

ASTRONOMY

Shrink Universe Yardstick

Milky Way galaxy is probably farther from nearby galaxies than previously thought. New estimates of interstellar distances are now possible.

► THE YARDSTICK by which astronomers measure distances in the universe may have to be changed, Dr. Harlow Shapley of Harvard College Observatory told members of the American Astronomical Society meeting in Amherst, Mass.

Our own Milky Way galaxy is probably farther from nearby galaxies of millions of stars and nebulae than previously realized, Dr. Shapley stated. This means that the expanding universe is even larger and older than previously estimated, and is expanding at a much slower rate.

Clusters of stars in our own and other galaxies are proving to be incredibly bright. Those recently studied average about 100,000 times as bright as the sun, Dr. Shapley estimates. It is these star clusters and individual variable stars of the Cepheid type that help astronomers estimate distances in the universe.

The new values would place the Larger and Smaller Magellanic Clouds so far away that the light now received from them started on its way toward our galaxy and the earth about 150,000 years ago. It would place the Andromeda nebula, a giant starry pinwheel believed to look much like the Milky Way galaxy to which we belong, so far away that light from it reaches us after 1,500,000 years. This would also mean that the Andromeda nebula is about twice as large as previously thought.

The new estimates of distance have become possible through the establishment of accurate photoelectric magnitude standards in the Magellanic Clouds by Dr. Uco van Wijk and Dr. Ivan King while at the South African Harvard station, Dr. Shapley explained. Equally important was a special series of photographs made with a midget telescopic camera of only six inches focal length.

"Ever since a number of the star clusters in the two Magellanic Clouds were identified at Harvard as probably globular like the Hercules cluster and other globular clusters in our own galactic system," Dr. Shapley pointed out, "we have been disturbed by the apparent discrepancy in luminosity between the clusters of the Clouds and those of our Galaxy."

If the globular clusters in our own Milky Way, in the Magellanic Clouds and in the Andromeda nebula are equally bright, then the Cepheid stars are distinctly more luminous than heretofore measured, Dr. Shapley stated. We must therefore increase the distances to the Clouds very perceptibly to make the absolute luminosities of the groups of clusters agree.

"If we increase the scale of distances, the rate of recession of the galaxies at a given

distance from the observer will be decreased," Dr. Shapley said. "As a result, the age of the expanding universe will be increased and brought more nearly into agreement with the evidence of the age of the rocks on the earth's surface."

"These drastic revisions should not be considered final," Dr. Shapley stated. "The data are too few. The revision can be tested in various ways and appropriate investigations are under way at Mount Wilson-Palomar, Leiden, Harvard and elsewhere. The Magellanic Clouds may further contribute, through the discovery of faint Cepheid variable stars, to the unraveling of the current puzzle of the scale of the Metagalaxy."

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PSYCHOLOGY

Star Actor's Isolation From Others Important

► A STAR actor's isolation from other actors and from walls on the stage is more important than the position where he is standing.

This is one of the findings of psychologists at Cornell University, Ithaca, N. Y., who are testing some of the traditional rules of the theater about where an actor should stand on a stage. To make their tests, they used a miniature stage peopled by black pins.

Two rules "seem doubtful." These are "the belief that upstage is more important than downstage, and that the left creates a different mood from the right."

In the tests, the black pins were placed in various positions on the stage and student observers, with and without stage production experience, were asked to point out the "star." Choices of both groups were about the same. The experiments were conducted by Mrs. Carol Barnes Hochberg, Julian Hochberg and Herman M. Harvey.

Science News Letter, January 10, 1953

MEDICINE

Spot Pneumonia Types By Infrared Light

► THE SUGARY outer coats of pneumonia germs, which determine the types of the germs such as Type I, Type II and so on, absorb infrared light in characteristically different ways.

This finding, important in the study of the chemistry of disease germs and of immunity to them, is announced by Drs. Heber J. R. Stevenson and Seymour Levine of the U. S. Public Health Service's Environmental Health Center, Cincinnati, in *Science* (Dec. 26, 1952).

Science News Letter, January 10, 1953



ON STAGE TESTING—Checking up on the theater's traditional rules about what part of the stage gives an actor the most attention, Mrs. Carol Barnes Hochberg has an observer judge which mannikin is the "star" of the show.