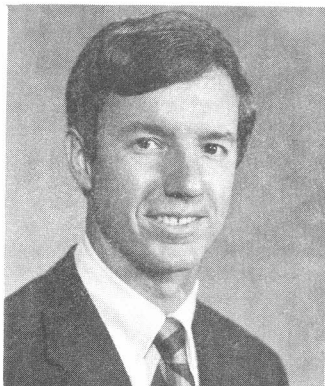




Niedner: Latest Science from Halley, Giacobini-Zinner



DR. NIEDNER

Dr. Malcom B. Niedner, NASA Goddard, will bring the latest findings from comets Halley and Giacobini-Zinner in his January National Capital Astronomers lecture. The recent apparitions of these comets were unique in the annals of cometary exploration. Not only were unprecedented efforts made in the remote study of comets, i.e., from the ground and earth-orbit, but these were the first comets to be visited by spacecraft equipped with instruments to provide "space truth."

Solar-wind interaction with two very different comets was observed in great physical detail for the first time. Mass spectrometers analyzed relative abundances of the many gaseous species in the coma, mass distribution and elemental composition of dust particles were measured directly for the first time. The first direct observations of a comet nucleus confirmed Whipple's theory of the source of cometary material and revealed a number of surprises. Gas-production rate, temporal variability, and time-dependent tail structure were measured

by remote spectroscopy and imaging.

These areas but scratch the surface of the total effort. Niedner will also discuss the future of cometary studies.

Malcom H. Niedner, Jr. received his Ph.D. in astronomy from Indiana University in 1979 and immediately went to NASA GSFC to continue his work on comets, specifically, their interaction with the solar wind. Dr. Niedner has published many papers in this field and has become a known authority in it. He has contributed very substantially to cometary science as Deputy Discipline Specialist for the Large-scale Phenomena Discipline of the International Halley Watch, as Chairman of the Astro Halley Science Team, and as Scientific Consultant for the International Cometary Explorer, which penetrated Comet Giacobini-Zinner, the first for any comet, on its way to observe Comet Halley.

JANUARY CALENDAR -- *The public is welcome.*

Friday, January 2, 9, 16, 23, 30, 7:30 pm -- Telescope-making classes at American University, McKinley Hall basement. Information: Jerry Schnall, 362-8872.

Saturday, January 3, 6:00 pm -- Dinner with the speaker at the Smithsonian Restaurant, 6th and C streets, SW., inside the Holiday Inn. Reservations unnecessary. Use the 7th Street and Maryland Avenue exit of the L'Enfant Plaza Metro station.

Saturday, January 3, 8:15 pm -- NCA monthly lecture in the Einstein Planetarium of the National Air and Space Museum, Seventh Street and Independence Avenue, SW. (Enter Independence Avenue side.) Dr. Niedner will speak.

Monday, January 5, 12, 26, 7:30 pm -- Telescope-making classes at Chevy Chase Community Center, Connecticut Avenue and McKinley Street, NW. Information: Jerry Schnall, 362-8872.

Friday, January 9, 23, 30, 8:00 pm -- NCA 14-inch open nights with Bob Bolster, 6007 Ridgeview Drive, south of Alexandria off Franconia Road between Telegraph Road and Rose Hill Drive. Call Bob at 960-9126.

Saturday, January 17, 1:30 pm -- Discussion group, combined with a workshop on microcomputers in astronomy. See page 19.

DECEMBER LECTURE

The December National Capital Astronomers lecture monthly was given by Dr. Bary L. Bennett in the Albert Einstein Planetarium of the National Air and Space Museum. Dr. Bennett is Deputy Director, Division of Special Applications, U.S. Department of Energy. He discussed the Ulysses Solar Polar Orbit Mission.

Ulysses, a joint NASA-ESA project was originally scheduled for launch in May 1986. The Challenger Shuttle accident has delayed the mission until September 1989. The next possible launch would be in October 1990.

