MAY LECTURE - SOLAR X-RAY AND ULTRA-VIOLET INVESTIGATIONS -Cont'd.from p.3

last March 8. The OSO obtains an X-ray spectrum evay 15 minutes. Pictures taken at X-ray wavelengths (44 to 60 Angstrom units) have a resolution of 20 arc seconds. Perhaps in ten years NASA scientists can obtain X-ray pictures of one arc second resolution which is the quality of present H alpha photographs of the sun.

The character of the X-ray spectrum changes dramatically with the occurrence of solar flares. For example, iron and magnesium lines increase in intensity. Variations in the X-rays with a period of about 28 days, of course, result from the rotation of the sun.

X-ray telescopes require special optics because these wavelengths are absorbed by all glasses and reflect very poorly. X-rays reflect best at high angles to optical surfaces, and for this reason the outer (far off-axis) zones of parabolic and hyperbolic curves are used in the telescope design. These so-called grazing incidence optics are very difficult to grind, polish, and figure.

The research in this field is so recent that no new theories have yet evolved from these investigations. In time, Dr. Neupert is confident that new understanding of the solar corona will result from this work.

—Leith Holloway

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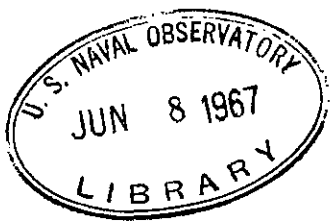
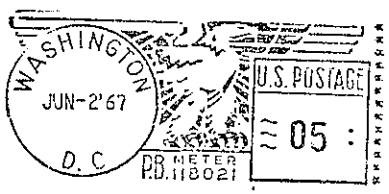
ELECTION OF OFFICERS AT JUNE MEETING!





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★ STAR DUST

June 1967 Vol. XXIV No. 10

A NEW LOOK AT THE OLD MOON

Dr. Ernst Öpik

NCA is indeed priviledged to have one of its own members—the internationally known Astrophysicist, Dr. Ernst J. Öpik as the June lecturer.

Dr. Öpik has sent the following abstract of his lecture which serves better than any other introduction to let you see what an interesting evening this will be:

"A New Look at the Old Moon"..."There are two major problems in lunar research: the study of its present properties and structure of its surface; and the mystery of its origin. The latter will never be solved completely, its traces being lost in the depths of time. Yet the present state is connected with the original one by a chain of evolution which can be deciphered to a certain extent.

New data and their analysis are used for this purpose. Cratering theory and the laws of interplanetary encounters, applied to the impact craters on the moon, tell us that the old pre-mare craters covering the lunar highlands could have been produced by slow projectiles which built the moon at a distance of 3-6 earth radii, impacting with a velocity of 3 km/sec. into a relatively soft and hot surface; and that the post-mare craters were produced by interplanetary projectiles, hitting a hard cold surface(like granite) at velocities of 20-40 km/sec. (continued on page 2.)

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CALENDAR

JUNE 3——— A NEW LOOK AT THE OLD MOON by Dr. Ernst J. Öpik in the Interior Department Auditorium at 8:15 P.M. (The Interior Dept. is located on D St. between 18th & 19th Sts.) Business meeting after the lecture. Election of officers and presentation of the Science Fair Awards.

DINNER WITH THE SPEAKER at 6:00 P.M. For information and reservations, please call Mr. Anderson CL 6-6324.

3——————— GENERAL MEETING OF JUNIOR DIVISION in the Interior Department Auditorium, 7:30 P.M. Election of Junior officers for the coming year. All Juniors are urged to attend.

17——————— EXPLORING THE SKY PROGRAM with the National Park Service in Rock Creek Park at picnic grove #16 on Glover Road, South of Military Road, 9:00 P.M. All NCA members urged to attend and bring telescopes. For additional information, call Bob McCracken OL 2-5395.

2,9,16——— TELESCOPE MAKING CLASS at the Chevy Chase Community Center with Hoy Walls from 7:30 to 10:00 P.M.

30——————
JULY 1,2,3,4— NATIONAL ASTRONOMICAL LEAGUE CONVENTION on the Georgetown University Campus. More information on page 2.

JULY 15,29—— EXPLORING THE SKY PROGRAM in Rock Creek Park at 9:00 P.M.

A NEW LOOK AT THE OLD MOON - Continued from page 1.

