



ANNUAL MEETING, ELECTION, MOVIES IN MAY

The annual NCA business meeting will be held May 3. A slate of candidates was announced by the nominating committee at the April 5 meeting:

President, Benson Simon; Vice President, Wolfgang Schubert (incumbent); Secretary, William Pala; Treasurer, Larry Torrance (incumbent); Sergeant at Arms, Paul Burnett (incumbent); Trustee, Henning Leidecker.

Other candidates may be nominated by petition signed by ten full members in good standing and presented to the trustees before the election.

Three NASA films will follow the election: *Orbiting Solar Observatory* (25 minutes) illustrates OSO studies of the Sun and their use in determining the effect of the Sun on the Earth. *Radio Astronomy Explorer* (30 minutes) describes the design and function of the RAE, a spacecraft with 1500-foot antennas to detect and relay various types of radio emissions from the Sun, Earth, and Jupiter. *X-ray Spectroscopy—The Inside Story* (25 minutes) describes the generation and spectroscopy of X-rays. Dr. Robert J. Liefeld will narrate.

MAY CALENDAR—*The public is welcome.*

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

Saturday, May 3, 8:15 PM — Annual NCA business meeting. Department of Commerce Auditorium, 14th Street and Constitution Avenue, NW.

Monday, May 5, 12, 19, 26, 7:30 PM — Telescope-making classes at the Chevy Chase Community Center, Connecticut Avenue and McKinley Street, NW. Information: Jerry Schnall, 362-8872.

Saturday, May 17, 9:00 PM — Exploring the Sky, presented jointly by NCA and the National Park Service. Glover Road south of Military Road, NW, near Rock Creek Nature Center. Planetarium program if cloudy. Information: Bob McCracken, 229-8321.

APRIL LECTURE

Dr. Benjamin M. Zuckerman discussed the use of interstellar molecules in the study of star formation, in his April 5 NCA lecture.

The clouds of dust and gas from which stars are believed to form may initially contain 10^5 solar masses. In question are the motions and processes involved in the transformation of such a cloud into stars. The vast, dark lanes of dust associated with many nebulae are *not* areas of star formation, but may be residue from previous formations.

Turbulence within the cloud results in fragmentation, first into portions of perhaps 10^3 solar masses. A second fragmentation into individual stellar masses and subsequent gravitational compression into protostars follows. The radiating molecules within the cloud, detectable by radio astronomy, provide tracers in the study of the motions during this early, gravity-dominated phase. After sufficient compressional heating, the concomitant infrared emission signals the presence of the protostar. Many of the strong infrared regions are probably protostars as large as the Solar System.

Infrared observations, however, do not provide radial-velocity information. At radio wavelengths, Doppler broadening of spectral lines is observed far in excess of thermal broadening at the low temperatures in these clouds. The indicated range of radial velocities could arise from random motions, expansion,

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gravitational contraction, or rotation. Continuing gravitational contraction at the observed rate would generate 100 to 1,000 new stars per galaxy each year; only about four are observed. Rotation would be evident as a velocity gradient. Expansive forces would arise later in the evolution of the star, when thermonuclear processes began at much higher temperatures. Supersonic turbulence would be required to account for the observation; it is too short-lived, ordinarily. The possibilities include continual generation of new turbulence, a mechanism supportable by several phenomena, including magnetic waves; a field of only 40 microgauss would suffice. The question is unresolved.

Our speaker, associate professor of physics at the University of Maryland, discussed radio observations of the Orion Nebula in detail. He characterized the visual H II-dominant region as only a pimple on a vast, dark, cold, carbon-monoxide cloud observed at radio wavelengths. Infrared and water-maser radiations indicate that protostars are forming within a small region of this cold cloud.

MEMBERSHIP DIRECTORY CORRIGENDUM

Change entries to read:

Mr. and Mrs. G. Robert Wright

Mr. and Mrs. Benson Jay Simon

Samuel Gordon is a member, not a junior member.

Richard A. Raven: 765-7824

Victor Slabinski: 379-7180

Larry White: 978-9681

Change addresses:

Lyle T. Johnson, 411 Blue Ridge Street, Hendersonville, NC 28739

Thomas Dalrymple, 2028 G Street, NW, Washington, DC 20006

Add:

Mirza A. Khoja, 522 - 21 Street, NW, Washington, DC 20006

NCA SCIENCE FAIR AWARDS

Judges Wilbur Lund, Bill Pala, Ken Short, Bill Winkler, and Estelle Finkle made the following awards at area science fairs in March and April. We congratulate:

Northern Virginia:

James L. LeCroy, 6406 Charnwood Street, Springfield 22152, 451-2981. "A Study of Reported Lunar Transient Phenomena"

Eric Boysen, 11640 Mediterranean Court, Reston 22090, 437-1943. "Time and Measurement System for Mars and Earth"

Prince Georges County, Maryland

Glen Taylor, 6908 Buchanan Street, Landover Hills 20784, 772-3326. "Wonders of the Universe"

Kenneth Keene, 8005 Carey Branch Drive, Oxon Hill, Maryland 20022, 248-6604. "New Approach to Photography of Stellar Parallaxes"

Each winner will receive a one-year membership in NCA and a subscription to *Sky and Telescope*.

MERAL CONVENTION SCHEDULED

The Astronomical League's Middle East Region will hold its 1975 convention from June 6 to 7 at the University of Pittsburgh. Events will include a tour of Allegheny Observatory and a banquet speech by Dr. John O'Keefe of NASA. Those desiring further details should contact Bob Wright, 301-EV4-6748, or June Loguirato, 703-830-1317.

