

MEDICINE

Mice Travel 5000 Miles To Aid Cancer Research

► A NEW long-distance travel record has been set by a dozen mice which went by air over a secret route from London to somewhere in Russia carrying in their bodies three kinds of tumors for cancer research.

The distance covered, probably five or six thousand miles, is believed the longest journey yet accomplished by mice for the purposes of research. It is reported by Dr. E. L. Kennaway, of the Royal Cancer Hospital (Free) and Dr. W. E. Gye and Dr. J. A. Marsh, of the Imperial Cancer Research Fund, in the scientific journal (*Nature*, Oct. 14).

The mice were sent at the request of Prof. S. A. Sarkisov of the Institute of the Brain, Moscow, to Prof. L. Shabad, formerly director of the Laboratory of Cancer Research in the Institute of Experimental Medicine, Leningrad.

For their air journey, each batch of four mice was placed in a wooden box with hay and sawdust as bedding and enough oats, puppy biscuits and proprietary rat food to last many weeks. Water was supplied from bulbs used for laboratory animals. A syringe for filling these and directions to be translated into Russian were supplied.

Prof. Shabad reported all 12 mice arrived safely within about three weeks and that the three kinds of tumors they bore have been successfully grafted in the mice available in his laboratory.

"Before the war," the English scientists point out, "many such mice crossed the Atlantic on liners, chiefly from west to east, in charge of the butcher, who at sea is the custodian of animals living and dead, but this is a shorter journey without halts and changes and the conditions of temperature are uniform."

Science News Letter, November 18, 1944

ORNITHOLOGY

General's Birds Come to National Zoological Park

► FIVE BIRDS, that until now have been pets of an American general in the Solomon islands, have been added to the National Zoological Park collections in Washington. They were sent by their former owner, Maj. Gen. R. G. Breene, U.S.A., when new duties prevented him from keeping them any longer.

Dr. William M. Mann, director of the National Zoological Park, states that all

birds represent species hitherto unknown in the cages here. They comprise one pair of bare-eyed cockatoos and one specimen each of thick-billed green parrot, rosy lory and gallinule.

Although the birds arrived in apparent good health and have all passed the customary quarantine at the port of entry, they are being kept segregated from the other birds until absence of any infectious disease is completely assured.

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CHEMISTRY

Life of Shoe Sole Leather Increased by Oil Formula

► SHOE SOLE leather for soldiers and civilians, treated with oil preparations to increase their wearing qualities, owe much of their improvement to a special oil formula developed at the laboratory of the Tanners' Council of America at the University of Cincinnati, and withheld from the public until now. Dr. Fred O'Flaherty, director of the laboratory, the only one of its kind in the United States, announced the formula.

The sole leather, he states, "should be immersed for 30 minutes in a solution of not less than 60% by weight of non-volatile base, preferably solvent naphtha, not less than 25% by weight of a fatty oil with a viscosity of at least 2,500 Staybolt units at 100 degrees Fahrenheit, the balance of the oil base consisting of a mineral oil, preferably naphthenic-base oils, of such a viscosity that the overall viscosity of the oil base, without solvent, exceeds 1,800 Staybolt units at 100 degrees Fahrenheit."

This oil treatment, Dr. O'Flaherty says, increases the wearability of shoe soles by 25% on an average.

The treatment of sole leather with oils, and with wax, is not altogether a new practice but the wartime scarcity of leather has caused its more extensive use and much interest has centered on a more satisfactory preparation than those formerly used.

During 1943 the National Bureau of Standards conducted extensive research on the improved wearing qualities of treated soles, examining some 30 commercial mixtures for waterproofing and improving the wear. The Bureau found the life of soles with preparations tested was increased from 14% to 40%, the higher percentages being with wax-impregnated leather. A Washington high school military unit was used by the Bureau in conducting its service tests.

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IN SCIENCE

EARTH-SCIENCE

Giantess Geyser Erupts For First Time Since 1942

► THE GIANTESS geyser, in the Old Faithful area of Yellowstone National Park, recently erupted for the first time since June 1942. Noises during the night, resembling subterranean cannonading, were recognized by District Park Ranger Bauman as symptoms of one of the Giantess' tantrums.

In the morning the geyser was found steaming heavily, with little water in its crater but showing signs of having overflowed during the night, the water damaging the rim somewhat and washing away most of the minute plants called algae which give geyser craters and hot springs formations their coloring. On the west side of the crater the deposit known as sinter had been washed away and spread out in fragments or layers like an alluvial fan.

Shortly the geyser again erupted, shooting up rockets of water to a height of from 80 to 100 feet; and geysering continued at about 20-minute intervals until well into the afternoon. Shortly after noon jets of water reached a height of at least 150 feet.

The Giantess is one of the most powerful of the park's geysers, its eruptions lasting from 12 to 36 hours. Once it erupted every 10 or 20 days, but now eruptions occur at much longer intervals. Again asleep, it is difficult to foretell when the Giantess will next go into action.

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INVENTION

Tractor Power and Cable Pull Trees Up by Roots

► A REVOLUTIONARY invention for use in lumbering and land clearing, with a touch of Paul Bunyan about it, is covered by patent 2,361,931, granted to Alfred W. Evans of Gloucester, Va. Instead of first felling the trees and then pulling or blasting out the stumps, he uses tractor power applied to a winch-wound cable to pull the whole trees out by the roots, using a twisting drag. One end of the cable has to be anchored to a giant tree, the other to the smaller tree that is to be the victim.

