

The Md - DC Juniors are responding well to the new policy of two meetings a month. At the January 13 meeting, a record fifteen persons heard J. L. Holloway discuss the "Milky Way Galaxy." As a sideline, he calculated the cosmic year by means of Kepler's third law, coming up with a figure not far off from the accepted value (200,000,000 years). The cosmic year is the rotational period of our galaxy. Our second meeting, on the 26th, was scheduled to be spent observing with Lewis Acker's 8" reflector, but it was cloudy and observing had to be postponed to the next suitable date. At the February 10 meeting, nine were present to hear a lecture on cosmology. Gamow's evolutionary ideas were pitted against Hoyle's steady-state theories and judging from the number of questions put to the lecturer, both suffer from inadequacies (at least in the mind of the public).

In March we will hear a talk on relativity, hear another lecture on practical astronomy given by an outsider, and do some observing. In April we will hear talks by science fair entrants and visit the Georgetown Observatory. May will find the Md-DC Juniors at the Middle East Regional Convention. Some of us will give papers.

Junior biographies will appear next month.

Chris Walker, Md, - DC Junior Editor

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REGULAR NEW MEMBERS

- Walter F. Rothe 5060 Mac Arthur Blvd., NW, Wash. 16, DC
EM 3-6664
- Victor J. Slabinski 6810 Darmouth Ave., College Park, Md.
WA 7-3800 X 471
- William Huffman 413 Haycock Road, Falls Church, Va.
JE 2-2607
- Lou Ann Davidson 4714 Medora Dr., Wash. 23, DC
- Frank Keliher 1426 21st St., NW, Wash. 23, DC

JUNIOR MEMBERS

- Arthur Carl Neuendorffer 911 Allison St., Alex., Va. KI 9-6819
- Wesly Page 5512 Glenwood Rd., Bethesda 14, Md.
OL 4-5873
- Kenneth Ritto 5013 Euclid Dr., Kensington, Md.
WA 2-2593
- Ronald Nelson 3605 58th Pl., Cheverly, Md. AP 7-5988
- John Nicholas Tolliver 3508 56th St., Hyattsville, Md.
WA 7-1354

* S T A R D U S T

Washington, D.C.



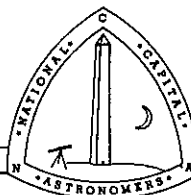
Published monthly except August by and for members of the NATIONAL CAPITAL ASTRONOMERS, INCORPORATED, a non-profit, public-service organization promoting interest and education in astronomy and the related sciences. President, James J. Krebs, LU 2-1247; Vice President, Adm. Alvin L. Malstrom, Ret.; Secretary, Mrs. John Stolarik; Treasurer, Duane A. Baugher. Trustees: Glen E. Neville, Leo W. Scott, Sam C. Feild, Jr., G. Robert Wright, Editor, Mrs. John Stolarik, RE 6-4321. Assistant Editor, Mrs. Ellis Marshall; Junior Division Editors, D. C. and Md: Christopher W. Walker, OL 4-3572, Va: June LoGurato, BR 8-9017; Astronomy, Alexander L. White; Publicity, Mrs. William Lipscomb; Photography and production, Sam C. Feild, Jr.; Publicity Distribution, Morton Schiff. Deadline tenth of each month.



MAR 5 1962

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MARCH 1962

Vol. XIX, No. 7

ROCKET STUDIED OF THE SOLAR ULTRAVIOLET SPECTRUM



Mr. J. D. Purcell, Head of the Solar Spectroscopy Section of the Atmosphere and Astrophysics Division at the U. S. Naval Research Laboratory, will be the speaker at the March meeting of the NCA.

The nature of the extreme ultraviolet spectrum of the sun and its effect on the upper atmosphere of the earth has long been a subject for speculation among astronomers. The short wavelength limit to which solar spectrum can be observed from the ground is at about 3000A in the near ultraviolet. Although the radiation below this limit carries only an insignificant one percent of the sun's

total radiation, these various wavelengths provide new knowledge about the sun's characteristics and they have important effects as they are absorbed in the different levels of the upper atmosphere.

Using spectrographs mounted in rockets, the solar spectrum has been photographed and studied in detail down to 170A in the extreme ultraviolet. By the use of recently developed photon counter techniques the spectrum has been studied in narrow wavelength bands down to 5A in the X-ray region during periods when the sun is quiet, and as low as 0.1A during solar flares.

