

TECHNOLOGY

Streamlining Can Cut Truck Fuel Bill 30%

► **RADICAL STREAMLINING** of conventional truck-trailers can cut fuel bills 30%, wind tunnel experiments at the University of Maryland have demonstrated.

Working with 50-mile-an-hour winds and one-sixth scale, piece-together wooden models, engineers found that the gap between the cab and the truck alone accounted for one-quarter of the air resistance. Prof. A. Wiley Sherwood, wind tunnel manager, predicted the truck of the future would probably employ a sliding panel connection between the two units.

No vehicles in service now have this space covered.

Another 20% of the air resistance can be eliminated by "skirting" the vehicle, or covering the top half of the wheels with an outside sheet of metal.

If the gap between the cab and the trailer is not filled in, rounding the corners and edge surfaces would contribute large savings over "boxy" designs.

The ultimate in streamlining would employ a "beaver tail" rear design which would reduce wind resistance another 12%. This would be impractical on actual trailers since it would cut down on the trailer's storage space.

More than 7,000 cab and trailer combinations were tested in the university's subsonic wind tunnel. The experiments were the first of their kind ever made on truck-trailers, and were conducted by Paul Jung and other engineers from Trailmobile in a research project for the American Trucking Associations Foundation.

Science News Letter, June 4, 1955

VETERINARY MEDICINE

Hormone and Antibiotic Gives More, Better Beef**See Front Cover**

► **MORE AND** better beef is the result of experiments by a team of nutritionists at the Agricultural Research and Development Farm of Chas. Pfizer & Company, Inc. The announcement was made before the farm's third annual research conference in Terre Haute, Ind.

The scientists used a supplement containing recommended levels of stilbestrol plus the antibiotic terramycin. Stilbestrol, a synthetic with female hormone activity, has been widely used during the past year as a cattle growth-promoter.

Feeding cattle this supplement on a commercial feed lot where animals are fattened by 400 pounds before marketing would save 268 pounds of feed per steer over cattle fed stilbestrol alone, and 916 pounds of feed saved per steer over cattle which received neither supplement, the scientists said.

Cattle receiving the terramycin-stilbestrol

combination returned an average of \$3.53 more per head when put on sale at the stockyards.

The experiment involved a total of 192 Hereford steers like the one shown on the cover of this week's SCIENCE NEWS LETTER, fed over a 100- to 130-day fattening period. One of the trials was conducted on a hay-grain ration, the other on a high carbohydrate corn and cob ration.

Steers were divided into three groups of 64 each, in both trials, the scientists said. A control group received no supplement. The second received a dose of stilbestrol daily. The third received eight times as much stilbestrol plus terramycin daily.

Of the carcasses of the steers in the third group, 52% graded choice, 48% good, compared to 48% graded choice, 48% good, and four percent commercial, in the control group that got no supplement, and 41% graded choice, 50% good, and nine percent commercial in the second group, the scientists reported.

Cattle fed the new feed additive gained weight at the rate of 2.79 pounds per day as compared to 2.18 pounds per day in the control group and 2.46 pounds per day in the group fed stilbestrol alone.

Science News Letter, June 4, 1955

GENERAL SCIENCE

Accident Reports Can Save Lives—Maybe Yours

► **WHEN YOU** fill out an accident report, do you chafe at the many questions and red tape involved?

Well, do not.

The time and trouble involved may save lives—perhaps your own.

Research in the Institute of Transportation and Traffic Engineering at the University of California at Los Angeles has shown how your report, combined with thousands like it, can point the way to reduction of crashes and resultant injuries when carefully analyzed by traffic experts with the help of electronic brains.

The study was supported by the U. S. Air Force. Lessons learned are applicable to all, in government or privately owned vehicles.

Conducted by J. H. Mathewson, Robert Brenner, Slade Hulbert and Derwyn Severy, the research yielded several significant results:

1. New methods have been developed for digesting large numbers of accident reports into readily interpretable facts. These include psychological and other personal characteristics of accident drivers and injury patterns of crash survivors as well as fatalities.

2. It was found that accident drivers, as a group, had fewer years of schooling than the average in the Air Force.

3. Drivers and passengers do not suffer the same types of injuries. Dislocations and sprains are more in evidence in passenger injuries. Fractures occur with greater frequency among drivers.

