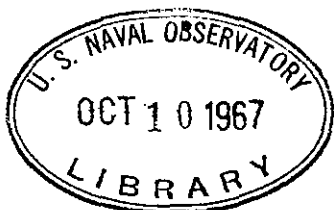


MD.-D.C. JUNIORS ATTENTION

Attendance at Md.D.C. Juniors meeting have been disappointingly small lately. In order to benefit from programs designed for juniors, members MUST attend meetings. If you are not interested in our programs, please come to our meeting on October 14 and let us know what kind of activities you want. I hope to have more junior members participate in lectures and discussions this year.

- Leith Holloway
Director
Junior Division



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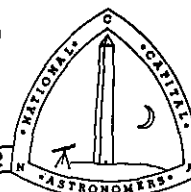
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October 1967

Vol. XXV, No. 2

THE MAYAN CALENDAR

October's speaker will be Dr. John J. Ruiz, an outstanding amateur astronomer who has distinguished himself in variable star work (he consistently turns in prodigious numbers of observations to the American Association of Variable Star Observers) and in photoelectric photometry. Many of us in N.C.A. have heard him speak on the latter subject at various conventions, and have been treated to an entertaining and fascinating presentation of one more account of amateur penetration into the professional realm.

Few of us know of another of Dr. Ruiz' hobbies, that of astronomical archaeology. He has studied the Mayan calendar in some detail, and will present us with an illustrated talk on the workings of that calendar, including a model which he has constructed. During his ramblings in Mexico, he discovered a document giving details of an almost forgotten French expedition in 1882 to observe a transit of Venus. Using a theodolite, he was able to arrive at the same position used by the expedition.

- Continued on page 2.

CALENDAR

- OCTOBER 6 OBSERVING AT THE FIVE INCH on the grounds of the U.S. Naval Observatory from 8:00 to 10:00 P.M. with Larry White.
- 7 GENERAL MEETING OF JUNIOR DIVISION at 7:30 P.M. in Dept. of Commerce Auditorium. All Juniors are urged to attend.
- 7 THE MAYAN CALENDAR---speaker: Mr. John J. Ruiz, at the Dept. of Commerce Auditorium, 8:15 P.M.
- 7 DINNER WITH THE SPEAKER at 6:00 P.M. at Bassins (corner of 14th St. and Pennsylvania Ave). For reservations, call: Sterling Anderson CI 6-6324 prior to Saturday.
- 14 MD-DC JUNIORS MEETING at 2:00 P.M. at the Chevy Chase Library, 8005 Connecticut Ave. Activity planning. For further information, call: Leith Holloway, 362-1961.
- 14 MD-DC JUNIORS MEETING at 2:00 P.M. at the Chevy Chase Library, 8005 Connecticut Ave.
- 15 P.G. COUNTY JUNIORS MEETING at 2:00 P.M. at the home of Ted Noble.
- 21 DISCUSSION GROUP meets in Room 2062 of Dept. of Commerce building, 14th St. Topic will be a review of the summer's conventions, and some of past years. Slides will be shown of the 1967 Stellafane Convention.
- 6,13,20,27 TELESCOPE MAKING CLASS at the Chevy Chase Community Center, 7:30 P.M.
- 28 STAR PARTY and PICNIC AT Manassas Battlefield Park. Take Route 66 west; take the exit marked Manassas; (rte. 234) turn north. After entering the park area, take a left and follow the road to its end. The picnic area is west of route 234, opposite the Visitor Center, and is the one nearest Chinn House. Picnic will get underway at 4:00 P.M.; please plan to arrive before dark, since the park closes then.

THE MAYAN CALENDAR—Continued from page 1.

Dr. Ruiz' account of his own field work should provide an interesting evening, and might possibly stir up some interest in N.C.A. members to do a bit of investigation on their own.

Born in Cuba, John J. Ruiz, became an American citizen soon after World War I. An electrical engineer, he received his E.E. degree from Cornell in 1917, an M.S. in physics from Union College, Schenectady, N.Y. in 1933, and his Ph.D. in E.E. from Renssler Polytechnical Institute in 1935. He worked for the State of New York as an electrical engineer, retiring in 1962.

