

TECHNOLOGY

Transoceanic TV System

► A TELEVISION transmission system reportedly developed at a cost of about \$1,000 was demonstrated by an inventor who claims it can be adapted to low-priced transoceanic telecasts.

The system built by Dr. Sid Deutsch, associate professor of electrical engineering at Polytechnic Institute of Brooklyn, employs shortwave broadcasting, rather than microwave relay stations such as those proposed for communications satellites.

Instead of the signals of 4,000,000 cycles per second used in conventional television, the Deutsch equipment uses only 45,000 cycles per second. A spot of light moves horizontally across the picture tube at 20 cycles per second and vertically at 2,250 cycles per second, compared with 15,750 cycles horizontally and 60 cycles vertically in conventional television.

The coarse movements are received clearly because of a "pseudo-random" scanning device, so called because of its "hop, skip and jump" kind of motion. The

scan and a yellow-colored screen eliminate flickering. A transoceanic telecast by shortwave would be rebroadcast on home screens in black and white.

Dr. Deutsch said the picture quality is somewhat inferior to standard television, but equivalent to shortwave signals originating in Europe and rebroadcast locally. The slow scan makes 1.6 seconds necessary for a complete fadeout, leaving a ghost-like image visible after a quick motion.

The system was developed primarily to record classroom lectures inexpensively with a stationary camera. Lectures and laboratory demonstrations can be recorded on a standard dual-channel tape recorder with the tape running at 30 inches per second, rather than the usual 15.

Dr. Deutsch said he spent \$800 for a standard closed-circuit system and about \$200 to convert it for shortwave transmitting.

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SPACE

Space Treaty Needed

► THE LATEST Russian space shot has again shown the need for an international space treaty.

With the United States and Russia taking turns cluttering up outer space with satellites, manned space flights and other rocket shots, some international agreement is necessary yet no significant steps are being taken.

Most legal experts think such a treaty is premature because so little is known about the uses of outer space and the political, technical and military implications involved. Such questions as how far into space does national sovereignty extend and what is the definition of "peaceful uses" of outer space are still highly controversial.

In the peace and quiet of pre-satellite excursions, the question of national sovereignty was settled by a 1944 international agreement that stated every state has complete and exclusive jurisdiction over the air space above its territory. Although "air space" was never defined, flights during that time were primarily limited to the conventional propeller-driven planes whose "space heights" were limited to thousands of feet.

Since then, rocket shots as well as the U-2 and rocket-driven airplanes such as the X-15 have further muddled the picture of where national air space ends and outer space begins.

The United States stand has been and continues to be that the use of space should be limited to "peaceful purposes." However, the definition of "peaceful uses" also runs into a snag because of the current threat to national security. The development of the military early warning and recon-

naissance satellites is considered an integral step in the defense of the country, yet one reconnaissance satellite jaunt over Russia has already brought cries of "acts of aggression" from Russia.

The dividing line between military and non-military uses of outer space is very fine—for instance, information from weather and communication satellites can also be used by the military.

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MINING

Methane Gas Affects Coal Dust Explosibility

► THE EXPLOSIVE FORCE of a mixture of coal dust and air resulting from the presence of a small amount of methane gas depends upon the concentration of the dust in the atmosphere.

Experiments on the effects of adding varying amounts of combustible gas to coal dust were conducted by the U. S. Bureau of Mines. The experiments were carried out in laboratory-type test chambers and the effects of changes in pressure and convection currents within the chamber were also studied.

Some of the conclusions are applicable to any combustible gas in a potentially explosive dusty atmosphere and also are important to industries other than coal. The report on "Explosibility of Coal Dust in an Atmosphere Containing a Low Percentage of Methane" by John Nagy and William M. Portman can be obtained from the Bureau of Mines, 4800 Forbes Avenue, Pittsburgh 13, Pa.

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SPACE

Yo-Yo De-Spin Device Will Slow Satellites

► A YO-YO mechanism may soon be used to slow down the spin of satellites.

The mechanism consists of two pieces of wire with weights on the ends. The wires are symmetrically wrapped around the middle of the satellite and the weights are fastened by a release device.

At a predetermined time, after the satellite has separated from the launching vehicle and is spinning in space, the weights are released and the two Yo-yo's reduce the spin of the satellite to the proper spin.

Dr. J. V. Fedor of the Goddard Space Flight Center calculated the theory and design curves of the de-spin mechanism for the National Aeronautics and Space Administration, Washington, D. C.

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PORTABLE FIRE SHELTER

PUBLIC SAFETY

Fire Shelter Developed Of Aluminum Foil

► A PORTABLE tent shelter that protects trapped forest firefighters from searing heat has been developed by U. S. Forest Service researchers.

Weighing about two pounds, the aluminum foil shelter with fire-resistant cotton netting and paper insulation comfortably shields its occupant, even when outside temperatures reach more than 600 degrees Fahrenheit.

Easily carried rolled up in a packet, the emergency shelter can be unrolled and wrapped around the firefighter within seconds, it is reported in *Agricultural Research*, 10:6, 1961.

• Science News Letter, 80:118 August 19, 1961