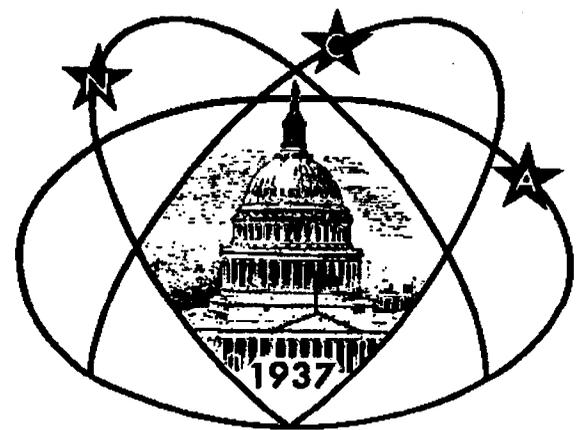


Star



Dust

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John Graham on Measuring the Universe

By Nancy Byrd

The next meeting of National Capital Astronomers is on January 9, 1993 at 7:30 PM at the National Institutes of Health (in the Bunim Room on floor 9 of the Clinical Center, Building 10). At this colloquium, Dr. John Graham, NCA president, will speak on the subject of measuring the universe. Because of the immense distances involved, the determination of the distance scale of the universe has always been full of difficulties and is still a controversial subject. Even at the present time, it is uncertain by about a factor of two.

One of the principal scientific objectives of the Hubble Space Telescope is to measure distances to the nearest galaxies with a greater accuracy than previously possible. Dr. Graham's current research is concerned with the observation of Cepheid variable stars. These stars pulsate regularly, leaking radiation from the stellar interior with a period which depends closely on their absolute brightness. They are recognized as first-class "standard candles" in star systems outside our own galaxy and can be used to calibrate other distance indicators which can be applied in turn to determine distances to galaxies which are much more remote. Having introduced us to this topic at his previous talk to NCA in 1988, when the work was still in its planning stage, Dr. Graham will tell about the progress he and his colleagues are making, even with the Hubble Space Telescope in its less than optimal shape.

Other currently popular distance indicators to be discussed include the use of supernovae, exploding stars which temporarily become the brightest stars in the universe, and using fluctuations in the surface brightness of distant star systems due to unresolved, individual stars. New distances for far-off galaxies will lead directly to the determination of the present-day expansion of the universe, which we must know in order to uncover its history and future evolution.

Dr. Graham has been a staff astronomer with the Carnegie Institute of Washington, Department of Terrestrial Magnetism since 1985. Before coming to Carnegie, he served at Kitt Peak National Observatory and the Cerro Tololo Inter-American Observatory, as well as others. He obtained his B.Sc. in Physics with honors at the University of Sydney, Australia, and his Ph.D. in astronomy from the Australian National University, Canberra, Australia. NCA is honored to have him both as speaker and as its president.

OBSERVER'S HANDBOOK
By Jeff Norman

Copies of the "Observer's Handbook" for 1993, published by the Royal Astronomical Society of Canada, will be on sale at the January 9, 1993 NCA monthly meeting and at all subsequent meetings until they are sold out. The price is \$10. If you would like a copy and cannot attend the meeting, please call Jeff Norman evenings or weekends at (202) 966-0739 to make other arrangements.

January Calendar

The Public is Welcome!

Saturday, January 2, 9:30 AM - Geoffrey Chester (Smithsonian Institution, National Air and Space Museum (NASM)), "Four Tales of a Comet," at NASM Albert Einstein Planetarium.

Saturday, January 9, 5:30 PM - Dinner with the speaker at Frascati's Restaurant in Bethesda before the monthly meeting. Reservations are for 5:30 Sharp!

Saturday, January 9, 7:30 PM - Dr. John Graham (Carnegie Institute of Washington), "Measuring the Universe." 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.

Friday, January 15, 29, 8:30 PM - NCA 14-inch telescope open nights with Bob Bolster, 6007 Ridgeview Drive, south of Alexandria off Franconia

NOTE: "Voyager at Neptune," the originally scheduled topic for this month's meeting, has been set for a later date.

Road between Telegraph Road and Rose Hill Drive. Call Bob for details and more dates at (703) 960-9126.

Thursday, January 28, 7:00 PM - Daniel Costanzo (NCA), "Astronomy O!O!O!: Life, The Universe, And Everything" (four week adult education course), at Arlington Planetarium. For details and cost, call Steve Smith 703/358-6070.

All January - Mars and Earth make their once every two year mutual close approach. NCA's Celestron 14 telescope is available for Mars observation from Ridgeview Observatory, Alexandria, VA. For arranging a time, call Robert Bolster at 703/960-9126.

Next Month:

Saturday, February 6, 7:30 PM - Dr. Steve Dick (U.S. Naval Observatory): Search for Extraterrestrial Intelligence (SETI), history and current directions.

