

of crevasses, and enough cabin space for a complete scientific research laboratory.

Another approach was suggested by Space-General Corp., who asked, why have a cabin at all? Instead, they designed a moonmobile that was little more than a chassis, engine and wheels. The crew of two would wear space-suits connected by thick umbilical cables to a large oxygen tank mounted on the chassis. To travel on, the crewmen would simply hang themselves up on hooks on the vehicle, like clothes on a hook, and drive off.

Even unmanned vehicles have something to offer. A remote-control Lunar Roving Vehicle proposed by Westinghouse in 1963 embodied an extendable foot that would feel ahead for dangerous fissures or other hazards. Though the device was intended to seek out landing sites for a subsequent manned mission, it could certainly be adapted as a safety measure for manned lunar trucks.

Moonmobiles have been designed around many ideas besides conventional wheels and treads. Now being evaluated by NASA is a vehicle with huge wheels having flexible spiral spokes that can cushion shocks and roll over even large boulders. Giant balloon tires 16 feet in diameter have been proposed by Goodyear, while the MOLAB, a mobile laboratory that got as close as any to acceptance when it was studied jointly for NASA by General Motors and Boeing, would be made in two sections with a flexible joint like a truck and trailer. The coupling would enable one section to ride up over an object while the other kept traction on the ground.

A wide variety of power sources have also been suggested, ranging from fuel cells similar to those used on Apollo to nuclear generators (which would probably be too heavy in a manned moonmobile because of the necessary shielding). Solar cells are a strong contender, but without the blanket of atmosphere enjoyed by the earth, micrometeoroid damage could become a problem to broad panels on long stays. NASA is presently investigating new kinds of solar cells that are more resistant to both micrometeoroid punctures and cosmic radiation. The latter is a danger because every puncture breaks another of the cell's molecular "connections," finally rendering it useless.

Lunar bases with crews of 10 or 20 men may not become a reality before 1985, but with any exploratory mission that is to get outside its own backyard, some kind of vehicle will be needed. Whether it walks, runs, rolls, hops, flies or jitterbugs, it will certainly look like nothing on earth.

# Films of the Week

Listing for readers' information of new 16mm and 8mm films on science, engineering, medicine and agriculture for professional, student and general audiences. For further information on purchase, rental or free loan, write to distributor listed.

**BOLD NEW APPROACH.** 16mm, b&w, sound, 62 min. Deals with the Comprehensive Community Health Centers concept, showing the spectrum of services that are available to help troubled people of all ages with their emotional problems. Stresses continuity of care within the community. Dramatized. Audience: Mental health professionals, co-operating agencies, high school students, general public. Purchase \$150 or rent \$15/day from Mental Health Film Board, 164 E. 38th St., New York, N.Y. 10016.

**ENGINEER, MAN OF DESTINY.** 16mm, color, sound, 30 min. Vocational film showing continuing need for engineers; suggests how to prepare for professional careers in engineering fields: aeronautical, structural, design, electronics, mechanical, civil, and chemical. Audience: high school students, general public. Free loan from Sterling Movies, 43 W. 61st St., New York, N.Y. 10023.

**INDIAN BOY OF THE SOUTHWEST.** 16mm, color and b&w, sound, 15 min. Tobooya, a Hopi Indian boy from the southwestern desert in the United States, tells about his life, the food he eats, his family, and his school. Audience: Upper elementary, junior, senior high. Purchase color \$160 and b&w \$85 from Film Associates, 11559 Santa Monica Blvd., Los Angeles, Cal. 90025.

**MARVELS OF THE HIVE.** 16mm, color, sound, 20 min. Complete documentary on the life cycle of the honey bee, with emphasis on the complex behavior patterns that make up the instinctive activities of bees. Audience: Upper elementary and junior high. Purchase \$170 or rental \$10 from Contemporary Films, 267 W. 25th St., New York, N.Y. 10001.

**MORE AND LESS.** 16mm, color, sound, 10 min. Illustrates the meaning of equality and inequality in numbers. Shows how we can sometimes match objects from two sets, and other times, objects are left over. Gives special symbols for these relationships. Audience: primary, elementary beginning math students. Purchase \$125 from Film Associates, 11559 Santa Monica Blvd., Los Angeles, Cal. 90025.

**NO MAN EXPENDABLE.** 16mm, color, sound, 11 min. Shows the activities of the U.S. Air Force's Aerospace Rescue and Recovery Service, including actual rescues of downed airmen picked up by helicopters deep in hostile territory in Vietnam. Audience: general. Loan from Public Relations Department, Sikorsky Aircraft, Stratford, Conn.

**NO TIME FOR UGLINESS.** 16mm, color, sound, 30 min. Most cities are built haphazardly, growing rapidly in some sections, deteriorating in others. Suggests how knowledgeable and demanding citizens can influence the development of cities. Audience: colleges, adult groups. Free loan from Sterling Movies Inc., 43 West 61st St., New York, N.Y. 10023. (Produced from American Institute of Architects.)

**OPERABLE HEART DISEASE IN INFANCY** -K-1260. 16mm, b&w, sound, 18 min. (TV film recording). Current trends in operable heart disease during early childhood compared to the state of the art 10-15 years ago; and current surgical technicals, the heart-lung machine and their relationship to improved surgical results and low mortality rate. Audience: professional biomedical personnel. Free loan from Public Health Service Audiovisual Facility, Atlanta, Ga. 30333.

**PADDLE-TO-THE-SEA.** 16mm, color, sound 28 min. The journey of a toy canoe carved by an Indian boy as it travels from Lake Superior past busy ships, over the Niagara cataract, and on toward the Atlantic. Audience: Junior science K-8. Purchase \$260 from National Board of Canada, 680 Fifth Ave., New York, N.Y. 10019.

**THE PARTICLE OF DIFFERENCE.** 16mm, color, sound, 14 min. Shows how herbicides can be literally tailor-made to form the droplet size that will give effective drift control and effective weed and brush control for aerial and ground applications. Audience: interested specialists. Loan information from local sales offices of Agricultural Chemical Department of Hercules, or from Phenoxy Herbicides Sales Office, Agricultural Chemicals, Hercules Inc., Wilmington, Del. 19899.

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