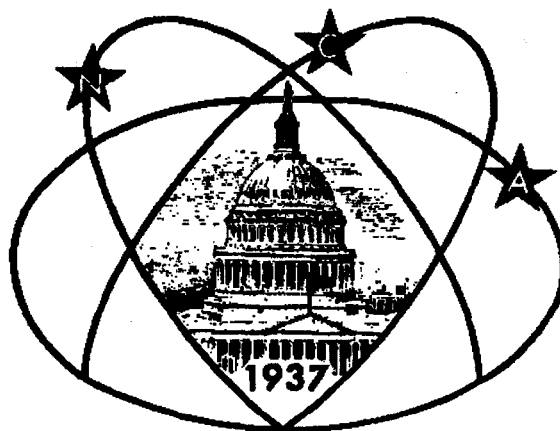


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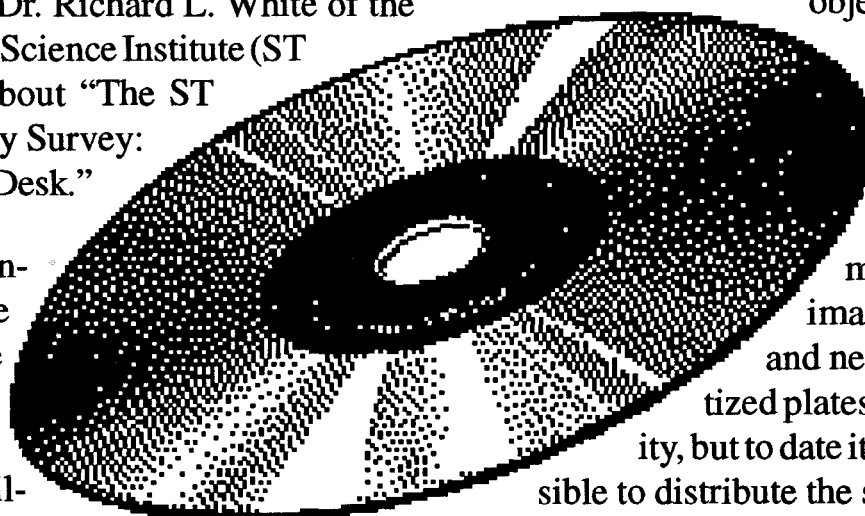
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Rick White to Describe the Space Telescope Science Institute Digitized Sky Survey

*By Wayne H. Warren Jr.
(from abstract by Richard L. White)*

The next meeting of the National Capital Astronomers will be held on October 2, 1993 at 7:30 PM in the Bunim Room of the Clinical Center (Building 10, floor 9) at the National Institutes of Health. At this meeting, we are pleased to have Dr. Richard L. White of the Space Telescope Science Institute (ST ScI) to tell us about "The ST ScI Digitized Sky Survey: The Sky on Your Desk."

In order to construct the Hubble Space Telescope (HST) Guide Star Catalog (a catalog of 18 million objects between magnitudes 7 and 15) for use in pointing the HST, the ST ScI digitized Schmidt plates covering the entire sky. There is a great deal more information in the scanned images than



was included in the catalog: the GS Catalog includes only objects brighter than 15th magnitude, while objects as faint as 20th magnitude are visible on the plates. Also, the GS Catalog has no information about extended objects (other than an

indication that an object is not a star), while the digitized plates show tremendous detail in images of galaxies and nebulae. The digitized plates are of great utility, but to date it has been impossible to distribute the scans because of the massive volume of data involved (a total of about 600 Gbytes).

A project is now underway at ST ScI to compress the digitized sky survey for distri-

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October Calendar

The Public is Welcome!

All October - Saturn visible almost all night. NCA's Celestron-14 telescope available for Saturn observation from Ridgeview Observatory, Alexandria, VA. For arranging a time, call Bob Bolster at 703/960-9126.

Fridays, October 1, 8, 15, 22 and 29, at 7:30 PM - Telescope making classes at American University, McKinley Hall Basement. Information: Jerry Schnall, 202/362-8872.

Friday, October 1, 3:30 PM - Margaret Geller (Harvard University), "Mapping the Universe." At Goddard Space Flight Center (GSFC), Building 3, Auditorium. For details, call 301/286-6878.

Saturday, October 2, 9:30 AM - Geoff Chester (National Air and Space Museum (NASM)), "Sky Shooting." At Smithsonian Institution, NASM, Albert Einstein Planetarium.

