

AERONAUTICS

'Jeep' to Fly Missions

► THE FLYING "JEEP," which should be ready next year for anti-guerrilla jungle fighting, will have a greater spread of talents than any aircraft now being used in Viet Nam.

It can drop bombs, shoot rockets, fire 20mm machine guns and cruise over an area for three hours searching for the enemy.

It will be able to take off and land on short stretches of the bumpiest roads; change itself to be able to land on water; fly at more than five miles per minute, and use the same type of gasoline that Army trucks use.

President Johnson announced the planned construction of the "jeep," a counter-insurgency (COIN) aircraft, at a news conference in Washington, D.C.

Officially called the LARA, for Light Armed Reconnaissance Aircraft, it is being built under an \$18 million contract awarded to the North American Aviation's, Columbus, Ohio, division by the Navy Department. LARA will also be able to perform peacetime operations such as disaster relief, medical missions and riot control.

SPACE TECHNOLOGY

Scientists to Swing Out In Giant Centrifuges

► SPACE SCIENTISTS and astronauts will soon be swinging in the world's two biggest centrifuges.

One will whirl a 40-foot room with four passengers around a 150-foot circle for periods up to a month. Built for North American Aviation's space and information systems division, Downey, Calif., the centrifuge is designed to simulate living and working conditions expected in an orbiting space station. Studies will be made of the fatigue and illusions caused by rotation in the centrifuge.

The 40- by 10-foot living quarters are based partly on an actual space station design and partly on submarines and other examples of close quarters.

The other centrifuge is being built in Houston, Texas, at the National Aeronautics and Space Administration's Manned Spacecraft Center.

In a 170-foot diameter building, about three stories high, payloads up to 3,000 pounds will be subjected to as much as 30 times the force of gravity. In a 12-foot chamber, representing controls and accommodations in the Apollo spacecraft, three astronauts will perform their expected space duties under artificial acceleration. Meanwhile, NASA doctors will monitor their respiration, body temperature, heart activity and blood pressure.

In addition to Apollo experiments, the NASA centrifuge is scheduled for a broad range of work, although not of such long duration as the device at North American. Both centrifuges are being built by the Rucker Company, Los Angeles.

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It will be able to take off or land in a clearing or a primitive road in a very short distance, a feat that only the versatile helicopter has been able to perform in the Viet Nam jungles. The helicopter is often a vulnerable target for machine gun fire from the ground.

The twin-engine LARA, designed for level flight speeds of 315 miles per hour, will prove a much more difficult target than a helicopter, however. It is designed to carry four operating machine guns and transport six passengers or 3,000 pounds of cargo.

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ENGINEERING

Equation for Insulation Saves Space and Money

► SAVINGS of both space and money in insulating equipment that must withstand very high and low temperatures have been made possible by a set of mathematical equations newly worked out.

The equations will take the guesswork out of determining the amount of insulation the equipment needs.

Since little is known about porous insulating materials such as fibers, powders and foams, designers often over-insulate the equipment, explained the creator of the equations, Prof. Raymond Viskanta of Purdue University, Lafayette, Ind.

Unnecessary insulation for high and low temperature uses has been costly and has created problems where minimum weight is a vital factor, such as in the liquid propellant tanks for missiles.

The equations will determine many of the previously unanalyzed characteristics of porous material that affect heat transfer rates, Prof. Viskanta said, in reporting his technique at a meeting of the National Heat Transfer Conference in Cleveland, Ohio.

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TECHNOLOGY

Camera Tracks Missiles Despite Cloud Covers

► A NEW AIRBORNE combination camera and missile tracker will allow the firing of missiles despite photo-proof cloud covers.

Nortronics division of Northrop Corporation, Palos Verdes, Calif., has developed an automatic tracking system connected to a camera with a 200-inch focal length telephoto lens. The camera is capable of taking detailed close-ups of a baseball 15 miles away. After the missile is located manually, two television sensors take over and keep the camera in position.

Developed for the U.S. Air Force, the system will be installed in a special pod in a JC-135 aircraft.

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MATHEMATICS—What determines the light reflecting or absorbing capability of paint? p. 135.

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ZOOLOGY—Where did a normally lethal rodent-control method fail recently? p. 137.

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