

to absorb and release heat under various flight environment conditions.

Some of the most important painted designs in our missile program are on the inside of rockets where they never are seen by the public. These are stripes and patches of temperature-sensitive paints that change color permanently upon exposure to varying temperature ranges. They are the same paints used to record variations in temperature along a machine gun barrel or to indicate where a furnace is leaking heat.

These paints reduce the weight and cost of recoverable re-entry missiles such as the X-17 and Jupiter-A by eliminating many thermocouples previously used to record interior temperatures. Thermocouples still are used at points requiring very exact temperature measurements.

The most significant development in missile development is anti-radar paint which greatly reduces chances of radar detection of missiles and aircraft. (See SNL, April 19, p. 245.)

Science News Letter, May 17, 1958

ENGINEERING

"Who Is Safe Driver?" Simulator to Find Out

► DESPITE MILLIONS of automobile accident reports, nobody really knows the answer to the question, "Who is a safe driver?"

Within the next five years, a research team from the Institute of Transportation and Traffic Engineering of the University of California at Los Angeles will try to find out.

The primary research tool will be a driving "simulator," costing from \$250,000 to \$500,000, and so complex that some of its components have yet to be manufactured.

When completed, the simulator will faithfully recreate the sight, sound and feel of driving in actual Los Angeles traffic and make possible the scientific measurement of the driver's reactions to traffic snarls, road signs, long drives and other factors.

Its planners are John H. Mathewson, assistant director of ITTE, Slade Hulbert, assistant research psychologist, Heinz Haber, physicist and lecturer in engineering, and Charles Wojcik, associate research engineer.

The simulator will consist of an integrated system of an actual vehicle mounted on a roller-type treadmill, surrounded by a circular screen, with television projectors and remote TV cameras coordinated with the driver to feed back the changing traffic situations to the screen by way of computers and servo-mechanisms.

In contrast to existing simulators for classroom driving instruction, which show an unchangeable motion picture film, the TV screen on the ITTE simulator will vary the traffic scenes to reflect the responses of the drivers.

The rate of progress and success of the simulator program will depend largely on the amount of funds available to the group.

When all the results are in, the ITTE group hopes to present a set of tested standards for safe driving to control licensing, teach high school students, and cut down costly traffic accidents.

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DEMOGRAPHY

Study Red Populations

► NO EVIDENCE has been found that the Communists keep a double set of books on population, one for their own planning use and the other for propaganda and foreign consumption.

We can use the figures published for Russia and for Communist China if we make proper allowance for errors and for their difficulties in collecting data, a group of statisticians of the U. S. Bureau of the Census reported to the Population Association of America meeting in Chicago.

The American statisticians believe they have found evidence that the Chinese have minimized the tremendous numbers in their population. The Chinese announced that on June 30, 1953, their people numbered 582,600,000. Actually, there are probably a minimum of 595,000,000 people in China and possibly as many as 600,000,000, Drs. Lawrence Krader and John Aird reported.

In taking a census, he commented, there are always some people missed and some counted twice, but there is reason to think that in China the number lost is larger than the number counted twice.

In addition to the number who never were found to be counted, there is another reason why the count may not have been complete. The census takers were also listing people for voting purposes. Some of the inhabitants, for understandable reasons, may have been reluctant to give their political affiliations.

METEOROLOGY

Hurricane Paths Probed

► THIS YEAR marks a vastly stepped-up program to probe the formation, structure and paths of hurricanes, the giant tropical storms that roar northward toward the Gulf or East Coasts leaving death and destruction in their wake.

At the American Meteorological Society meeting in Washington, D. C., hurricane experts outlined what they have learned about past storms and how they plan to study future ones.

One experiment the Weather Bureau stands "ready and willing" to conduct is the possibility of changing a baby hurricane's direction of movement or intensity before it develops into a full-scale storm. This could be done by "seeding" the storm clouds, perhaps by spraying water into them from airplanes. It will, however, be done only when conditions are right, and when there is no chance of veering it into a land area.

Another plan is to place in the hurricane's eye, the relatively calm center, a constant-level balloon equipped with a radio transmitter that would constantly send out information on the storm's course.

As in many years past, research aircraft carrying the latest meteorological instruments, accurate navigation devices and

The population in Russia has been moving around, Dr. Frederick Leedy, also of the Census Bureau, told the meeting. But the principal shift has not been, as some Americans may imagine, to Siberia.

The movement in Russia, as it is the world over, is mainly from the farm and country regions to the city. There is a population shift eastward, but the biggest part of this is to new industrial centers there. Some agricultural people are moving to virgin land areas that have opened up.

There has been tremendous growth in Siberia, Dr. Leedy said, but that increase is not high in proportion to the total increase.

Despite the Communist programs to encourage larger families, the fertility rate of Russian women is declining, Dr. James Brackett stated.

Two big factors Dr. Brackett believes may be responsible for this drop in fertility. First is the housing shortage. Many young people in Russia live in dormitories. It is very hard to find housing for the couple who wants to get married and start a family, and the accommodations are very poor even for those lucky enough to find something.

The other important factor is the employment of women on a mass scale. Dr. Brackett foresees no alleviation in the employment of women in the next five years.

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radar will fly into the storms to get an overall picture of its structure.

Robert H. Simpson, director of the Weather Bureau's National Hurricane Research Project, West Palm Beach, Fla., reported evidence that hurricanes do not have the uniform structure they once were thought to have. He said simultaneous flights into 1957's Hurricane Carrie showed systematic eddies, some of which might be identified as false "eyes," throughout the entire storm.

Hurricane movements can be predicted more accurately by determining the winds near the center of the storm's swirling vortex, Robert C. Gentry, also of the Hurricane Research Project, reported. He said by measuring the strength and direction of winds immediately surrounding the center, the hurricane's future path could be plotted mathematically. Although his calculations have so far been made only for past storms, the method will be tested this year for the still-unborn hurricanes of 1958 as they are spawned.

accuracy in forecasting hurricane paths with Several scientists also reported greater electronic computers because of continued improvements in the mathematical models of tropical storms.

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