"The moon was most probably built from a ring of fragments and rubble inside 'Roche's limit' or 2.86 earth radii. How the material got there is open to conjecture. But then, clumping due to cohesion (a new viewpoint, for the first time treated quantitatively) produced a great number of moonlets which got out of the 'hole' (Roche's limit) by way of tidal action. Within about 350 years (only!), all this material emerged and, being originally built into six (approximately) rings, produced some six moonlets at the edge, with intervals of about 70 years. These moonlets were 'chasing each other', moving out under tidal action, overtaking and colliding, until finally the moon was built, at 4.5-4.8 earth radii, hot (1,200-1,300 deg. K) with molten pools rapidly solidifying on the surface. The highland craters were produced from minor fragments of collisions of the six(+) moonlets, while the maria were melted into lava seas later by major impacts. The story is supported by documental evidence never produced before."

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ASTRONOMICAL LEAGUE CONVENTION - JUNE 30, JULY 1,2,3,4

We are very fortunate to have the National Astronomical League Convention right here in Washington this summer. It is sincerely hoped that all NCA members will take advantage of this opportunity to attend a national convention and that as many as possible will offer their services in whatever capacity they can.

The convention will be held on the Georgetown University Campus and will begin Friday evening, June 30, at 6:00 P.M. in Copley Lounge. To reach Copley Lounge, enter the Campus through the main gate at "O" Street and immediately turn right and follow signs pointing to the Lounge. There you will find the Registration desk and exhibits. The Georgetown Observatory will also be visited on Friday evening.

After 8:00 A.M. on Saturday, the Registration desk will be in the Science Building. All sessions will be held at the Science Building.

The Registration fee for the entire convention is $2.00 for an individual and $3.00 for a family. There will be an additional charge for some special events as listed below:

Smithsonian Trip ---Saturday, July 1, 1967..... $1.00

Goddard Space Flight Center Trip, Sunday July 2, 1967... $2.00

Convention Banquet, Sunday July 2, 1967 ..... $5.00

Naval Observatory Trip,Monday, July 3, 1967 ..... $1.00

Proceedings of the 1967 Astronomical League General Convention $3.00

Due to the fact that the banquet will be held on a holiday weekend, we are required to advise the caterers on Wednesday, June 28 (two days prior to the convention) the number of persons that will attend.

If you wish to register or sign up for any of the special trips, make your checks payable to: Astronomical League Convention and send to G.R. Wright, 202 Piping Rock Drive, Silver Spring, Maryland 20904.

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ELECTION OF OFFICERS AT JUNE MEETING

ELECTIONS AT THE JUNE MEETING

Election of new officers for the coming year will be the main order of business at the June meeting, at that time nominations may be made from the floor. The following people have already been nominated:

President ..... Sterling Anderson
Vice President ..... Jerome Hudson
William Winkler
Secretary ..... Mrs. Nora Keel
Treasurer ..... Robert Bolster
Trustee ..... James Sharpe

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NEW MEMBERS

Applications for regular membership were received from the following at the May meeting:

Charles N. Harria
4517 Sangamore Road
Washington, D. C. 20016

Jerome J. Kurkowski
3035 Patrick Henry Drive
Falls Church, Va., 22044

Richard R. Muniz
3629 Barcroft View Terrace
Bailey's Crossroads,Va.22041

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ATTENTION TELESCOPE OWNERS

This summer the National Science Foundation is presenting an Earth-Space Cooperative Study Institute for area science teachers on the Rockville Campus of Montgomery Jr. College. NCA has been asked to put on a star party for these teachers Friday, July 21, at 9:00 P.M. A number of telescopes will be needed to make this evening a success. This is an important way in which NCA can serve the community and also a good way to let interested persons learn more about NCA and its activities. If you can come and bring your telescope, please contact: Ellen Stolarik, 336-4321.

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SCIENCE FAIR WINNER

The winner of the Montgomery County Jr. High Fair was James Crosby of Pyle Jr. High School in Bethesda for a project "Tide Clock."

All the science fair winners have been invited to bring their projects to the June NCA meeting. The fair winners will be awarded certificates.

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MAY LECTURE - SOLAR X-RAY AND ULTRA-VIOLET INVESTIGATIONS

In visible light the disk of the sun is a million times brighter than its corona, but far ultra-violet and X-ray emission from the corona outshines that from the sun's photosphere. For this reason our May speaker, Dr. Werner M. Neupert, and other scientists at the Goddard Space Flight Center study these ultra-short electromagnetic waves to learn more about the sun's corona and its light variations. The corona emits X-rays strongly because of its extremely high temperature of several hundred thousand degrees Kelvin. Why "the kettle is hotter than the fire" has so far not been adequately explained.

Variations in the solar corona can only be observed from space because continuous observations are needed. Eclipse photographs are far too infrequent for learning about coronal variations. The observations are made from the Orbiting Solar Observatories (OSO's), the latest of which was launched (continued on p.4)