

MEDICINE

"Brown Eyes" Feels Drill More Than "Blue Eyes"

A BROWN-EYED person will be "blue" on the next trip to the dentist to have a tooth filled.

An Australian scientist has discovered that more persons with brown or dark eyes feel the pain of the dental drill than persons with lighter colored irises.

Blue-eyed persons appear best able to endure the drill without the use of a pain killer, Philip R. N. Sutton of the dental school at the University of Melbourne, Australian, reports in *Nature* (July 11).

Very few of those whose irises were grayish-blue or greenish-gray needed analgesic. Continuing along the color scale, 13% of the subjects whose eyes were grayish-green, green or hazel required a pain reliever while 30% of the patients with light brown or brown did. More than 53% of those with dark brown eyes called for an analgesic.

Mr. Sutton examined 403 Australians of European descent whose teeth were being prepared for filling. All cavities were cut with a high-speed drill.

He based his conclusions on observations of at least 40 persons for each eye color except light brown, where there were only 11 subjects, 23 with brown and 28 with dark brown. He then retested 136 of the subjects.

Of these, the same values were obtained for the color of the eyes of 115 while the pain reaction was the same for 114 of these. The discrepancies were not considered to be significant.

The association between these factors is highly significant, but is considered to be due to their joint association with other factors, he concludes.

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GEOLOGY

Glaciers May Yield Clues On Rock Flows in Earth

GLACIAL FLOWS may provide scientists with better understanding of the massive movement of rock within the earth's crust.

Geologist Robert Sharp of the California Institute of Technology regards glacial ice as a special type of rock, composed of ice crystals.

In glacial movement, which can be anywhere from a few inches to several hundred feet a day, Dr. Sharp sees a speeded-up version of what is happening to large bodies of sub-surface rock. Normally, rock movement is too slow to observe.

While camping beside the Blue Glacier on the slope of Mount Olympus in the State of Washington, Dr. Sharp has said that scientists hope "to relate the formation of structures in glaciers to the formation of structures in rocks."

Dr. Sharp and his group are studying the lower one and one-eighth miles of the glacier. He estimates a minimum thickness of 100 to 150 feet is necessary for the weight of this section of the Blue Glacier ice to overcome its own rigidity and to start a

plastic flow down the slope. The section is 900 feet thick.

Polar glaciers are colder and more rigid. They require a greater ice burden to provide the necessary pressure for movement.

Glacial flow is measured in both horizontal and vertical directions. At Blue Glacier, 50 stakes have been placed into the surface. The changing patterns of the stakes reveal the directions of horizontal flow.

Four holes, drilled 400 to 750 feet deep, are deformed by vertical movements of the ice. The pattern is determined by measurements of inclinometers periodically lowered into the holes.

Dr. Sharp and a team of scientists from Caltech and the U. S. Geological Survey are working under a National Science Foundation grant. The research began in 1957 as part of the International Geophysical Year.

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PUBLIC SAFETY

Industry Goes Below In Case of Nuclear Attack

CONVERSION of mined-out areas to underground shelters for industrial plants and living accommodations for employees and their families was urged.

This would not only serve as a major protection against fallout in the event of a nuclear attack, but might even deter an enemy from making such an attack, an industrialist told the Society of Mining Engineers of the American Institute of Mining, Metallurgical and Petroleum Engineers meeting in Bedford Springs, Pa.

Russell W. Hunt, president of the Southwest Lime Company, described his company's achievements at its Neosho, Mo., mine, where a two-year reconstruction job has made 600,000 square feet available as a strategic storage center.

The work was planned, he said, to provide emergency shelter for the employees and their families, as well as most of the community.

Humidity control, exhaust fans, and a reservoir and deep well water have been provided at Neosho. Eight-inch reinforced concrete division walls are equipped with approved doors. Walls and ceiling are white to give maximum lighting and to improve appearance.

Commenting on his company's cooperation with the Defense Department, Mr. Hunt said preliminary investigations indicate that a small subsidy of the mining industry would make it possible to have underground space created "very cheaply."

The subsidy might be the additional cost per square foot of underground mining over open quarry mining, he suggested. This should be sufficient to change 20% to 30% of open quarrying to underground operations.

