

JUNIORS--GODDARD SPACE FLIGHT CENTER TOUR

On May 4th the Va. NCJA, with the Md.-DC Juniors as their guests, had an interesting tour of the Goddard Space Flight Center. Five buildings were inspected during the two and a half hour tour. The first two buildings contained IBM 704 computers for space flight control, a world wide communications center, the Tiros control center, space operations control center and a large satellite and instrumentation display. A very large building where spacecraft, sounding rockets and hardware are manufactured was impressive for its large machinery, percision optical room and fine displays. The last two adjacent buildings were perfectly controlled, dust free environments for testing payloads and spacecraft. After a movie we saw testing facilities ranging from a 110 lb. dynamic balancer to a massive 28' x 40' test chamber capable of reaching temperatures lower than - 400° F and pressures of 10<sup>-6</sup> mm Hg.

Besides this rewarding experience, everyone on the tour received an envelope of gifts from the Center.

\*\*\*\*\* David Coomber\*\*\*\*\*

JUNIOR CONVENTION

The Junior Convention was held on May 4th in room 1851 of the Commerce Dept. A new set of Junior By-Laws, drawn up by Leith Holloway, was ratified.

The main item on the Junior's agenda was the election of officers. All of the NCA Juniors wish to congratulate the following: President Butch Goodwin; Vice President, Travis Taylor; and Secretary-Treasurer, Ellie Matter.

Eleanor Matter

\*\*\*\*\*

MD - DC JUNIORS

Instead of having a regular Md -DC discussion meeting on May 11th we attended the trip to the Franklin Institute in Philadelphia. Eleven members of the Juniors were present on this trip. I'm sure that all of those present found the trip both interesting and rewarding.

The Junior Division held a General Meeting at 7:00 PM on May 4, we did not accomplish all of the business which we had hoped to and so decided to hold some over until June, when a special meeting will be held at 7:00 PM in Rm. 1851. All members are urged to attend this meeting. We plan to continue our old business and then have the initiation of our new officers. We will also have a report on the findings of the Barlow Committee. Douglas Richstone is going to tell us about the work which he has done in preparation for the coming eclipse. We will decide whether the eclipse should be designated as a "World Day" for amateurs to make reports and communicate with other amateurs.

Ernest Goodwin

\*\*\*\*\*

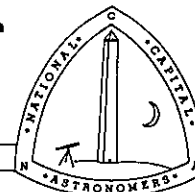
STAR DUST



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, Mrs. John Stolarik, RE-6 4321; Vice President, Ellis Marshall; Secretary, Morton Schiff; Treasurer, Roger Harvey. Trustees: Leo W. Scott, Sam C. Feild, Jr., G. Robert Wright, and James Krebs. Editor, Mrs. John Stolarik. Assistant Editor, Mrs. Ellis Marshall. Junior Division Editor, Ernest Goodwin, WO-6 4058. Astronomy Editor, Alexander L. White. Publicity, Mrs. William Lipscomb. Publicity Distribution, Morton Schiff. Photography and Production, Sam C. Feild, Jr. Deadline: Tenth of each month.

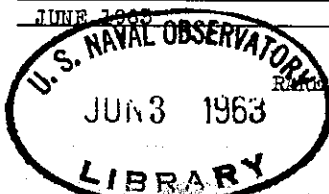
98  
1  
579\*

STAR DUST



JUNE 1963

Vol. XX No. 10



RARE EARTHS IN THE STARS



One of the foremost authorities in the world on the composition of the sun is Dr. Charlotte Moore Sitterly, an astrophysicist with the National Bureau of Standards and the author of many works about solar and atomic spectra. It is with great pleasure that we present Dr. Sitterly as the June lecturer for NCA.

Dr. Sitterly received an A.B. in 1920 from Swarthmore College, where she majored in mathematics, and then promptly went to work as a math computer at Princeton University Observatory. She moved to Mount Wilson Observatory in California in 1925, returned to Princeton in 1928 and then spent 1930 and '31 earning her Ph. D.

in astronomy on a fellowship at the University of California in Berkley. She was a research associate at Princeton when she joined the Bureau of Standards in 1945.

In 1937 she married Dr. Bancroft Sitterly, a Princeton astronomer physicist now chairman of the physics department, at American University. That same year the American Astronomical Society awarded her the Annie J Cannon Medal for her distinguished work. Twelve years later, members of the Royal Astronomical Society of Great Britain broke a 129 year old tradition by electing her their first woman associate. continued on page 2

CALENDAR FOR JUNE

- 1 RARE EARTHS IN THE STARS by Dr. Charlotte Sitterly, Dept. of Commerce Auditorium 8:15 PM. Business meeting follows. Dinner with the speaker at the Occidental Restaurant 6:30 Pm. All members are invited. For reservations call RE 6-4321 before noon Saturday.
- SPECIAL MEETING OF THE JUNIOR DIVISION at 7:00 PM in Room 1851 at the Dept. of Commerce.
- 8 MD - DC JUNIORS MEETING at 2:00 PM at St. Paul's Lutheran Church, 4900 Connecticut Ave. at Everett St. Leith Holloway will lead a discussion on Amateur Astronomical Observations.
- 16 NCA PICNIC AND STAR PARTY at Rock Creek Park near the Nature Center 6 PM. For additional information call RE 6-4321.
- 21 OBSERVING AT THE FIVE INCH on the Naval Observatory ground, with Larry White. 7:30 to 10:30 PM
- 29 EXPLORING THE SKY at Fort Reno Park. Bring your telescope.

