

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

Rockland Astronomy Club Journal ~ March 2006

HUBBLE SEES M101

Credit: NASA, ESA, and The Hubble
Heritage Team (STScI/AURA)

SAVE THE DATES:

MAR 4 SAT 7PM
NEW RAC ANNUAL
DINNER DATE

DETAILS ON PAGE 3

MAR 17 FRI 8PM
AL NAGLER AT RCC

DETAILS ON PAGE 4



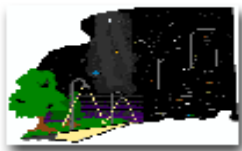
DISTANT LIGHT

is published 10 times a year by the Rockland Astronomy Club, 214 Route 59, Suite 10-304, Suffern, NY 10901-5205. Subscriptions are included with annual RAC membership dues. Send address changes to Bill Thys at the address above. Contributions to and inquiries about this journal can be emailed to the Editor/Design Director Mies Hora: Editor@rocklandastronomy.com

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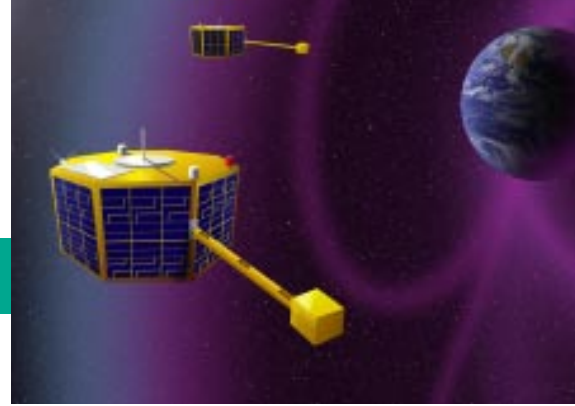
International Dark Sky Association



Rockland Astronomy Club is proud to be the first astronomy club to become a lifetime member of the International Dark Sky Association, is a longtime member of the Astronomical League, and is the 2005 recipient of the prestigious Pride of Rockland Award.

[CLICK HERE FOR MONTHLY SKYDATA: P. 5](#)

[CLICK HERE FOR RAC MEETINGS SCHEDULE AND ADVISORY COMMITTEE: P. 6](#)



NASA SPACE PLACE

Micro-sats with Macro-potential

By Patrick L. Barry, JPL

Future space telescopes might not consist of a single satellite such as Hubble, but a constellation of dozens or even hundreds of small satellites, or “micro-sats,” operating in unison. Such a swarm of little satellites could act as one enormous telescope with a mirror as large as the entire constellation, just as arrays of Earth-bound radio telescopes do. It could also last for a long time, because damage to one micro-sat wouldn’t ruin the whole space telescope; the rest of the swarm could continue as if nothing had happened. And that’s just one example of the cool things that micro-sats could do. Plus, micro-sats are simply smaller and lighter

than normal satellites, so they’re much cheaper to launch into space. In February, NASA plans to launch its first experimental micro-sat mission, called Space Technology 5. As part of the New Millennium Program, ST5 will test out the crucial technologies needed for micro-sats (such as miniature thrust and guidance systems) so that future missions can use those technologies dependably.

Measuring only 53 centimeters (20 inches) across and weighing a mere 25 kilograms (55 pounds), each of the three micro-sats for ST5 resembles a small television in size and weight. Normal satellites can be as large and heavy as a school bus.

If ST5 is successful, these little satellites could end up playing a big role in future exploration. ★

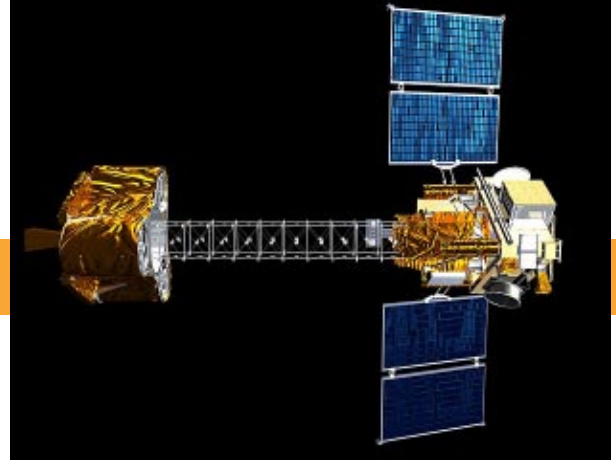
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| High School Student | \$10 | \$18 | \$25 | \$40 | +\$18/yr. | _____ |
| Grand Total | | | | | | _____ |



An X-ray satellite observatory called NuStar is being cancelled after several years of development (shown here in an artist's rendering). Mark Wilson/Getty Images.