The purpose of the mission is to investigate the Sun's heliosphere over the full range of solar latitudes. To date, spacecraft have been limited to acquisition of data within 10 degrees of the ecliptic. This narrow band is not necessarily representative of the total solar environment. It is anticipated that quite different phenomena will be observed in the polar regions as well as in the solar activity zone, the solar latitudes between 10 and 40 degrees north, where more violent particle phenomena are likely to be observed. Study of the heliosphere is a critical part of space science. For example, seemingly small changes in solar conditions may have a measurable effect on the Earth's climate. The Sun and the heliosphere constitute a virtual giant astrophysical laboratory that can provide data on the behavior of plasma under a wide range of conditions.

The following instruments will be carried aboard Ulysses: (a) magnetometers to map the heliospheric magnetic field, particularly above the Sun's poles; (b) solar-wind plasma spectrographs to investigate variations of solar wind as a function of solar latitude and variations of solar wind properties between Earth and Jupiter; (c) solar-wind ion-composition spectrographs to determine coronal locations of solar wind, the heating process in the corona, and reasons for variation in composition of the Sun's atmosphere; (d) heliospheric instrument for spectrum, composition, and anisotropy at low energies, to study the solar flare process, the Sun's composition, and the interplanetary propagation of energetic solar particles and how these particles are accelerated; (e) energetic-particle detectors to study medium-energy ions in solar winds, to better understand the process of temporary storage of particles in the corona. The instruments will also detect helium atoms entering the solar system and provide information on the source of material for star formation; (f) cosmic-ray and solar-particle detectors to provide information on the motions of cosmic rays before they are affected by the solar system; (g) unified radio and plasma-wave antennas to aid in understanding the basic physics of plasmas and to measure the properties of radio sources from the Sun and the waves in the solar wind; (h) solar X-ray and cosmic gamma-ray detectors to study X-rays emitted from solar flares and gamma rays from outer space; (i) cosmic dust detector to measure the speed, flight direction, latitudinal distribution, and charges of the particles to help determine their origin.

Upon Shuttle launch into low earth orbit the Ulysses spacecraft will enter a trajectory toward Jupiter. Fifteen months later a gravitational boost from Jupiter will redirect the craft out of the ecliptic plane and into a solar orbit, to pass over the Sun's south pole 2.5 years later, then back over the Sun's north pole. The mission objective is to obtain a minimum of 150 days of observations above 70 degrees heliographic latitude. Total mission time will be 4.5 years. Secondary objectives of the mission include interplanetary physics investigations during the in-ecliptic Earth-Jupiter phase, measurements of the Jovian magnetosphere during the Jupiter fly-by phase, and a search for gravitational waves which could lead to a much better understanding of phenomena such as black holes.

Stanley G. Cawelti

TWO SIMULTANEOUS NAKED-EYE NOVAE REPORTED

The rare circumstance of two novae simultaneously visible to the unaided eye, one in each hemisphere, north and south, occurred in late November. Both were faint, one of them only marginal under excellent conditions. Both are now fading, but still should be easily seen from their respective hemispheres, or at low latitudes, with binoculars.

In Australia, R.H. McNaught reported a 5.6-magnitude nova in Centaurus on November 22 which was reported at magnitude 4.7 by November 24. Earlier plates showed the star at magnitude 19.3 (near the photographic limit of the largest telescopes) on November 8. Our Southern Hemisphere readers will find it at right ascension 14 hours 32 minutes 13.42 seconds, declination -57 degrees, 24 minutes, 31 seconds, 1950 epoch.

In Japan, M. Suzuki, Tokyo Observatory, reported an 8th magnitude nova in Andromeda on December 5, which reached 6.3 magnitude by December 9. It is located at right ascension 23 hours 9 minutes 47 seconds, declination 47 degrees 12 minutes 1 second, 1950 epoch.

Both are reported in this issue. See the IAU circular excerpts on page 20.

OCCULTATION EXPEDITIONS PLANNED

Dr. David Dunham is organizing observers for the following occultations. For further information call Dave at 585-0989.

