

New Device Tracks Down Radio Impulses in Space

Wonders of Research

By the Natural Science Correspondent of The Christian Science Monitor

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The same type of apparatus useful in radio astronomy to locate star systems invisible to ordinary telescopes is serving the National Bureau of Standards as a practical aid to predicting the best frequencies for radio communication between any two points on earth. It has importance not only in commercial communications but for military operations.

It was while tracking down thunderstorms at the Bell Telephone Laboratories in Holmdel, N.J., in 1932 that Dr. K. G. Jansky discovered that additional radio noises not attributable to thunderstorms could be tracked to points mainly centered along the plane of the Milky Way. He clearly showed that it was possible to track down radio waves originating in space, and that the origins of such waves could be plotted on a sky map just as visible stars are plotted on star maps. The new field of "radio astronomy" was born.

From the earliest days of wireless it was known that thunderstorms within the earth's atmosphere caused widespread "static" disturbances to communications, but these ceased to be much of a problem above about 15 megacycles per second.

But while the familiar crackling noises cease at this level, cosmic noise manifests itself as a steady rushing noise or hiss. In frequency modulated radio systems, this cosmic noise is suppressed at short distances, but completely drowns out the signal over long distances. It makes the television screen jumpy or causes "snowstorm" effects.

Most of this noise has been tracked down to a center in the constellation Sagittarius in the Milky Way. But the sun is also an important offender, especially when sunspot activity is highest, according to Grote Reber of the Bureau of Standards central radio propagation laboratory.

The bureau has two giant reflectors, about 25 feet in diameter, constantly keeping track of the large amount of energy coming from solar broadcasts. One that is even larger has been built, and tests will be started soon, he says.

Huge Radio Telescope At Festival of Britain

Featured at the 1951 Festival of Britain will be a South Bank exhibition in London of a large radar telescope, by means of which visitors will be able to transmit radio pulses toward the moon and, 2½ seconds later, see the returned wave show up on a cathode ray tube as a sudden surge.

Capable of operating either by day or night, the radar telescope, which has a wave-length of 1½ meters, is hailed in London as the astronomer's latest tool. By study-

ing the radio pulses received from outer space, astronomers are learning new facts about the composition of distant nebulae and the locations of stars and sources of meteor showers.

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Also to be exhibited at the festival is a 74-inch reflecting telescope built by British craftsmen for the Australian Government. After the celebrations, it will be shipped to Mount Stromlo, Canberra, where it will be used by the Australian Commonwealth Observatory. It is one of the world's six largest telescopes.

Synthetic Detergents Held Better Than Soap

Some of the secrets of the makers of new whiter-washing compounds were discussed recently at the Du Pont Country Club in Penns Grove, N.J. There were no advertising agents around, so Dr. Arthur L. Fox, director of research for the Colgate-Palmolive-Peet Company, was able to give plain unadulterated facts, explaining why synthetic detergents dissolve more easily than soap, are unaffected by hard water, and leave no scum.

Chemically speaking, the main ingredient in a synthetic detergent is either a long-chain alcohol sulfate made from animal or vegetable oils or a sulfonate from petroleum and coal tar sources. These remove the dirt and produce foam.

To increase the dirt-removing power, a second ingredient called a "builder" is used. This is a phosphate or long-chain alcohol that makes the foam last longer and appear whiter and creamier.

A third ingredient is called CMC, for short, a chemical made from cellulose, which prevents the return of dirt once it has been removed. Sodium silicate is also present in all heavy-duty synthetic detergents. This protects aluminum pots from attack by the "builders," Dr. Fox disclosed.

The latest ingredient to go with detergents is a brightener—a colorless dye that actually reflects some of the ultraviolet light in sunshine as visible light to make the cloth appear brighter.

"Detergents should foam," Dr. Fox said, "because people are used to having soap foam, and housewives use the foam as a measure of the amount of washing material to use. Many housewives are also happier when the dirty dishwasher or laundry water is hidden under a blanket of foam."

Yes, it seems to be true what they say about the new synthetic—they are more economical than soap, do not go rancid, disperse grease better, give dishes and glassware greater sparkle, and really do require no rinsing.