MD-DC JUNIORS REPORT

On Saturday, September 17, the Md.-D.C. Juniors met in the Chevy Chase Library, our new meeting place, to hear Mr. Robert McCracken speak on the Grazing Lunar Occultation experiments. He explained how the 'expeditions' worked and played a tape of the unreduced data from the May occultation at Virginia Beach.

- Mark S. Goldberg

Library,
Naval Observatory
Washington 25, D.C.

☆ STAR DUST

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THE NASA LUNAR ORBITER PROGRAM

Martin J. Swetnick

With the Lunar Orbiter Program so much in the news lately NCA is very pleased to have Dr.Martin J. Swetnick, the Lunar Orbiter Program Scientist, as the October Speaker.

The NASA Lunar Orbiter Program has as its broad objective the acquisition of information of various terrain types on the lunar surface through photography for usein the selection of suitable sites for the manned Apollo landings. The first in a series of five lunar Orbiter missions has been recently completed. A progress report on the mission will be presented. Mission objectives and the means of achieving these objectives will be discussed. A number of Lunar Orbiter photographs obtained during the mission will be shown.

Martin J. Swetnick is presently the Lunar Orbiter Program Scientist at NASA Headquarters. He is -(Cont'd. p.2)

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CALENDAR

OCTOBER 1 THE NASA LUNAR ORBITER PROGRAM by Dr. Martin J. Swetnick in the Interior Department Auditorium at 8:15 P.M. (The Interior Department is located on D. St. between 18th and 19th Sts.) Business meeting after the lecture.

DINNER WITH THE SPEAKER at 6:15 P.M. For further information and reservations, please call: Mr. Anderson Cl 6-6324

1 General Meeting of the Junior Division at 7 P.M. in the Dept. of Interior Auditorium. All juniors are urged to attend.

8 MD.-D.C. JUNIORS meeting at 2 P.M. in the Chevy Chase Library, 8005 Conn. Ave. in Chevy Chase, Md. Leith Holloway will speak on "Computers in Science and Astronomy."

7,14,21,28 TELESCOPE MAKING CLASS at the Chevy Chase Community Center from 7:30 to 10:00 P.M. with Hoy Walls.

14 OBSERVING NIGHT at the NCA Five Inch Telescope on the grounds of U.S. Naval Observatory, with Larry White, from 8:30 to 10:30 P.M.

14,28 TELESCOPE MAKING CLASS at McLean High School, McLean Va. with Grady Whitney.

15 DISCUSSION GROUP ON COMETS to be led by Mr. Henry Wilson in room 2062 of the Commerce Department at 8:15 P.M.

Dr.Martin J.Swetnick-Cont'd.from p.1.

responsible for the planning, coordination, and management of scientific investigations of the moon from unmanned spacecraft in orbit about the moon. Before joining NASA in 1960 he spent two years with the Defense Atomic Support Agency planning high altitude nuclear weapons effects tests. From 1956 to 1958, he actively participated in the IGY program while he was an assistant research professor of physics at the University of Maryland. He developed and operated cosmic ray experiments at the north and south poles and at mountain altitude laboratories in Canada and the United States. He spent four years in industry developing a variety of radiation detectors. He earned a B.A. in physics at Brooklyn College and a M.S. and Ph.D. in physics at New York University. His major fields of interest are cosmic rays, radiation physics, and the application of geophysical and geological techniques to the investigation of the moon and the planets.

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SEPTEMBER LECTURE - SATELLITE METEOROLOGY

According to our September speaker, Mr. McClure Johnson, of the National Environmental Satellite Center of E.S.S.A., large storms are better organized than previously thought before the TIROS satellites started taking pictures of the atmosphere from space. Giant storms (or cyclones) display spiral cloud bands extending hundreds and even thousands of miles away from their centers. Warm and cold fronts,vorticity centers, anticyclones above tropical cyclones, fog, the intertropical convergence zone, mountain waves, thunderstorm tops, and many other meteorological phenomena are clearly shown in TIROS photographs. Since cyclones and bad weather are here to stay, so are weather satellites. -- Leith Holloway

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NEW MEMBERS

The following applied for membership at the meeting of 10 September:

Joint	Worth and Jessie O. Crowley 4228 Albermarle St.N.W. Washington,D.C. 20016	Junior....	Howard W.Bielich 3410 79th Ave. Forestville, Md. 20028
Regular...	John R. Comulada, Jr. 7103 Decatur St. Hyattsville, Maryland	Junior....	James Kenneth Crowley 318 South Fairfax St. Alexandria, Va.
Regular...	Fred B. Jepson 610 Greenbriar Dr. Silver Spring, Md., 20910	Junior	Thomas P. O'Brien 7808 Helena Pl. Forestville,Md. 20028
Regular...	Chuck Squire 1302 Earnestine St. McLean Virginia	Junior	Eugene Peters 4406 Edgefield Rd. Kensington, Md. 20795

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HELP.....