CLUB NEWS

NEWS

2006 RAC Annual Dinner Date Change

Due to the record snowfall on February 11th, the Annual RAC Dinner was postponed until March 4th. There is still time to sign up and enjoy this special once-a-year opportunity to mingle with your astro buddies, hear a great lecture, and share a wonderful meal at the Casa Mia.

'MARS, SATURN, COMETS & BEYOND'

7pm Saturday March 4, 2006

Casa Mia Restaurant

577 Rt. 303, Blauvelt, NY

Special Guest Speaker:

Dr. Ken Kremer, JPL Spokesman

Email: SpecialEvents@RocklandAstronomy.com or
Phone: 914-523-6548 Frank Bifulco

ADMISSION \$19.99 RAC Members & Spouses (each)
\$35 Non-Members
\$10 Children 4 to 12 years of age (under 4 free)

LOCATION Casa Mia Restaurant (formerly Kings Arms)
577 Rt. 303 Blauvelt ★

New Budget Delays or Cancels Much-Promoted NASA Missions

By Dennis Overbye
March 2, 2006, NY Times

Some of the most highly promoted missions on NASA's scientific agenda would be postponed indefinitely or perhaps even canceled under the agency's new budget, despite its administrator's vow to Congress six months ago that not "one thin dime" would be taken from space science to pay for President Bush's plan to send astronauts to the Moon and Mars. The cuts come to \$3 billion over the next five years, even as NASA's overall spending grows by 3.2 percent this year, to \$16.8 billion.

Among the casualties in the budget, released last month, are efforts to look for habitable planets and perhaps life elsewhere in the galaxy, an investigation of the dark energy that seems to be ripping the universe apart, bringing a sample of Mars back to Earth and exploring for life under the ice of Jupiter's moon Europa as well as numerous smaller programs and individual research projects that astronomers say are the wellsprings of new science and new scientists.

The agency's administrator, Michael D. Griffin, says NASA needs the money to keep the space shuttle fleet aloft, complete the International Space Station and build a new crew exploration vehicle to replace the shuttle. That transition has produced an unexpected shortfall of money, but, Mr. Griffin told the House Science Committee last month, to postpone it would be more damaging than to put off some space science projects. "We're delaying some missions," he told the committee, "but we're not abandoning them."

Yesterday, Mary Cleave, NASA's associate administrator for science, said she took Dr. Griffin at his word that the cuts were a one-time event. "There was no money available anywhere else," Dr. Cleave said. "We took a hit." The programs could still be saved if Congress voted to increase the NASA budget. The agency has powerful allies in both parties, and some have expressed alarm at the proposed cuts, which will be discussed today at a hearing of the House Science Committee. But at a time when fiscal conservatives are placing intense pressure on the Republican Congressional leadership to rein in government spending, programs that were previously considered sacrosanct are now vulnerable.

The cuts have alarmed and outraged many scientists, who have long feared that NASA will have to cannibalize its science program to carry out the president's vision of human spaceflight. The new cuts, they say, will drive young people from the field, ending American domination of space science and perhaps ceding future discoveries to Europe.

