NEW MEMBERS

Mrs. Ione Alston, 20 Plattsburg Ct. N.W.
George V. Plachy, 8604 76th, Woodhaven, New York City
Joseph C. Conrace, Jr., 927 N. Liberty Street, Arlington, Va. Chestnut 5376. (Junior member.)
Major Gerard Swarthout, 2659 Connecticut Ave. N.W. Columbia 1563.

OCCULTATION PREDICTIONS - Morgan Cilley

June	Star or Cat. No.	Magnitude	Immersion E.S.T.	Hour Angle
23	1612	7.3	8:39.7 P	3.7 W
26	1951	7.1	11:47.1 P	4.6 W
28	2070	6.7	1:32.1 A	5.6 E
29	106 G Sco	5.9	8:18.6 P	1.2 E

All occur on the dark edge.

ECLIPSE EXPEDITIONS FROM FINLAND TO BRAZIL AND AFRICA.

The two expeditions consist of only two persons each and their foremost task will be to observe the eclipse in order to establish as accurately as possible the distance between the observation sites in Africa and Brazil. The method they will use was first invented by a Polish scientist, but later on developed and made more practical by Dr. Ilmari Bonsdorff, Chief of the Geodetic Institute of Finland. This method was tried out the first time during the eclipse of July 9, 1945, but since, owing to the war, normal communications were not yet established in the world, this could be done only along rather short basis; that is, one point in Sweden and the other in Finland.

The forthcoming eclipse will give a much better opportunity for this and one of the ultimate aims of the calculations is to compare them in the future, when observations can be made from eclipses occurring in about the same parts of the world whether the two continents of Europe and America are stationary or whether they approach each other or recede from each other.

---Sigurd von Numers

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Mabel Sterns, President and Editor, 2517 K Street N.W.

STAR DUST

National Capital Astronomers
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CALENDAR

June
3 Constellation observation, Observatory grounds, 9 p.m. Call Miss Warthen, Sh. 9451 if doubtful.
5 Telescope class, 246 McKinley High School.
7 "Detection of Meteors by Radio Methods," A. G. McNish. 8 p.m. Commerce Auditorium.
10 Constellation study same as above.
12 Telescope class--the last at McKinley this year.
14 Introducing the 5-inch telescope to members who are not familiar with it. After dark, on Naval Observatory grounds.
15 Star outing of Natl. Capital Parks, Barnard Hill Park, Bunker Hill Road and 26th St. N.E.
17 Constellation group, Observatory grounds.
24 Constellation group, Observatory grounds.

SPECIAL ACTIVITIES

Telescope class closes at McKinley High on June 12. We hope to have facilities for work during the summer but plans are not yet definite....Discussion group had its last session in May and expects to resume in September....Those who have not used the NCA telescope are especially invited to see it June 14th.

ABOUT 40 PEOPLE attended the NCA picnic at the Sligo Creek Cabin April 26. The weather was perfect. Telescopes belonging to Miss Warthen, Messrs. Johnson, Benfer, Little, Stanton, and Slemaker were there for observing. Mr. Windham showed colored movies of his trip to the west coast last summer. Everyone had a good time--but what some people won't try to keep their feet warm.

The threatening weather kept away many who wished to attend the open house at Rotbarts' on May 13th. Mr. Rotbart has many things of an optical, electrical and photographic nature that are interesting to professional as well as amateur astronomers. Mr. and Mrs. Rotbart were to be at home again on May 20th regardless of the weather. ---G. R. Wright

LIGHT OF THE NIGHT SKY

According to Dr. Joseph Kaplan, Director, Institute of Geophysics, U.C.L.A., immediately after sunset each evening, everywhere on earth, there is an aurora or afterglow which fades as night comes on, reaches its lowest intensity midway between sunset and sunrise, and then gradually brightens into another aurora as sunrise approaches. That phase of the afterglow between the sunset and sunrise auroras is known as the light of the night sky. It is also called the permanent or "non-polar" aurora in contradistinction to the polar aurora commonly observed in the higher latitudes.

This light is produced through excitation by the sun's energy of atoms of gases, essentially nitrogen and oxygen, that are present in the earth's outer atmosphere. The excitation causes the electrons attendant on each atom to change position during the day from an inner to an outer atomic orbit through absorption of energy, and to return at night to an inner or lower-energy orbit with accompanying emission of the absorbed energy as light. If, however, an excited atom collides with another particle while in an excited state, the electron will return due to this collision and consequently there will be no emission of light. Through a spectroscope, emitted light records as a series of lines forming a spectrum of the gases involved. Lack of emission of light therefore leaves no record on the spectrum.

In the attenuated outer atmosphere of the earth, collisions between particles of various kinds are extremely infrequent, and several lines appear in the spectre that are absent in the denser atmosphere nearer the earth's surface. These lines, recorded from the outer atmosphere

but missing in spectra recorded nearer the earth, are known as "forbidden lines."

Scientists have studied these forbidden lines, but they have found it difficult to use fast photographic plates and light-gathering instruments of high power, because of adverse factors, such as the radiation of wave lengths of the order of 10,000 angstrom units, which fog the photographic plates, and the opaque layer of ozone 10 to 30 miles above the earth's surface. To obviate these difficulties scientists have sought to reproduce the afterglow experimentally.

Dr. Kaplan has succeeded in this. He uses especially prepared glass tubes that simulate possible surfaces formed in nature by atmospheric dust. By increasing the number of excitations, Dr. Kaplan causes greater emission of the light that forms the forbidden lines in the spectrum. He has found that this light involves metastable nitrogen molecules and new forms of the oxygen atom and molecule, the oxygen atom emitting the so-called "green" line in the spectrum. The energies involved are measurable in temperatures of from 10,000 to 15,000 degrees Centigrade. These spectra resemble those of nebulae. Photographic exposures up to two weeks in duration are necessary to record them.

Thus, one astronomical phenomenon has been reproduced in the laboratory. Ultimately, spectra of neulae and comets may be reproduced and many fundamental problems solved experimentally. ---Franklin H. May

PROPOSED AMENDMENTS TO BY-LAWS would limit tenure of office to two consecutive terms by election plus the portion of a term which an officer may have been appointed to complete. A trustee would be similarly limited to one term. The Nominating Committee would be required to nominate one instead of two candidates for each office.

AUDIT COMMITTEE of Mr. Rotbart and Dr. Levin was appointed to audit the accounts for the fiscal year 1946-47.