

PUBLIC SAFETY

Simulated Accidents To Help Halt Real Ones

► A LIFE-SIZED automobile is "running into" model cars less than four inches long in an effort to keep drivers out of full-scale accidents.

The cars, both the models and the real one, are part of a driving simulator system that lets researchers create traffic "emergencies" in the laboratory by merely pushing a button.

The system, built by Goodyear Aerospace Corporation in Akron, Ohio, also includes a closed-circuit television, an analog computer, a spherical projection screen and a 12- by 18-foot model terrain.

The miniature terrain has a scaled topography and tree-lined highways, model cars, telephone poles, buildings, traffic and rural scenes.

A TV camera follows the road on the model terrain and projects the picture on the screen, located in front of the full-scale automobile. The camera is guided by the computer in response to the driver's actions behind the wheel, so that what he sees on the screen is exactly what he would see on a real road.

A grooved roadway on the terrain model enables engineers to push a button and let a miniature car dart out of a side street and into the path of the driver being tested to measure his reactions.

The computer sends signals to the TV camera so that the bridge carrying the camera over the tiny roads moves faster or slower as the driver speeds up or puts on the brakes. In addition, the computer regulates simulated engine sounds, oil and generator lights and the speedometer to make things even more realistic.

The engine of the automobile used in the tests is intact, but does not work. The steering wheel, gear shift, brake and accelerator, however, operate normally.

The simulator is being used as part of a program, conducted by the division of accident prevention of the U.S. Public Health Service and Goodyear Aerospace, to study human reactions to driving conditions.

• Science News Letter, 87:72 January 30, 1965

MEDICINE

Once-a-Month Injection To Prevent Pregnancies

► FOR WOMEN who dislike the responsibility of taking birth control pills daily, a new contraceptive preparation that can be injected once a month appears promising.

Dr. Edward T. Tyler, University of California at Los Angeles Medical School endocrinologist, has reported results of preliminary trials with the injection among a group of Los Angeles women. The study is being carried out in collaboration with the Planned Parenthood Clinics.

He said the materials in the preparation were similar to the synthetic hormones in the oral contraceptives but were longer acting.

One problem with the new technique is that it does not maintain the regular men-

strual cycle as well as the pills do, but new combinations may provide better results.

The injection is more expensive than the pills, requiring a trip to the doctor's office during a particular three-day period each month, and therefore, it will probably not be as popular as the pill.

Dr. Tyler also reported promising results with a drug designed to improve the rhythm method of birth control. The compound, clomiphene, is a non-hormonal fertility agent which actually facilitates ovulation. For this reason he believes it would be acceptable to the Catholic Church.

The drug is given on three successive days starting with the 11th or 12th days of each menstrual cycle.

On the fourth day the patient will usually ovulate. This precise pattern of ovulation would thus enhance the safety of the rhythm system.

This does not eliminate another obstacle, he added, for the length of time that a sperm can live in the female reproductive tract is still uncertain. There is evidence that in some cases it may live at least seven days.

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PUBLIC SAFETY

Tiny Trees Help Keep Expressways Safe

► SMALL TREES, planted in rows on expressway center strips, can help make the highways safer by shielding drivers' eyes from the headlight of oncoming cars.

In addition, the trees keep the driver on the highway and off the median by breaking the monotony caused by a continuous row of hedges or a steel barrier, Dr. John W. Hutchinson, University of Kentucky, Lexington, reported to the Highway Research Board in Washington.

Old Christmas trees by the hundreds were nailed and tied to center posts on stretches of two Chicago expressways. The trees were used to find whether live evergreens could help make the highways safer.

Results showed that the trees, which were spaced either 20 or 40 feet apart, helped keep vehicles off the center areas of divided highways.

Dr. Hutchinson noted that one curve which had a bad reputation for accidents had none while the trees were in place.

The evergreens would be a great safety aid except for one problem: when the highway department's anti-ice battalions have finished spreading rock salt, the salty soil makes it virtually impossible for most evergreens to grow.

The researchers have introduced an adequate substitute, however. A dwarf apple tree has been found that will grow in salty places.

It grows only about five feet high and has characteristics that make it an acceptable substitute for the evergreens, Dr. Hutchinson said.