In any event, he said, the maximum probable cost involved in starting a program of underground facilities is small and "it is important to get a feel, as soon as possible, to see how successful a large program might be."

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IN SCIENCE

ASTRONAUTICS

Ask Radio Hams To Record Vanguard

AN APPEAL to the nation's thousands of radio "hams" to record broadcasts from Vanguard III, which was placed in orbit Sept. 18, has been made by the National Academy of Sciences.

Dr. Richard W. Porter of the space science board asked the American Radio Relay League to request members to record, where convenient and possible, radio signals transmitted from Vanguard III on a frequency of 108 megacycles. These tape recordings should be retained at least 48 hours.

In the event a solar flare occurs, the Academy will notify ARRL again, requesting that members send in their tapes made during that period. Notification should come within 48 hours.

Dr. Porter explained that help from radio "hams" is requested "in order to broaden the possibility of catching a solar flare at the right time, or catching certain parts of it that might not be caught by our Vanguard ground stations."

Dr. Porter is chairman of the Earth Satellite Technical Panel of the U.S.-International Geophysical Year program, under which the Vanguard III experiments were developed. He indicated scientists are particularly anxious to obtain tape recordings of transmissions that show effects of any solar flare that might occur when the satellite is below the Van Allen radiation belts.

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MINING

Must Protect Water From Mine Contamination

WATER, our most essential natural resource, must be protected from acid pollution from abandoned mines.

Natural oxidation of the sulfuritic material associated with mining is the initial reaction responsible for this acidity, S. A. Braley of the Mellon Institute, Pittsburgh, told the Society of Mining Engineers of the American Institute of Mining, Metallurgical and Petroleum Engineers meeting in Bedford Springs, Pa.

Secondary reactions of the initially formed acid and acid salts with the earth and rock, he said, can produce mine discharges varying from high acid content to high alkali.

Because of the many factors involved, Mr. Braley said, there is no known universal, economical or practical method for the prevention of acid formation or for treatment after formation. However, there are "engineering procedures that may be used in specific cases to prevent or decrease the acid properties of mine discharges."

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E FIELDS

TECHNOLOGY

World Satellite Picture Can Be Seen in Seconds

UP-TO-THE-MINUTE positions of all satellites circling the earth can be promptly seen on SPASCOPE, a projection screen now being developed by the Naval Weapons Laboratory at the Government's satellite Surveillance Center, Dahlgren, Va.

By showing all satellites in their exact positions over a map of the world, the SPASCOPE system presents visually what an electronic computer "thinks" as it calculates past, present or future satellite paths.

After computing the path of each satellite, the machine electronically tells a cathode ray tube (which resembles a television picture tube) where to make "blips" representing satellites. These blips then can be recorded on film that is developed in about 20 seconds and projected onto the translucent screen from the rear.

SPASCOPE was one of many aids shown at The Business Equipment Exposition in Washington, D. C. Other new machines, chiefly designed for office use, include:

1. A mechanical bank clerk which, by examining characters printed in magnetic ink on checks, deposit slips and other documents, can sort a "tidal wave" of papers at the rate of 1,500 per minute.

2. An electronic linguist that can translate computer language into printed information at speeds of 20,000 characters a second. It can print pictures of moving objects that go by its special TV "eye". Thus it could "watch" railroad freight-car movements, recording car numbers and railroad designations as whole trains go by.

3. A portable punching and plastic binding unit that companies can use for attractively binding reports, statements and surveys.

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PSYCHOLOGY

Analysis of Play Steps Up Response

HAVING A STAGE play "analyzed" by a practicing psychoanalyst and revising it in accordance with the findings results in a production that is better received by the audience.

This was revealed when the same play before and after revision was presented with the same cast, costumes, lighting, sets and director before audiences matched for sex, age and theater-going experience. The play was "Table Number Seven," from Terence Rattigan's "Separate Tables."

The two audiences indicated their reactions by filling out questionnaires immediately after the performance. In addition, infrared pictures of the audience recorded signs of their interest and a recording on

tape preserved the applause and other noise made by them.

The services of the psychoanalyst changed a play which was "average" in interest into one judged to be from "somewhat above average" to "far above average."

