The 12 new comets discovered (only two 1948 discoveries were the expected periodic return of old comets) are an outstanding record.

"More extensive use of photography in comet-hunting, use of wide-angle telescopes more suitable for this purpose and improved photographic emulsions all helped make this the second consecutive year that 14 of these visitors from space have been found," Dr. Whipple told Science Service.

Comet enthusiasts in the northern hemisphere have been unusually fortunate this year. One brilliant comet, found early in November, was easily visible with the naked eye throughout most of the United States, and several were visible with binoculars or small telescopes.

Fourteen comets in all were found during this past year. This is as many as those discovered in 1947 when a new, all-time record was set. This year, however, 12 of the comets were new and two marked the expected, periodic return to the vicinity of the sun of more familiar ones; last year only nine of the 14 were new finds and five were periodic returns.

Science News Letter, January 8, 1949

ASTRONOMY

Sun's "Hisses" Powerful

➤ SCIENTISTS receive radio broadcasts from "stations" hundreds of thousands of times more powerful than any broadcasting station here on earth.

Broadcasts from the sun reach the earth as "hisses," "swishes," and grinding noises, which interfere with radio reception at ultra-high frequencies. A broadcasting station of 100 million kilowatts would be needed to make these noises, originating from the sun, heard here on earth, estimates Prof. Jesse L. Greenstein of California Institute of Technology.

This is two million times greater than the most powerful radio station permitted here in the United States by the Federal Communications Commission. No wonder solar static interferes with FM, television and radar.

"The total energy transported in these radio signals is small compared to the energy in light or in cosmic rays," Prof. Greenstein stated at the meeting of the American Astronomical Society in New Haven, Conn. "But when we analyze the observations, we find that the energy is much greater than we might have expected."

A broadcasting station placed as far away as the nearest star would have to use a billion billion kilowatts to make us hear static such as reaches us from cosmic space, Prof. Greenstein estimates.

The use of radar in probing the heavens marks the first time in astronomy that instruments other than telescopes and other light-sensitive instruments have been used, the Caltech astronomer pointed out.

Intensity maps of the Milky Way show that the cosmic static comes mainly from the central part of the constellation of Sagittarius, the archer, where the center of the Milky Way galaxy is located, and from a small but bright region in the constellation of Cygnus, the swan.

The great distance to the stars weakens the signal so much that the average stars would have to emit 100 billion times as much radio waves as does the sun, if the stars are to account for the observed intensity. Therefore one theory suggests that this cosmic static originates in the outer atmosphere of a few extraordinary stars, which emit a large proportion of their energies as radio waves, of much longer wavelengths than light. Such stars, with strong electric and magnetic fields, might prove to be the rarest and strangest objects in the sky.

Ionized gas between the stars is the source of this cosmic noise, according to a second theory. Near hot stars, hydrogen gas (the space between the stars contains about 20 hydrogen atoms per cubic inch) is quite hot and electrified, whereas that far from such stars is neutral and cool. The hot regions appear as very faint gaseous nebulae in the Milky Way and could emit nearly enough radio waves to account for the observed intensity, Prof. Greenstein calculates.

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Infrared ray measurements, the first ever taken of the sun at an altitude of 35,000 feet, were made by the U. S. Navy recently, using an Air Force bomber.

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