GEOPHYSICS

See New Radio Channel

"Whistlers," audible radio waves produced by lightning, may some day be used for long-distance communication. Signals can be picked up from storms in opposite hemisphere.

➤ INVISIBLE TUBES of force in the earth's atmosphere may some day be used for long-distance communications, it is foreseen from reports that scientists have launched intensive studies of "whistlers," which are audible radio waves.

An antenna hooked to an amplifier is sufficient equipment to tune in on these semi-musical sounds, produced by lightning flashes. The whistlers heard at any point have traveled along the earth's magnetic force lines from the opposite hemisphere, Dr. L. R. O. Storey of England's Radar Research Establishment in Malvern, suggests.

In doing so, they reach a height above the equator that is equal to the diameter of the earth itself, or nearly 8,000 miles. Short whistlers are believed to result from lightning flashes occurring at the end of a line of magnetic force in the opposite hemisphere.

Long whistlers are thought to originate in local lightning storms, the sound energy traveling along the tube of force to the opposite hemisphere, then being reflected back after reaching the earth at the other end.

Whistlers sound like a whistle falling steadily in pitch. They are first heard at about ten kilocycles per second, then fade within one to four seconds to about one kilocycle per second. The human ear hears in the range from about two cycles per second to 20 kilocycles per second.

To use the earth's magnetic lines of force for communication between the Northern and Southern Hemispheres would require generating energy in this range equal to that kicked up by lightning flashes. Much more study of the whistlers will be needed before this is feasible.

For this reason, scientists aboard the U.S.S. Atka, Navy ice-breaker returning from the Antarctic, are keeping track of whistlers. Daily messages were received from the Atka giving information on the whistlers heard on its trip to the white continent.

These messages are also being sent on its return trip.

Both the Central Radio Propagation Laboratory of the National Bureau of Standards at Boulder, Colo., and radio experts at Stanford University in California, under the leadership of Dr. Robert Helliwell, are setting up programs for keeping track of these strange sounds. They are interested in the time and duration of the whistlers, the number that occur during a given period, and how the hour and season affect their occurrence.

A recent scanning of the atmosphere near the earth's magnetic equator, from Achimota in Africa's Gold Coast, detected no whistlers there. This finding, reported by Dr. Storey and Dr. J. R. Koster of the University College of the Gold Coast, supports the theory that the queer sounds follow the earth's magnetic lines of force.

Over the equator, these lines are horizontal and the whistlers, therefore, would be unable to travel up through the lower ionosphere to reach the lines of force.

That whistlers have traveled to such great distances from the earth is expected to change present ideas about the earth's outermost atmospheric layers.

Science News Letter, March 5, 1955

AGRICULTURE

Sell Eggs by Machine Down by the Farm

➤ VENDING MACHINES may soon offer individual farmers an opportunity to market fresh eggs at increased profits, David Dunwiddie, a Whitewater, Wis., poultry expert, believes.

"The small farmer is prevented from bottling milk or processing many of his farm products," he explains. "But any farmer could market eggs if he desired. In eggs, you have the finished product right in your hands. If the product is of good quality, it will sell."

The cost of vending machines would be high, but a group of farmers could pool their resources to buy such machines and install them in places where they would attract the attention of customers.

Science News Letter, March 5, 1955

PHYSIOLOGY

People More "Grasping" Than They Need Be

➤ PEOPLE ARE more "grasping" than they need to be.

This has been demonstrated in research by John Lyman of the engineering department at the University of California at Los Angeles.

Most persons use much more grasp force than necessary in picking up objects, and workers who wear gloves expend considerably more energy on such tasks than those without gloves.

Subjects were asked to pick up a cylinder, whose weight could be varied by inserting different loads, from a base hole and place it in designated holes at various distances. The holes were in a half-circle panel which corresponded to the individual working area of a work bench or assembly line. A highly sensitive device in the cylinder measured the grasp force.

It was found that subjects always used more force than needed in picking up an object initially. In repeated performances the force was relaxed somewhat. There was a difference of a half pound force used in picking up objects close to the body and those at arm's length.

Gloves, even thin rubber surgical ones, made a difference in force used. Subjects used an average 3½-pound grip force with heavy gloves to pick up a one-pound object, 2¼ pounds with surgical gloves and a two-pound force with bare hands.

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