

ASTRONOMY

Moon Camera Planned

A new type of panoramic camera, geared to the spin stabilizer in a man-made satellite, has been developed to take better photographs of the moon.

A BETTER camera for moon exploration via satellites was described to the International Astronautical Federation Congress in London, England.

Merton E. Davies of the Rand Corporation, Santa Monica, Calif., reported a new type of panoramic camera has been developed which could be shipped as part of the payload of early space ships.

Earth-based telescopes, which have long been the principal tool for the exploration of the moon, are totally inadequate for the job. They always give answers which produce more penetrating questions. Even the television cameras, such as those carried by Pioneers I and III, do not provide adequate pictures.

The new camera, said Mr. Davies, could be carried in a four-stage rocket similar to the U. S. Army's Pioneer III and would be geared to the spin stabilizer so that it would take pictures without blurring them. It would use the spin to perform its panoramic scanning.

Careful timing would be a major essential in this camera, Mr. Davies explained. This could be achieved by a device similar to that used to measure the spin rate and lunar direction on Pioneer III.

To maintain the focus of the lens and

keep the film flexible, Mr. Davies said it would be desirable to pressurize the camera and control the temperature and humidity near the lenses and film.

Lunar photographs would probably have much greater contrast than those at high altitudes near the earth, he predicted. Such earth pictures are often marred by the scattering of non-image forming light into the optical system. A film which has a large dynamic range would be preferred for lunar photography. It should have a fast speed to allow high shutter speeds, perhaps of 1/2,000 second.

The camera would be packed in a three-foot sphere designed to survive severe heating as it re-entered the earth's atmosphere. An ablating plastic surface has been suggested for this purpose. These materials absorb large quantities of heat as they are vaporized during the descent through the atmosphere. The total weight of the payload capsule would be 400 pounds, of which 40 or 50 pounds would be vaporized during descent.

The problem of actual recovery, probably from the sea, would be the same as that with other space capsules.

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ASTRONAUTICS

Must Risk Life for Moon

No single instrument or group of instruments can duplicate the sensing, recording, interpreting abilities of man, two scientists report. Exploration of space thus means a human risk.

THE ARGUMENT that we cannot afford to risk human life to explore the moon is unsound, both historically and economically, two scientists from the National Aeronautics and Space Administration, Washington, D. C., told the International Astronautical Federation meeting in London, England.

Milton W. Rosen and F. Carl Schwenk said man has always dominated the history of exploration and has been able to cope with all physical hazards to reach inaccessible regions of the earth.

They conceded that exploration implies risk of life and that instruments could be built to withstand a greater range of temperature, pressure, acceleration and radiation than the sensitive body of man.

"But," they argued, "while an instrument can do one or several things, there are thousands, indeed millions, of things it cannot do. To put it bluntly, no instrument or array of instruments exists that can duplicate the sensing capabilities of a man.

When this is added to man's capability to record, remember, interpret and discriminate, we see how paltry are the powers of the most sophisticated mechanical substitute."

Arguing the merits of sending rockets on direct flight and by the orbital rendezvous methods, the scientists said that the direct flight method would be more costly, but would be better in every way.

They described a vehicle which could make a round-trip to the moon. A two and a half day flight from earth to the moon was chosen, as the shorter trip time minimizes effects of errors in burnout velocity. The rocket would have five or six stages.

The first three stages would accelerate the payload and remaining stages to an initial velocity of 36,000 feet per second. After coasting to the vicinity of the moon, the fourth stage would lower the vehicle to a landing on the moon.

At the time of departure, the fifth stage

would propel the vehicle toward the earth. After two and a half days, the payload approaches the earth. A sixth stage of propulsion could be used to slow the payload to orbital speed, or the vehicle could enter the earth's atmosphere at hyperbolic velocity.

This Nova rocket, as the scientists called it, would carry two men in a truncated cone 14 feet high and with a maximum diameter of 12 feet. They could have a 12-day stay on the moon and in that short time the NASA scientists think they could collect more lunar facts than all the instrument-equipped vehicles sent up before they get there.

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BIOLOGY

Skim Milk Halts Plant Virus Damage

SOMETHING in skim milk halts the destructive effects of a plant virus, a plant pathologist has reported.

In laboratory tests certain milk substances called globulins were found to inhibit tobacco mosaic virus, Dr. G. B. Lucas of North Carolina State College told the American Phytopathological Society meeting in University Park, Pa. The skim milk not only protected tobacco plants, but peppers and tomatoes also.

While it is still too early to say, Dr. Lucas pointed to the possibility of this milk substance being useful in controlling animal virus diseases. This year, he said, the scientists are recommending that tobacco farmers spray their crops with a skim milk solution. Researchers have found that when tomato and pepper pickers dip their hands in skim milk, the incidence of mosaic virus disease is greatly reduced.

Tests with skim milk gave nearly 100% inhibition of disease symptoms—leaf lesions. Whey proteins were also very effective. Various substances, especially alpha globulin, in cow blood were also tested with good results.

The experiments, carried out with Dr. W. W. Hare of Mississippi State University, point to some presently unknown globulins in milk as causing this disease inhibition.

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ELECTRONICS

Human-Like Computer Reads and Writes

A MACHINE can read the numbers on checks, deposit slips and other documents, process them, and select and post them to the correct customer's account.

This device using solid-state electronics is being introduced to the business world by the Burroughs Research Center, Paoli, Pa., as a data system that reads and writes language hitherto handled by the human eye.

A line of small numbers printed in magnetic ink along the bottom of checks can be read and processed by the visible record computer system.

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