Mr. Purcell was born in Baxley, Georgia and attended Berry College, the University of Georgia, and George Washington University. He received his B.S. degree from the University of Georgia. Mr. Purcell began work at the Naval Observatory in 1941, in the Material Department, working on vacuum evaporation of mirrors and lens coatings for instruments, and designing navigation instruments for the Navy. In June of 1946 Mr. Purcell transferred to the Naval Research Laboratory and began work on the rocket spectroscopy research program in early 1947. As current head of the Solar Spectroscopy Section of the Atmosphere and Astrophysics Division his work includes designing experiments and spectrographs for the study of the extreme ultraviolet spectrum of the sun and supervising the carrying out of the experiments and reduction of the data. Results have been reported in papers before the Astronomical Society of America, the Optical Society of America, the Washington section of the Instrument Society of America, and the first COSPAR Meeting in 1960 at Nice, France.

Results of his work have been published in a number of major scientific journals and several books on the sun. Together with three colleagues, Mr. Purcell received the Photographic Society of America's Progress Medal for 1959 for photographs of the sun from a rocket using only extreme ultraviolet light radiated by neutral hydrogen in the sun's atmosphere.

CALENDAR FOR MARCH

- 3 J. D. Purcell to speak on "Rocket Studies of the Solar Ultraviolet Spectrum" at the Dept. of Commerce Auditorium, 14th and Constitution Ave. Lecture at 8:15 P.M. Business meeting follows.
- 9 OBSERVING AT THE FIVE INCH at the Naval Observatory 7:30 to 10:00 P.M. with Larry White.
- 9 VIRGINIA JUNIORS MEETING at the Westover Baptist Church.
- 10 MD - DC JUNIORS MEETING at the Cedar Lane Unitarian Church, 9601 Cedar Lane, Bethesda at 2:15 P.M. Lecture by Leith Holloway on Einstein's Theory of Relativity. Phone Leith at 581-7870 for details.
- 17 DISCUSSION GROUP led by Betty Lipscomb to obtain information for the article on NCA to appear in Sky and Telescope. (See article on page 3)
- 23 MD - DC JUNIOR MEETING at the Cedar Lane Church at 7:30 P. M. Topic to be announced. If clear, observing after the meeting at Chris Walker's, 7101 Glenbrook Road, Bethesda. Phone Chris at OL 4-3572 for details.
- 23 VIRGINIA JUNIORS MEETING at the Westover Baptist Church. TELESCOPE MAKING CLASS every Tuesday evening at the Chevy Chase Community Center, 7:30 to 10:00 P.M. with Hoy Walls.

ADDRESS CHANGES OR CORRECTIONS

Dr. Ernst J. Opik
99 Clifton Road
Bangor, Co. Down
Northern Ireland

Harry A. Kline
AMCONGEN (FBIS)
Navy #539
New York, N. Y.

Lyle T. Johnson
Fort Tobacco, Md.
301-934-8060

Clarence de W. Herreshoff
4000 Tunlaw Road, N. W.
Washington 7, D. C.
FE 8-8593

Jay Miller
7007 Clarendon Road
Bethesda, Maryland
652-2453

Leland F. Ramsdell
54 Shaw Avenue
Silver Spring, Maryland
MA 2-0311

Dr. Anatol Dinbergs
4517 Butterworth Place
Washington 16, D.C.
EM 2-6920

SPACE NAVIGATION

Space Navigation, as with all human operations, is based on basic physical laws. Although we have little knowledge through experience in space, we can predict many results by the application of known physical laws governing the proposed operations.

I predict that space navigation itself, without considering biological or power problems, will be not only feasible, but will in many respects be simpler than sea or air navigation. The reason for this optimism results from the stark simplicity of the basic physical laws under which the space navigator operates.

The space navigator will not have navigational aids in the traditional form of lighthouses, beacons, "iron compasses," and terrestrial charts. He will have to go "celestial" in a big way. It is here that the guild of astronomers should lift their heads high for their all but miraculous contributions to the science of space navigation. The astronomers, past and present, furnish accurate and dependable "lighthouse in the sky" in the form of almanac star positions. With this assembled knowledge, the astronaut will be able to navigate simply, accurately, continuously, and speedily. If this statement is not substantially correct, any contributions I might have made in the field of sea or air navigation will be downgraded.

In my opinion the astronomer will come into his own as we enter the space age. The present state of celestial mechanics, and extended mathematical analysis now being published, will in my opinion, be more and more referred to old line astronomers who will furnish us with a Space Almanac, together with relatively simple methods and equipment for accomplishing practical space navigation.

Star positions are determined by optical line of sight observations. The space navigator's problem is fixing his position relative to the position of the Earth's center. For cislunar navigation, which should take us, in time, beyond 1970, the Earth itself should afford the astronaut with the most feasible means for space navigation. The apparent path of the Earth's center relative to fixed stars, and in terms of sidereal hour angle and declination and also including the distance from the observer's ground point, may be included in the Space Almanac.