## SCIENCE FAIR AWARD WINNERS

Each year the NCA presents awards to students having outstanding Science Fair Projects in the field of astronomy. The NCA award consists of a year's junior membership, subscriptions to Sky and Telescope and Space Science plus a certificate of award. This year's winners will be presented at the June 1st meeting. They have been asked if possible to bring all their projects for all of us to see. Those receiving the awards are:

Christopher Edler, Williamsburg Jr. High, The Moon  
 \*Eleanor Matter, Swanson Jr. High, Jupiter - Great Giant of Them All

Pat Callis, Leonardtown Jr. High, I Followed the Route of Sunspots  
 \*Ernest Goodwin, Woodrow Wilson High, Jupiter  
 \*Harry Barnes, Alice Deal Jr. High, Astronomical Spectroscopy  
 John Stott, Districh Heights, Astrophotography  
 William Ruh, Leland Jr. High, Celestial Observations  
 (\* indicates previous NCA award winners, they will receive only the award certificate this time.) The President and the Educational Committee wish to thank all the NCA members who gave of their time to judge these fine amateur astronomers projects.

\*\*\*\*\*

## NCA HOSTS JUNIOR ACADEMY

On May 3rd, the NCA entertained the Washington Junior Academy of Sciences at Fort Reno Park with a special program featuring the moon in a beautiful sky. About a hundred young people explored the sky and took many pictures of the gibbous moon with the help of NCA members Bob McCracken, Duane Baugher, Sam Field, Leith Holloway, James Krebs, Leo Scott, Norman Sperling, and Thomas Wells.

\*\*\*\*\*

## TRIP TO PHILADELPHIA

On Saturday May 11th a bus load of NCA members and their guests made a trip to Philadelphia to visit Franklin Institute and the Fels Planetarium. On the way they stopped at Edmunds Scientific, where they were treated to coffee and donuts. The group enjoyed browsing around the store and were each given an envelope of gifts. The trip can indeed be listed as a success. We regret those that had to be left behind because they waited until too late to make their reservations. Are there other trips you would be interested in making?

\*\*\*\*\*

continued from page 1

A group of fourteen chemical elements having atomic numbers 58 to 71, called the lanthanides, has long been known as the "rare earth" group. When the first spectrum of uranium was observed in a magnetic field, the splitting of individual lines into well-defined patterns proved conclusively that this element was the third in a second group of rare earths known as the actinides, having atomic numbers from 90 to 103.

Our knowledge of these very complex rare earth spectra is still limited. Enough is known, however, to indicate that they are of great interest to the astrophysicist. A large laboratory program is in progress to extend our meager knowledge of these complex spectra. A study of the structure of these atoms and ions as revealed by their spectra is a most challenging one. The full astrophysical significance of these elements is still unrealized and provides a rewarding incentive to the spectroscopists of the present space age.

\*\*\*\*\*

## ELECTION RESULTS

At the May meeting the following people were elected to serve as officers in NCA for the coming year.

President: Mrs. Ellen Stolarik  
 Vice Pres.: Mrs. Margaret Noble  
 Secretary: Theodore Noble  
 Treasurer: Arthur Etienne  
 Trustee: Robert McCracken (four year term)

\*\*\*\*\*

## May Lecture --- ASTRONOMICAL APPLICATIONS OF IMAGE INTENSIFIERS

Our May speaker, Dr. Lawrence Frederick, Director of the Leander-McCormick Observatory of the University of Virginia, described his work with image intensifiers which have permitted him to study fainter stars than ordinary photographic film would have allowed. While photographic films have a maximum quantum efficiencies of only ten percent, photosensitive electron emitting surfaces attain efficiencies in excess of twenty per cent. (The quantum efficiency of a light sensitive material is the ratio of the number of chemical or electrical reactions occurring to the number of photons required to produce them.) Thus astronomers can gain a two-fold increase in light gathering sensitivity if they can focus the electrons emitted by a photosensitive cathode onto a phosphor screen where a bright image similar to a TV picture is formed. The price astronomers pay for this increase in light sensitivity is loss of image resolution. Resolution can be improved by replacing the phosphor screen with a photographic plate. However, since the electrons must be emitted by the photocathode and focused in a high vacuum, the film has to be sealed in a tube with the cathode, and the astronomer must break open the expensive image intensifier tube in order to retrieve and develop the film after exposure.

Dr. Frederick spent four years at Lowell Observatory in Flagstaff, Arizona recording the infrared spectra of dim carbon stars such as W Orionis down to the 11th magnitude with the 24-inch reflector there. He believes that these stars with their wide bands of molecular carbon in their spectra are just "more super" supergiants. He hopes to continue this work at the University of Virginia. He has also studied the ammonia in Jupiter's atmosphere with the help of image intensifiers. In this work the spectra of Jupiter's four bright moons were obtained while they were being occulted by the planet's atmosphere.

Leith Holloway

\*\*\*\*\*

## EXPLORING THE SKY

Each summer the NCA in co-operation with the National Park Service puts on a series of starparties for the public. These programs are one of our main activities during the summer months. By supporting these programs we are performing a worthwhile public service and also have a wonderful opportunity to advertise the NCA and recruit new members. The participation of all our members is needed, come to as many of the sessions as you can and bring your telescope. The programs are held at Fort Reno Park, 40th and Chesapeake streets, NW. and begin at 9:00 PM. If the evening is cloudy a slide-illustrated talk will be substituted and if raining at the scheduled time, the event will be cancelled. The schedule for the next two months is Saturday June 29; Saturday, July 13; and Saturday, July 27. For further information, call R. H. McCracken at OL 4-3321.

\*\*\*\*\*