"The bottom line: science at NASA is disappearing – fast," said Donald Lamb, an astrophysicist at the University of Chicago and chairman of a committee on space science for the Association of American Universities. Representative Sherwood Boehlert, the New York Republican who is chairman of the Science Committee, called the new budget "bad for space science, worse for earth science," adding, "It basically cuts or de-emphasizes every forward-looking, truly futuristic program of the agency to fund operational and development programs to enable us to do what we are already doing or have done before." ★

Constellation Stamps



RAC MEMBER PROFILE

Al Nagler, Optical Designer & RAC Co-Founder

Excerpted courtesy of *Astronomy*,
December 2005, by Michael E. Bakich,
associate editor of *Astronomy*

LIFETIME FOCUS

Al Nagler, founder and CEO of Tele Vue Optics, was both an amateur astronomer (he co-founded the Rockland Astronomy Club in 1958 and still serves on the advisory committee) and a successful optical designer before he formed his company in 1977. As a youth attending the Bronx High School of Science in the 1950s, he built his first telescope — an 8-inch $f/6.5$ reflector that, with its mount, weighed 350 pounds. And what a start this was.

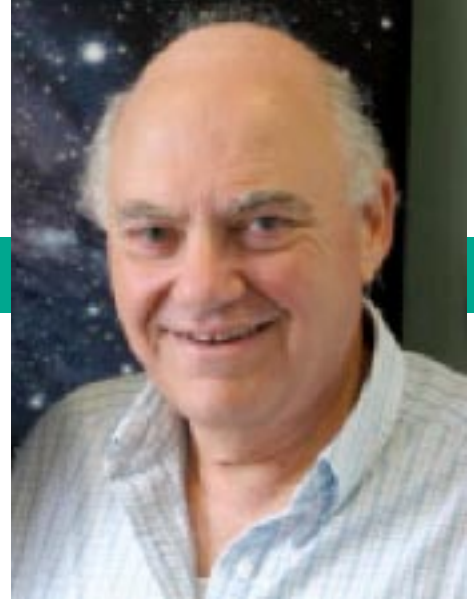
The project earned Nagler a prize (a micrometer) at graduation, \$80 from *Mechanix Illustrated* (payment for an article detailing how he made it), a Stellan award, and a job interview at Farrand Optical Company in the Bronx, New York. Nagler had a productive optical design career at Farrand from 1957 to 1973. While there, he designed the optics for the visual simulator that was used to train astronauts to pilot the Gemini spacecraft

and the Apollo lunar module. The lunar module simulator included a star field using 1,000 polished steel ball bearings set into a black globe. They were the correct size and in the correct positions to simulate an accurate star field. Al even had a few bearings gold-plated to simulate Antares, Betelgeuse, and several other red-dish stars. “You wouldn’t believe how much realism just that little bit of color added,” he said. Such attention to detail still is one of Al’s finest traits.

MAKING OPTICS

In 1977, Nagler founded Tele Vue Optics in Spring Valley, New York. There, he began making projection lenses for big-screen television sets. Al’s first “for sale” telescope was the MPT, which stood for “Multi-Purpose Telescope,” a 5-inch $f/4$ refractor, which was introduced in 1981. In 1979, Al was awarded a patent for his Plössl eyepieces and he introduced them to amateur astronomers. “Actually,” Al said, “I designed the Naglers first. But it was such a radical design with its wide field of view and sharp images. At the time, Tele Vue wasn’t well-known to amateur astronomers, so I didn’t know if I could sell eye-pieces — no matter how good — that cost a lot more than available eyepieces without more name recognition. Indeed, \$200 was a steep asking price for an eyepiece when other companies at the time were selling “research grade” eye-pieces

Amateur astronomy has marked a number of great moments: the first Schmidt-Cassegrain telescope, the first time a reflector was put on a Dobsonian mount, and the first go-to drive, to name a few. Count with these benchmarks the introduction of the TeleVue 13mm (left). It debuted in 1980 and won wide acclaim among amateur astronomers. That eyepiece was the first to offer both a large apparent field of view and sharp images. TeleVue produced this eyepiece until 2001, when the 13mm Type 6 replaced it.



for as little as \$39.95. So I designed a line of Plössls, built up good reviews and good word of mouth from observers, and when I thought the time was right, I introduced the Nagler.” Even though the Plössls had received rave reviews, 1980 stands out in the minds of most observers.

