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 pointed out that the dimmest known star, Van Biesbroeck's star, is 400,000 times dimmer than the sun that that such a star revolving around the sun could remain undiscovered. (It would appear as a tenth magnitude star at a distance of 46,000 A. U.) However, he feels that a stellar companion of the sun probably would produce detectable perturbations in the motions of the outer planets and in the path of the sun in space.

He concluded the lecture by showing a photograph of a globular cluster which he called the ultimate multiple star.

Leith Holloway

YOUR OBSERVATIONS

Due to the lateness of the hour at the February meeting we did not get a chance to call for reports on your observations. Keep track of all astronomical observations and other atmospheric phenomena that you observe. We will ask you to tell about them at the March Meeting.

COMET IKEYA

During the first two weeks in March comet Ikeya (fourth magnitude) will be visible shortly after sunset. For additional information call Larry White 533-3261.

MD - DC JUNIORS

On February 9, the MD - DC NCJA met at St. Paul's Lutheran Church. Due to the absence of Leith Holloway, we had a much asked for discussion of Astro-photography.

It was then brought up that we take a field trip and decided that we should attend a planetarium lecture at the Montgomery Jr. College Planetarium.

Also discussed were the problems of transportation for the members to the meetings and publicity of the lectures. We are at present working on some ideas brought up concerning these problems.

Ernest Goodwin

VIRGINIA JUNIORS

On Friday evening, February 6, eleven members of the Virginia Juniors were treated to a lecture by Ernest Ott, from the Division of Astronomy and Solar Physics Programs, NASA. Mr. Ott talked about the role of the engineer in space technology as opposed to that of the scientist. He also gave detailed descriptions of five NASA satellites; Orbiting Solar Observatory (OSO), Orbiting Geophysical Observatory (OGO), Nimbus, Mariner, and Ranger. Accurate one-eighth scale models of these satellites were utilized in the description. Mr. Ott described the sequence of probes to the moon, but expressed pessimism that man could develop in the near future rockets capable of traveling an appreciable fraction of the speed of light for travel to the more remote planets. He stated that NASA has been successful in about two thirds of all attempts. A concluding Questions and Answer period covered a wide range of topics.

Douglas Lind

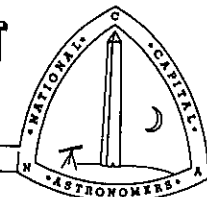
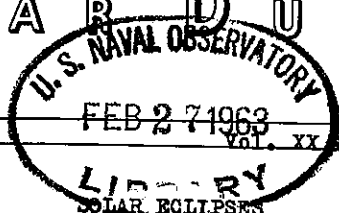
JUNIOR CONVENTION

The Maryland, D.C. and Virginia Juniors will hold a convention March 2, in Room 1851 at the Dept. of Commerce, before the regular NCA meeting. Starting at 7:00 PM, the meeting will provide an opportunity for these groups to talk over ideas and suggestions for improving interest and providing better programs for the junior meetings. All members are encouraged to bring observations.

PHILADELPHIA, FRANKLIN INSTITUTE FELS PLANETARIUM TRIP:

We are planning a bus trip to Philadelphia on May 11. This would be an all day trip to Franklin Institute and Fels Planetarium with a possible stop at Edmund Scientific on the way. More information will be available at the meeting. Please keep this date in mind and plan to make the trip with us.

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March
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The March lecture meeting will feature a long time friend of the NCA. Reverend Francis J. Heyden will speak on a topic on which he is a recognized world authority Solar Eclipses. He will discuss what observations can be made, as well as how to make photographs, and what methods of developing will give the best results for your eclipse pictures.

No one can be better equipped to discuss solar eclipses than Father Heyden, who has led expeditions to the far corners of the world to photograph the eclipsed sun, as well as to conduct other valuable experiments.

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CALENDAR FOR MARCH

- 2 SOLAR ECLIPSES by Reverend, Francis J. Heyden, S. J. Dept. of Commerce Auditorium 8:15 P.M. Business meeting follows.
- DINNER with the speaker, Occidental Restaurant 6:15 PM.
- JUNIOR CONVENTION at 7:00 PM in Room 1851, Dept. of Commerce.
- TRUSTEES MEETING 7:30 Dept. of Commerce Auditorium.
- 5 ASTRONOMY REVIEW COURSE final session 8:00 PM at the D.C. School Planetarium, Cardozo High School, 13th and Clifton Street, NW., Room 301.
- 8,22 VIRGINIA JUNIORS meeting at the Westover Baptist Church, Room 234, 1125 N. Patrick Henry Drive, Arl., Va. 8 PM.
- 9 MD - DC JUNIORS meeting at 2:00 PM at St. Paul's Lutheran Church, 4900 Connecticut Ave. at Everett St. Subject: Stellar Spectroscopy (Leith Holloway 362-1951)
- 16 DISCUSSION GROUP at 8:15 PM in Room 1851 at the Dept. of Commerce. Bob Wright will lead a discussion on plans for the July 1963 Total Eclipse of the Sun. (see page 2)
- 22 OBSERVING AT THE FIVE INCH with Larry White on the grounds of the U.S. Naval Observatory. 7:30 to 10:00 PM.
- 1,8,15,22 MAKUTOV CLUB at the Chevy Chase Community Center with Hoy Walls from 7:30 to 10:00 PM. Calendar continued 2

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6,13,20,27 TELESCOPE MAKING CLASS at the Chevy Chase Community, with Hoy Walls from 7:30 to 10:00 PM.

