PRINCE GEORGE'S COUNTY JUNIORS

At their meeting on January 16, the PG Juniors completed plans for a bus trip to Philadelphia in April.

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NEW HOBBY SHOW OF THINGS ASTRONOMICAL .....April 16, 1966

Plans are coming along nicely for the NCA members hobby show of telescopes, clever measuring devices, good photos, slides and prints, unusual trivia, and such.. Start to search through your astronomical treasures to decide which you would like to display on April 16 at the Commerce Department. This hobby night will take the place of the regular discussion group but time has been allowed for discussion of the things displayed. This is not a commercial show, it is our own show. Make it successful by participating in it. More details in March STAR DUST.

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* STAR DUST *

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★ STAR DUST

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MARKOWITZ MARKS TIME FOR NCA

Dr. William Markowitz

The ancients, as modern man,in noting the passage of events, sought means to measure the duration from one event to another. Thus, the problem of time keeping is an old one and has been met in a variety of ways through the ages, as dictated by the social, commercial and scientific needs and limited by the technological "State of the Art."

Our February lecturer, Dr. William Markowitz, of the U. S. Naval Observatory, will bring us abreast of the current state of the art with a talk entitled "Clock Synchronization and Relativity Experiments Utilizing Artificial Satellites."

Dr. Markowitz has been concerned with the problem of timekeeping for some 30 years. He received his Ph.D. in Astronomy in 1931 from the University of Chicago. He joined the Time Service Division of the U. S. Naval Observatory, Washington, D. C., in 1936, and became Director in 1953. - Continued Page 2.

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CALENDAR

February	5	CLOCK SNYCHRONIZATION AND RELATIVITY EXPERIMENTS UTILIZING ARTIFICIAL SATELLITES, by Dr. William Markowitz at the Interior Dept. Auditorium at 8:15 P.M. Business Meeting Follows.
		Dinner with the speaker. For reservations, call Hank Hudson at 534-8378.
	12	MD-DC JUNIORS MEETING at Silver Spring Library at 2 P.M. Program to be announced.
	18	OBSERVING AT THE FIVE INCH on the grounds of the U. S. Naval Observatory with Larry White from 7:30-10:00 P.M.
	19	DISCUSSION GROUP, MEMBER'S PHOTOS OF OBSERVATORIES. Bring slides from your own collection. This group meets in the Commerce Department, Room 2062 at 8:15 P.M. Bring an interested friend.
	20	PRINCE GEORGE'S COUNTY JUNIORS will meet at Ted Noble's home. Phone LU 2-6721 for details. IMPORTANT MEETING.
	1,8, 15	TELESCOPE MAKING CLASS at the Chevy Chase Community Center with Hoy Walls from 7:30 to 10:00 P.M.
	5,12,19,26	ADVANCED TELESCOPE MAKING CLASS at the Chevy Chase Community Center with Hoy Walls from 7:30 to 10:00 P.M.

Dr. Markowitz - Continued from Page 1 - He designed the dual-rate moon camera used in determining the fundamental frequency of atomic clocks.

Dr. Markowitz was President of the Commission on Time of the International Astronomical Union, 1955 to 1961. He is a member of the Consultative Committee for the Definition of the Second of the International Bureau of Weights and Measures and of the study group of Time and Frequency of the International Consultative Committee for Radio. He serves on several panels of the National Academy of Sciences and NASA.

He has participated in synchronization experiments with Telstar I in 1962 and Relay II in 1965.

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NEW MEETING PLACE FOR REGULAR MEETING

February lecture and subsequent lectures through June will be held at the U. S. Department of Interior Auditorium on C. Street between 18th and 19th Sts. N. W.

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DISCUSSION GROUP MEETS AT COMMERCE DEPARTMENT .....Room 2062

The Discussion Group meetings have been just that -- discussion groups that are informal, lively and informative. It was suggested that February Discussion Group be devoted to the discussion of observatories and invite the members to bring their own prints or slides of observatories that they have visited. This should be a very interesting meeting as people always have little anecdotes to tell about places they have visited. Look through your collection of pictures and bring along some observatory shots to show to the group. Let's have some of private observatories as well as the large installations. A 35 mm slide projector will be on hand to show your slides. Come and bring an interested friend.

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NEW APPLICANTS FOR MEMBERSHIP

REGULAR	JUNIOR
Colonel John D. Peters 1431 Julia Avenue McLean, Virginia 22101	Victor Westhall 7802 B. Street Seat Pleasant, Maryland,20027

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NCA DIRECTORY AND TIME TABLE OF THE HEAVENS

The NCA Member's Directory will be ready for distribution at the February meeting. Please advise the Secretary, Gertrude Dellar, if there are any corrections to be made in your address or phone number. The Directory will contain the names of all members who had joined by December 1965 or had paid their dues by December. Pick up your copy of the Directory at the February meeting. A copy of the Timetable of the Heavens is another free publication available to NCA members. If you did not receive yours at the last meeting, please ask Mr. Cornelius for it on February 5.

JANUARY LECTURE - BALLOON ASTRONOMY

Our January speaker, Dr. John Strong of the Johns Hopkins University, has detected water vapor in the atmosphere of Venus by means of a 12-inch telescope, a spectroscope, and a photomultiplier tube mounted in the gondolas borne aloft by huge Mylar polyester balloons to an 80,000-foot altitude. Balloons rising to this height (16 miles) expand to a diameter of 200 feet and carry astronomical instruments above 99.9% of the atmosphere's water vapor and 97% of its carbon dioxide and above most of the turbulence which causes poor seeing.

In Dr. Strong's February and October 1964 observations, 22 slits in the spectroscope spaced so as to correspond to 22 lines of water vapor in the infrared increased the signal-to-noise ratio to about 20 times that with only one slit and compensated for the small aperture of the reflecting telescope used. The spectral lines exhibited a Doppler shift by an amount exactly consistent with the relative velocity of the earth and Venus at flight time. These measurements showed that the amount of water vapor above the clouds of Venus is comparable to that above the clouds on the earth.

The reflectivity of clouds on Venus varies with wavelength in infrared and visual light the same as that of ice crystal clouds on earth which strongly suggests that Venus's clouds are ice.

New observations on the degree of polarization of the microwave brightness of Venus have cast doubt on the assumption that all of this radiation comes from the planet's solid surface. About 30% of the microwaves probably originate in the atmosphere of Venus. These emissions may result from some form of static electricity associated with cloud formation. If this is so, the high estimates of the surface temperature of Venus must be revised downward to an average of perhaps only 238°C. on the sunlit side. In polar regions, surface temperatures may fall below freezing and lakes could even exist at high latitudes. With these conditions, some form of life may actually live on Venus.

- Leith Holloway

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THE OBSERVER'S HANDBOOK

Mr. Frederick Cornelius, Treasurer of NCA, has a limited supply of the Observer's Handbook, published by Royal Astronomical Society of Canada available for one dollar. New members of NCA will want to know this valuable reference book. It includes the tables of the principal elements of the solar system and of the satellites, the inclination of the equator of each planet to its orbital plane, dimensions of Saturn's rings, the predictions for the minima of Algol, and how to correct for the proper time, plus many more bits of ready information.

Ask Mr. Cornelius to reserve one for you by phoning ..... 560-1393.