

ASTRONOMY

Star Whirls Hitherto Unknown Discovered in the Milky Way

Giant Cluster Which Revolves About Still Larger Group Provides Evidence of Gravity Connection

IMPORTANT new clues to the structure of the Milky Way have been found at the Harvard Observatory where officials announced discovery of a new type of astronomical sub-system in the universe.

The new system consists of a giant cluster of some hundreds of stars which revolves about a still larger cluster, much as the earth travels about the sun. Astronomers say it presents the first positive indication they have had that these tremendous clusters may be connected with one another by gravity to form independent sub-orders within the galaxy.

The discovery, made by James Cuffey of the Harvard Observatory staff, was the result of numerous extremely accurate computations of the distances from

the sun of nine galactic star clusters in the constellation Auriga, the most comprehensive and exact measurements of these distances ever made.

The two clusters the research showed to be companions are those known as Messier 38, which has a mass about 500 times that of our sun, and NGC 1907, which is about 75 times the mass of the sun. The smaller one, it was found, revolves about the larger cluster with the time required for one complete revolution estimated to be about 60,000,000 years.

A painstaking study of the colors of nine such groups in Auriga led to the conclusion that these two clusters constitute a system. The colors of stars in clusters are used by astronomers to determine their distances and Messier 38

and NGC 1907 were found to have very similar characteristics. Thus they were shown to be about the same distance from the sun, approximately 28,000 light years. In space they are only 24 light years apart.

A third and still larger cluster, Messier 36, is also believed to be physically connected with the other two groups for it too is about 28,000 light years from the sun. It is about 150 light years from the first two.

Mr. Cuffey doubts, however, that there is any possibility of a second rotation, of the pair around Messier 36 as a common center of gravity, for dynamical reasons. Four other clusters in Auriga which Mr. Cuffey studied appear close together when viewed from the earth but are merely an optical group rather than a physically connected system, he has decided. Two of them are at an equal distance from the sun but another is more than four times as far while the last is hardly half as distant.

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PHYSICS

Rays Smash Into Atmosphere With Ten Billion Volts

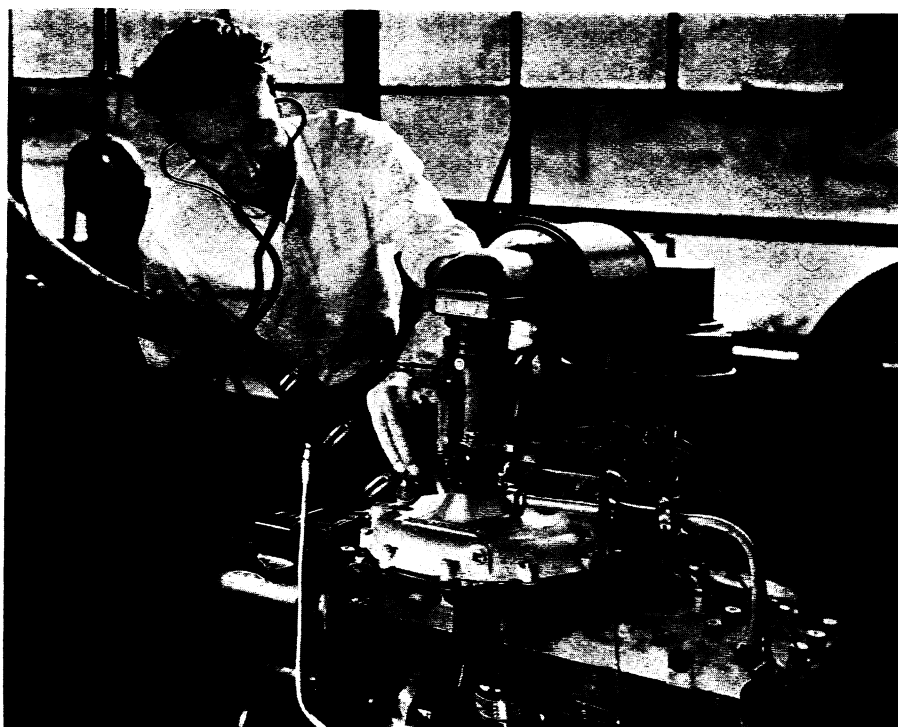
COSMIC ray particles reach the earth's atmosphere with the immense voltage of ten billion (10,000,000,000), Dr. Bruno Rossi of Padova, Italy, reported to the Fifth International Congress of Radiology, at Chicago.

To medical and other scientists who have recently spent a week in discussing how X-rays and radium can detect and cure disease, Dr. Rossi brought the latest results of researches upon the penetrating radiation from outer space that man has not yet been able to use practically.

Whereas a million or two is about the peak voltage practically used in connection with X-rays and neutrons in medical treatment or research, Dr. Rossi told the congress that a greater part of the primary cosmic radiation is composed of electrified particles and that most of the particles observed reach the earth's atmosphere "with an energy greater than 10,000,000,000 volts."

Dr. Rossi traveled to the Italian colony of Eritrea on the Red Sea to make some of his cosmic ray observations. He is a member of the Italian research team of Fermi and Rossi, which demonstrated the existence of chemical elements beyond number 92, which has long been considered the heaviest possible.

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LISTENING FOR SYMPTOMS

The stethoscope is used to listen for signs of old age in motors as well as in men. Here it is helping a Graham-Paige Motors Company engineer to test a supercharger which has lived through 100,000-mile run on the test block.