

MEDICINE

Curb Cancer Development

► A STEP TOWARD PREVENTING cancer in man, especially the type caused by excessive X-ray exposure or ionizing radiation, is seen in experiments on mice in the Weizmann Institute of Science in Rehovoth, Israel.

Dr. Isaac Berenblum, an internationally recognized authority in cancer research and head of the Institute's department of experimental biology, headed a team of scientists that has found definite inhibition of radiation-caused leukemia in a special strain of inbred mice.

Repeated injections of cell-free extracts of sheep spleen overcame the immunology factor previously found in experiments with living-cell injections.

The researchers emphasize that it is still an "open question" whether the injections "would be effective in preventing leukemia development in man after excessive exposure to ionizing radiation." The experiments call the humoral, or liquid, factor in sheep spleen RLP, referring to the initials of "radiation leukemia protection." RLP is not a general anti-leukemia substance and appears to have no effect either on chemically induced or spontaneous leukemia in mice.

RLP acts specifically on that phase of

radiation damage that leads eventually to thymic lymphosarcoma and/or leukemia formation. In thymic lymphosarcoma, the cancer first appears in the thymus, which is a lymph gland under the breastbone. The malignant tumor later develops into a typical blood-borne lymphatic leukemia in some of the mice that survive long enough.

Ten injections of RLP were given the mice during a seven-week period. The mice were irradiated each week with 150 roentgens over a period of four weeks. Within four hours of each exposure they were injected with RLP, and for three weeks after irradiation had stopped they were given an RLP injection twice a week.

At the same time, other mice, used as controls, were given similar radiation doses but did not receive RLP injections. These mice developed leukemia within six to eight months.

Working with Dr. Berenblum were Drs. G. Cividalli and N. Trainin, with Dr. M. E. Hodes of Indiana University Medical Center, Indianapolis, who was a visiting professor at the Institute in 1962-63.

Details of their findings are given in *Blood*, the *Journal of Hematology* 26:8, 1965.

• Science News Letter, 88:86 August 7, 1965

DENTISTRY

Tests Show Tooth Needs

► CHEWING GUM and rubber-tipped stimulators for use between the teeth are of no help in keeping the gums of astronauts in good condition, the International Association for Dental Research meeting was told in Toronto.

What they need is a toothpaste they can swallow and an electric toothbrush, Dr. Jack L. Hartley of the Aerospace Medical Division's USAF School of Aerospace Medicine, Brooks Air Force Base, Texas, concluded after a series of simulated-flight tests. The experiments were carried out at Wright-Patterson AFB, Ohio.

A toothpaste that can be safely swallowed has been developed and is now being evaluated, Dr. Hartley reported. He said the electric toothbrush, even without a dentifrice, was very satisfactory under the conditions of the experiment, but once-a-day brushing is not enough.

False teeth and removable bridges should prevent an astronaut from being selected, Dr. Hartley warned. Not only is there more difficulty in maintaining oral health, but there is danger of accidental dislodging of these appliances in zero gravity and high "G" environmental activities.

Astronauts should brush their tongues as well as their teeth, Dr. Hartley pointed out, because of the strong coating tendency of the milk base liquid diet. Training in emergency procedures, along with a suitable dental kit, should be provided. He emphasized early treatment, when neces-

sary, to reduce dental emergencies in either simulated or actual space missions.

More attention should be paid to the condition of mucous membranes in the astronaut's mouth when candidates for research are chosen. So far, the procedures for maintaining oral hygiene during most experiments have been rudimentary and casual, Dr. Hartley said.

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Broadcasting Tooth Made

► A BROADCASTING TOOTH has been devised. Although it has implications as a useful bit of spy apparatus or an ultra-convenient transistor radio, it was implanted in a volunteer to give information to dental researchers.

Dr. Major M. Ash, a dentist at the University of Michigan School of Dentistry, and Ian S. Scott, project engineer, reported construction of the electronic tooth at the meeting of the International Association for Dental Research.

The tooth looks like an ordinary replacement for a first molar, but it can not only chew food, it measures the pressure and direction of forces pressing on its surface, and broadcasts detailed information to laboratory monitors.

So far, the tooth can broadcast only for a distance of one foot, but plans are being made for a vest-pocket booster apparatus

that will transmit signals over a distance of several miles.

No background music will be included, but Dr. Ash said that as data recording accumulates, it should give dentists new information and better guidelines for restoring teeth that have been damaged or decayed.

Six miniature radio "stations," 28 electronic components with special bondings, and two rechargeable batteries are crammed into the tooth. Circuits in the tooth transmitters are linked by microscopic gold wires.

Previous efforts to study the forces exerted on a tooth have been thwarted because any instrument inserted into the mouth makes the bite abnormal.

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Laser Replaces Drill

► THE POWERFUL LIGHT of the laser could some day replace the nerve-racking dentist's drill, a preliminary study on hamsters indicates.

It is necessary to keep adjoining teeth protected with wet cotton packs to prevent the laser beam from "splashing" into them, however, Dr. Richard G. Taylor of Tufts University School of Dental Medicine, Boston, told the meeting of the International Association for Dental Research.

The beam should be confined to 10-20 joules, or units of electrical energy, to be safe, he explained, as previous investigations showed injury to tooth pulp if the beam was too intense.

Dr. Taylor was assisted in his study by Dr. Gerald Shklar, also of Tufts, and by Fred W. Roeber, senior engineer in advanced development at the Raytheon Laboratory, Wayland, Mass.

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Tooth Bank Experimental

► THE FALSE TEETH of the future may well be transplants from a "tooth bank," but a good deal of research will have to be done to make the new method successful, a physician and oral pathology researcher said.

Dr. Richard J. Coburn, who divides his time between duties as a physician on the staff of the New York Hospital and as a research associate at Tufts University School of Dental Medicine, Boston, predicts that tooth buds stored in a "living environment" before transplantation will one day replace dental appliances.

He told a meeting of the International Association for Dental Research that tissue culture preservation in a chilled solution providing nutrients to the extracted tooth and its surrounding tissue is more promising than cold storage methods that freeze the tooth.

Although proper selection and good surgical procedures frequently lead to an apparently successful tooth graft, he explained, unqualified acceptance of the tooth bank must await long-range observations of existing transplants.

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