Saturday, October 2, 1993, 5:30 PM - Dinner with the speaker at the Thai Place Restaurant (4828 Cordell Ave., Bethesda) before the monthly meeting. Reservations are for 5:30 PM.

Saturday, October 2, 7:30 PM - Dr. Richard White, "The ST Sci Digitized Sky Survey: The Sky on Your Desk." Meeting will be held in the Bunim Room at the National Institutes of Health. For directions refer to map and description on inside back page.

Tuesdays, October 5, 12, 19 and 26, 7:30 PM - Telescope making classes at Chevy Chase Community Center, Connecticut Avenue and McKinley Street, NW. Information: Jerry Schnall, 202/362-8872.

Wednesday, October 6 - See "Sky Watch" column by Blaine P. Friedlander Jr. in The Washington Post "Style" section for other events of astronomical interest.

Friday, October 8, 3:30 PM - Frances Bagenal (University of Colorado), "The Particular Role of Io in the Magnetosphere of Jupiter." At GSFC, Building 3, Auditorium. For details, call 301/286-6878.

Friday night, October 8/9 - Last Quarter Moon (Waning & Half Full).

Saturday night, October 9/10 through Monday night, October 18/19 - No Moon of any consequence in Pre-Midnight sky, local time (5:00 Universal Time) - 10 consecutive nights.

Thursday night, October 14/15 - New Moon (Moondark All Night).

Friday, October 15, 11:30 PM - Earth Night 1993 - October: "The Autumn Sky, Nocturnal Nature, and Fall Foliage" (SRAP Code: 513-726). At Shenandoah National Park's Big Meadows on Virginia's Skyline Drive. For details and cost, call 202/357-3030. See Star Dust, 1993 September, p. 4.

Saturday, October 16, 7:00 PM - "Splendors of Star Formation," Montgomery College's Planetarium. For information call Dr. Harold Williams at (301) 650-1463.

Thursday, October 21, 7:00 PM - Daniel Costanzo (NCA), "Astronomy O!O!O!: Life, The Universe, & Everything" (four week adult education course). At Arlington Planetarium. For details and cost, call 703/358-6070.

Thursday night, October 21/22 - First Quarter Moon (Waxing & Half Full).

Thursday night, October 21/22 - Orionid Meteor Shower peak. Best after Midnight. Good on night before and after too. Pieces of Comet Halley.

Friday, October 29, 3:30 PM - Eugene Shoemaker (U.S. Geological Survey), "Comet Shoemaker-Levy 9 and its Impact With Jupiter." At GSFC, Building 3, Auditorium. For details, call 301/286-6878.

Friday night, October 29/30 - Full Moon (Moonlight All Night). Hunter's Moon.

Saturday night, October 30/31 - Change clocks back one hour. Eastern Daylight Time (EDT) to Eastern Standard Time (EST).

Fridays, October 1, 8, 15, 22 and 29, 8:30 PM - Open nights with NCA's Celestron-14 telescope with Bob Bolster, 6007 Ridgeview Drive, south of Alexandria off Franconia Road between Telegraph Road and Rose Hill Drive. Call Bob for details 703/960-9126.

Smithsonian Sky Watchers' Report

Non-technical information recording on astronomical events, objects, and phenomena in the Washington, D.C. region's sky. Updated weekly.

202/357-2000

Sky & Telescope's "Skyline"

Moderately technical information recording on latest in space technology, astronomy, and related sciences. Updated weekly, or sooner if necessary.

617/497-4168

bution on CD-ROMs. Two versions of the images will be distributed, one compressed by a factor of 10 (requiring 100 CD-ROMs) and the other compressed by a factor of 100 (requiring 10 CD-ROMs). Positional and brightness calibrations will be supplied along with the images, so that it will be possible to measure positions accurate to an second of arc or better for objects brighter than magnitude 19.5 anywhere in the sky. This talk will describe the digitized sky survey and the image compression techniques developed for this project.

Dr. Richard L. White earned a B.S. degree in physics from the University of Tennessee,

Knoxville and a Ph.D. in astrophysics from the University of Wisconsin, Madison. He has held postdoctoral positions at Columbia University (1978-1981) and Lawrence Livermore National Laboratory (1982) and was an adjunct visiting assistant professor at UCLA in the 1981-2 academic year. Since 1982, he has been a staff astronomer at the ST ScI, while taking a sabbatical year from 1991 September to 1992 September at the University of Colorado in Boulder. He developed an interest in image processing problems while using the Very Large Array radio telescope in New Mexico in 1981. It is an interferometer that generates data requiring extensive image processing. When the optical flaw was dis-

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ABSTRACTS OF ASTRONOMICAL ARTICLES

By *John B. Lohman and John A. Graham*

I. "Getting in Touch with the Edge of the Solar System" - Richard A. Kerr in *Science*, 11 June 1993, p. 1591.

The two Voyager spacecraft have detected very low frequency radio emission which is interpreted as coming from the "edge of the solar system" (the heliopause), where the solar wind collides with the interstellar wind. The heliopause appears to be less than 169 AU from the sun. Voyager 1 will arrive there at about 2020 AD.

