ELECTRONICS

Outer Space Radio Hiss

Cosmic hiss first radio impulses received from outer space in 1932. Radio mystery antedated radio echoes from moon by over dozen years.

➤ THE RADIO WAVES bounced off the moon in the Army's radar experiments are not the first radio waves to arrive on earth from outer space.

There is a cosmic radio hiss that seems to originate in the stars of the Milky Way or in interstellar space which Karl G. Jansky, Bell Telephone Laboratories engineer, discovered in 1932 while working with an extremely sensitive receiving set. This Milky Way static is probably the first radio impulse received from outer space, although the moon-reflected radar signal is the first man-made radio signal to be received on earth after a travel in outer space.

The origin of this cosmic hiss is one of the problems of science that need to be solved in the future. Probably the best suggestion as to its origin is that it is black-body radiation from the stars or from matter in interstellar space. This idea, which means that the stuff in the stars act somewhat like a radio transmitting tube, was put forth by Mr. Jansky when he was still working on the phenomenon some years ago before war research absorbed his time and energies. At present, Mr. Jansky, who was interviewed while attending the meeting of the Institute of Radio Engineers, is doing research for the microwave repeater systems such as that being installed by American Telephone and Telegraph Co. between New York and Boston.

The interstellar static impulses are not on any one frequency but seem to be spread up and down the radio spectrum. Mr. Jansky's original experiments were with a radio set tuned to about 200 megacycles. Grote Reber, experimenting near Chicago, has reported in the *Astrophysical Journal* during 1945 cosmic radio impulses received on 300 and 600 megacycles.

Radio engineers have been confident that radio waves travel into outer space because some radio signals are not reflected by the ionosphere layers and since they did not bounce back to earth they must have gone out into outer space.

Science News Letter, February 2, 1946

ORDNANCE

VT Fuze Closely Guarded

➤ THE PROXIMITY fuze was one of the war's really secret "secret weapons"; even at the close of hostilities the military chiefs of enemy countries had not found out about it.

That it was one of the war's two best-kept big secrets (the other being the atomic bomb) was due in large measure to the careful precautions taken to keep any specimens from falling into enemy hands, in shells or bombs that failed to explode. These security measures are outlined in a general discussion of the fuze by Col. Harold S. Morton, who has worked on the fuze since 1941. (*Army Ordnance,* Jan.-Feb.)

Navy shells carrying the proximity fuze, or as it is at once more technically and more briefly known, the VT fuze, were fired at enemy aircraft only over the water; the shells were never used against enemy surface craft, and they were not used against shore targets until the closing months of the war.

Anti-aircraft batteries on land used VT-fuzed shells only when their targets were above ground totally controlled by Allied forces. For example, when the secret of Hitler's planned V-1 buzz-bomb leaked to British information services, a special VT fuze was designed for use against it, in American 90-millimeter and British 3.7-inch rifles. The firing, done entirely from British soil, was highly effective against the Nazis' jet-propelled robot weapons, but there was never a chance of even a fragment of one of the fuzes falling into Nazi hands.

In the meantime, it had become increasingly apparent that the fuze would be highly effective against ground targets such as enemy troops, batteries and communications centers. Fuzes for field gun ammunition were designed and built in large numbers, but they were allowed to accumulate in strategic reserves until some occasion should arise when they could be used with greatest effect.

This occasion came at the famous Battle of the Bulge, the Nazis' last desperate bid for victory. Artillery using shell fuzed with VT's made their fire four or five times as effective as it would have been with older-type fuzes. Still the Germans failed to "get wise"—so that the inspired writer of the first report on their full use titled his opus, "They Never Knew What Hit Them."

Science News Letter, February 2, 1946

Utah, or desert, juniper, *Juniperus utahensis,* is the most abundant and widely distributed tree of the Great Basin from Idaho and Wyoming south into Arizona; it grows in dry, rocky, gravelly and sandy soils.

SCIENCE NEWS LETTER

Vol. 49 FEBRUARY 2, 1946 *No. 5*

The weekly summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St. N. W., Washington 6, D. C. NOrth 2255. Edited by WATSON DAVIS.

Subscriptions—$5.00 a year; two years, $8.00; 15 cents a copy. Back numbers more than six months old, if still available, 25 cents.

Entered as second class matter at the post office at Washington, D. C., under the Act of March 3, 1879. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to Periodical Literature, Abridged Guide, and the Engineering Index.

The New York Museum of Science and Industry has elected SCIENCE NEWS LETTER as its official publication to be received by its members.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 393 7th Ave., N.Y.C., PEnnsylvania 6-5566 and 360 N. Michigan Ave., Chicago, STAte 4439.

SCIENCE SERVICE

The Institution for the Popularization of Science organized 1921 as a non-profit corporation.

Board of Trustees—*Nominated by the American Association for the Advancement of Science:* Edwin G. Conklin, American Philosophical Society; Otis W. Caldwell, Boyce Thompson Institute for Plant Research. *Nominated by the National Academy of Sciences:* Harlow Shapley, Harvard College Observatory; Warren H. Lewis, Wistar Institute; R. A. Millikan, California Institute of Technology. *Nominated by the National Research Council:* C. G. Abbot, Smithsonian Institution; Hugh S. Taylor, Princeton University. Ross G. Harrison, Yale University. *Nominated by the Journalistic Profession:* A. H. Kirchhofer, Buffalo Evening News; Neil H. Swanson, Executive Editor, Sun Papers; O. W. Riegel, Washington and Lee School of Journalism. *Nominated by the E. W. Scripps Estate:* Max B. Cook, Scripps Howard Newspapers; H. L. Smithton, Executive Agent of E. W. Scripps Trust; Frank R. Ford, Evansville Press.

Officers—*President:* Harlow Shapley. *Vice President and Chairman of Executive Committee:* C. G. Abbot. *Treasurer:* Frank R. Ford. *Secretary:* Watson Davis.

Staff—*Director:* Watson Davis. *Writers:* Frank Thone, Jane Stafford, Marjorie Van de Water, A. C. Monahan, Martha G. Morrow. *Science Clubs of America:* Joseph H. Kraus, Margaret E. Patterson. *Photography:* Fremont Davis. *Sales and Advertising:* Hallie Jenkins. *Production:* Dorothy Reynolds.