**ORBITING ASTRONOMICAL OBSERVATORIES**

We are fortunate to have as our guest speaker next month, Dr. Nancy G. Roman, Chief of the Astronomy and Astrophysics Satellite and Manned Rocket Program at NASA.

The atmosphere of the earth is a most formidable obstacle to the observation of the outside universe. It dim the light of the stars; blurs telescopic images; causes scintillation of the stars; in addition to other distortions. For these reasons astronomers have long tried to get above as much of the atmosphere as possible. Towards this end they have built their observatories on the top of high mountains and even put telescopes in balloons. Since the advent of artificial satellites a way of getting above the atmosphere exists. NASA is working on plans to put astronomical observatories in satellites. Dr. Roman will discuss tentative designs of some astronomical satellites and the equipment they will carry, as well as astronomical observations they plan to carry out.

Dr. Roman was born in Nashville, Tennessee and obtained her BA from Swarthmore College and her PhD in Astronomy from the University of Chicago. Before coming to NASA, Dr. Roman was a research associate and an instructor in astronomy at the U. of Chicago. Some of her other specialties are the determination of stellar motion and the spectral classification of stars.

**DECEMBER DATES**

3 - ORBITING ASTRONOMICAL OBSERVATORIES by Dr. Nancy G. Roman; followed by monthly meeting Dept. of Commerce Auditorium, 8:15 PM

9 - VIRGINIA JUNIORS MEETING - "Telescope Optics" by Everette Neville; Westover Baptist Church, 1125 N. Patrick Henry Dr., Arlington, Va.; Room 224, 8 PM

10 - MD-DC JUNIORS MEETING - "Sunspots" by Jim Erbes; Chevy Chase Community Bldg., 5601 Conn. Ave., NW 2:00 PM

*NO CLASSES THE LAST WEEK OF DECEMBER*
At the November meeting of NOA we were privileged to hear Dr. Ernst J. Opik, visiting professor of Astrophysics, U. of Md. and research associate (on leave), Armath Observatory, Northern Ireland, speak on comets.

Comets have been observed since earliest time and are best known for their splendid tails which always point away from the sun. The comet consists of 3 parts: a head, a tail, and a nucleus, however, a comet may be considered as a point of mass since the nucleus containing most of the mass may be only 2-4 miles in diameter, while the head is actually thousands of miles across. In its orbit the nucleus obeys Kepler's Laws. This orbit is a conic section that can be predicted by means of triangulation using three points on the earth's orbit as a base line.

Comets are described as being periodic or non-periodic. The periodic comets have elliptical orbits and move counter-clockwise as do the planets and in a plane at only a slight angle to that of the planets. Most comets, however, are classified as non-periodic having near parabolic orbits and, no doubt, belonging to our solar system with the greatest number coming from a distance of 50,000 to 150,000 astronomical units. Some comets described as non-periodical, however, have periods of thousands or millions of years. Not a single hyperbolic orbit has been observed. Non-periodic comets may come in from any direction and its orbit will be greatly changed and its direction of motion may be reversed.

Take, for example, a comet at 10,000 AU. Its period is proportional to 3N or 10^N years. The probability that it will come within an observable distance of the earth is 1/10^N, thus 1/10^2 x 1/10^4 = 1/10^6. Comets will be seen each year from this given distance of 10,000 AU. Calculations of this kind can be made for all distances from such probabilities. Dr. Cort has calculated that our solar system contains at least 10^3 comets above an observable size of about 1 mile. 99.5% of the light from a comet is reflected from its gaseous portion - the head and the tail. Only 0.5% comes from the nucleus. A comet's brightness is proportional to 1/10^N where N is its distance from the sun and D is its distance from the earth.

Comets are living remnants of a remote past dating from the origin of the solar system. Their study may lead to information about the formation of the solar system. If comet nuclei may have exerted a fatal influence on the development of light on the remote past and over millions of years may endanger life in the future.

We would like to call the membership's attention to the book written by Dr. Ernst J. Opik. It is called THE OSCILLATING UNIVERSE and is now available in a paper-back edition. Don't miss it.

NEW MEMBERS

Regular

Mrs. Marjorie Dunke 933 S 22nd St., Arl., Va. OT 4-6997
Irving S. Friedman 5512 Britte Dr., Bethesda, Md. OL 2-7103
Richard Perry Leclercq 8283 14th Ave., Hyattsville, Md. HE 2-3630
L. K. MacMillan 911 Manor Rd., Falls Church, Va, JI 4-4570
Currie W. McCracken 9508 Pinoak Dr., S.S., Md. JU 5-8618
E. H. Rietseke "Beaufort", McLean, Va. EL 6-3808

Juniors

Eric J. Buhr 700 Mass. Ave., Wash., D.C.
Christopher G. Kawakimi 5727 Moreland St., NW, Wash. EM 3-6918
David McLean 1706 Tucker Ave., McLean, Va. KE 6-5867

The Editors join in sending their best wishes for a New Year filled with new members, new satellites, new stars, and, most of all, new joy.

MEMBERSHIP

We are about to inaugurate a membership campaign! First, however, many of the present members have not renewed their memberships -- so don't forget -- DUES ARE DUE!