

## ASTRONOMY

# Ultraviolet "Stars" Found

Rocket probes high above the earth's atmosphere have spotted seven "stars," or nebulous regions, that are apparently emitting ultraviolet light.

THE HEAVENS have "stars" of ultraviolet light that cannot be seen by the human eye but can be spotted by rocket-borne instruments sent high above the earth's atmosphere.

Dr. Herbert Friedman of the U. S. Naval Research Laboratory, Washington, said these sources of invisible ultraviolet can be mapped from rockets or satellites at heights above 60 miles from the earth's surface. An Aerobee-Hi rocket, launched from White Sands Missile Range on the night of Nov. 17, 1959, carried the first ultraviolet telescope used in rocket astronomy—a four-inch instrument from which information was telemetered earthward.

He told the American Physical Society meeting in New York that results from this rocket flight indicate there are at least seven stars that appear to be individual point sources and seven nebulous regions emitting ultraviolet light.

One of the tentatively identified stars is Achernar, the ninth brightest star in the sky. Achernar is four times the diameter of the sun and twice as luminous as the sun in visible light. Its ultraviolet luminosity, however, appears to be less than a tenth of the estimated value expected on the basis of its visible light.

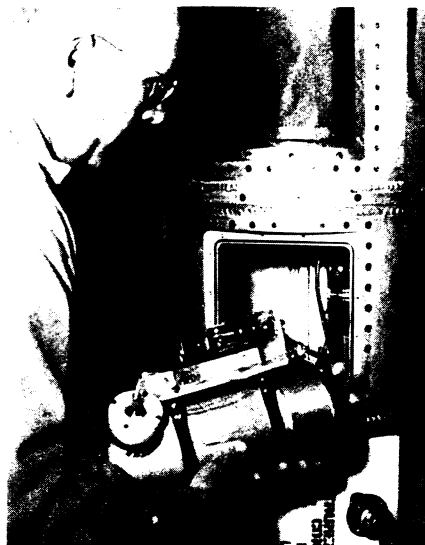
Dr. Friedman said other rockets flown

at heights from 60 to 84 miles have shown that the night sky shines with a bright glow in the ultraviolet light of Lyman alpha radiation. Very preliminary results from a detector sent some 800 miles into the atmosphere indicate that the earth's far atmosphere glows in Lyman alpha during the daytime because of its own halo, but that most of the night sky glow is of interplanetary origin. Lyman alpha radiation is about one-fifth of the wavelength of visible red light.

The night glow, Dr. Friedman reported, is believed caused by atoms of neutral hydrogen outside the night shadow that have first absorbed Lyman alpha emitted by the sun, then re-radiated it in random directions. Some of this re-radiated Lyman alpha reaches the earth's night side.

Dr. Friedman said that the solar Lyman alpha emission shows a deep black core at the center, representing the light absorbed by neutral hydrogen between the sun and the rocket. From the blackness and width of the core, Drs. J. D. Purcell, R. Tousey and P. Mange, also of the Naval Research Laboratory, have estimated that there are about five trillion neutral hydrogen atoms per square inch in a column from the rocket height to the sun.

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**ULTRAVIOLET TELESCOPE**—The four-inch telescope is inserted into the nose cone section of an Aerobee rocket by Edward T. Byram of the U. S. Naval Research Laboratory. It has been flown to 88 miles to make the first measurements of ultraviolet stars as part of the International Geophysical Cooperation.

## FLORICULTURE

## All-America Flowers Named for 1960

YOU CAN have a rocket in your own backyard this summer—it could even be a Vanguard.

The rocket, which comes in six varieties, is an All-America award-winning snapdragon and the first bred for summer blooming and heat tolerance.

Two and three crops per season can be obtained from the same plants which bear ten to 12 tall spire-like spikes filled with blossoms. The plants grow to three feet and come in the following colors: bronze, gold, orchid, red, rose and white.

Vanguard, rose pink with a "golden throat," is the first double snapdragon to merit an All-America award, said W. Ray Hastings, executive secretary of the All-America Selections which sponsors annual open trial-grounds competition for the world's leading introductions in vegetable and flower seeds.

Other All-America award winners include an extra large flowering annual salmon-colored phlox named Glamour.

A big orange marigold called Toreador is also an award winner. It is a carnation-flowered type, with four-inch blooms on a bush that may be as tall as three feet. A second marigold, Spun Gold, bears its three-inch blooms on low bushes that are said to be effective as borders or pot plants.

The only vegetable award winner for 1960 is the Just Right turnip. It is described as having pure white, slightly flattened globe-shaped roots with "vigorous erect leaves."

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## ASTRONAUTICS

# U.S. Space Man Delayed

THE UNITED STATES PROGRAM to put a man in space has already been delayed and the most optimistic schedule is likely to show a timetable "slippage" of many more months before manned space flight is achieved.

However, in its first report on Project Mercury, the House of Representatives Committee on Science and Astronautics concluded that the Mercury program is moving satisfactorily.

It praised the National Aeronautics and space Administration for refusing to set a man-launch date that "might bring the temptation to launch a man before the level of development fully justified this step." Project Mercury is the only U. S. program funded and actually under way for putting man into orbit. The committee questioned whether the national interest is best served by this "all eggs in one basket" philosophy. To offset some of the hazards of this approach, back-up contracts have been let on factors most likely to give trouble.

Advantages cited for this single approach include no competition between parallel programs for research and development

support, for manpower and for critical program items. The Mercury capsule that this year may carry one of seven astronauts into space had to be designed in six months to meet the up-in-space schedule. This required extensive wind tunnel tests, air-drops of full-scale capsules, and rocket flight tests.

"This phase of the program was completed on schedule only because no back-up program of equally high priority was competing," the House Committee's staff report said.

Although a single approach to manned space flight promises to give faster results, the Committee indicated that there are a number of promising approaches and said "the failure to develop in parallel at least one other man-in-space program could prove to be a costly mistake."

Members of the Democratic party's scientific advisory panel has criticized the Government for placing too much emphasis on the Project Mercury program. They urged emphasizing "other, more worthwhile programs," such as world-wide communications and weather satellites.

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