ASTRONOMY

Milky Way Larger

Eight hundred million billion miles is new estimated diameter for the Milky Way galaxy of which our sun is a star. Measurement based on Cepheid variables.

➤ THE MILKY WAY galaxy to which our earth, the sun and all the stars in our pinwheel part of the universe belong has a hazy envelope that extends farther into the depths of space than astronomers have realized.

A corona of stars about four hundred million billion miles in radius is now believed to completely surround our watch-like system. This makes our galaxy almost eight hundred million billion miles across.

This new estimate of the size of our galaxy has just been completed by Dr. Harlow Shapley, director of Harvard College Observatory, and Ann B. Hearn, also of the observatory. Their findings will be reported in a forthcoming issue of the *Proceedings of the National Academy of Sciences.*

The core of the Milky Way system—our pinwheel grouping of stars—is about ten times as broad as it is thick. We are located in an outer spiral arm, yet many stars in the thin scattering of stars called the corona are fully as far from us as we are from the center of our galaxy.

The far-away stars in our galaxy selected for estimating the extent of the corona are variable stars called Cepheids. All the chosen stars periodically get brighter, then fade, in less than a day. The luminosities of such stars have already been worked out, calculations being based upon the fact that the shorter a Cepheid's period, the less its average brightness. With this key to the star's true brightness, it was possible to estimate its distance by studying its apparent brightness.

All of the selected stars are on the borders of the Milky Way, in Taurus the bull, Auriga the charioteer, Perseus, Orion the great hunter and neighboring constellations. This is the opposite direction in the heavens from the constellation of Sagittarius the archer, where the center of our galactic system is located.

These stars were all found to be members of our stellar corona and not to belong to the central celestial merry-go-round which carries us around the hub of the universe every two hundred million years. Instead of whirling around the center, these stars may have oscillatory motions with respect to the nucleus.

The corona to which these stars belong extends considerably beyond the radius of 50,000 light years, the estimate now accepted for the radius of the flattened discoid part of our galactic system. A dozen to 15 stars have been found to be much farther away from the center than this. Several of the stars are almost 60,000 light years from the hub of our universe, and one is over 65,000 light years away, Dr. Shapley and Miss Hearn found.

The further out one explores from the edge of our pinwheel system, the less numerous the stars in the corona become. This faint sprinkling of stars therefore contributes little to the total mass of our galaxy, most of which is concentrated near its center.

Science News Letter, September 6, 1952

BIOPHYSICS

Thigh Shields Protect Against Radiation

➤ LEAD SHIELDS on the thighs give protection against radiation, at least to one strain of mice, Drs. Henry S. Kaplan and Mary B. Brown of Stanford University School of Medicine, San Francisco, find.

Lead thigh shields appear to be impractical for human protection against atomic radiation as the lead vests for spleen shielding that earlier experiments showed also protected mice.

The point of the Stanford experiments, however, as reported in *Science* (Aug. 22), is that apparently any shielding that protects bone marrow is helpful against radiation injury.

The mice in the thigh-shield experiments were a strain of C57 blacks which consistently get tumors of the thymus gland as a result of radiation over the entire body. With the lead shields on one thigh, tumors did not develop. At first the animals showed the same injury to their thymus glands as mice without lead shields under irradiation. But the glands of the thigh-shielded mice recovered much faster.

The marrow in the shielded thigh bone apparently was able to provide enough protection against the radiation damage.

Science News Letter, September 6, 1952

PHARMACOLOGY

Test Tells if Alcohol Breath Really Is Killed

➤ A METHOD for telling whether a deodorant will really kill an alcohol breath has been worked out by Dr. J. A. Campbell and associates at Purdue University School of Pharmacy, Lafayette, Ind. They reported it at the meeting of the American Pharmaceutical Association in Philadelphia.

The method is being tried also on chemicals intended to kill other odors. It might tell whether chlorophyll compounds can keep Fido from smelling doggy. Dr. Campbell and associates hope it will give a "standardized, statistically sound technique" for testing such chemicals.

It depends on the effect of the alcohol vapor or other smells on the surface tension of a drop of water or other liquid.

Science News Letter, September 6, 1952

VIBRATION TESTS—The camera has here recorded the motion of a vibrating machine that tests new sea-going electronic gear by giving it, in Bell Telephone Laboratories, a shaking up that simulates the rolling of a destroyer's deck when the ship is battling rough seas.