

PUBLIC HEALTH

Thyroid Survey to Show Effect of Radiation Levels

➤ A SURVEY for cancer of the thyroid glands of youngsters who were living in upstate New York during April and May, 1953, will show the effects of radiation levels on human tissue.

Scientists are still not certain whether there is a lower limit below which radiation has no effect or whether any amount of radiation, no matter how small, is harmful to human tissue.

To settle this question, Dr. Ralph Lapp of Alexandria, Va., suggests the thyroid cancer survey by the Public Health Service of upstate New Yorkers now from 9 to 11 years old.

Control groups would be those from seven to nine and from 11 to 13, who were also living in the Troy, Albany and Schenectady area during the spring of 1953. This area was selected because unusually heavy fallout of radioactive iodine-131 was recorded there following the 1953 Simon atomic bomb test in Nevada.

The radioactive compound contaminates the milk supply and is then concentrated in the thyroid gland, particularly of babies and nursing mothers. Iodine-131 is a known cancer cause.

Dr. Lapp calculates that no cases will be found among the youngsters if there is a threshold of 10 rads (radiation dose unit) below which no effects occur. If there is no lower limit, then the 1953 fallout might yield up to five cases of thyroid cancer, Dr. Lapp reported in *Science*, 137:756, 1962.

He concluded that radioiodine appears to have been underestimated as a radioactive hazard in bomb fallout. The level of irradiation may have already reached a point in some areas where biological injury to humans may be associated with fallout, Dr. Lapp warned.

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SPACE

Rocket Program Spurred By President Kennedy

➤ THE PRODUCTION of super rockets to boost the United States ahead of the Russians in manned space flight will be stepped up as a result of President John F. Kennedy's tour of the nation's major space engineering facilities, *SCIENCE SERVICE* learned.

While liquid-fueled rocket engines such as the Atlas and advanced Saturn vehicles will still receive the greatest share of appropriations, more money will be spent for new propulsion systems combining liquid and solid rocket technologies as well as for more research on nuclear-powered rockets for interplanetary travel.

To cut down the radiation hazards involved in testing and launching nuclear-powered boosters, launch facilities floating on the ocean have been proposed. These would be designed to handle all solid-fuel rocket launching as well as liquid-fuel rocket launchings as large as Saturn. Launch facilities that will float in the ocean of space are also now being considered by the National Aeronautics and Space Administra-

tion to provide the United States with a position of preeminence in space which the President considers essential for the survival of the free world.

In the President's private discussions with scientists, engineers, and management personnel responsible for the nation's booster engine development, the President has supported working overtime, round the clock if need be, to cut the present lag in manned space flight.

A major strike in the aerospace industries which threatens this month would seriously set us back in space exploration and would imperil the national defense, the President warned. A settlement of disputes before strike is in the national interest, he said.

In addition to technology and labor problems involved in putting the U. S. first in manned space flight, there still are, of course, known and unknown biological hazards such as weightlessness and radiation which must be overcome.

Dr. Robert C. Seamans Jr., NASA associate administrator, who traveled with the President on his space tour, said that as a result of the two recent Soviet almost week-long orbital flights, weightlessness no longer appears to be a barrier to flights to and from the moon. However, longer flights could result in vision impairment and other physiological disturbances that could be serious. Mechanical means to overcome this hazard are under intensive research.

The tour, which ended on Sept. 12, took President Kennedy from the antique-furnished White House to the white room housing the Mercury space capsule at Cape Canaveral, as well as to the Marshall Space Flight Center in Huntsville, Ala., the new Manned Space Flight Center in Houston, Texas, and the McDonnell aircraft plant in St. Louis, Mo.

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SPACE

Radiation Belt Could Limit Schirra's Orbits

➤ RADIATION exposure could limit Astronaut Walter Schirra's trip in space to one orbit, instead of the six now planned.

SCIENCE SERVICE learned this in an exclusive interview with Dr. Wernher Von Braun, director of the Marshall Space Flight Center in Huntsville, Ala.

It is possible, though unlikely, that the powerful Atlas rocket may boost Astronaut Schirra higher than planned, thus orbiting him too close to the new radiation belt created by the U. S. high altitude blast over Johnston Island earlier this year. (The lower limit of the man-made belt begins at about 200 miles above the earth. The orbits of Astronauts John H. Glenn Jr. and Scott Carpenter reached maximum heights of 162 miles and 166.8 miles respectively. Schirra's orbit is not expected to exceed 160 miles.)

