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STAR DUST
National Capital Astronomers

look. It was observed by Grace Scholz still low in the east on the morning of the 13th. A good many people saw it in the vicinity of the Big Dipper on the 14th, 15th, and 16th. It was of second magnitude brightness or greater and was spectacular even with the naked eye. Attempts were made to predict when the object would be close enough to Washington to be seen by the area's Moonwatch stations. Bob Wright modified the mountings of his telescopes so that they would cover more territory. Bob Dellar conducted observations near his home and obtained a theodolite to aid in tracking.

The E. R. D. C. team erected a 30-foot mast at the north end of this station. This extended coverage to the north to an altitude of 10 degrees. The rocket was observed crossing the meridian to the north at an altitude of 33 degrees on the 16th. So far radio fixes have been too broad to establish a good orbit for the satellite. Moonwatch teams across the country are continuing to accumulate data. One of the large Schmidt-Numm cameras is ready to photograph the satellite, but this observatory must first receive accurate orbital data.

--A. L. White

LUNAR OCCULTATIONS FOR NOVEMBER

Date	Star	Mag.	Age	Phase	E. S. T.
Nov. 1	Kappa Aqr	5.3	10.0	D	11:16.9 P. M.
2-3	22 B. Psc	6.5	11.0	D	12:20.2 A. M.
4	62 Psc	6.1	12.9	D	6:49.9 P. M.
10-11	19 B (Gem)	6.2	19.1	R	2:03.1 A. M.
13-14	Kappa Cnc	5.1	22.2	R	5:44.5 A. M.

OBSERVATIONAL DATA - The date for maximum intensity for the LEONID meteor shower is November 16. Average meteor fall per hour is 20. Venus is very bright in the southwest and reaches greatest eastern elongation on the 18th. Saturn is low in the southwest at sunset. In the morning Jupiter may be seen near Spica and low in the southeast. Mars is moving from Virgo to Libra.

--A. L. White

Jewell Boling, Editor 1717 P Street, N. W. NO 7-7693

November 1957 Vol. 15, No. 3

NOVEMBER CALENDAR

- Nov. 1 VIRGINIA JUNIORS will meet with Bob Brown at the (Fri.) Westover Baptist Church at 7:00 P. M. For further information call Bob at KE 6-8059
 - Nov. 2 "COSMIC RAY EVIDENCE ON THE ORIGIN OF METEORITES" (Sat.) by Dr. S. Fred Singer of the University of Maryland. Department of Commerce Auditorium, 14th and E Streets, N. W., at 8:15 P. M. The public is invited.
 - Nov. 9 MARYLAND and D. C. Juniors over twelve meet with (Sat.) Leith Holloway at the Chevy Chase Community Center, 5601 Connecticut Avenue, N. W., at 2:00 P. M. Discussion topic: Orbits. Call Leith at FE 3-7796 for details.
 - Nov. 16 DISCUSSION GROUP on NAKED-EYE ASTRONOMY led by (Sat.) Bill Isherwood at 8:00 P. M. in the Foyer of the Commerce Auditorium. Don't miss this one. It's fundamental! Tycho Brahe didn't own a telescope!
 - Nov. 22 GROUP OBSERVING at the NCA 5" refractor at the (Fri.) Naval Observatory. Your NCA membership card will admit you. Juniors must be accompanied by an adult.
- EACH MONDAY NIGHT at 7:30 the TELESCOPE MAKING CLASS meets with Hoy Walls at the Chevy Chase Community Center.

NCA MOONWATCH TEAM GETS HISTORIC ALERT - On the evening of October 4, the Moonwatch team had gathered at Bob Dellar's house for a scheduled practice "fly-by." Present as a guest, Mr. Leon Campbell, Jr., the Smithsonian's Supervisor of Station Operations, received word

of the launching of the Russian satellite and promptly alerted our group - the first team ever to be so alerted for the dawn watch.

This was "for real."

We were there. For two long, cold, pre-dawn hours on cinder block seats, the team watched in vain. Then came a telegram from Cambridge. The orbit had been roughly found by radio to be out of range of our station for the present, and for two weeks or so other techniques would be needed.

The two-week scramble that followed, the hasty changes to accommodate the high-inclination orbit, the up-all-night, back-before-dawn, late-to-work daily routine, the pre-dawn chill, the borrowed theodolites, and, perhaps most of all, Trudy's overworked coffee pot, all helped to make historic memories for faithful NCA Moonwatchers. Good data were gathered daily, the Smithsonian expressed pleasure, and all concerned know that it was all worthwhile.

---Bob McCracken

"COSMIC EVIDENCE ON THE ORIGIN OF METEORITES," the November lecture, will describe how helium three is used to obtain the age of meteorites. The effects of exposure to cosmic rays cause a measurable amount of helium three to be produced.

The lecturer, Dr. Siegfried Fred Singer was born in Vienna, Austria, on September 27, 1924. He is a naturalized citizen of the United States, a Captain in the Air Force Reserve and a member of many learned societies both here and in Great Britain.

ORBITAL INFORMATION ON SPUTNIK - The following orbital information from a Harvard announcement card was supplied by Lyle Johnson. Nomenclature is conventional:

Satellite 1957 α 1

a = 1.0890751 Earth
e = 0.0510696
i = 64°26'01.2
 Ω = 327°33'28.8

Argument of perigee = 61°40'25
Instant Osculation = 1957 October 9.40466
The period appears to be shortening appreciably.

--- Bob McCracken

LYLE JOHNSON has made a number of photographic fixes of the satellite and has apparently spotted a fourth component not previously reported.

LEITH HOLLOWAY has been computing orbits and making daily satellite predictions.

SOME NCA SATELLITE-TRACKING TECHNIQUES - Among the hastily-contrived techniques for finding the high-inclination Sputnik were altazimuth fixes made with theodolites and timed by WWV, aerial camera photographs with accurately timed breaks in the exposure, and visual spotting timed with reference to star positions. WWV time signals were recorded with observations on magnetic tape for timing. Stopwatches, set by WWV, were also used.

Perhaps the most ambitious alteration was made by Bob Wright, who mounted the entire Silver Spring Moonwatch line on a long wooden turntable, adjustable to any desired angle.

---Bob McCracken

SATELLITE OBSERVING - The first Moonwatch team to observe the satellite was at Cambridge, Massachusetts. They saw the satellite, nose cone, and the third stage of the rocket. By October 12 the orbit had moved sufficiently to the west for Bob Wright to see the rocket. He observed it low in the east with the aid of a telescope. He alerted observers in the area by means of the newspapers, giving directions as to where and when to