II. "Evidence for a K/T Impact Event in the Pacific Ocean" - E. Robin, L. Froget, C. Jehanno & R. Rocchia in *Nature*, 17 June 1993, pp. 615-617.

The prime candidate for the impact causing the Cretaceous/Tertiary (K/T) extinction event in which the dinosaurs died is the Chicxulub crater in Yucatan. There are others. Another contemporary 2-km asteroid impact has been found in the Pacific Ocean. Several such events appear to be necessary to account for world-wide geological findings. The evidence appears to favor multiple accretionary events

rather than a single large impact.

III. "Andromeda Leads a Double Life" - Richard Stone in *Science*, 23 July 1993, p. 422.

The Hubble Space Telescope images reveal two distinct nuclei in the nearby Andromeda galaxy (M31). One interpretation is that a small galaxy recently tumbled into Andromeda and is in the process of merging with it.

IV. "A Nearby Protogalaxy" - S. van den Bergh in *Nature*, 5 August 1993, pp. 490-491.

It has been believed that "protogalaxies" which have not yet formed massive stars can only be discovered very far away where we are looking thousands of millions of years into the past. However, one protogalaxy may have been found in the M81 group of galaxies which is only 10 million light years from us. The evidence is the detection of a large molecular hydrogen cloud embedded in a massive atomic hydrogen complex associated with the group. There is no sign of high-mass star formation in the molecular cloud.


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covered in the Hubble Space Telescope shortly after its launch in 1990, he began working on methods for deblurring Hubble's images, and he is currently helping to lead the efforts at ST ScI on image restoration, which is coordinating the work of researchers at institutions around the world on HST image restoration problems.

In Spring 1991 he began developing image compression techniques to allow digitized images of the entire sky to be distributed on CD-ROMs. Since that time he has been involved in the use of compression for a variety of astronomical applications, including remote observing, access to data archives, and space-based applications.

The world of large astronomical catalogs and databases has become increasingly accessible to amateurs and professionals alike over the last several years, as demonstrated by the availability of large collections of such data on CD-ROMs readable by PCs and individual workstations. With the development of PC-based acquisition software to interface these catalogs, for which advertisements can be found in popular astronomy magazines, it has now become possible to automatically set large and small telescopes on objects at the limits of their visibility. For anyone who has attempted to locate a star of magnitude 11 in an 8-inch telescope by star hopping, these developments represent a giant step forward. Thus, Dr. White's topic has relevance for all of us who use telescopes for observing.

*NEXT
MONTH'S
CALENDAR
ITEMS*



Wednesday, November 3 - See "Sky Watch" column by Blaine P. Friedlander Jr. in The Washington Post "Style" section for other events of astronomical interest.

Saturday, November 6, 9:30 AM - Priscilla Strain (NASM), "Lunar Landscapes." At NASM, Albert Einstein Planetarium.

National Capital Astronomers, Inc.

is a non-profit, public-service corporation for advancement of the astronomical sciences and is the astronomy affiliate of the Washington Academy of Sciences. For information, call NCA: (301) 320-3621.

SERVICES AND ACTIVITIES:

A Forum for dissemination of the status and results of current work by scientists at the horizons of their fields is provided through the monthly NCA Meeting. (See monthly *Stardust* for time and location.) All interested persons are welcome; there is no charge.

Expeditions frequently go to many parts of the world to acquire observational data from occultations and eclipses which contribute significantly to refinement of orbital parameters, the coordinate system, navigation tables and timekeeping. Other results of this work under continuing study include the discovery of apparent satellites of some asteroids, discovery of apparent small variations in the solar radius, and profiles of asteroids.

Discussion Groups provide opportunities for participants to exchange information, ideas, and questions on preselected topics, moderated by a member or guest expert.

Publications received by members include the monthly newsletter of NCA, *Star Dust*, and an optional discount subscription to *Sky & Telescope* magazine.

The NCA Public Information Service answers many astronomy-related questions, provides predictions of the

paths and times of eclipses and occultations, schedules of expeditions and resulting data, assistance in developing programs, and locating references.