An article in Sky and Telescope in 1948 by G.E. Kron sparked his interest in astronomical photoelectric photometry, although an interest in astronomy had been handed down through three generations of the Ruiz family. His activities in P.E.P. soon carried over from the amateur to the professional realm, where he has published in several journals: Annales des Astrophysique, Journal of the Royal Astronomical Society of Canada, Publications of the Astronomical Society of the Pacific, and of course, S&T.

We look forward to hearing what he has to say in this more recent avocation.

-----J. Hudson

SEPTEMBER LECTURE - GRAZING LUNAR OCCULTATIONS

The grazing lunar occultation program of the U.S. Naval Observatory seeks to obtain data with which to answer fundamental questions about the orbit of the moon. Astronomers need to know precisely where the center of the visible disk of the moon is located. This is not a trivial problem since the moon's edge is not a perfect circle. The center of the moon must be established before a mean datum level can be determined upon which to base heights on the moon. At present, we can state mountain heights only in kilometers above the surrounding plains. Furthermore, the exact latitude of the moon cannot be predicted accurately. The theory of the motion of the moon has been well established, but, unfortunately, the values of the coefficients in the moon's orbital equations are not known accurately enough. Finally, the discrepancies between Universal Time, measured by the earth's rotation, Ephemeris Time, determined by the moon's motion, and Atomic Time, obtained by atomic clocks, has not yet been resolved.

Timings of grazing occultations did not become useful until the publication of lunar limb charts by Watts of the Naval Observatory. There are 1,800 diagrams in this massive volume - one for every one-fifth of a degree of arc along the moon's edge. Observations of grazes will enable astronomers to detect errors in these limb charts. Preliminary results from the graze program suggest that there are some systematic errors in the predictions resulting from either errors in the profiles given by Watts or errors in the calculation of the lunar orbit and librations. Fortunately extreme observing accuracy is not required in this work because the limit of precision possible is imposed by the limb charts themselves.

A successful grazing lunar occultation expedition obtains sufficient timings to derive a profile of the lunar limb in enough detail to compare with the profile predicted by the Watts charts. From an analysis of the discrepancies between the predicted and observed locations of the edge of the moon information about the exact position and orientation of the moon can be obtained. Data from a great many expeditions will be needed to answer all the questions now being asked by astronomers. Observations of grazes will be needed for many years. Therefore, this is an ideal observing program for amateur astronomers. One is lucky to observe two or three grazes a year within 100 miles of home. Thus, many amateur observing teams are needed throughout the country to gather sufficient data for a meaningful analysis. The Naval Observatory staff is designing a prototype graze observing setup suitable for amateurs. (Cont'd. p. 3)

MEET THE VICE PRESIDENT



Jerome Hudson

The NCA Vice President this year is the very energetic Jerome Hudson. Mr. Hudson was born in North Carolina, raised in Iowa, Maryland, and later--Texas, where he acquired an early interest in astronomy which was nurtured by dark and frequently clear skies. He majored in mathematics at Rice University and following graduation in 1963, he spent three years in the Army: one in Korea with the 13th Engineer Battalion, and two at Fort Belvoir with the Automatic Data Fold Systems Command. It was during this time that Jerry joined NCA and found in his words "a friendly stimulus for my interest in astronomy and telescope making."

He is now working at the National Bureau of Standards as a mathematician and systems programmer and going to school part time at American University working toward an M.S. in physics.

FINANCIAL STATEMENT 1966-67 19 July 1967

INCOME		EXPENSES	
Dues	\$1,314.15	"Sky and Telescope"	\$ 681.01
"Observer's Handbook"	60.30	"Star Dust"	42.42
"Observe"	24.00	Monthly meetings	63.35
"Graphic Time Table"	9.35	"Observer's Handbook"	50.40
Juniors	607.50	Observatory	52.00
		Astro. League dues	40.00
Total	\$2,015.30	"Graphic Time Table"	37.50
		Treasurer	25.87
Fwd. from 65-66	397.81	Publicity	17.25
		Juniors	570.75
		Total	\$1,980.55
Less expenses	1,980.55		
Balance	\$ 432.56		

SEPTEMBER LECTURE -GRAZING LUNAR OCCULTATIONS - Cont'd. from p. 2

The recording equipment, clocks, cables between observing stations and so forth must be reliable but nevertheless relatively inexpensive. Amateurs use their own telescopes in this work. If you wish to participate in this program, write our speaker, Mr. Peter Espenschied, at the Naval Observatory to be put on their mailing list. Mr. David Dunham, our second speaker, is in charge of predictions for grazing occultations.

