid 3 Juno is in conjunction with the Sun.
- 7 Dec 03:00 Minimum lunar libration of 1.3°.
- 7 Dec 07:04 The Moon is at apogee.
- 13 Dec Geminid Meteor Shower Peak 80/hr.
- 22 Dec 02:04 Winter Solstice
- 31 Dec Saturn at opposition

SATURN OPPOSITION

Saturn is one of the splendors of the night sky. Few people forget their first glimpse through a telescope at the planet and its expansive rings hovering against the velvet background of space.

While the best views of Saturn will be during the cold winter months, few will disagree that it is worth the trouble to venture out into the frosty air to

experience the beauty of this, the most recognizable celestial object. Saturn begins to rise high in the evening sky in late October and reaches opposition (where the Sun and Saturn appear in opposite directions from Earth's perspective) on December 31st.

Saturn with its rings will be 1.8 times larger than Mars was at its recent opposition. Mars was 25 arc seconds in diameter (angular size) during the opposition in 2003. Saturn with its rings will be about 46 arc seconds in angular size. Even though Saturn is much further away than Mars, Saturn is much larger. Mars was about 35 million miles away at opposition where as Saturn will be about 800 million miles away.

Viewing specifics for Opposition 2003 are as follows:

- Date: December 31, 2003
- Magnitude: - 0.3
- Diameter: 20.7"
- Declination: +23 degrees

Saturn's next opposition will not be until January 13, 2005. During the 2003 opposition the orientation of the rings will be particularly good. This year's

opposition will reveal an optimal view with little or no shadowing on the planet and nearly optimal brightness.

Any telescope with at least a 30x magnification will reveal the rings. But the views become truly exquisite with a 100-200 mm (approximately 4-8 inch) aperture instrument.

You will be able to easily see a gap in (continued on next page).

Prime Observing Window

Tuesday Dec 16 thru Saturday Dec 27

Sun & Moon Rise & Set Times

Date	Sunrise	Set	Moonrise	Set	Phase
Dec 8	07:26	16:55	16:42	07:21	Full
Dec 16	07:33	16:56	—	12:45	Last Qtr
Dec 23	07:37	16:59	20:08	17:10	New
Dec 30	07:39	17:03	00:29	00:10	1st Qtr

Planetary

Visible Planets in the Night Sky

Beginning of December, 2003

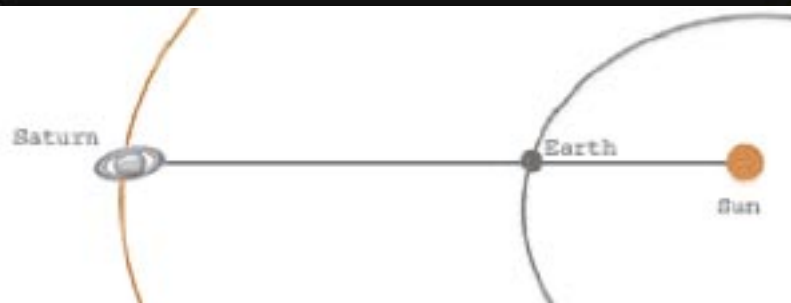
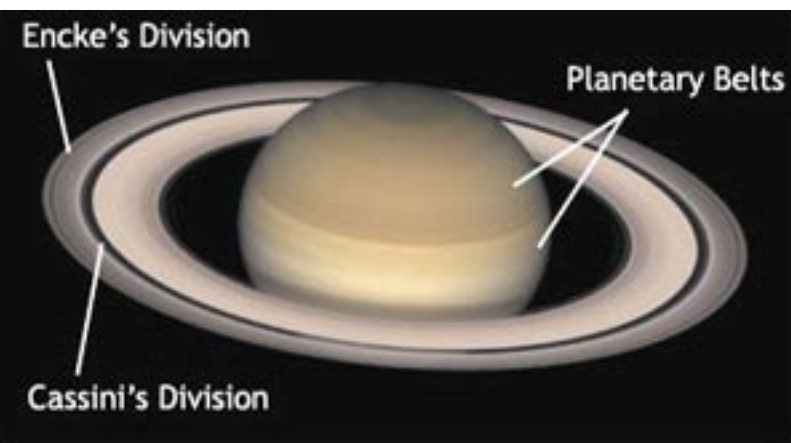
	Const	Rise	Transit	Set	Mag
Sun		07:18	12:09	17:00	-26.8
Mercury	Sgr	09:01	13:32	18:05	-0.5
Venus	Sgr	09:28	14:05	18:43	-3.9
Mars	Aqr	13:17	19:09	01:02	-0.4
Jupiter	Leo	00:26	06:51	13:20	-2.1
Saturn	Gem	19:04	02:29	09:54	2.0

