SPACE

Satellites for Television

Low-flying satellites for telephone and television communication will be faster to build than high-flying ones, a scientist reports to First Conference on Peaceful Uses of Space.

➤ LOW-FLYING satellites that rise and set in the sky will be the best for sending telephone messages and television signals around the earth, one authority has reported.

Such a satellite, just a few thousand miles up, could be built much sooner than a 24-hour satellite that stands at all times over the equator 22,300 miles up, Dr. J. R. Pierce of the Bell Telephone Laboratories, Murray Hill, N. J., said.

He told the First National Conference on Peaceful Uses of Space in Tulsa, Okla., that the low-altitude satellite could be made lighter than the high-altitude ones so that several could be launched with one shot. They could also be made reliable sooner and provide a given amount of world-wide communication more cheaply.

Another advantage of low-altitude satellites that sweep across the sky is that if one of many satellites fails, only a small link in a chain is broken and the system as a whole keeps working. If a high-altitude, 24-hour satellite that beams over a larger area fails, system effectiveness is greatly cut down.

A distinct disadvantage with the 24-hour satellite, he pointed out, is that it would take half a second longer to hear a telephone conversation over this system than it now does with transoceanic cables.

Long-lived satellites must be developed for this type of communication, since the initial cost of sending them into orbit around the earth is high. However, once such satellites can function for a number of years they will be technically superior to present day methods of sending TV and telephone signals.

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SPACE

Sterile Space Probes

➤ THE NATIONAL Aeronautics and Space Administration has awarded a contract for research work on developing means of sterilizing vehicles destined for outer space.

The move results from increasing concern that future space probes may accidentally contaminate other space bodies.

The $106,000 contract went to Wilmot Castle Co., Rochester, N.Y., manufacturers of sterilizers and related equipment for hospitals and industry.

Purpose of the 12-month project is development of standard operating procedures for sterilizing each missile component or space probe assembly. The company will emphasize sterilization by dry heat, but will utilize radiation and chemical disinfectants for items that cannot be heat-treated. Treatments must be devised that will not affect operation of components or make changes in basic materials necessary.

Exteriors of space craft can be sterilized by applying such gaseous sterilants as ethylene oxide. But sealed components, which might be shattered upon landing, must be internally sterilized before they are sealed.

The NASA and the U. S. Army Chemical Corps have been actively investigating prevention of extraterrestrial biological contamination for some time. The contention is that no probe should be launched toward Mars, Venus or the moon, if there is as much as a one-in-a-million chance that it will land a living organism on their surfaces.

Maximum precautionary efforts are considered vital to assure that artificial spreading of living earth forms does not complicate future studies of life beyond earth.

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SPACE

Solar Probe Can Skim Close to the Sun

➤ A SOLAR SATELLITE could be sent as close as 4,600,000 miles to the sun and still withstand the intense heat. This would be well within the orbit of the planet Mercury, which is 36,000,000 miles from the sun.

The National Aeronautics and Space Administration reported that speeds ranging between 51,000 and 100,000 feet per second would be needed to send a satellite even as far as a third of the way to the sun, which is 93,000,000 miles from the earth.

The space agency said the best way to launch a solar satellite into orbit would be in a direction opposite from that of the earth around the sun. That way the satellite's closest approach to the sun would be in months rather than in years.

If the probe was launched in the same direction that the earth is traveling around the sun, a second impulse would be needed one or several years after launch to head it toward the sun. This would decrease its reliability. Possibility of damage from meteors would also be increased as would the requirements on instruments.

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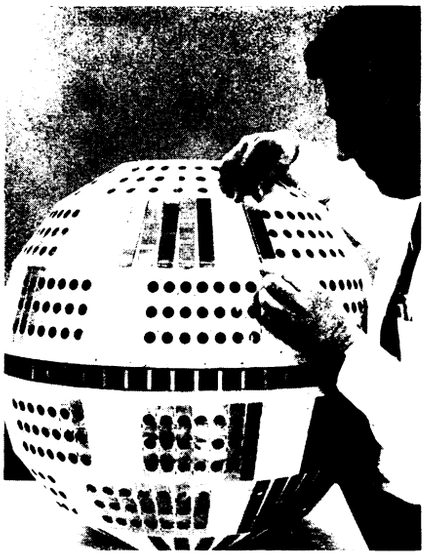

SAPPHIRE COVERING

SPACE

Sapphires Will Protect Satellite Solar Cells

➤ THOUSANDS of pieces of man-made sapphire, designed to protect solar cells from space radiation, will cover communications satellites now being developed by Bell Telephone Laboratories.

Dr. James B. Fisk, company president, said the sapphires should enable a system of telephone satellites to endure electron and proton bombardment ten years or more while serving as radio relay stations for overseas communications.

Sapphire sheathing will cover solar cells made of silicon and mounted on the satellite surface to convert sunlight to electricity. Dr. Fisk, speaking at the meeting of the American Iron and Steel Institute in New York said Bell wants to put the system into operation as soon as possible, and has offered to pay rocket and launching costs.

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SPACE

Atomic Energy Seen Best for Rocket Power

➤ ATOMIC ENERGY is the most feasible source for powering rockets into the far reaches of outer space.

A refined model of a nuclear power system now being developed could be used to propel space probes to Mars and Venus, Dr. Glenn T. Seaborg, chairman of the Atomic Energy Commission, told the American Ordnance Association in San Francisco.

Already it is feasible to put an "atomic generator" in a satellite whirling around the earth to supply electric power. This generator, weighing four pounds, could produce electricity, equivalent to thousands of pounds of batteries, over a five-year period, Dr. Seaborg said.

Atomic energy can also be used in a world-wide network of television satellites or weather stations, the scientist noted.

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