Science News Letter, June 4, 1955

IN SCIEN

PUBLIC HEALTH

Find Smog "Fingerprint" In City Atmospheres

► **CITIES HAVE** tell-tale smog "fingerprints" in their atmospheres, a study of the air from 31 metropolitan areas in the United States, Alaska and England showed.

New Orleans has a "coffee" atmosphere. The gases separated from that city's air "shows all the identifying absorption characteristics of caffeine," three U. S. Public Health Service scientists said.

The infrared "fingerprints" of different smogs probably reflect differences in industrial activity, waste incineration practices or products of other human efforts.

Careful study of the absorption pattern, obtained from a spectrograph of particles in the air, may help spot particular sources of smog, the scientists said at a meeting of the Air Pollution Control Association in Detroit.

About 90 high volume samplers are being operated now by voluntary personnel of local and state agencies. About 2,000 samples from such devices were correlated in the report presented by Drs. Leslie A. Chambers, Elbert C. Tabor and Milton J. Foter.

Each sample consisted of the total particulate matter removed from 2,000 cubic meters of air during a 24-hour period. Organic substances were routinely extracted with acetone and evaporated to constant weight. Use of fired filters made possible estimation of organic soluble substances and proteins, as well as radioactivity and a variety of inorganic ions.

Science News Letter, June 4, 1955

ENTOMOLOGY

Collection of Ants Given to Smithsonian

► **A UNIQUE** collection of more than 117,000 specimens of ants has been given to the Smithsonian Institution in Washington by Dr. William M. Mann, director of the National Zoological Park.

The gift makes the Smithsonian's ant collection one of the most complete in the world, increasing its number of type specimens from 1,200 to 1,900. There are approximately 8,000 kinds of ants in the world, but type specimens on which the original scientific description of a species is based are widely scattered.

Dr. Mann has personally collected ants all over the world. His most startling discovery, he reported, was of a living ant that was a nearly perfect replica of the ants of the tree-fern forests of 300,000,000 years ago.

Science News Letter, June 4, 1955

CE FIELDS

PUBLIC HEALTH

Yeast Chemical Can Aid Radiation Survival

► A CHEMICAL from yeast can change the body's ability to survive or succumb to deadly doses of radiation and also to handle invading disease germs, scientists at Western Reserve University, Cleveland, Ohio, have discovered.

The yeast chemical is called zymosan. It is the insoluble cell-wall residue from yeast. When injected into mice and rats, it increases or decreases the amount of properdin in their blood.

Properdin is a protein which seems to play an important part in giving natural immunity to germ and virus diseases and protection against fatal doses of irradiation. Its discovery and effects were announced last fall by Dr. Louis Pillemer and associates of Western Reserve (see SNL, Sept. 4, 1954, p. 156).

In *Science* (May 20) Dr. Pillemer and Dr. Oscar A. Ross report their new finding of the action of zymosan on the properdin in the blood of laboratory animals.

Within one or two hours after it is injected, zymosan causes a decrease in the amount of properdin in the blood. This is followed after two days to two weeks by a marked increase in properdin to 200% to 300% above the normal level.

Properdin can be obtained in good yield from cattle blood. Bovine properdin, the scientists previously reported, protected mice against 800 roentgens of total body irradiation and the mice gained weight and remained healthy for at least three months after the irradiation.

Zymosan injected before or after irradiation decreases or increases the deadly effects, depending on the time it is given, the dose, and whether injected into the bloodstream or elsewhere in the body.

Science News Letter, June 4, 1955

PHYSICS

Atomic Space Looks Like Swiss Cheese

► ATOMIC SPACE looks like "Swiss cheese," to a Purdue University physicist. The "holes" are where the masses of atoms are located, the "cheese" is the space between.

The "Swiss-cheese" model of the atomic world was devised by Dr. Frederik J. Belinfante in an effort to reconcile Einstein's curved universe with the quantum laws governing atomic particles.

Einstein's general theory of relativity holds that space, like the earth's surface, is curved wherever there is mass, the amount of curvature increasing with greater mass.

Over a small section of such space, the three dimensions of length, width and breadth give sufficiently accurate measurements. Over a longer distance, the curvature must be taken into account.