6,13,20,27 TELESCOPE MAKING CLASS in Bladensburg from 7:00 to 9.00 PM with William Isherwood.

Lecture Con't.

Anyone who is planning a trip to view the July 20th Total Eclipse of the sun will find this lecture a must. Father Heyden promises not only his spoken words, but some mimeo sheets with his written words, so we will not forget these all important facts.

Father Heyden has studied and taught at Harvard University, He has also taught at St. Peter's College in New Jersey and Manila Observatory. Since 1945 he has been stationed at Georgetown University, where he is now Head of the Department of Astronomy. He is well known, not only for his Solar Expeditions (May 1947, May 1948, February 1952, June 1954, and December 1955,) but also for spectroscopic research on the sun, planets and metals of astrophysical interest. He has conducted special studies on the colors of pulsating stars and position measurements of lunar craters for precise moon mapping.

ECLIPSE DISCUSSION GROUP ** March 16

The March discussion group would like to hear about your problems and plans for the July 20th, 1963 Total Eclipse of the Sun. We would like to have everyone present who is planning on going "north" to see this astronomical event. Tell us about your site plans, proposed equipment, and your proposed eclipse observing program.

Bring your past eclipse pictures to show what can be done.

NEW MEMBERS JUNIORS

Mark Hageman
6607 Burgess Place
District Heights 28, Md.
RE 5-8870

Billy J. Kipper
7907 Halleck Street
District Heights 28, Md.
RE 6-4470

REGULAR

Joseph S. Eichelberger
4950 Sargent Road, N.E.
Washington 17, D.C.
LA 6-5036

Dermond R. Hienmiller
3922 First Street, S.W.
Washington 24, D.C.
JO 3-5890

Dr. William R. Perl
8411 48th Ave.
College Park, Md.
474-3839

ASTRONOMICAL LEAGUE CONVENTION

We have received an invitation from the Amateur Telescope Makers of Boston to attend the 1963 General League Convention
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at the University of Maine in Orono. The high light of the convention will be the total solar eclipse. Rooms will be available on campus from July 15 through July 21, rates are \$3.00 per person in a double room and \$5.00 for single occupancy. Members who plan to camp out will find Lamoine State Park the nearest public park to Orono. For a serious observing program you can reserve a site on Mt. Cadillac. For information on where to write for reservations please contact the president at RE 6-4321.

FEBRUARY LECTURE ** STELLAR MULTIPLICITY

At the February NCA meeting Mr. Charles Worley of the Naval Observatory described astronomical research on stellar multiplicity during the past 160 years, beginning with William Herschel's announcement in 1803 that the components of the double star Castor revolve around each other with a period of several hundred years. Later in the century the Russian astronomer, F. G. W. Struve, the great grandfather of Otto Struve, discovered 3000 doubles with a 9-inch telescope while observing over 100,000 stars at the fantastic rate of 400 per hour. S. W. Burnham, who started in astronomy in the late 1800's as an amateur, took more time, concentrated on close doubles down to one-tenth of a second separation, and by means of a 6-inch refractor discovered 12,000 binary stars. Aitken's catalog published in 1932 contains 17,180 visual double stars north of 30° South declination. Hussey extended the search into the southern hemisphere sky, and modern catalogs now list over 65,000 multiple stars.

Astronomers need the masses of stars to construct the so-called mass-luminosity diagram, an important astrophysical tool, but they can determine the masses only of stars in multiple systems. In order to compute the total mass of a double star by means of Kepler's law the period of revolution of the two stars around each other must be known as well as the mean distance between them. The latter can be found from the mean angular separation of the components and their parallax (or distance), but since this factor enters into the equation cubed, the method suffers greatly from observational errors. For this reason astronomers have been able to calculate accurate masses for only a relatively few nearby double stars.

Multiple stars fall into four categories: visual systems whose components can be separated by telescopes; spectroscopic binaries identified by more than one set of lines on stellar spectrographs; eclipsing binaries recognized by a perfectly periodic dimming of a star attributed to an eclipse of a brighter component by a dimmer one; and astrometric doubles detected by wriggles in the path of a bright star resulting from revolution around an unseen dim companion. There are only eight known astrometric binaries including Sirius whose irregular proper motion was first noticed by Bessel in 1834. Pickering discovered the first spectroscopic binary known, Zeta Ursae Majoris, (Mizar) at Harvard College Observatory in 1889.

Only 27% of the stars having the brightest apparent magnitudes and 37% of nearby stars are single stars while the rest belong to multiple systems. However, 63% of M-type dwarf stars do not have companions. Within a sample of 536 multiple star systems, 433 contain only two stars apiece, 84 are triples, 12 quadruplets, 5 quintuplets, and two multiple stars, Castor and Beta Tucanae, have six stars each. Theories on the origin and evolution of stars must explain these observations.

The above statistics and the revelation that the widest measured separation of two components of a double star is 46,000 astronomical units may have inspired the question from the audience about the possibility of the sun being a double star. Mr. Worley