

Do You Know?

Rats average 10 young to a litter, and may have up to 12 litters a year.

The *pearling* industry in Australia is expanding to meet American demands.

What is called the High C variety of *tomatoes* has at least twice as much vitamin C as the standard varieties.

There are nearly 192,000 railroad *bridges* in the United States; the sum of their lengths is about 4,000 miles.

Sugar is primarily a food, but it is used in hair tonics, shoe polishes, adhesives, photographic materials and explosives.

Sugar cane is a tall perennial grass; its stalk is divided into sections by joints, and each section contains a bud which will sprout when planted.

Anthracite silt is an excellent fuel for the production of these gases, Dr. Johnson states, because it is non-coking, non-caking, free of tar, has a low sulfur content and a high ash-fusion temperature. The new process is related to the German method for gasifying brown coal. In it, the anthracite silt can be processed into three gases, two of which are fuel gases.

In the process, anthracite silt, air and steam are fed into a refractory-lined cylinder. Combustion takes place with the silt boiling inside the cylinder while the heavier ash settles to the bottom and is ejected by a rotary grate. The gas obtained is fed through a second bed of burning silt, fortifying it with addi-

tional carbon monoxide. The result is producer gas.

If gas of higher heat quality is desired, steam is forced into the burning silt in the second stage of the process. To produce gases from which liquid fuel is made, the same method of fluidized or boiling combustion bed is used. However, by intermittently blowing air and steam into the combustion chamber, or by using a continuous blast of oxygen and steam, a synthesis gas of carbon monoxide and hydrogen is produced. It is from these the liquid fuel is made as is done in making liquid fuels from natural gas or other coal.

Science News Letter, March 20, 1948

MEDICINE

Anti-Leukemia Weapon

➤ ARSENIC made radioactive in the atomic pile is now being tried in the treatment of leukemia and Hodgkin's disease, a group of University of Chicago and Argonne National Laboratory scientists reported at the meeting in Atlantic City of the American Association for Cancer Research.

The scientists are Drs. William Neal, Leon O. Jacobson, Austin M. Brues, Howard Ducoff, Robert Straube and Thomas Kelly.

"Very nice responses" have been obtained in some of the 12 patients treated so far. But, Dr. Jacobson cautioned, he does not know how long the improvement will last or even whether the present improvement is any better than the temporary responses obtained with other kinds of radiation treatment.

Use of the radioactive arsenic was started about nine months ago. It is being tried in the hope of obtaining both the chemical effect of ordinary, stable arsenic and the radiation effect of the radioactive chemical. Arsenic, as phy-

sicians know, has been used for treatment of leukemia and allied conditions since 1878.

The radioactive arsenic was first used in tracer studies on both laboratory animals and humans. These studies showed that the chemical was quickly and widely distributed throughout the body, which meant that its penetrating rays would get to the parts of the body where they were needed. The tracer studies also showed that the chemical is rapidly excreted, so there would be no danger from over-long irradiation.

Additional safeguard in the use of radioactive arsenic is the existence of BAL, or British Anti-Lewisite. This chemical can remove radioactive arsenic from the body as quickly as it removes the stable form of arsenic.

The radioactive arsenic used is arsenic⁷⁶. It has a short half-life, 25 hours, and must be used pretty rapidly after it comes from the atomic pile. It is made by pile irradiation of cacodylic acid, an arsenic-containing compound.

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MEDICINE

Breast Cancer in Mice

➤ A CANCER experiment which brought results exactly the opposite of the ones the scientists expected was reported by B. E. Bennison of the National Cancer Institute at the meeting in Atlantic City of the American Association for Cancer Research.

The experiments concerned the breast cancer in mice which is transmitted through some agent in the mouse

mothers' milk. The agent is thought to be a virus. Since the spleen helps in resistance to ordinary infections, Dr. Bannison removed the spleens from young mice who had been nursed by mothers carrying the cancer-causing agent in their milk. He expected the young mice to develop cancers at an earlier age than these usually appear.

Instead, it took longer for the cancers

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to appear, and fewer mice developed cancer than was expected from what happened to their litter mates that did not have their spleens removed.

Possible explanations are: 1. The cancer-causing virus localizes in the spleen and when this is removed most of the virus is also removed. Or, 2, the spleen is

necessary for the multiplication of the virus.