Middle of December

	Const	Rise	Transit	Set	Mag
Sun		07:30	12:15	17:00	-26.8
Mercury	Sgr	08:53	13:37	18:18	0.1
Venus	Sgr	09:42	14:25	19:10	-4.0
Mars	Psc	12:38	18:42	00:47	-0.1
Jupiter	Leo	23:36	06:00	12:28	-2.1
Saturn	Gem	18:04	01:30	08:55	1.9

End of December

	Const	Rise	Transit	Set	Mag
Sun		07:37	12:23	17:09	-26.8
Mercury	Sgr	06:35	11:30	16:31	2.0
Venus	Cap	09:43	14:45	19:47	-4.0
Mars	Psc	11:53	18:13	00:32	-0.2
Jupiter	Leo	22:36	04:59	11:23	-2.2
Saturn	Gem	16:55	00:21	07:47	1.8

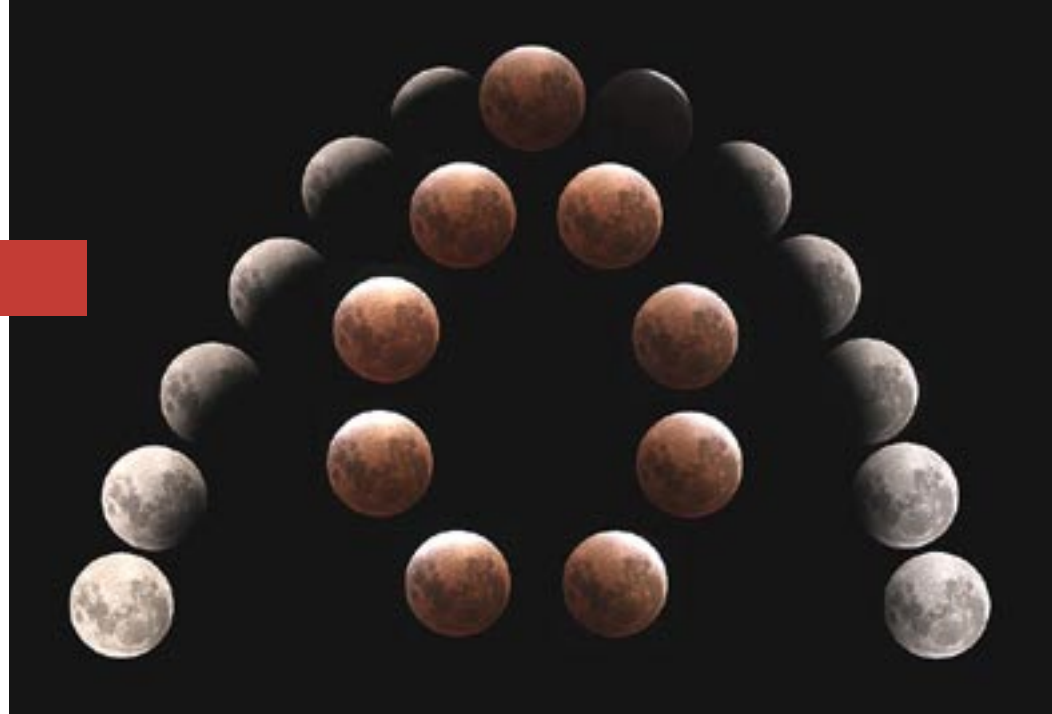


HOT PHOTO

Lunar Eclipse 8 November 2003

This two-part sequence consists of the outer ring with the exposure levels optimized for the illuminated portion of the disk, and an inner ring to capture the umbral progression. The event begins on lower left, with an image taken at 17:52 local time (EST, 22:52UT) and terminates with the lower right image, taken at 22:17 EST. The umbra series begins at 19:57 EST and winds completes at 20:41 EST.

Approximately 100 images were taken during the evening (all keepers!), but that number needed to be reduced sufficiently to allow a manageable display, hence only 21 of them are presented here. The raw images each measure 3072 x 2048 pixels and were converted to 16/48 bit 36Mb images, so they too were substantially reduced in size for web display (the "working copy" of this poster is 56 x 38 inches). The animation on my site was formed using 21



thumbnail images from the set, using a Canon 10D with a Takahashi FS128 refractor at prime focus and a setting of ISO100, exposures for the illuminated disk range from 1/250th to 1/45th of a second and the umbra images from 2 to 6 seconds.