UT Date	Time	Place	Vis Mag	Pent Sunlit	Cusp Angle	Min Aper
Grazing Lunar:						
01-02-87	23:42	Mercersburg, PA	4.8	11	19S	3 cm
01-05-87	00:50	Upper Marlboro, MD	8.4	30	17S	10 cm
01-05-87	01:03	Comus, MD	8.7	30	15S	15 cm
01-18-87	08:55	Severn, MD	8.1	90	21S	20 cm
Asteroidal and Lunar:						
			Star Mag	Delta Mag	Name	
01-01-87	00:40*	All USA	9.5	0.0	Jupiter	20 cm
01-25-87	00:01	New York	8.0	2.3	(471) Papagena	4 cm
01-25-89	10:39	Florida	9.1	1.6	(30) Urania	6 cm

*Time of central occultation; duration 66 minutes.

NCA WELCOMES NEW MEMBERS

Thomas Brock and Maureen Brennan
2821 N Street, NW
Washington, DC 20007

Michael Hieu Tran
4203 Four Mile Run Drive, Apt 22
Arlington, VA 22204

Stephen S. Kudla
509 Springfield Road
Silver Spring, MD 20904

DISCUSSION GROUP AND ASTRONOMICAL COMPUTER WORKSHOP JANUARY 17

The January discussion group will be expanded to a workshop on the use of microcomputers in astronomy, starting at 1:30 pm. Following a pizza break at 5:30, it will continue at 8:10 pm if there is sufficient interest. It will be held by Drs. David and Joan Dunham at their home, 9408 Ocala Street, Silver Spring, Maryland. Ocala Street is inside the Beltway, just north of Franklin Avenue.

The Dunhams would like to hear from those involved in such projects. If you wish to demonstrate, either bring your computer or call to be sure of compatibility with those on hand: (301) 585-0989.

The Dunhams have a number of project suggestions, all related to occultations, some of which do not require programing.

AIR AND SPACE MUSEUM OFFERS TALK, SAFE SOLAR VIEWING

On Saturday, January 3, at 9:30 am, in the Albert Einstein Planetarium of the National Air and Space Museum, James Hyder, NASM Staff, will discuss Ptolemy's view of the Universe.

Following the talk, weather permitting, Stanley Cawelti will offer safe telescopic solar viewing in hydrogen alpha on the east deck.

ASTRONOMY AND PERSONAL COMPUTERS

One software publisher that sells software for the observer with a microcomputer is **Dynacorp, Inc.** Their current catalog of almost 200 pages lists six astronomy entries. They sell a two-disk set of the programmer Burgess' book, *Celestial Basic* for the Apple, C-64, and IBM PC's, either with or without the book. They sell a celestial calendar for IBM PC's, and a Halley's Comet locator (a bit dated now). They also sell a number of programs in other sciences and mathematics.

To get on their mailing list, write them at: PO box 18129, Rochester, NY 14618.

Computer Astronomy Network is "a newsletter for the computer astronomer." At \$0.50 per issue, \$3.00 for six issues, it is available for a check to Barney Melpas, 20 Helen St., Warren, NJ 07060. Ask for the November-December 1986 issue, which has an index of 280 articles on computer astronomy appearing in 62 magazines and journals in 1986.

David and I are holding a computer astronomy workshop at our home on January 17. See "Discussion Group" for the details. Joan B. Dunham

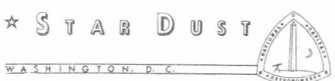
EXCERPTS FROM THE IAU CIRCULARS

1. November 22 -- R.H. McNaught, Siding Spring Observatory, discovered a nova of magnitude 5.6 in Centaurus on photographs taken with an 85-mm lens. The nova brightened to magnitude 4.7 by November 24.

2. November 28 -- M. Lovas, Piszkesteto, Hungary, discovered a comet (1986p) of 14th magnitude in Aries. The orbital elements by Marsden indicate that Comet Lovas passed perihelion on November 9, but the period of revolution is still uncertain.

3. December 5 -- M. Suzuki, Ena City, Japan, discovered a nova of 8th magnitude in Andromeda on a photograph taken with a 200-mm lens. It reached maximum brightness of magnitude 6.3 about December 9. The nova is located at 23h10m+47°12m
Robert N. Bolster

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