

This Week's Citation Classic™

CC/NUMBER 23
JUNE 4, 1984

Jansky K G. Electrical disturbances apparently of extraterrestrial origin.
Proc. IRE 21:1387-98, 1933.
[Bell Telephone Laboratories, New York, NY]

Observations made during 1931-1932 of radio atmospheric at high frequencies (~ 20 MHz) indicated the presence of a steady source of unknown origin. Comprehensive studies revealed that these radio waves originated from the Milky Way with a maximum from the galactic center. [The *SCI*[®] indicates that this paper has been cited in about 15 publications since 1955. However, the citation record for 1933-1954 will have to wait for the publication of the *SCI* for those earlier years.]

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January 2, 1984

"In 1928, Karl G. Jansky, a 22-year-old physics graduate, joined the Bell Telephone Laboratories where his first assignment was to study the atmospheric radiations that interfere with radio communication. In the next few years, he constructed and assembled apparatus to record the intensity and direction of radio waves at 14.6 meters wavelength. The antenna was a 30 meter broadside array mounted on wheels and driven to make a complete rotation every 20 minutes (and nicknamed the merry-go-round). The antenna was connected to a sensitive receiver and regular recordings commenced in August 1931. In addition to radio atmospheric from thunderstorms, Jansky detected a steady radio noise of unknown origin.¹ Comprehensive studies during 1932

revealed that the radio waves emanated from a fixed direction in space close to the center of our galaxy of stars that constitute the Milky Way. Jansky described his results at an URSI meeting in Washington in spring 1933, and his detailed analysis was published in the *Proceedings of the IRE* in October. This cited paper marks the beginning of radio astronomy. In *Nature*, July 1933,² he also outlined this finding of an astronomical source of radio emission. (In the astronomical interpretation of the data he was helped by a colleague, A.M. Skellett, who was involved in observations of ionospheric ionization associated with meteors, a precursor of one aspect of radar astronomy.)

"Jansky's discovery hit the headlines in the press and radio broadcasts, but interest waned in the following years. In one further paper,³ in 1935, he noted that the source was distributed throughout the Milky Way with a maximum near the galactic center. However, it was not the primary function of Bell Laboratories to pursue astronomical research. Consequently, Jansky resumed studies of radio noise in connection with communications systems. Sadly, he suffered from a chronic kidney ailment, and although he had not behaved like a sick man, he died in 1950 at the early age of 44.

"Astronomers were slow to explore further the radio phenomenon that Jansky had disclosed. For many years, the subject was actively pursued only through the remarkable spare-time enterprise of an electrical engineer, Grote Reber.⁴

"During and after World War II, new discoveries prompted astounding advances in radio and radar methods applied to astronomy. The historical development of radio astronomy has been described by me,⁵ and a recent publication provides an up-to-date survey of progress."⁶

1. Jansky K G. Directional studies of atmospheric at high frequencies. *Proc. IRE* 20:1920-32, 1932. (Cited 20 times since 1955.)
2. Radio waves from outside the solar system. *Nature* 132:66, 1933. (Cited 5 times since 1955.)
3. A note on the source of interstellar interference. *Proc. IRE* 23:1158-63, 1935. (Cited 10 times since 1955.)
4. Reber G. Cosmic static. *Proc. IRE* 28:68-70, 1940. (Cited 5 times since 1955.)
5. Hey J S. *The evolution of radio astronomy*. London: Elek Science, 1973. 214 p.
6. *The radio universe*. Oxford, England: Pergamon Press, 1983. 260 p.