Our STARDUST editor of almost six years standing, Ellen Stolarik, is actively seeking a successor. Interested members may contact her at 336-4321.

Sam Feild, who has for many years done the photographic preparation of STARDUST is finding it increasingly more difficult to continue this work. He would appreciate speaking with any member interested in this aspect of the publication of STARDUST. Sam may be reached at 256-6138.

FINANCIAL STATEMENT - 1965-66 ... 30 June 1966

INCOME		EXPENSES	
Dues	$1,223.94	Treasurer	$ 15.22
Observers Handbook	55.00	Publicity	18.50
Graphic Timetable	10.75	Star Dust	397.51
Juniors	732.50	Sky & Telescope	667.84
Telescope classes	200.00	Juniors	730.50
Observers manual	50.00	Monthly meetings	155.60
Other	3.70	Miscellaneous	
Total 1965-66	$2,275.89	Shirer Mem. Fund	(10.00)
		Graphic Timetable	(30.25)
		Observers Handbook	(50.01)
Fund from 1964-65	316.35	Directory	(22.50)
	$2,592.24	Observers manual	(50.00)
		Astro.League dues	(36.50)
Less 1965-66 expenses	2,194.43	Total miscellaneous	209.26
Balance 30 June	$ 397.81	Total 1965-66	$ 2,194.43

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THE STORY OF SIRIUS B

Sirius has contributed to astronomical research ever since 1718 when it was involved in the discovery of proper motion of stars by Sir Edmund Halley. Our June speaker Mr. Irving Lindenblad of the U. S. Naval Observatory recounted the scientific history of Sirius A, the brightest star in the sky excepting the sun, and its small dense companion,Sirius B. As early as 1844 Bessel had predicted that Sirius and Procyon were binaries on the basis of their winding paths through the sky, and in 1862 Alvan Clark, Jr. observed Sirius B optically.

Sirius B has a density roughly 50,000 times that of the sun. Before its discovery Eddington had forecast the existence of such super-dense white dwarf stars. In 1925 Walter Adams at Mt. Wilson Observatory confirmed the Einsteinian gravitational red shift in the spectrum of dense stars by observing Sirius B. These observations of Adams, the orbit of Sirius B according to van den Bos, and the theory of degenerate stars by Chandrasekhar yield conflicting values for the mass of this white dwarf. Modern observations indicate that Sirius B has a mass of three quarters that of the sun and exhibits a red shift corresponding to 60 km/sec. or three times Adams' value which is now thought to be in error because of haste prompted by the desire to confirm Einstein's theory as early as possible.

Many astronomers have speculated that Sirius B itself is double in order to explain the discrepancies in the mass estimates, but no companion to this star has yet been observed by any means. It is difficult to observe Sirius B, photograph its spectrum, measure its brightness, and determine its position because of the great brilliancy of Sirius A. The best method for observing Sirius B is to place a hexagonal mask overthe telescope's objective. This mask converts the large circular diffraction pattern of Sirius A into a 6-pointed figure. Then Sirius B can be seen in one of the concave indentations between two of the six cusps. Mr. Lindenblad uses 35 evenly spaced parallel wires across his hexagonal mask on the 26-inch refractor at the Naval Observatory. These wires create a string of tiny diffraction images on either side of Sirius A which enable him to locate the exact center of the extended primary image of A. In addition, he can predict the brightness of these secondary images of Sirius A by theory, and these points of light provide artificial comparison stars for determining the brightness of B which he estimates to be about 8.5 by this method.

The separation of Sirius A and B is increasing and is now close to its maximum value of about eleven seconds of arc. Many amateurs with large telescopes can observe Sirius B using a hexagonal mask. -- Leith Holloway