

ASTRONOMY

Star Cluster's Mass Found

► THE NEAREST of all star clusters, the Hyades in the constellation Taurus, the bull, has a mass about 500 times that of the sun. The cluster, which includes the bright reddish star Aldebaran, is at a distance of 130 light years, one light year being six million million miles. Drs. R. S. Kushwaha and D. S. Kothari of the University of Delhi, India, calculated the mass of the Hyades on the basis of their new theory of fragmentation.

The Hyades cluster, a group of a dozen naked-eye stars, is actually a loose organization containing at least 150 individual members. Their association in a gravitational system has been revealed by their observed similar motions, across the sky as well as in the line of sight.

The Hyades played a part in ancient mythology. The stellar group has often been linked with weather lore and called the "rainy Hyades."

The equally famous Pleiades, also in Taurus, is another open cluster, near the Hyades in the sky but actually more distant in space (230 light years). The

Pleiades cluster is composed chiefly of hot, white stars enmeshed in dust and gas, a medium from which the Hyades are free.

The fragmentation theory of Drs. Kushwaha and Kothari is applied to the pre-star nebula from which the Hyades presumably condensed a billion years or so ago. The total mass is estimated from the frequency distribution of the masses of the individual stars.

The Hyades cluster will eventually dissolve, since it is a part of the Milky Way galaxy, the rotation of which introduces a shearing action on the open stellar groups.

The part of the Hyades cluster most distant from the galactic center will lag behind in its 200,000,000-year journey around the galactic nucleus. In time, the cluster will be a stream of stars rather than a gravitationally organized star cluster. Eventually its members will be lost in the general star fields of the Milky Way.

The Pleiades, being a tighter group, will resist dissolution longer.

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will observe the heavens, he will be about 90% to 95% above the earth's atmosphere. Through the 12-inch stabilized telescope fixed in the gondola, he should be able to see the stars and photograph them free from the distortions caused by the atmosphere," Dr. Hynek said.

The primary purpose of this experiment, the first in a series of four manned flights scheduled for both Capt. Kittinger and Mr. White, who is attached to the Naval Ordnance Test Station at China Lake, Calif., is to determine all the physical and technical requirements that are best suited for balloon astronomy.

"It is a basic research project," Dr. Hynek said. And one of the major elements in whether it is successful or not is whether the telescope can be successfully stabilized.

Previous attempts under Navy auspices did not succeed. The job of assuring the stabilization has been assigned to the Massachusetts Institute of Technology.

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Electronic Device "Sees" Ultraviolet Light in Space

► AN ELECTRONIC device that promises, when rocketed above the earth's atmosphere, to give man a view of the universe as it looks in ultraviolet light has been developed by scientists at Westinghouse research laboratories in Pittsburgh.

The device is an electronic image tube sensitive to the shortwave ultraviolet light sent out by stars and from interstellar space. It is called the Uvicon and was developed for the Smithsonian Institution's Astrophysical Observatory, Cambridge, Mass.

The Uvicon will be used in Project Telescope, one of several experimental launchings planned as part of the National Aeronautics and Space Administration's orbiting astronomical observatory program. First of the orbiting observatories is planned for 1963.

The ultraviolet-telescope package consists of an optical arrangement to form the ultraviolet images, the Uvicon tube and its television camera and a transmitter to broadcast signals back to earth. It will go into the nose cone of an Aerobee-Hi rocket that will take it to an altitude of about 150 miles after launching from NASA's Wallops Station, Va.

Useful portion of the flight will be the five minutes spent above an altitude of 60 miles, the height at which the ultraviolet radiations of interest are no longer absorbed, Dr. Robert J. Davis, Smithsonian astrophysicist in charge of Project Telescope, said.

Ultraviolet light is just beyond the blue end of the spectrum of visible light. Ultraviolet radiations near the frequency of visible light penetrate the atmosphere and can cause sunburn or tanning.

Those of higher frequency, or shorter wavelength, are ones to which the Uvicon is especially sensitive, including wavelengths of five-millionths to eight-millionths of an inch.

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Manned Star Observation

► FOR THE FIRST TIME man will be able to view the stars through a telescope at altitudes from 50,000 to 80,000 feet, the Air Force Research and Development Command announced.

This spring a giant balloon is scheduled to carry to these heights the Air Force's high-jumping parachutist Capt. Joseph Kittinger and astronomer William White in a specially designed and sealed gondola, carrying a stabilized telescope.

The manned balloon star-gazing project,

piloted by Capt. Kittinger, has as its scientific director Dr. J. Allen Hynek, director of Northwestern University's Dearborn Observatory in Evanston, Ill.

Dr. Hynek has worked on this project with the Air Force for close to two years.

"If it is successful, my own personal feeling is that this will be a real breakthrough for balloon astronomy and will advance the gathering of important astronomical data," he said.

"At the altitudes from which Mr. White



ULTRAVIOLET "SEEING EYE"—The Uvicon is installed in a TV camera.