Please Participate in IDA North American Star-Watch Program

By Daniel J. Costanzo & Walter I. Nissen

This Winter, The International Dark-Sky Association, Inc. (IDA) is conducting its second official North American Star-Watch program. Star-Watch serves two important purposes. On the quantitative side, it documents environmental degradation caused by light pollution. On the qualitative side, it fosters both sky awareness and sensitivity to light pollution across as broad a spectrum of society as possible.

Star-Watch observations are incredibly simple to make by any observer, from any location in North America (and beyond), using a minimum of optical or photographic equipment. As the Washington region's IDA representative, NCA heartily endorses this worthwhile effort. NCA encourages all members (and *Star Dust* readers) to participate in Star-Watch themselves, and urge others to do so. NCA educators, mentors, Junior, and Family members should take note: Star-Watch makes an excellent class exercise or science fair project.

See *Sky & Telescope*, 1992 December (Vol. 84, No. 6), p. 692, for background, instructions, and an observing form. Locally, Walter Nissen (Phone: 301/585-5711) and Daniel Costanzo (703/841-4765) can advise and answer questions about IDA and Star-Watch. If you wish to participate, please contact one of us. This program is a vital volunteer observing activity in service to science and society.

To join IDA, or for more information and data sheets,

write to: David Crawford (Executive Director), IDA, 3545 North Stewart Avenue, Tucson, Arizona 85716. IDA is a very fine non-profit organization that's well worth supporting. NCA has supported it since its inception. IDA membership is very inexpensive, and there is no charge for participating in Star-Watch.

Excerpts from The IAU Circulars

By R.N. Bolster

1. November - A'Hearn, McFadden, Feldman, Haken, and McPhate, University of Maryland, measured substantial emissions of CS from periodic Comet Swift-Tuttle using the International Ultraviolet Explorer. U.K. Infrared Telescope spectra showed that the comet is also producing large amounts of methanol (methyl alcohol).

2. November 15 - J. Bryan, Georgetown, Texas, discovered a nova of 17th magnitude in the nuclear bulge of M31 on photographs taken by W. Wren with the McDonald Observatory 76-cm telescope.

3. November 24 - Nobuo Ohshita, Furukawa-machi, Japan, discovered a comet (1992a1) of 11th magnitude in Virgo with 25x150 binoculars. Preliminary orbital elements indicate that the comet passed perihelion on November 1.

4. November 30 - Larson and Marcialis, Lunar and Planetary Laboratory, obtained CCD images of (2060) Chiron with the 2.3-m Steward Observatory reflector that showed a tail at least 50" long.

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.

The Telescope Selection, Use, and Care Seminar, 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 and other astronomical items.

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.

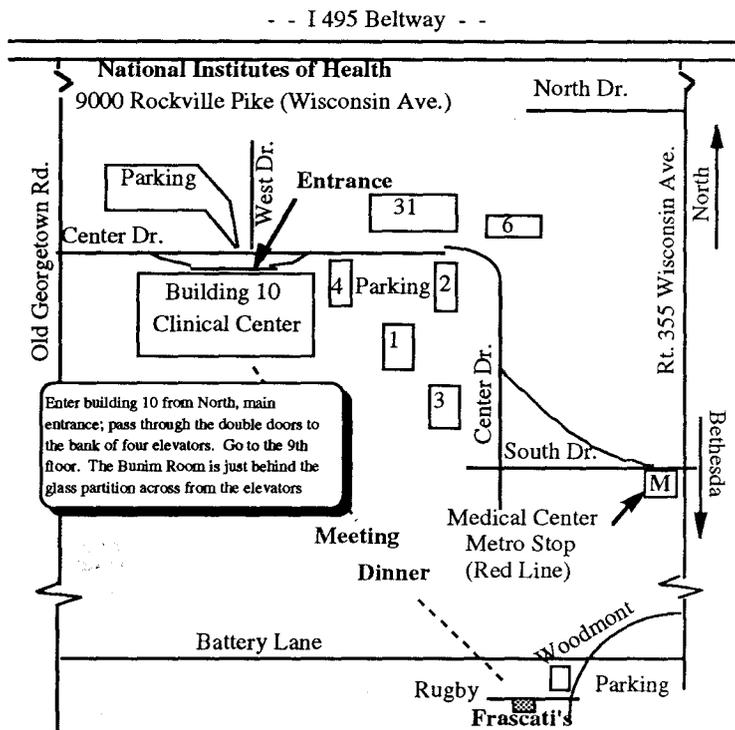
The following information is optional. Please indicate briefly any special interests, skills, vocation, education, experience, or other qualifications which you might contribute to NCA.

Thank you, and welcome!

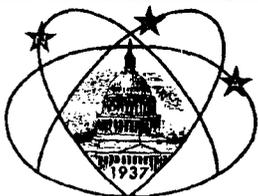
Getting to the NCA Monthly Meeting

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



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