A number of the apple trees will be tested on Chicago expressways next spring.

Dr. Janis H. Laxis, Illinois Division of Highways, cooperated in the research.

• Science News Letter, 87:72 January 30, 1965

IN SCIENCE

GENETICS

Certain Genes in Coffee Cause Much Less Caffeine

► THE PRESENCE of a tiny pair of specific genes, bearers of heredity that are transmitted from one coffee generation to the next, makes a coffee bean have less caffeine.

When a pair of genes or alleles, *1r 1r*, is present, there is a drastic reduction in the caffeine content of the coffee bean, said A. Carvalho, J. S. Tango and L. C. Monaco of the Instituto Agronomico in St. Paulo, Brazil.

Caffeine, a stimulant alkaloid, is one of the main constituents of the coffee bean, the researchers reported in *Nature*, Jan. 16, 1965.

In spite of a limited but expanding market for decaffeinated coffee, most persons still seem to prefer the normal product with caffeine, they pointed out.

The amount of caffeine varies considerably in different species of the coffee shrub, which is a member of the Rubiaceae family, with gardenias and the dye-bearing madder as relatives.

Experimenting on nine varieties of the *Coffea* plant, the researchers found that those coffee varieties with the highest amount of caffeine in their beans did not have the paired genes *1r 1r*. Three varieties (*laurina*, *mokka* and *laurina-maragogipe*) had a very low amount of caffeine and all had the paired genes.

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PSYCHOLOGY

Monkeys Prefer Humans If Reared by Man Alone

► MONKEYS prefer the company of human beings to that of their own species, if they have been reared and handled by humans during the first month of their lives.

Yet if the monkeys had both human handling and physical contact with other monkeys when they were young, they preferred monkeys, Gene P. Sackett, Mary Porter and Hazel Holmes of the Wisconsin Regional Primate Center at Madison, reported in *Science*, 147:304, 1965.

Monkeys that were reared for a month in complete isolation from other monkeys and humans preferred to be more alone, but they preferred monkeys to humans, the researchers found. Experiments were conducted with six groups of rhesus monkeys that were reared in the laboratory and were tested two to three years later in a six-sided frame of aluminum channels with six outer chambers that permitted them to "choose" the company of a human being, another monkey or to remain by themselves.

• Science News Letter, 87:72 January 30, 1965

CE FIELDS

ANTHROPOLOGY

New Species Name Of *Homo* Suggested

► HOMO SAPIENS, as today's "thinking man" is called, has a newly defined but older brother—*Homo transvaalensis*.

This older brother is named by Dr. J. T. Robinson of the University of Wisconsin, Madison, in a communication to *Nature*, 205:121, 1965.

In reassessing material presented by Dr. Louis S. B. Leakey, British anthropologist who discovered in eastern Africa the skull of a new species which he named *Homo habilis*, Dr. Robinson proposes a new name: *Homo transvaalensis*.

Homo transvaalensis had a few limitations when he walked the earth about two million years ago. He had a rather small brain, could not communicate very well with his fellow creatures and had a comparatively simple social structure. But at least he was walking on two feet, and could use tools of a sort.

Dr. Robinson believes that the genus *Homo* should be extended to include the whole sequence of early man from the point where he shifted from an essentially vegetarian diet to an omnivorous diet, including meat.

This shift in diet caused a whole new set of pressures on the evolving man-creature for using and making tools and in adapting himself to emerge into a culture-bearing man.

The newly defined genus *Homo* would include only two species, Dr. Robinson proposes: *Homo transvaalensis*, who primarily had learned to use tools such as rocks, clubs or branches; and *Homo sapiens*, including men of larger brains who learned how to make tools, possessed greatly improved means of communication and a comparatively complex social structure.

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DENTISTRY

Mouth Cells Possible Factor in Tooth Decay

► CELLS that line the inside of the mouth contribute significantly to the acid production of saliva.

This finding is of importance because up to the present time both tooth decay and acid formation have been attributed to bacteria.

Although epithelial cells shed into saliva from the lining of the mouth can form large amounts of acid, from the existing knowledge no correlation can be drawn between the acid production by epithelial cells and tooth decay.