Whew... the late hours of gathering and processing astro-images is a bad mix for an old goat like myself, already ignoring the autumn leaves and other chores (actually, it's my daytime job that seems to get in the way! But I've finished compiling the eclipse

shots gathered this weekend. Well, not really complete complete, but far enough along to plonk something on my site. To check out the animation of the above photos and more, visit: <http://www.astro-nut.com/lunar-eclipse.html> Now I can get back to working with Solar Hydrogen-alpha, and Saturn, and Jupiter, and... Gee, maybe I can hire a kid to do the leaves!

Ciao, Paul Hyndman, Associated Club Member
<pghyndman@yahoo.com> ★

SATURN OPPOSITION

(continued from previous page)

the rings known as Cassini's Division. There is another division near the outer edge which can be seen in the larger telescopes. That feature is called the Encke's Division. You will also be able to see belts on the planet itself. For approximately one to four months either side of opposition, Saturn's shadow across its rings is very apparent.

Saturn's rings are the planet's most endearing telescopic feature. Throughout the 2003-2004 viewing cycle, the rings display themselves to Earth through an average tilt of -25 degrees. Due to the ring tilt, we see the rings and moons of Saturn from south of the ring plane. Saturn's rings are incredibly thin for their size. The ring thickness is about 3,280 feet or nearly 2/3 of a mile.

At last count, Saturn had 31 moons. The largest, Titan is easily visible in any telescope. At west and east maximum elongation the moon appears as an 8th magnitude object orbiting approximately 5 ring diameters from the planet. Saturn's other visible moons are Enceladus, Tethys, Dione, and Rhea.

Saturn is the second largest planet in our solar system with a diameter of 74,900 miles which is 9.5 times larger than Earth's diameter. To put it into perspective, Saturn and its rings would just fit into the distance between Earth and the Moon. It is the sixth planet in the solar system at distance of 840 million miles from the Sun. The rotational period for Saturn is 10 hours, 39 minutes, meaning one there are a little over 10 hours in each Saturnian day.

Its atmosphere is primarily composed of hydrogen, with small amounts of helium and methane. It can be said that it is some what cold and windy on Saturn, with

velocities reaching 1,100 miles an hour at the equator and average atmospheric temperatures of about -220 degrees Fahrenheit. Keeping that in mind is sure to make you feel warmer as you view Saturn in the cold winter months.

It was Galileo in the early 1600's who was the first to observe Saturn's rings with his 20-power telescope. Interestingly, he was quite confused by the ring apparition through his poor quality optics. Originally he speculated that the rings were "handles" or large moons on either side of the planet. In 1655, Dutch astronomer, Christiaan Huygens was the first to correctly discern the nature of the rings of Saturn. It was not until 1675 that Italian Astronomer Giovanni Domenico Cassini was able to resolve the main division in the ring structure, thus bearing his name.

On July 1, 2004, the Cassini/Huygens spacecraft will arrive at Saturn and begin a detailed study of the planet and its largest moon Titan, stay tuned.... ★

The RAC Essentials

DECEMBER CALENDAR

201-768-2238

Message Hotline: The latest information or last minute changes to club events.

Tues, Dec 9 Advisory Committee Meeting, 8pm, LVHCC
Fri/Sat, Dec 21/22 Observing at Wawayanda*
Sat, Dec 22 "Up All Night" at Lake Taghkanic*

Sat, Dec 27

RAC Special Saturn Viewing Bear Mtn. Lodge Parking Lot (see details page 2)

Prime Observing Window

December 16 through 27

LOCATIONS

North Rockland High School Planetarium
Hammond Road, Thiells, NY
Rockland Community College
College Road, Suffern, NY
Lower Hudson Valley Challenger Center
Rt. 59, Suffern, NY
Anthony Wayne Recreation Area*
Exit 17, P.I.P., NY
Silvermine Ski Area*
Exit 18, P.I.P., NY
Wawayanda State Park*
973-853-4462,
Highland Lakes, NJ
Tahgkanic State Park*
Taconic State Parkway,
Ancram, NY

**Special permits required to observe at these locations. Contact Observing@rocklandastronomy.com for permit copies.*

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