A familiar example of this is the jog that straight flat roads in the Midwest suddenly take after many miles. Although property rights are sometimes involved, the jog is usually put there to make up for the earth's curvature.

The "jog" of space near atomic masses is sharper. Close to the point at which an atomic particle's mass is concentrated, space suddenly becomes infinitely curved in Dr. Belinfante's model.

The smooth water surface that suddenly breaks into a whirlpool gives a rough, much enlarged picture of what Dr. Belinfante suggests takes place in atomic space.

"If a picture of space is made" on a very small scale, he stated in the *Physical Review* (May 15), "then space has holes, where masses are located." This is the "Swiss-cheese" model of space.

Dr. Belinfante believes that his model may be helpful in visualizing atomic space, in calculations and "as a basis for a simple quantum theory of fields."

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GENERAL SCIENCE

New Tonguetwister Made—Parsnip Chips

► ADDICTED POTATO chip eaters will soon be able to vary their snack diet with carrot chips, beet chips and parsnip chips. Other tidbit fanciers will be able to munch on whole pea and lima bean "nuggets."

These newly developed snack foods are all prepared by deep-fat frying. The beets and carrots are sliced 1/16 inch thick and the parsnips, 1/32 inch.

Created by scientists at the U. S. Department of Agriculture's eastern utilization research branch in Wyndmoor, Pa., all are described as high in carbohydrate and fat. Carrot chips are high in provitamin A and the peas and beans in protein.

Each chip retains its own characteristic taste. The nuggets have a nutlike flavor.

"Besides their use as snack items," the Wyndmoor scientists report, "the lima-bean and pea nuggets can be ground into soup powders that reconstitute quickly in hot water." They can also be pressed into quick energy bars for emergency military rations.

Both the chips and nuggets keep from six months to a year in storage at room temperature if fried in oil of high stability, such as coconut oil. Peanut, corn or cottonseed oil can also be used.

The new foods are seen as offering potato chip manufacturers an additional line of foods, as well as a new market for the vegetables.

"Although no commercial production has yet been undertaken," the agricultural researchers state, "major food processors are actively interested in the new products."

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ANTHROPOLOGY

Men Wear the Veils in Nomadic Sahara Tribe

► EVER HEAR of a tribe in which the men proudly wear veils?

Tall, aristocratic and fearless, these people are the Tuaregs and were visited recently by Dr. Benjamin Thomas, University of California at Los Angeles geographer, while studying trade routes in Africa.

The Tuaregs once ruled desert commerce with an iron hand before their power was broken by the French.

Called the "People of the Veil," the Tuaregs are a nomadic people who live in the central part of the Sahara desert. They retain a hereditary caste system and any labor except for managing herds or fighting is deemed unworthy by Tuaregs born to the noble class.

To Tuareg men, the veil is a symbol of masculinity and is worn from puberty. Tuareg women, unlike their Moslem sisters elsewhere in the Arab world, never wear the veil and have the same social freedoms as women in the Western world.

In their sojourns through the desert, Tuaregs still carry lance and sword. And on their arms are shields of antelope hide shaped like those once carried by Christian Crusaders. A favorite diversion is dueling armed with sword and shield.

Science News Letter, June 4, 1955

MEDICINE

Cigarette Tar Chemical Causes Tumors on Plants

► DISCOVERY THAT a chemical in cigarette tar will cause so-called tumors in plants has been announced by horticulturists R. H. Roberts, B. Esther Struckmeyer and Sidney O. Fogelberg of the University of Wisconsin.

The tar was obtained from machine-smoked and naturally-smoked cigarettes.

The three research workers also reported that they can prevent the tar-extract effect on plants by adding a recently-discovered plant hormone, antiauxin, to the tar at the time of application. The antiauxin is a crystalline substance extracted from the leaves of plants which are in flower. They tested it successfully on plants treated with certain chemicals and hormones, including the 2,4-D weed killer, which produce tumorous tissue on plants.

The antiauxin has definitely shown its ability to inhibit or prevent the plant tumor formation that normally would result from applications of these materials, one of which is the tar extract.

It was while studying the antiauxin and its properties that the three scientists discovered a way to isolate the tar factor which also produces a tumorous growth on plants. Though this tar factor has not been chemically identified yet, it melts at a relatively low temperature and is very poorly soluble.

Science News Letter, June 4, 1955