- Leith Holloway

NEW MEMBERS

APPLICATIONS FOR MEMBERSHIP RECEIVED AT THE SEPT. MEETING

REGULAR

Ellsworth J. Johnson
2015 Cascade Road
Silver Spring, Maryland 20902

Sidney P. Opie
2115 Ellis Street
Silver Spring, Maryland 20910

JOINT

James W. Elkins and James Jr.
1436 Oakview Drive
McLean, Virginia 22101

Robert and Peter Frandsen
10311 Folk Street
Silver Spring, Maryland 20902

Kenneth and Barbara Severin
604 Alma Street
Vienna, Virginia 22180

ERRATUM

In the September issue of Stardust, I did David Dunham the disservice of listing his university as Princeton. Instead it is Yale. My sincere apologies to both David Dunham and the Yale Astronomy Department!

- Jerry Hudson

"ONCE EVERY THOUSAND YEARS"

"If men could see the heavens but once every thousand years," is the central theme of a story by Isaac Asimov, entitled "Nightfall." In Dr. Asimov's version, the inhabitants of a multiple star system enjoyed darkness only once every few millenia, when the components of the system were lined up so that their planet lay half in darkness, and there suddenly became such a thing as night. He makes what is perhaps not a too-far-fetched prediction: (Continued on page 4)

"ONCE EVERY THOUSAND YEARS" - Continued from page 3

The citizens of this world go stark, raving mad. They burn all of their buildings in an effort to restore daylight, and ruin their whole civilization. We in our own world seem to have the same dread, although we have night much more frequently. Our literature betrays a fear of the dark, for in stories passed down through the ages, the most terrible creatures stalked the earth at night; Grendel broke into the longhouse and devoured sleeping warriors; the witches gathered on Walpurgis Night; and the screech owl put

...the baleful wretch that lies in woe
In fear of a shroud.

Twentieth-century man has seemingly found the answer. In his cities there is no more night. Awesome arrays of mercury vapor lights line the streets and places of business; advertising signs can be seen for miles. Seemingly the light of knowledge and science has not completely conquered the terrors of the night; we must do it also with sheer candlepower.

Now, to an observer of the heavens, this is not a little disturbing. The lesson was all the more brought home to me during our recent spell of cloudy and hazy weather, which seemed to last a thousand years, though in reality it was fifty-nine days until the heavens in their full glory could be seen again. The sight of the Milky Way in Cygnus, Scutum, and Sagittarius was so much more beautiful because of the increasing rarity of getting a glimpse of it. But even when our spell of cloudiness was ended, I had to travel some forty miles outside of Washington in order to see the sight the way it should be viewed, and to photograph it with my camera.

Reflecting on the panic caused by the recent power failure from New York to Boston, I cannot doubt that we have come to demand our bright city lights, and that we will strive to set up more of them to keep away Grendel. Though the power failure should have rated as no more than an inconvenience, and naturally a cost to the industries and services relying on electrical power, there seemed to be a vague uneasiness in all the people who were caught in it—could it be a fear of the dark? It is disconcerting that the human solution to problems of fear is to eliminate the object of that fear, not the dread itself. Thus it is sometimes that we go to war because of what we fear an enemy might do to us, not because of what he actually has done. In retrospect, such action is often justified, but it seems also wasteful.

It is somewhat with tongue in cheek that I put forth this thesis of fear of the dark. But no matter what the human motivation, the doing away with darkness appears to be an eventuality. Could it be that some day only astronauts will speak of the Milky Way, the Great Nebula in Orion, and the Double Cluster in Perseus?

- Jerry Hudson, Vice President
