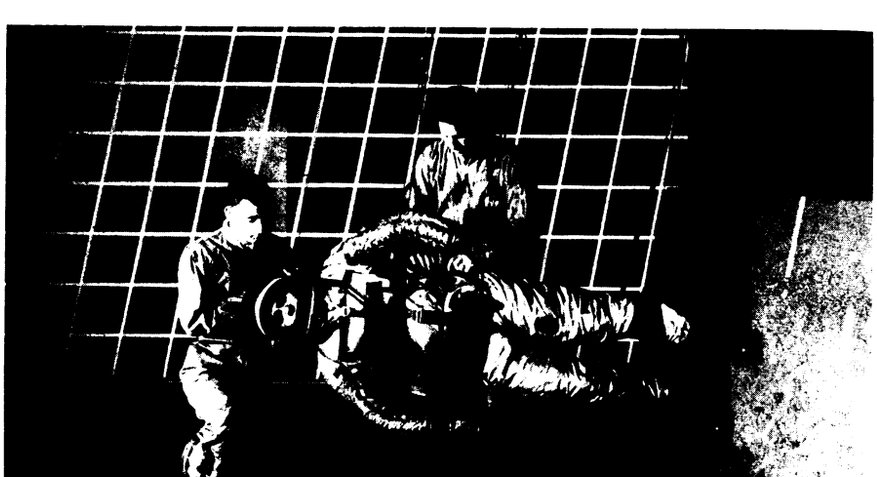

NASA

A WALK AT ONE-SIXTH G—A system of slings supports the weight of a man and allows him to walk and jump under conditions simulating the gravitational forces on the moon's surface at the Langley Research Center of the National Aeronautics and Space Administration.

SPACE

Scientists Walk On Walls

Walks on walls are helping solve problems that man, encumbered with a space suit, may encounter in his activities on the moon.

➤ SCIENTISTS ARE LEARNING to walk on the moon by using a device that imitates the moon's low gravity. They walk on walls.

The National Aeronautics and Space Administration has found that by suspending a man's head, body, arms and legs in slings attached to long ropes from a trolley above him, a man is able to walk on the wall like a fly. The wall becomes his "ground" and there is no pull of gravity on his feet.

By adjusting the position of the crane above him, the man's feet are made to push against the wall with the same force that gravity would pull on his body were he on the moon.

Experimenting on a 16-foot-long wall-walkway, the men found they were able to adjust easily to their new position. With a few trees "planted" on their wall, they thought they could even believe they were walking on a normally horizontal floor.

The canvas slings which held them up gave them freedom to move about easily. NASA scientists say this system probably will give an accurate idea of what actual moon-walking will be like.

The moon and this simulated moon have about one-sixth the gravity of earth. Under these conditions a six-inch earth jump becomes a three-foot jump on the moon.

Experimenters reported that the reduced gravity also reduced their foot traction. Their feet slipped as they accelerated or slowed down while walking and running. The result was much like trying to walk or run on ice. They had to move slowly and carefully to avoid slipping.

This could be dangerous for a lunar explorer who needed to move quickly to dodge a falling or moving object. Special friction shoes would help in the same way cleats help on ice.

A 180-pound man will weigh only about 30 pounds on the moon. With little effort he can make jumps of 12 to 14 feet. Although the experimenters easily lost their balance jumping, they fell against their "ground" without even being bruised.

They were able to perform acrobatics that under normal earth conditions would be attempted only by a skilled gymnast. High jumps, forward and backward flips, and handstands were described as "exhilarating" for there was no chance of bumps and bruises.

The men found it easier to climb a pole hand over hand than to climb a conventional ladder. Lunar base housing may use giant stairsteps that the experiments indicate are easier to climb.

Previous methods of stimulating low gravity have not proved successful. By submerging the body in water, the necessary buoyancy is provided but the water puts a drag on the mover.

Flying an airplane in a particular trajectory will produce the low gravity effect for about 20 seconds. This does not give the experimenter enough time to test his new freedom.

Future tests with the sling system will explore the possibility of using rocket-powered jump packs and man-powered vehicles to augment or extend the lunar explorer's capabilities. Designs of spacesuits and lunar housing will take into consideration the effects of low gravity.

Astronauts will learn to walk, carry loads, lift, catch, and throw bulky packages, and use all kinds of tools and machinery under moon conditions before they ever leave the safety of earth.

The research is being carried out at Langley Research Center, Hampton, Va., by Donald E. Hewes and Amos A. Spady Jr.

• Science News Letter, 85:213 April 4, 1964

ASTRONOMY

Galaxy's Stars Formed 15 Billion Years Ago

➤ THE STARS in the Milky Way galaxy, in which the sun, earth and other planets are located, started to form about 15 billion years ago.

This ancient age was calculated by Dr. Donald D. Clayton of Rice University, Houston, on the basis of astronomical observations and studies of radioactive materials. Although the dates obtained by these two methods are not in exact agreement, they are approaching the same figure, Dr. Clayton reported in Science, 143:1281, 1964.

Dr. Clayton calculates that the heavy elements from which the solar system was formed were created about 13 billion years ago. Because radioactive atoms disintegrate at a known, unchanging rate, the time at which they were created can be found from their abundances now.

Astronomical observations, on the other hand, indicate that most of the heavy elements were synthesized between 15 billion and 20 billion years ago. From these two dates, Dr. Clayton concludes, "extensive star formation" in the Milky Way galaxy began about 15 billion years ago.

The abundances of the elements osmium and rhenium and of thorium and uranium were involved in calculating the radioactive birth date.

• Science News Letter, 85:213 April 4, 1964

PHYSICS

Two Satellites Could Detect Sun's Charge

➤ TWO SATELLITES launched at the same time into orbits around the sun, one clockwise and the other counterclockwise, could show whether or not the sun has an electrical charge and whether it is negative or positive.

Most scientists believe the sun has no electrical charge. One who disagrees emphatically with the no charge theory is Dr. V. A. Bailey, emeritus physics professor at the University of Sydney, Australia. He believes the sun has a large negative electric charge and proposes launching the two solar satellites to prove it.

The magnetic fields between the planets measured by four space probes, he stated in a communication to Nature, 201:1202, 1964, have verified his theory of the sun's electrical charge. There is an unbreakable bond between magnetism and electricity, so magnetic measurements would show the electrical field.

• Science News Letter, 85:213 April 4, 1964