

ASTRONOMY

Radio Impulse Found Coming From Heart of Milky Way

Year's Study of Strange Cosmic "Hiss" Indicates That Its Apparent Source Follows Rotation of Stars

TO THE COSMIC rays, the light of the stars and other detected radiations from outer space, there has now been added a mysterious Milky Way static or radio impulse that seems to come from the vicinity of the very heart of the Milky Way.

Karl G. Jansky, of Bell Telephone Laboratories, discovered this cosmic "hiss" while working with an extremely sensitive receiving set at Holmdel, N. J. Disentangling this particular kind of static from other sorts that are heard in radio sets, Mr. Jansky noted that the hiss was always a little stronger coming from one direction than from all other directions and that this direction of maximum static hiss was continually rotating around the horizon, approximately once a day.

Mr. Jansky made many observations, attempting to check the idea that the hiss had something to do with the sun's position and the earth's daily motion. He discovered that the direction of the hiss progressed slightly in position in the sky with each day. For a year he gathered observations daily, without making any scientific announcement. Apparently the hiss was not following the sun, but something that gained on the sun four minutes a day or a whole rotation of the heavens in a year. This is exactly what the stars do, as every amateur astronomer or star-gazer knows.

Received on Short-Wave

The cosmic static was therefore seemingly hitched to a given place in the heavens or the Milky Way. It is a stream of radio impulses coming from some fixed point outside the solar system in the great aggregation of stars, known as the Milky Way, in which our sun is a mere minor star.

Mr. Jansky's radio was short-wave, tuned to 14.6 meters or 20,600 kilocycles, but he feels sure that these interstellar static impulses will be found all up and down the radio spectrum, probably increasing with frequency in the high-frequency or short wave portions.

The point from which the Milky Way static comes is very near the location of the center of our Milky Way galaxy as determined by Dr. Harlow Shapley, director of Harvard College Observatory. The point is where the plane in which the earth revolves around the sun crosses the center of the Milky Way. It is also the position toward which the solar system is moving with respect to the stars. The astronomical coordinates of the newly discovered radio waves are right ascension 18 hours and a declination of about minus or south 20 degrees. If you want to see where this is in the heavens, look at the Milky Way between the constellations of Sagittarius and Ophiuchus.

What generates the cosmic hiss is as yet unknown, just as the origin of the cosmic rays is unknown after many years of research. The center of the Milky Way is computed to be some 40,000 light years from the solar system and the power of a generating station, measured in earthly terms, would be prodigious, per-

PSYCHOLOGY

Apes Work for "Money" and Spend It in Slot Machines

A PES CAN be taught how to use "money" to buy the food delicacies they enjoy, to choose a small white token rather than a larger one with less purchasing power, and even to "hoard" more of the tokens than they can spend at one time and to discard worthless brass checks. They will work just about as hard to earn the "money" as they will for a direct reward of food.

This ability of animals lower in the scale than man to realize the significance of symbols was revealed in Washington when Dr. John B. Wolfe, National Research Council Fellow, reported to the Division of Anthropology and Psy-

haps millions upon millions of times as powerful as any broadcasting station on earth.

Perhaps the cosmic hiss is the by-product of some wide-spread galactic happening, such as transmutation of mass into light, a mighty murmur of atoms disturbed. Mystics may see in the Milky Way static messages from intelligent beings on unseen planets of remote stars, but scientists will not support this view. There has been presented another problem for the future of science to solve.

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BOTANY

New Giant Clover Species Found in Northwest

WITH SEVEN leaflets to each leaf instead of the usual three, and big in all its parts, a new giant clover species has been discovered in the state of Washington by J. W. Thompson of Seattle. It was growing on dry sagebrush slopes near the mouth of Swakane Creek, Chelan County, Wash.

Mr. Thompson sent a specimen to the U. S. National Herbarium, Washington, D. C., where it was examined by C. V. Morton. Mr. Morton found it to be a plant hitherto entirely unknown, and therefore gave it a technical description in the *Journal of the Washington Academy of Sciences*. He named it *Trifolium thompsoni*, in honor of its discoverer.

Science News Letter, June 3, 1933

chology of the Council experiments he had been making, under the direction of Dr. Robert M. Yerkes, with chimpanzees in the Laboratories of Comparative Psychobiology at Yale.

Poker chips of various sizes and colors were used by Dr. Wolfe as money and he taught the apes to spend these by placing them in a slot machine aptly called the "chimpomat."

This was a difficult task at first. The chimpanzees readily learned to reach for the food at the opening even before the token was placed in the slot. But it was harder to teach them to put the tokens in the slots themselves.

When two animals had learned the