Dr. Bennison cautions against hoping for any application of this technique to human cancers, and points out that removal of the spleen in mice has no effect on the cancer if done after the malignant growth has developed.

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PSYCHOLOGY

Quick As Wink Is Slow

Blinkers have a complete blackout of vision for a good three-tenths of a second, measurements by a British scientist indicate.

► HOW quick is a wink?

It is altogether too slow to be ignored by scientists, Dr. Robert W. Lawson of the University of Sheffield, England, concludes after careful measurements.

There is a complete blackout of vision, he figures, for a good three-tenths of a second. And since the winks, or blinks, are repeated at frequent intervals, you have been missing more than you probably realized.

Dr. Lawson divides blinkers into four main types. You probably belong to what he calls the J-type, since it is the most common among normal people. Men in the J-type blink every 2.8 seconds. Girls are slower. But still the inter-blink period is only a little less than four seconds. The other three groups—the plateau type, the bimodal type and symmetrical—have a longer period between blinks but are much less common.

This means that the majority of persons have their vision blacked out completely 11% of the time and have their vision at least partly blacked out about 20% of the time.

A current of air blowing into the eye increases the rate of blinking. So does the smoke from a cigarette between the lips; a bright flash of light; or a particle of dust in the eye.

Some individuals were found by Dr. Lawson to have a much more rapid blinking rate than others. This is important not only to the motorist but also in industry and in some sports. But it is of special importance in making certain kinds of scientific observations.

"In fast games like tennis or badminton," Dr. Lawson said in reporting his study to the scientific journal, *Nature* (Jan. 31), "the ball or the shuttlecock will certainly be lost to sight during the 0.3 second of the blackout due to blinking.

"For people with a high rate of blinking, bowls is a much more suitable form of recreation.

"In flying, too, the airman does not appear to have been aware hitherto of the effect of blinking on his efficiency, either in bombing a target or in fighter combat, for in the period of his blackout or mobile vision he may have travelled a distance of the order of 100 yards. The effect will be greater still for the pilot of a jet fighter."

Blinking is also important for the photographer. Dr. Lawson estimates that in taking a photograph of a group of 18 persons you might expect to find that two have closed eyes.

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sible hazards. They have been thoroughly tested by the U. S. Civil Aeronautics Administration and bear the full seal of government approval.

The grounding of these luxury liners, by voluntary action of the Douglas Aircraft Company and the five transportation systems using them, followed a safe landing of one afire in New Mexico just after a fatal crash of another in Utah. An official investigation by the Civil Aeronautics Board indicated that in both these cases gasoline which had overflowed while being transferred from alternate to main tanks in flight had entered a cabin heater air intake scoop under the fuselage.

All DC-6's resuming service have had their air intake scoops relocated in the leading edge of the wing, while the overflow vents have been conducted to the wing's trailing edge. Other changes include the replacement of aluminum air ducts in the heater compartment with stainless steel ducts, the addition of extra fire-extinguishing equipment, an increase in the number of smoke detectors, and the placing of loose-running electric wiring in conduits.

The Douglas DC-6 is described as America's first postwar air transport. The White House plane is one of this type. It is a 56-passenger craft, powered by four Pratt and Whitney engines with a total of 8,400 horsepower, and with Hamilton full-feathering, reversible-pitch propellers, which can be used to decrease the speed of the plane rapidly in landing. The craft is designed to operate most efficiently at a 15,000-foot altitude, and it has a cruising speed of 300 miles an hour. Its speed is assisted by a jet thrust exhaust system.

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MEDICINE

Markle Foundation Picks Group of Medical Scholars

► SIXTEEN scholars in medicine, who will teach and do research in American and Canadian medical schools for the next five years, were announced by the John and Mary R. Markle Foundation, of New York.

These scholars are the first group in a new program which provides \$25,000, payable at a rate of \$5,000 annually for the five years, from the Foundation. Twin aims of the grants are to relieve the acute shortage of teachers in medical schools and to encourage trained investigators in medical science.

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AERONAUTICS

Return DC-6's to Service

► NO MAJOR structural problems were involved in reconditioning for service the giant DC-6 transports, 97 of which were voluntarily grounded last November. Important modifications, recommended after intensive study, have now been made and all will be in the air

soon, it is officially reported.

Some of these planes returned to service on March 15, American Airlines announced. United, Panagra, National and Braniff transports of this type will all be in use this spring. The changes made are designed to remove any pos-