If he does accidentally get too near the belt during the six orbits, the radiation could cause serious damage to the eyes and bone marrow, Dr. Von Braun said.

Space experts met in Washington to estimate the hazard from the new radiation belt and to determine whether it is near enough to delay man in space flights.

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IN SCIENCE

TECHNOLOGY

"Electrosleep" Relaxes Patients for Therapy

➤ PATIENTS suffering from painful muscular spasms can now be treated through electrically induced sleep.

Electrical apparatus patterned on a Russian device was described in New York at the American Congress of Physical Medicine and Rehabilitation by Dr. Sigmund Forster, State University of New York Downstate Medical Center, Brooklyn.

Electrodes are applied to the eye and mastoid regions of the patient's head and low-voltage electrical current introduced to the brain, thus inducing sleep or a sense of well-being and calmness.

Electrosleep produces conditions very much like those present when a person is sleeping naturally. Blood pressure drops, respiration and pulse slow down, muscles relax and abdominal breathing takes over. Patients formerly afraid to move in bed for fear of touching off painful muscular spasms can now be more readily treated, Dr. Forster said.

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RADIOLOGY

Radiation May Be Hazard To Supersonic Transports

➤ PARTICLES of radiation bombarding high-flying supersonic transports may be a real hazard to passengers and crew.

During periods of high solar activity, crews flying 10 hours a week at 75,000-foot altitudes will be exposed to twice the maximum permissible limit set by the Federal Radiation Council for radiation workers. Limits set for radiation workers are ten times the amount allowed for the general population.

A British aviation expert predicted recently that the development of commercial supersonic airliners was not only inevitable but also economically sound.

Supersonic transports can travel at altitudes up to 75,000 feet; but during periods of intense solar activity, a substantial reduction of the radiation hazard would be achieved by flying at about 45,000 feet.

Crews on northern routes would be exposed to more radiation during flight than crews on equatorial routes. To reduce exposure on a polar route, Trutz Foelsche of the National Aeronautics and Space Administration's Langley Research Center has suggested that the crews be changed periodically.

Passengers are not likely to reach the maximum permissible levels set for those in atomic occupations, the NASA expert said. However, they could probably get a dose reaching the limits set for the general population.

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E FIELDS

SPACE

Satellite Radio Link Planned for Americas

► PROJECT RELAY, the communications satellite scheduled to be launched later this year, will provide a radio link between North and South America by satellite for the first time.

Initial tests are planned to connect the International Telephone and Telegraph Corporation's station in Nutley, N. J., with mobile equipment to be set up outside Rio de Janeiro. Direct communications via Relay will also be made between the Rio station and Europe.

Relay will be placed in an elliptical orbit, inclined 50 degrees from the equator, by the National Aeronautics and Space Administration. It is expected to complete one orbit in two and a half hours.

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GEOPHYSICS

Radiation Belt No Hazard To Weather Satellite

► TIROS VI, the next research weather satellite, scheduled for launch in late September, will not be affected by the man-created radiation belt resulting from a U.S. high-altitude bomb test last July.

The atomic particles are now circling the globe in a false Van Allen belt. Although some space shots have been delayed by the hazardous belt, Tiros VI will be on schedule when it follows its successful forerunners, Dr. S. Fred Singer, director of the National Satellite Weather Center, said.

Two more Tiros research vehicles will follow Tiros VI before June 1, 1963, Dr. Singer said.

During August, Tiros V and its weak brother, Tiros IV, spotted 50% of the major storms well in advance of other reports, showing the extreme success of the research satellite, Dr. Singer told a subcommittee of the House Committee on Science and Astronautics. Hurricanes Alma and Becky were first "seen" from the weather spy, as well as three other major storms.

Since the Tiros satellites have been an "overwhelming success," Dr. Singer has proposed they be used operationally until the lagging Nimbus satellites are completed and checked out.

The development snag of the Nimbus vehicles was reported at the end of August. The scheduled launch date was changed from the second quarter of 1962 to at least the middle of 1963. Even if the shot is successful, it will take several months before Nimbus is truly functional.

An alternative proposal for an operational Tiros system has just been drafted, Dr. Singer said. If the plan is accepted by the users of the system and the National Aeronautics and Space Administration, the first

of two operational Tiros satellites could be launched by June 1, 1963.