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CE FIELDS

MEDICINE

Chilling and Baking Soda Tried as Penicillin Aids

► TWO WAYS of increasing the efficiency of penicillin treatment are reported, (*Science*, Nov. 10).

Strapping an ice bag over the site of injection of the drug saves 50% of the amount of penicillin required for each patient, Lt. Comdr. Max Trumper and Lt. Comdr. A. M. Hutter, of the National Naval Medical Center, Bethesda, Md., find. The reason is that the chilling slows blood circulation and therefore the rate at which penicillin is carried to the kidneys and excreted from the body.

Excretion of penicillin taken by mouth can be slowed by giving it with sodium bicarbonate, Drs. Alfred H. Free, Jack R. Leonards, D. Roy McCullagh and Barbara E. Biro, of Western Reserve School of Medicine, found. Although in most cases it would be more convenient for both patient and physician to have the drug given by mouth instead of by hypodermic injection, this method has not been used much because of the limited supplies of penicillin and the fact that it was difficult when giving it by mouth to have a high enough level in the blood to be effective.

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MEDICINE

Lactose Used for Penicillin-Producing Mold

► LACTOSE, or milk sugar, is used in giving the penicillin-producing mold a well-balanced diet. Although the mold grows luxuriantly on almost any nutrient solution, it will not make penicillin unless conditions in its diet and environment are carefully controlled. Thus corn steep liquor, lactose and some essential salts and water are used in producing the germ-killing mold.

A certain amount of sugar is also considered necessary to the diet of human beings. People as a whole are most familiar with sucrose, the cane or beet sugar used to sweeten desserts, pastries and drinks at home, but sugars from many other sources are also in constant use. Some are used as substitutes for

sucrose, others are employed in preference to sucrose because of their special qualities.

Dextrose, which is generally made from corn, is from two-thirds to three-fourths as sweet as the sugar made from cane or beets. Lactose, derived from cow's milk, is only about a quarter as sweet. All three of these, and a number of sugars made from other sources, are carbohydrates, being compounds of carbon, hydrogen and oxygen. Characterized by water-solubility, crystalline form and absence of color, they are best known for their sweet taste.

Saccharin, which has no food value, is from 450 to 500 times as sweet as sucrose. Doctors sometimes prescribe its use by those suffering from diabetes.

If you would like to have samples of sucrose, dextrose, lactose and saccharin, you can secure the Sweetness Unit of THINGS of Science, a kit prepared by Science Service, by sending 50 cents to SCIENCE NEWS LETTER, 1719 N Street, N. W., Washington 6, D. C. and asking for Things unit No. 48.

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OPTICS

Diffraction Gratings Better Than Originals

► COPIES of diffraction gratings, glass or metal with closely spaced parallel lines ruled on it, used in many types of spectrographs, are even better than the original gratings from which they were made, Dr. R. W. Wood, the Johns Hopkins University physicist, has reported (*Journal of the Optical Society of America*, Sept).

Coarse gratings of 1,000 to 7,000 lines to the inch, which are especially useful for analyzing infra-red light, are first ruled on copper plates which have been polished as well as possible but cannot be made as flat as polished glass.

The collodion cast or copy of the original grating will reproduce faithfully both the carefully ruled lines and the small irregularities of the surface of the copper plate. But when this replica is pressed into contact with a piece of optically flat plate glass, the imperfections on the surface are "ironed out," leaving the replica with better optical properties than the original.

Studies of light spectra with these gratings not only extend our knowledge of the behavior of atoms but also have practical applications such as the identification of impurities in chemicals or metals. Spectrographic analysis is one of the most powerful tools of modern physics.

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CHEMISTRY

New Kind of Coating Protects Structural Steel

► ZINC CHROMATE and iron oxide-zinc chromate primings to protect iron and steel from corrosion, when properly formulated with a synthetic resin vehicle, make a very good rust-inhibitive coating, the National Bureau of Standards states in a new report on paints for structural steel.

They combine to a high degree the essential requirements necessary to withstand extremely severe corrosive atmospheres, the Bureau finds from extensive tests. Zinc-dust paints, particularly the alkyd type, have good adhesion on galvanized iron. Among the top-coat finishes tested, aluminum, black and dark-colored paints were found the most durable.

This report is the third and final summary of the Bureau's investigations of surface treatments for protecting steel against corrosion, with special reference to low-cost housing construction. Both outdoor and accelerated laboratory tests were used, and the primings were applied to treated and untreated steel and to galvanized iron panels.

Many paints were found suitable for use in protecting metal structures. Their composition and relative ratings, based on their performance in the tests, are discussed in the report, copies of which are now available from the Superintendent of Public Documents.

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ZOOLOGY

Hybrid Gibbon Baby And Mother Play at Zoo

See Front Cover

► THE first hybrid gibbon ever born is now a little over six weeks old (*See SNL*, Oct. 14). The baby and his mother seen in the photograph taken by Fremont Davis, Science Service staff photographer, on the front cover of this SCIENCE NEWS LETTER, attract a good share of attention at the National Zoological Park in Washington. The mother and father, two of the zoo's best acrobats, go through a routine each day, the baby always clinging to his mother.

This hybrid between a Siamese gibbon and a Sumatran gibbon is not very distant and could probably occur in nature; but there has never been any such cross reported.

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