While the principle the direct visual observation of the Earth's center in the star field determines the observer's vertical and geographical position, this operation has been put in the form of star trackers by Kollsman Instrument Corporation. Accuracy to within half a minute of arc is claimed. The automatic-tracking of three stars provides precise pointing of the spacecraft. This optical system requiring less than half a watt of power, and comparatively small and lightweight will perhaps be the type of navigational aid selected by space navigators.

The above is an excerpt from a paper by Captain B. V. H. Weems, U.S. Navy.

MARCH DISCUSSION GROUP

Sky and Telescope has asked us to contribute an article about NCA to be used in a new series spot lighting amateur societies. We think it will be fun to reminisce about the NCA and at the same time bring together a history of our club. Toward this end on March 1, Betty Lipscomb will lead a discussion group to get information for the article which is to include a short history of the society, how we maintain interest among members, special activities, observing parties, telescope making, community service, group projects and social affairs, anecdotes, unusual experiences, what some members do for a living and juniors who have become professional astronomers.

They, also, will print some pictures, preferably not posed. Do you have any? Come one, come all !!! Come armed with your album, your diary, and your memories. If you are unable to attend but do have something to contribute, contact Betty Lipscomb at SO 5-3928.

Betty Lipscomb

TWO JUNIORS IN HONORS GROUP

The NCA is proud of two of its junior members, Chris Walker and June LoGuirato, who won honors in the 21st Annual Westinghouse Science Talent Search. The 356 boys and girls in the Honors Group comprise the top ten percent of those entering the competition. Chris wrote his project report on Astrophotography, and June did research on oxidation salts of nickel dimethylglyoxime.

Leith Holloway

1962 MIDDLE EAST REGIONAL CONVENTION

An interesting and well rounded program is planned for the convention on May 11, 12, and 13. NCA registration for the convention has been disappointing. Bill Lipscomb has been looking in his mail box daily and getting very few dollars. Won't you send yours? The Registration fee for the convention is \$1.00 per person. Send registration to Bill Lipscomb, 906 Waterford Road, Alexandria, Va.

The article appearing last month reviewing the January lecture by Rev. Martin F. Mc Carthy was written by Leith Holloway.

BRITISH INTERPLANETARY SOCIETY

The British Interplanetary Society will hold a meeting on March 6 at 8:00 P. M. in the Gymnasium of Georgetown University. The speaker will be Mr. Robert Carder, Chief, Programming Branch, Division of Operations - HQ - ACIC. His topic will be USAF Lunar Charting. The lecture will be accompanied by snapshots and slides.

TELESCOPE MAKING NEWS

Bill Isherwood's Telescope Making Class at Prince George's Count Material Center and Planetarium has gotten under way with a good start. The following school students and adults are making 6" Newtonian telescopes:

STUDENTS	ADULTS
Bruce Peterson	George Whitmore
Carl Livingston	Charles Brown
James Brilen	Ermelinda Desmond
Ronald Nelson	Dave Trumbule
Pat Rossi	
John Tolliver	
Tom Greshko	
Melvin Porter	

CHEVY CHASE CLASS

Joan Dunn has completed her 6" Newtonian. She is quite pleased by its performance. Johnny Reed finished polishing his 8" mirror and when it was tested by Mr. Carle was found to have a very good parabolic figure slightly over corrected. (Mabel Duval had the same good fortune a few years ago.)

Bill Borts and Galen Whittaker are completing two mirrors, started by other persons in earlier classes. Richard Stanger has completed his 4 $\frac{1}{4}$ " mirror. The following have started new mirrors since the last report:

John Kalup	6"	Newtonian
Frank Van Brunt	6"	"
Richard Drury	4 $\frac{1}{4}$ "	"
David Schoeer	4 $\frac{1}{4}$ "	"

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MAKSUTOV CLUB

Maksutov glass grinders get under way despite the snow on Friday evening, February 16, at the Chevy Chase Community Center. The following persons are undertaking making a Maksutov type of telescope:

Jim Krebs	Mrs. Margaret Noble & son, Ted
Robert Bolster	J. Schnall
L. K. Mac Millen	Hoy Walls
Ernest McDaniels	Henry Wilson
E. J. Johnson	

The telescopes will be Maksutov Cassergrainian types, 6" c.a. f-18 following a design developed by Robert G. Hires.

The telescope class is lacking some of the essential equipment for making this type of a telescope, but we figure that we can beg, borrow, or steal what is needed.

----- Hoy Walls-----