That was the year the Tele Vue Nagler eyepiece series made its debut. At this point, Nagler decided to visit star parties and let people try his eyepieces in their telescopes. Later, as Tele Vue became more established, it used the slogan, “even better than you imagined.” Well, initial response to the Nagler eyepieces was even better than Al imagined. Observers couldn’t believe what they were seeing. The Nagler combined the widest field (82° apparent field of view) with sharp images, not just in the center, but at the field’s edge as well. Since then, amateur astronomy hasn’t been the same.

Both the Nagler eyepieces (in 2003, Tele Vue introduced the Type 6) and the company have evolved. And, in March 1988, Al took a step that guaranteed Tele Vue, Inc., would stay in the family: He hired his son David. Today at Tele Vue, one employee assembles one telescope from start to finish. This instills a sense of accomplishment, and there’s no lack of pride among employees. ★

RAC LECTURE SERIES

AL NAGLER AT RCC

Friday March 17, 8pm, SUNY Rockland
Community College, Suffern, NY

Come see the optical designer & founder of TeleVue Optics in person: “The Eyepiece that Swallowed a Spacecraft & Other Optical Adventures”.





1st Qtr Mar 6 Full Mar 14 Last Qtr Mar 22 New Mar 29

MARCH SKYDATA

Highlights

- Mar 4 Jupiter stationary
- Mar 6 Mars 3° south of Moon
- Mar 10 Saturn 4° south of Moon
- Mar 11 Mercury in inferior conjunction
- Mar 14 Full Moon - penumbral eclipse 6:36 P.M. EST
- Mar 17 Spica 0.3° south of Moon
- Mar 19 Jupiter 5° north of Moon
- Mar 20 Antares 0.3° north of Moon
- Mar 20 Vernal equinox 1:26 P.M. EST
- Mar 24 Mercury stationary
- Mar 25 Venus at greatest western elongation (47°)
- Mar 25 Venus 6° north of Moon
- Mar 27 Mercury 2° north of Moon

Spring is Near!

The vernal (Spring) equinox marks the first day of the season of spring. It is signified by the Sun passing the celestial equator going from the south to the north. In the southern hemisphere, the vernal equinox corresponds to the center of the Sun crossing the celestial equator moving southward and occurs on the date of the autumnal equinox (the first day of Autumn).

This is also the time when the length of night and day are almost exactly equal; after this the days are longer than the nights in the northern hemisphere and shorter in the southern. The right ascension at the vernal equinox originally was in the constellation Aries and the point of crossing was known as the first point in Aries (now actually in Pisces because of precession).

Also on this day, sidereal time and solar time are exactly 12 hours apart. ★

Spring Equinox Mystery

The word "Equinox" comes from the Latin aequinoctium and means that day and night are of equal length. However we can see that this is not true. The Spring equinox takes place on the

20th at 1:26 pm. On that day the Sun rises at 6:00am and sets at 6:09 pm. The length of time when the Sun is up is 12 hours and 9 minutes, and the night lasts for 11 hours and 51 minutes. Why is there this discrepancy of 16 minutes when the day and night should be perfectly equal?

The cause of the mystery comes from the Earth's atmosphere. The spherical layer of air deforms images causing an effect known as refraction. The bigger the layer of air, the bigger the refraction is. When the Sun is on the horizon, either at sunset or sunrise, its low light cuts through the thickest cross section of air and its image is pulled up, or refracted, by 0.5 deg. This corresponds to the maximum refraction of the Sun. Each day it moves back by 1 deg, to go around the sky in a year (360deg). Between rising and setting it recedes by 0.5 deg angular distance, which it covers in two minutes. The length of time that it stays visible is therefore increased by two minutes. In total, refraction is responsible for increasing the presents of the Sun above the horizon by four minutes and its daily movement by two minutes making six extra minutes. Another two minutes are added because this year equinox takes place at 1:50am and not 12noon. This is why day and night are not perfectly equal even at the exact moment of the equinox. Mystery solved! ★

Prime Viewing for Jupiter & Saturn

Planetary viewing is at its best this Winter. The ringed planet Saturn shines bright in the evening sky since it is just past opposition which occurred on January 27th. This month Saturn will be at an apparent magnitude of 0.0.