If the bacteria are associated with caries and body cells are not, the source of acid

production is of greater importance than the total acidity, said Drs. J. Tonzetich and S. D. Friedman, both of the Colgate-Palmolive Company, New Brunswick, N. J. They suggested that the relationship of acid to tooth decay may require critical reevaluation.

The two scientists reported their research at the Conference on Mechanisms of Dental Caries in New York, sponsored by the New York Academy of Sciences.

By destroying the power of bacteria to form acid from sugar in saliva, with antibiotics and ultraviolet light, the scientists found that the action of epithelial cells was not disturbed.

These results indicated that the saliva retained 40% of its capability to form acid from sugar after the bacteria were rendered inactive.

The effect of this acid on the formation of caries should be determined, the scientists said.

Two other researchers said, however, that their investigations lead them to believe much of the acid in saliva is produced by enzymes from white blood cells in the mouth.

Drs. B. Eichel and V. F. Lisanti, both of the Science Resources Foundation, Cambridge, Mass., said this enzyme is different from that produced by bacteria. Also, there are large amounts of the white blood cell enzyme present in the mouth.

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PUBLIC SAFETY

Freeway Drivers Need More Room to Dodge

► FREEWAYS, the safest of all highway types can be made even safer if motorists are given more room to dodge out of danger during an emergency, two researchers reported.

Richard A. Lundy and John Vostrez, both of the California Division of Highways, stressed the importance of clutter-free and properly designed roadsides and median strips. Large, solid objects such as bridge piers, trees, light standards and sign supports add to the traffic hazard.

When medians and road shoulders are composed of firm ground and are relatively free of obstructions, drivers can leave the pavement—even at high speeds—and suffer only minor damage, they said.

In studying various sections of California freeways, the researchers found that one highway—an elevated type which gave drivers little room to maneuver—had an accident rate almost four times above normal.

Mr. Lundy also pointed out that more lanes mean fewer accidents. A 100-mile section of 6-lane highway handling 60,000 vehicles a day will have 3,000 fewer accidents over a 20-year period, or 50 fewer a year, than will a 100-mile section of a 4-lane highway carrying the same traffic volume, he said.

The researchers reported their findings at the annual meeting of the Highway Research Board in Washington, D.C.

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PUBLIC HEALTH

Hair May Be Good Guide To Strontium-90 Level

► HUMAN HAIR may be a valuable indicator on levels of strontium-90 in the body, according to the U.S. Public Health Service, Washington, D. C.

Tests now underway show that while results are still tentative, the preliminary indication is that "correlations may exist between human hair and strontium-90 levels in the human diet. Strontium-90 is a radioactive element associated with fallout."

The investigation is being conducted at Winchester, Mass., by the Northeastern Radiological Health Laboratory of the PHS.

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ZOOLOGY

Dolphins Can Mimic Human Voice Duration

► THE LARGE-BRAINED, friendly dolphin can easily mimic sounds made by man, Dr. John C. Lilly of the Communication Research Institute in Miami, Fla., reported in *Science*, 147:300, 1965. These aquatic mammals can imitate the same number of human sounds and for the same duration.

The sleek sea creature *Tursiops truncatus* has long been known to have exceptional intelligence and an ability to communicate with others of its kind and with human beings. It has even been said that the dolphin can make sounds like humans.

In addition to its normal underwater sounds, the dolphin can emit sounds in the air from its blowhole which is located near the top of its head. When the dolphin's head is above water, it can whistle, click, chirp and make other expressive noises by vibrating two valves or noisemakers on each side of its nose below the blowhole.

In carefully equipped laboratories, dolphins have been taught to emit blowhole sounds right after a human being has made a vocal sound. By rewarding it when it emitted noises most closely resembling those of a human being, Dr. Lilly believes that the natural patterns of a dolphin's noises can be changed to resemble those of the human voice.

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TECHNOLOGY

Public Computer Center Open 24 Hours a Day

► A "DO-IT-YOURSELF" computer service called Data-Mat, which allows customers to drive in and process information, is now available in Chicago 24 hours of the day, every day of the week.

To use the service, a customer brings unprocessed information to the mid-town center, parks his car and then has the use of a private office to sort and prepare the data. The necessary computations are performed on one of four computer systems.

Cost of the service, based upon the number of hours the computer equipment is actually used, starts at \$20 an hour.

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