The experiment was conducted under the auspices of the M-R (Motivation Research) Theatre and the Division of Communications of the University of Southern California. Oliver McGowan of the M-R Theatre originated the experiment and the data obtained were processed and reported by Dr. Jit L. Kapur, graduate student of the University. The psychoanalyst who took the play as a patient was Dr. Barnet Sharrin of Beverly Hills.

"It is possible," the report of the experiment pointed out, "that some other director by intuition might have arrived at an interpretation as good as or better than the one given by the psychoanalyst. Still, even in such cases, a trained psychoanalyst might have provided the director with a short cut which might save valuable time in arriving at a valid interpretation."

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MEDICINE

Little Girl Suffers From Rare Male Blood Disease

A RARE CASE of hemophilia that usually occurs only in men has been reported in a little girl. With hemophilia, a person's blood does not clot readily and he may bleed to death from minor cuts or wounds.

The child, 16 months old, had always bruised easily. Doctors noted that her blood coagulated very slowly. In addition, she suffered from long bouts with nosebleeds. Prior to her birth, a brother had died with bleeding soon after his birth.

Her mother belonged to a hemophilic family. It is a well-known fact that females can carry this disease of the blood in their genes, and pass it to their sons. Seldom do daughters suffer, however, because the hereditary gene is recessive.

Laboratory findings of blood and skin tissue of this little girl were found to be identical with those obtainable in severe hemophilia A in males, four Swedish scientists report in *Lancet* (Sept. 5).

A study of the patient's chromosomes gave the investigators an explanation for the oddity. The girl did not have the usual female XX chromosome makeup. Instead, she probably has the male XY combination. Knowledge of the sex chromosomes is not yet sufficient to identify this combination as the certain cause, however, the scientists caution.

No exact determination of the child's sex can be made due to her age and the possibility that she is a hermaphrodite cannot be determined until she reaches sexual maturity, they pointed out. They also referred to four previous cases of hemophilia in females.

The investigators are Dr. Inga Marie Nilsson, Dr. S. Bergman, and Dr. J. Waldenstrom and J. Reitalu, all of the University of Lund, Sweden.

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MEDICINE

Immunize 50% Lab Animals Against Syphilis

A CRUDE VACCINE that immunized 50% of a group of laboratory animals against syphilis has been introduced.

The vaccine was developed by Dr. Albert N. Wheeler of the University of Michigan. He indicated future refinements will lead to a product that will offer even higher levels of protection against syphilis. Likewise, it could show the way toward worldwide protection against yaws, pinta, bejel and other syphilis-like diseases, he pointed out.

Dr. Wheeler has worked with the vaccine for more than one year, but he has not yet tested it on humans.

Syphilis is caused by a one-cell, corkscrew-shaped bacterium called *Treponema pallidum*. The bacterium's name means "pale thread" and refers to its appearance under the microscope.

Early experiments with a vaccine of killed whole bacteria proved unsuccessful but about a year ago Dr. Wheeler started a fresh approach with the aid of a three-year research grant from the venereal disease branch of the U. S. Public Health Service.

He began destroying quantities of the spirochetes by mechanical means and from the pulp he extracted fractions of proteins and carbohydrates. These fractions are crude mixtures of several types of proteins and carbohydrates rather than single purified units.

His results to date show that the protein fraction can provide complete immunization for 10% of the test animals and promotes strong resistance in an additional 40%.

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PHYSIOLOGY

Mother-to-Be Stores Large Amount of Fluoride

WHETHER or not she believes that fluoridation of water is beneficial, a pregnant woman is certain to store up an amazing amount of fluoride.

Recent data suggest that pregnant women store more fluoride during pregnancy and shortly thereafter than non-pregnant adult females and males, a review article in *Nutrition Reviews* (Sept.) points out.

Scientists do not know, however, just where this abundant supply goes, nor how it is distributed. It is suggested that it might nourish the maternal skeleton, the placenta and embryonic membranes and fetus.

The data on fluoride retention among pregnant women were obtained by studying a total of 196 healthy pregnant women in Jerusalem. They excreted lesser amounts of fluoride in their urine until they reached a plateau in the eighth month. This was followed by a slow increase during the ninth month. The fluoride concentration did not return to the pre-pregnancy level until two or three months after delivery. The concentration is not poisonous, the findings show.

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