An operational program is urgently needed, Dr. F. W. Reichelderfer, Weather Bureau chief, said. Lives, limbs and property can be saved by advance hurricane prediction, as well as protection to crops and aid to navigation, he pointed out.

Tiros VI will carry essentially the same equipment as Tiros V, a NASA official said. It will have two TV cameras and infrared receptors to scout the earth. It will also have nearly the same orbit, covering approximately 50% of the world's weather pattern.

With two Tiros satellites girdling the earth at the same time, Dr. Singer said, 90% of the world would be surveyed constantly. But the emphasis would be on the North American continent, since the receiving stations are on the East and West Coasts of the United States.

Asked if a top priority was being given to the lagging Nimbus program, Weather Bureau officials noted that a research and development problem could not be solved by additional funds or scientists. Too many persons working on the problem can do as much harm as too few, they said.

Until Nimbus technicians solve their problems, an operational Tiros system could do the job, Dr. Singer said.

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TECHNOLOGY

First Live Color Telecast From Europe

► THE FIRST live color telecast from Europe, utilizing Telstar, the communications satellite, was viewed by physicians attending the Twelfth International Congress of Dermatology in Washington, D. C.

The transmission is a part of an experimental intercontinental medical communications program from England. It is the first time the satellite has been used for an intercontinental exchange of medical information.

The dermatologists saw a discussion and demonstration of advances in treatment of psoriasis, a chronic skin disease.

The telecast originated at Culdrose, England, near Goonhilly Downs, site of the British transmission station of satellite communications. The picture was transmitted in color by microwave to Goonhilly Downs. The color event conveyed to Andover, Maine, by Telstar was relayed by microwave to Washington, D. C.

At the same time, a panel of physicians in England and a panel of physicians in Washington, D. C., voiced communications with each other by Atlantic telephone cable.

Dr. Donald M. Pillsbury, Philadelphia, Pa., President of the Twelfth International Congress of Dermatology, hailed the communications experiment as a milestone in exchange of medical information. He said: "The Telstar color transmission points the way to more rapid spread of medical information between nations."

Color television facilities of Smith Kline and French Laboratories, Philadelphia, and its British subsidiary, Smith Kline and French Laboratories Limited, were used to telecast the program.

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OPHTHALMOLOGY

Eye Drops Can Cause Blindness in Humans

► INFECTION from contaminated eye drops often causes blindness, an Australian eye surgeon said in Sydney.

In the United States, the real incidence of eye infections from contaminated solutions is unknown because of fear of legal liability among doctors and hospital staff, the surgeon charged.

The charge was made by Dr. D. O. Crompton, honorary eye surgeon at Royal Adelaide Hospital, to the Australian and New Zealand Association for the Advancement of Science congress.

Dr. Crompton said medical journals should publicize cases of eye infection caused by contaminated eye drops. They should not feel "fettered by fear of any possible legal consequences following specific disclosures," he said.

Not long ago in an Australian hospital, a number of eyes were lost in a few months from infection following lens extraction, he said.

"The cause was found to be unsterile eye drops. When the ophthalmologists wished to make public their findings, permission was refused by the hospital administration."

Dr. Crompton said there was a proven frequency of contamination in eye drop solutions by *Pseudomonas pyocyanea*—one of the most dangerous organisms in eye infections.

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SPACE

Instrument Package to Reach Venus After 1965

► AN INSTRUMENT package piercing the shrouded atmosphere of Venus and landing on its hidden surface sometime after 1965 is one of many planetary probes scheduled to follow the successful Mariner shot.

The package will be dropped from a spacecraft orbiting around Venus. The probe is part of the National Aeronautics and Space Administration's planetary exploration program, largely obscured until now by the man-in-space race.

Within the next decade, NASA plans to have:

Another Mariner fly by Venus in 1964.

A more sophisticated Mariner that will skirt Mars the same year.

The 1,500-pound Voyagers, now in the design stage, to orbit Mars and Venus, sometime after 1965. Each spacecraft will drop a capsule on the planets' surface during its mission.

Between 1968 and 1973, flights will be sent toward Mercury, 57 million miles away, and Jupiter, more than six times farther away (390 million miles) from earth.

Manned flights to Mars may follow soon thereafter.

The Mariner probe now hurtling through space toward Venus successfully marks the beginning of a new phase of outer space exploration—the planets.

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