PHYSICS

Artificial Moonlet Now

Scientist urges launching a small, 50-pound moon now, instead of aiming at a "super-satellite." Mouse, for "Minimum Orbital, Unmanned Satellite, Earth," suggested as name.

➤ A SMALL earth satellite, an artificial moon, could be launched by the United States now, Dr. S. F. Singer of the University of Maryland has told SCIENCE SERVICE.

We have all the necessary know-how, he said, and should not set our sights too high. Instead of starting with a "super-satellite," we could send up a tiny moonlet that would weigh only about 50 pounds.

The "new look" in proposed satellites has been named the "Mouse." The name stands not only for its size, but for "Minimum Orbital Unmanned Satellite, Earth."

The artificial moon would whiz around the earth in about two hours, only 200 miles or so above the surface. And it would flash across the sky for only three weeks or less, not indefinitely.

The satellite's payload of instruments would bring back "invaluable information about the sun now screened out by our atmosphere," Dr. Singer said. This is the first time that such a low weight, low altitude and short duration have been suggested for a sky-sweeping satellite vehicle.

As the Mouse zoomed out into space, the three expendable rockets that had boosted it to its orbit would drop back to earth one by one. To aid in tracking the man-made moon, a weak radio signal could be triggered as the last booster was jettisoned.

Original speed of the Mouse in its orbit is estimated at just under five miles a second. The extremely thin air at 200 miles above the earth's surface would, by friction, gradually slow the speeding moonlet. As it slowed down, it would spiral in toward the earth, coming a bit closer each turn.

Although the tiny satellite might get very hot and even melt a little, it would not burn up entirely. The unique information recorded by its instruments could be recovered.

Scientists would have to wait until the Mouse dropped back to earth to get the instrument readings, however. Dr. Singer suggests that this first trial vehicle contain no equipment to radio information back to earth. Since a battery to supply power for telemetering is not needed, much weight can be saved.

Another weight-saver is elimination of the need for keeping the space vehicle always fixed in a certain position relative to the sun. This can be dispensed with by making the recording instruments non-directional. In this way, over a period of time, the desired readings are obtained no matter how the satellite tumbles and rotates as it whisks around the earth.

It would be easy, Dr. Singer said, to make the Mouse visible as it raced by overhead. During the day, a plastic balloon, inflated with a little air after the man-made moonlet was in its orbit, would reflect enough sunlight to make it show up. Coating the balloon with particles of aluminum dust would aid tracking it by radar.

At night, a flashing light on the artificial moonlet would make it visible as it swept around the earth.

Dr. Singer believes that the problems of getting such a small satellite into its orbit have mostly been already solved in rocket work. The still unsolved ones, he said, would not be difficult to overcome.

Rockets have reached an altitude of over 250 miles, according to official reports. Unpublished information may show they have gone much higher. Their stay so far above the earth, however, has been very brief, a few minutes at most.

Instruments on the earth-circling Mouse could measure the primary cosmic rays bombarding earth from somewhere in space. Perhaps the controversy as to whether cosmic rays are thrown off by the sun or whether they come from elsewhere in our galaxy could be settled. Much could also be learned about the sun's radiation spectrum from radio waves to ultraviolet light and X-rays.

The earth's atmosphere acts as a shield to much of the sun's radiation. Until scientists can get outside of our heavy blanket of air, they can only infer the amount and distribution of the sun's total outpouring.

One practical result from such direct measurement of the different kinds of radiation could well be a better knowledge of the causes of the atmospheric disturbances that upset long-distance communications by shortwave radio.

Exactly what causes the northern lights, or aurora, is not known now, but information brought back by the man-made moonlet might solve this mystery. The Mouse might also return with information that would show a direct relation between solar radiation and weather patterns, Dr. Singer suggested.

Until now, scientists have only been able to infer such a relation, but have never measured it directly.

The name "Mouse" was devised by two London scientists, Arthur C. Clark, author, and Arthur V. Cleaver of the de Haviland Aircraft Co., in collaboration with Dr. Singer.

Dr. Singer is now working out details concerning the best instruments to use and a cost estimate for such a satellite. These details will be reported in May at the third symposium on space travel, sponsored by the American Museum of Natural History and the Hayden Planetarium.

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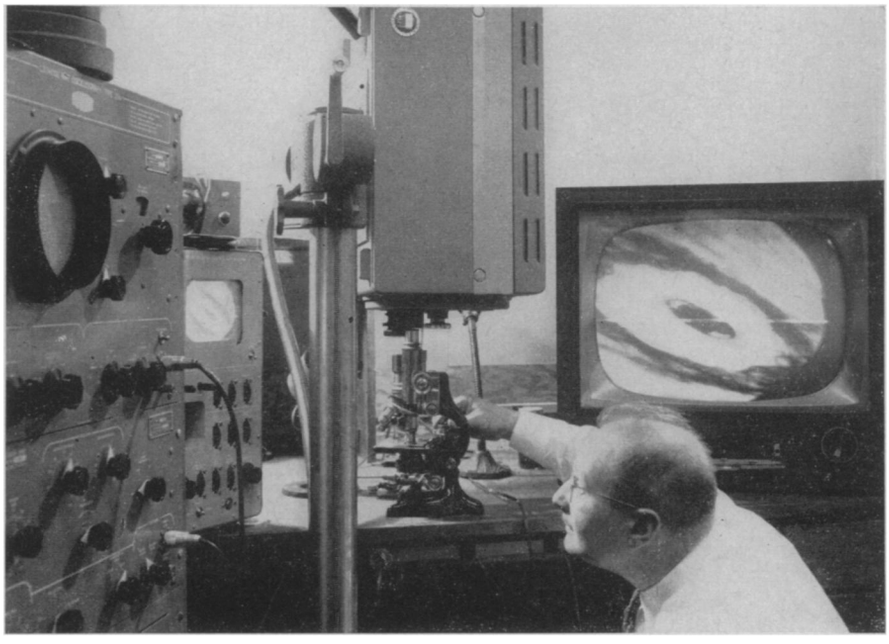

BIOLOGICAL TELEVISION—To evaluate the constituents of living cells, scientists at Western Reserve Medical School, Cleveland, and the Allen B. Du Mont Laboratories, Inc., Clifton, N. J., combined a microscope with electronic equipment. Here Carl Berkley of Du Mont watches the cell on which the microscope is focused, which shows as a luminous graph on the oscillograph (left), on one of the two television screens.