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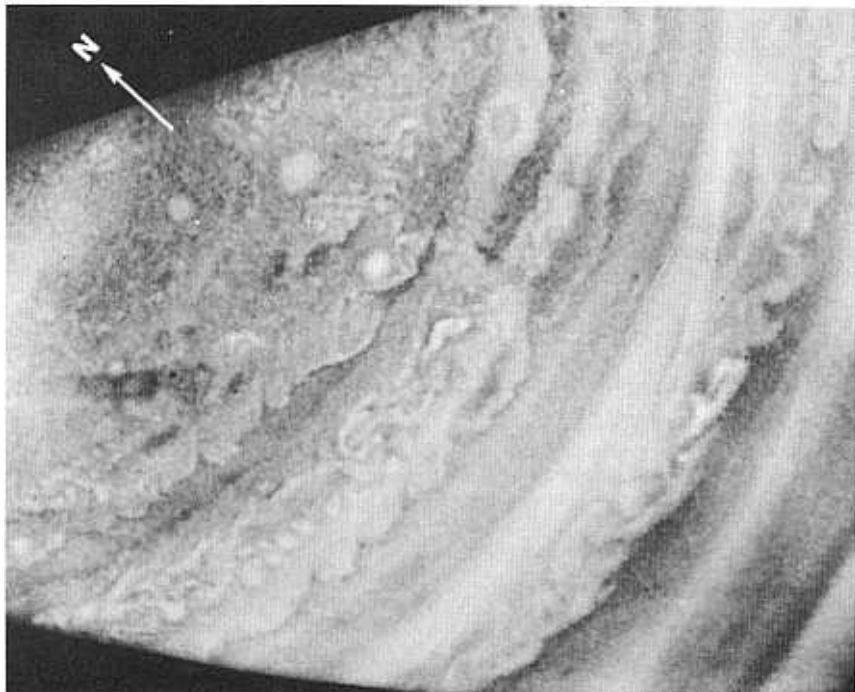
JUPITER STORMY

Thunderstorms — Acetylene, recently discovered in Jupiter's atmosphere, suggests thunderstorms there, for electrical discharges and shock waves appear to be the only means of forming such amounts in that environment. Optical studies show much of Jupiter's atmosphere to be in violent convection, and especially favorable conditions exist for thunderstorm formation. Akiva Bar-Nun of Hebrew University, Israel, calculated that the observed rate of production of acetylene from methane would require one stroke every ten minutes per square kilometer.

Bar-Nun's hypothesis of acetylene formation yields a lifetime of 6.1×10^6 y for all that in Jupiter's atmosphere, far too short for it to have been formed with Jupiter. (*Icarus*, January 1965)

These just-released NASA Pioneer 11 photos show more details of Jupiter's stormy turbulence than ever before seen. Details can be seen spiraling counterclockwise within the Great Red Spot, which seems to be a storm that has been raging for centuries. The wake turbulence extending to the right of the spot is apparently one of the first examples of mass transfer between belts and zones as predicted by Jovian meteorological theory.

Hurricanes — The lower photo is the first to show hurricane-like storms near Jupiter's north pole. It also is the first detailed view of the breakup of the dark belts and bright zones toward the pole.



TREASURER'S ANNUAL REPORT -- May 1, 1974 -- April 30, 1975

Income		Reconciliation of Checking Account	
Dues	1831.75	Apr 30,75	May 1, 74
Publication sales	122.75	Chk acct	1641.31 1698.80
Telescope class	88.00	Pty cash	64.30 56.97
Other	72.40	Total	<u>1705.61</u> <u>1755.77</u>
Total	<u>2114.90</u>	Ledger	1195.44 1245.60
Outgo		Summary	
Publication costs	1729.08	Income	2114.90
Operating costs	119.87	Outgo	<u>2165.06</u>
A. L. Dues	92.00	Deficit	<u>50.16</u>
New PA system	182.88		
Treas expenses	41.23		
Total	<u>2165.06</u>		

(Signed) Lawrence C. Torrance, Jr.
Treasurer

MEMBERS INVITED TO OBSERVE TOTAL LUNAR ECLIPSE

Bob Wright invites all NCA members to observe the May 24-25 total lunar eclipse from his home north of Colesville, Maryland. The eclipse will begin on Saturday, May 24 when the moon enters the penumbra at 10:59 PM EDT, (May 25 at 02:59 UT) and will end Sunday at 04:38 as the moon leaves the penumbra (08:38 UT). Bob's address is 202 Piping Rock Drive, 8 miles north of the intersection of Colesville Road and Georgia Avenue in Silver Spring.

Bob will provide observing space, ac power for your telescope and accessories, and coffee. Please let him know if you plan to come. Call 384-6748. Arrive any time after 7:30 PM.


EXCERPTS FROM THE IAU CIRCULARS

1. The Department of Physics and Center for Space Research, M. I. T., has reported the discovery of 14 new X-ray sources between September 1971 and May 1974 with their OSO-7 X-ray experiment. The brightest of these was in western Sagittarius.

2. Another group of M. I. T. researchers, using a balloon-borne X-ray telescope, observed the temporary appearance of a new pulse in the light curve of the Crab Pulsar, NP 0532, on June 21, 1974. The new peak, preceding the primary peak by 12 ms, was seen during two observing periods of several minutes, but was not seen in earlier and later observations.

3. March 4 -- T. M. Smirnova and N. S. Chernykh, Crimea Astrophysical Observatory, discovered a 15th-magnitude comet (1975e) near the boundary between Leo and Cancer.

This listing courtesy R. N. Bolster.

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