

## PUBLIC HEALTH

# Pauling on X-Ray Dangers

A Nobel Prize winner cautions against too frequent dental X-rays. Dentists lead the professions in demanding and securing modern X-ray equipment.

"CHANGE DENTISTS, if the one you have exposes you or your children to full mouth X-rays semi-annually or even annually, as a matter of routine," Dr. Linus C. Pauling, the Nobel Prize winner and chemistry professor at the California Institute of Technology, has advised in an interview.

Dr. Pauling was recently in the news for his opposition to nuclear testing as a hazard to world peace and health.

According to the Nobel scientist, indiscriminate use of X-rays may be a greater health hazard than current exposure to radiation fallout from nuclear weapons tests. The danger from the X-rays is greater for children and embryonic infants known to be more susceptible to radiation damage than other age groups. This is true for all radiation.

Dr. Pauling told SCIENCE SERVICE that an important difference is that X-rays, used judiciously, are beneficial while fallout radiation is not. He believes that complete oral X-rays are warranted only where such diagnostic aid is essential in determining proper treatment.

Leading professional dental and radiological groups, as well as authorities in the U. S. Public Health Service, agree with this. However, dentists and radiologists caution against the other extreme tendency of avoiding X-rays when they are essential.

"As much damage can be done to one's health by completely rejecting the use of dental and medical X-rays as by their injudicious use," a radiologist from PHS warned. But he agreed that the advice offered by the Nobelist was essentially sound.

Dental authorities urge "full disclosure" when a dentist recommends the use of X-rays in any particular instance. "The patient should feel free to ask and the dentist should be willing to explain why X-rays are recommended."

As a matter of fact, studies show that dentists have been ahead of other medical groups in demanding and securing the most modern and efficient X-ray machines and equipment designed to cut down radiation exposure.

In many offices and clinics, leaded aprons are worn during X-ray by the patient as well as the dentist or technician in order to further cut down exposure. Monitoring badges also are commonly worn to measure levels of exposure to office personnel.

According to the U. S. PHS Division of Radiological Health, the 88,000 practicing dentists in the United States are their own radiologists and thus are exposed to far more radiation than any individual patient.

"Enlightened self-interest," therefore, as well as a desire to provide the best in

dental care, underlies the demand of the dental profession for the best and safest X-ray equipment.

PHS inspections of dental X-ray equipment throughout the United States by its field workers are so much in demand that the division of radiological health has devised a "do-it-yourself" testing kit. The kit contains film that is exposed to the machine tested and then mailed back to PHS for analysis.

Following analysis, recommendations are forwarded for correction or improvement of equipment if indicated.

Dr. George Crocker, in charge of the PHS program, used the kits successfully first in Prince Georges County, Md. The technique is well on its way toward nationwide acceptance, according to Dr. Crocker, and will cut down radiation exposure from dental X-rays to a great extent.

New and better machines and fast film have, in the past decade, cut down radiation exposure from dental X-rays by as much as a thousand percent. "We take the position in dentistry and medicine," said one PHS authority, "that no radiation is best and we intend to keep what we must use at a minimum."

Science News Letter, July 16, 1960

## ASTRONOMY

## New Table Shows Hourly Meteor Rates

A TABLE that shows the number of "shooting stars" a trained observer can expect to see during any hour of darkness for any night of the year is now available.

The number varies from zero at 6:00 p.m., local time, on Jan. 1 to 66 at 3:00 a.m. on Aug. 11, when the Perseid meteor

## BIOCHEMISTRY

## Chlorophyll Synthesized

THE FIRST SYNTHESIS of chlorophyll, announced almost simultaneously by research teams in the United States and in Germany, proves that the suspected chemical structure is correct.

Knowing this fact is a prerequisite to further study of chlorophyll chemistry and photosynthesis, said Dr. Robert B. Woodward, the Harvard University biochemist who heads the 17-man research group there.

Future research of the Harvard team will be in the general direction of trying to find out more about chlorophyll and what part it plays in photosynthesis.

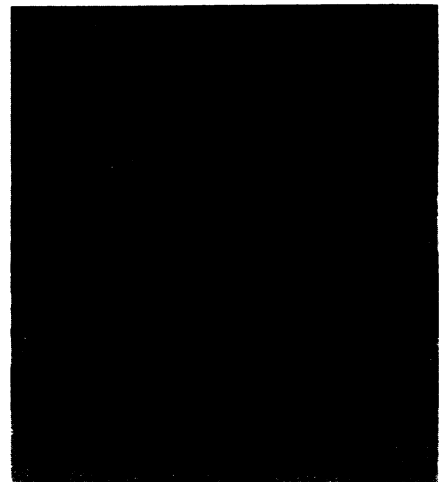
Some scientists believe the green substance serves mainly to transfer energy; others

believe it has other functions and itself takes part in further chemical reactions.

The rates he computed from reports by many hundreds of observers are those that might be seen by a skilled observer at a good station on a moonless, clear night. Since conditions usually fall short of this ideal, the number of meteors actually observed will usually be smaller than shown in the table.

Dr. Olivier also calculated that during the 58-year period on which the table is based, a total of about 294,000 visible meteors could have been seen. The catalogue of hourly meteor rates, published by the Smithsonian Institution Astrophysical Observatory, is available from the U. S. Government Printing Office in Washington, D. C., for fifteen cents.

Science News Letter, July 16, 1960



*OUTER SPACE EYE—A sandwich-type construction enabled Corning Glass Works to make telescope discs lightweight and compact for use in missiles, satellites and aircraft. The mirrors consist of two fused silica plates, held apart by ribs or tubes of the same material.*

believe it has other functions and itself takes part in further chemical reactions.

The Harvard team will try to find out which theory is correct by studying the transformation products of chlorophyll—modified molecules changed by reduction or oxidation reactions.

When asked if his research is slanted toward a practical goal, Dr. Woodward replied, "Definitely not. This is the purest form of basic research."

He also said that he had not been in contact with the German research group but had been familiar with their work for a number of years.

Science News Letter, July 16, 1960