Jupiter will be more luminous this month than it will be for the rest of the year at a magnitude of -2.3 as it also approaches opposition. With the steady winter skies this will be the perfect opportunity to get the best views of these two planets that we can expect this year. ★

Prime Observing Window

Thursday Feb 23 thru Saturday Mar 4
Friday Mar 24 thru Sunday Apr 2

Sun & Moon Rise & Set Times

| Date | Sunrise | Set | Moonrise | Set | Phase |
|--------|---------|-------|----------|-------|-----------|
| Mar 6 | 06:23 | 17:53 | 09:58 | 01:07 | First Qtr |
| Mar 14 | 06:10 | 18:02 | 17:55 | 06:08 | Full |
| Mar 22 | 05:56 | 18:11 | 01:29 | 10:00 | Last Qtr |
| Mar 29 | 05:45 | 18:19 | 05:49 | 18:55 | New |

Planetary

Visible Planets in the Night Sky

March 1

| | Rise | Transit | Set | Mag |
|---------|-------|---------|-------|------|
| Mercury | 06:57 | 13:03 | 19:09 | 0.8 |
| Venus | 04:09 | 09:12 | 14:16 | -4.6 |
| Mars | 10:03 | 05:34 | 01:06 | 0.8 |
| Jupiter | 23:20 | 16:25 | 09:31 | -2.2 |
| Saturn | 14:35 | 09:51 | 05:08 | -0.1 |

March 15

| | Rise | Transit | Set | Mag |
|---------|-------|---------|-------|------|
| Mercury | 05:40 | 11:34 | 17:29 | 0.7 |
| Venus | 03:58 | 09:06 | 14:14 | -4.5 |
| Mars | 09:36 | 05:12 | 00:48 | 1.0 |
| Jupiter | 22:24 | 15:29 | 08:35 | -2.3 |
| Saturn | 13:36 | 08:53 | 04:11 | 0.0 |

March 28

| | Rise | Transit | Set | Mag |
|---------|-------|---------|-------|------|
| Mercury | 04:47 | 10:26 | 16:06 | 0.7 |
| Venus | 03:47 | 09:06 | 14:25 | -4.3 |
| Mars | 09:08 | 04:47 | 00:27 | 1.2 |
| Jupiter | 21:16 | 14:23 | 07:30 | -2.4 |
| Saturn | 12:31 | 07:49 | 03:07 | 0.1 |

All data calculated for Suffern, New York, Eastern Time:
Latitude: 41:06:48 N; Longitude: 74:08:38 W

The RAC Essentials

MONTHLY CALENDAR

**201-768-2238
or 845-47STARS**

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

Prime Observing

March 24 thru April 2

Sat, Mar 4, 7pm

Reschedule Date for Annual RAC Dinner, Guest Speaker Dr. Ken Kremer (see details on page 3)

Wed, Mar 14, 8pm

Advisory Committee Meeting LHVCC, Airmont, N.Y.

Fri, Mar 17, 8pm

“Eyepiece that Swallowed Spacecraft and Other Astro Optical Adventures”

Fri/Sat, Mar 31/Apr 1

Lecture by Al Nagler SUNY RCC, Suffern, NY (see details on page 4)
Observing at Wawayanda (members night)*

Sat, Apr 1

Up all night Observing at Taghkanic State Park (members night)*

LOCATIONS

ADVISORY CMTE.

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

Taghkanic State Park*
Taconic State Parkway,
Ancram, NY

Jose Alvira
Frank Bifulco
Jim Burnell
Mark Hettinger
Mies Hora
Rob Lyons
Keith Murdock
Al Nagler
Dr. Jack Rosen
Audry Salvatore
Len Salvatore
Ed Siemenn, *Chair*
Bernie Sokolowski
Bill Thys
Alan Traino
Don Urban

Life & Honorary Members

Tom Massey (L)
Al Nagler (L)
Andrew Warrington (H)
Dr. Saeed Safaie (H)

*Special permits required to observe at these locations. Contact Frank Bifulco for permit info.

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