Astronomical Telescope & Binocular - Public Seminar, for Selection, Use, and Care, held annually in November, offers the public guidance for those contemplating the acquisition of a first telescope, and dispels the many common misconceptions which often leads to disappointment.

Working Groups support areas such as computer science and software, photographic materials and techniques, instrumentation, and others.

Telescope-Making Classes teach the student to grind and polish, by hand, the precise optical surface that becomes the heart of a fine astronomical telescope.

NCA Travel offers occasional tours, local and world-wide, to observatories, laboratories, and other points of interest. NCA sponsored tours for comet Halley to many parts of the southern hemisphere.

Discounts are available to members on many publications, products, and services, including *Sky & Telescope* magazine.

Public Programs are offered jointly with the National Park Service, the Smithsonian Institution, the U.S. Naval Observatory, and others.

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Note: If you already subscribe to *Sky & Telescope*, please attach a recent mailing label. You may renew this subscription through NCA for \$22 when it expires.

Make check payable to National Capital Astronomers, Inc., and send with this form to:

Leith Holloway 10500 Rockville Pike Apt. M-10, Rockville, MD 20852.

The following information is optional. Please indicate briefly any special interests, skills, vocation, education, experience, or other qualifications which you might contribute to NCA.

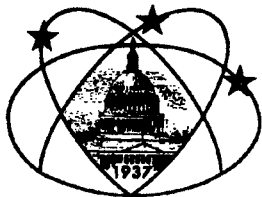
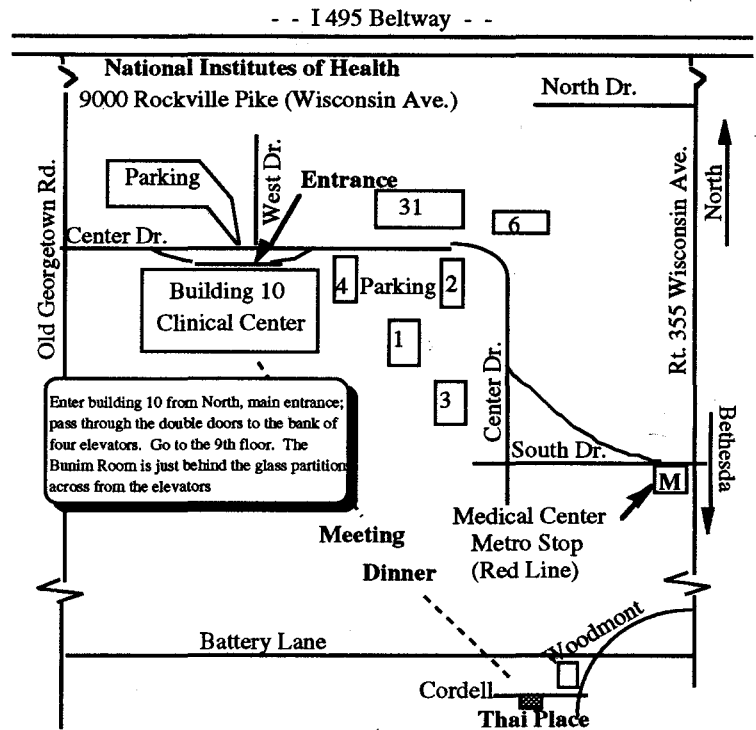
Thank you, and welcome!

Getting to the NCA Monthly Meeting

•Subway Riders - From Medical Center Metro Stop: Walk down the hill, pass the bus stops and turn right at the anchor (onto Center Drive). Continue uphill to building 10, the largest building on campus. Also, the J2 bus line connects the Bethesda (7:16 PM) and NIH (7:23 PM) Metro stops with Building 10 (7:25 PM).

•To Thai Place Restaurant: Proceed down Wisconsin Avenue toward Bethesda. Bear right onto Woodmont (or the next right onto Battery Lane), follow Woodmont across Battery and Rugby, take a right onto Cordell and park. The restaurant will not guarantee seats after 5:30.

Stardust is published ten times yearly (September - June) by National Capital Astronomers, Inc. (NCA), a non-profit, public-service corporation for advancement of astronomy and related sciences through lectures, expeditions, discussion groups, conferences, tours, classes, public programs, and publications. NCA is an affiliate of the Washington Academy of Sciences. President John Graham. Deadline for *Stardust* is the 15th of the preceding month. Editor Nicoletta Stephanz, 202/332-7756. NCA Phone Number is 301/320-3621.



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