ASTRONOMY-PHYSICS

Rocket Space Ship

➤ WHEN rocket ships fly out into space beyond the earth, they will not be in great danger of being hit by the missiles from outer space that are called meteorites.

Anticipating space ships or artificial "moons" that circle the earth as satellites, G. Grimminger, Douglas Aircraft Co. scientist, has investigated what would happen if rockets were launched to travel above the earth's atmosphere.

Skin covering for a space craft of stainless steel or duraluminum need be no thicker than that presently used in high-speed aircraft in order to withstand the hail of cosmic dust that can be expected above the earth's atmosphere. The most frequent meteorites are the tiniest. Some are so small that they barely escape being whisked out beyond the solar system by the pressure of the sun's radiation. A rocket ship can expect to meet these smallest sub-microscopic motes about once every second, but with no more effect than to receive a tiny blemish on its polished hull.

The larger the cosmic fragment, the rarer it will be. Mr. Grimminger's calculations show that any meteoritic particle large enough to puncture a stainless steel hull a twentieth of an inch thick would be so rare as to be encountered by a rocket ship on the average of only once in 15 years of flight. Even then, the penetrating fragment would be very tiny, having about the diameter of the shaft of an ordinary pin. A pin-hole puncture would result, but there is a good chance that it could be located and patched.

It would be an almost inconceivable rarity for a rocket ship to meet a meteorite of the size that we usually imagine, such as the diameter of a baseball or even greater.

From Mr. Grimminger's study, it can be concluded that until present rocket engines and their explosive fuels are made much safer and until someone devises a safe technique for landing a rocket craft, the hazards from meteorites will be the least of the worries of high-flying astronauts.

The investigation was reported to the American Institute of Physics' JOURNAL OF APPLIED PHYSICS (Oct.).

Science News Letter, November 20, 1948

CHEMISTRY

Hints on Laundering

➤ IF THE WATER in your locality is fairly soft, be sure to use soap rather than synthetic detergents in laundering. Where the water is hard, synthetic detergents in most cases will clean your clothes better than soaps, particularly when only a small amount is to be used.

Both soap and synthetic detergent clean your cottons better, irrespective of the hardness of the water, if you heat the water to about 140 degrees Fahrenheit.

This is the practical advice given to members of the American Association of Textile Chemists and Colorists meeting in Augusta, Ga., by Miss Margaret S. Furry, Division of Textiles and Clothing of the U. S. Department of Agriculture.

Laundering tests leading to these results were conducted by Miss Furry, Dr. Verda I. McLendon and Miss Mary E. Aler at the Department of Agriculture in an attempt to help homemakers get the best results from home laundering of clothing and household fabrics. Soaps and synthetic detergents now on the market were tested for their ability to remove soil under conditions similar to those used in millions of homes throughout the country on wash day. Fifteen soaps, one soap powder and 35 synthetic detergents, chosen to represent the various classes now commercially available, were examined.

First, strips of bleached percale sheeting were artificially soiled in a mixture of graphite, tallow and mineral oil, then dried. These were laundered for 15 minutes in the launder-ometer, in waters heated to both 105 and 140 degrees Fahrenheit. Both distilled water and water of two degrees of hardness were used. To discover how much detergent must be used for maximum cleanliness, five different concentrations were employed.

Only three soaps and five detergents, representative of the various classes, were employed for the more detailed tests. The other detergents were evaluated at one temperature and one concentration only in both distilled and hard water.

The non-ionic synthetics were found the most efficient of the synthetic detergents tested in removing soil. In distilled water they were quite as effective as the standard soap. The cationic synthetic detergents were the least effective. In distilled water they were only about a quarter as efficient as the standard soap.

Science News Letter, November 20, 1948

ENGINEERING

Wasted Airplane Exhaust Will Add Jet-Propulsion

➤ WASTED ENERGY in the exhaust gases of an airplane engine is to be put to work in a new engine under development for the U. S. Air Force. The new engine will deliver some 4,000 horsepower to a propeller as well as several hundred pounds of jet thrust.

This piston-jet propulsion combination consists of a 28-cylinder Pratt and Whitney Wasp Major engine with a General Electric two-stage turbosupercharger which utilizes the engine's hot exhaust gases in two ways.

The turbosupercharger first uses the gases' energy to supercharge all combustion air required by the engine. It then discharges the gases to the rear through an orifice, the size of which is varied to obtain the best division of exhaust energy between supercharging and jet thrust.

This new combination powerplant, which will be known as the Wasp-Major-VDT, will be used first on the Air Force's Boeing B-54, an extended development of the famous B-29 and of the newer B-50. It is expected to enable heavy, long-range aircraft to fly farther, faster and higher. It will enable planes to take off with heavier loads of cargo, fuel or bombs, and to climb more rapidly. The VDT, by saving formerly wasted energy, is a fuel economizer. The new combination engine is already undergoing flight tests.

Science News Letter, November 20, 1948

Scientists are attempting to develop a *sugarcane* for America that will shed its lower leaves and leaf sheaths so that machine harvesting can be speeded up; they are crossing an American cane with a Burma variety that has this property.

Over-dried *popcorn* will not pop well.