

# Most Adults Carry Tuberculosis Germs

Public Health

## Physician Urges X-Ray of Entire Population

FROM one-half to nine-tenths of the people in this country are carrying in their bodies the germs of tuberculosis, Dr. Linsly R. Williams, president of the National Tuberculosis Association, declared at the annual meeting of the organization which has for over a quarter of a century been fighting the dread white plague.

"We must consider every person as a possible carrier of tuberculosis," Dr. Williams said. If there were but a few thousand carriers the problem might be solved, he explained. But probably one-tenth of that vast portion of the population that carries the germs are what are called "spreaders", meaning that they not only carry the germs but spread them to others.

Dr. Williams outlined the scientific knowledge we now have about the disease, and said that if it could be applied to the population, tuberculosis might be eradicated.

"But we cannot handle and control human beings as we do a test tube or a guinea pig. The human being insists on escaping his cage, even though he be incarcerated for life. In some measure we can isolate those individuals who are a constant menace to society. It is even possible to isolate persons who constitute a defi-

nite danger because at the moment they harbor bacteria which are dangerous to others, but when it comes to the chronic carrier of tuberculosis, the case is difficult."

A plea for directing efforts at diagnosis of tuberculosis to an earlier period of life was made, based on the theory that the majority of people in this country have been infected with tuberculosis by the age of 15 and more than 90 per cent. by the age of 21. Dr. Williams urged that the entire population be watched by annual X-ray examinations so that the persons who have definite signs of disease can be put under proper treatment at an earlier age.

### Tumors

THE importance of distinguishing between tuberculosis and tumors of the lungs or bronchi was emphasized by Dr. Channing Frothingham of Boston, speaking at the meeting of the National Tuberculosis Association.

"It is often difficult to differentiate these conditions from pulmonary tuberculosis," he said. "It is important to diagnose these conditions accurately if for no other reason than to save the patient from the expense of seeking a cure for the tuberculosis which does not exist."

These tumors, some of which are cancer, are apparently increasing. The non-cancerous ones may sometimes be successfully removed. The X-ray examination is the most important diagnostic procedure, Dr. Frothingham said.

### Sugar

THE different sugars of germ cells are probably among the most important chemical substances concerned with the vital processes of the cells, Prof. Treat B. Johnson of Yale University said.

In the Yale laboratories, tuberculosis germs by the pound have been analyzed chemically and found to contain among other things poisonous sugars. The sugars of the bacterial cells exist in very complex forms. The existence of these complex, highly poisonous sugars appears to be characteristic of germ cells in general, and are not necessarily characteristic of the tuberculosis germs alone, Prof. Johnson pointed out.

When considering the question of immunity to diseases, the proteins of the cells have been given chief attention. Prof. Johnson suggested that the sugar of the cell must now be taken into consideration as well.

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# A Trip to the Sun in 13 Months

Astronautics

A TRIP to the center of the sun, in a space ship speeding at the rate of 10,000 miles an hour, was described as the fanciful possibility of some remote future explorers by Prof. John Q. Stewart of Princeton University, in a report to the American Philosophical Society. This astronomical flight of fancy prefaced a paper on "The Physics of a Star."

Prof. Stewart said:

"We shall travel in imagination at the arbitrary rate of 10,000 miles per hour. A couple of minutes at this speed carries us up through the last vestiges of the earth's atmosphere; in one day we are crossing the moon's orbit; but it requires 3½ months to reach the orbit of Venus; 4½ months more to reach the orbit of Mercury, and nearly thirteen months in all to arrive at the surface of the sun. During the last fortnight of that period we might be

travelling through the sun's corona, and at any time during the last two days we might encounter a prominence. We plunge into the chromosphere and ride down through it for an hour. We dash through the reversing layer in a very few seconds, and a few seconds later are lost to sight beneath the photosphere. Still holding our speed of 10,000 miles an hour, it requires 42 hours longer to reach the center of the sun."

### Time-Table of Trip Into Sun, at 10,000 Miles per Hour

To top of atmosphere	3 minutes
To moon's orbit	1 day
To Venus's orbit	3½ months
Venus to Mercury	4½ months
Mercury's orbit to corona	4½ months
Through corona	2 weeks
Through chromosphere	1 hour
Through reversing layer	4 seconds
Through photosphere	4 seconds
On to sun's center	42 hours

"There is one condition with which all passengers must comply—no remarks about the temperature! Our ship is provided with refrigerating machinery, and plenty of power to operate it. To make habitable a space of 10 cubic feet at the sun's surface—barely enough to hold a man—would require a refrigerating plant rated at 60,000 kilowatts. At the sun's center, according to Eddington's temperature of 40,000,000 degrees Centigrade absolute, the power required would be greater by a factor of 4000 trillion. The high cost of living at the center of the sun ought to be notorious. If power cost only 1/1000 cent a kilowatt century—which is all of a billion times cheaper than the usual rate—the refrigerating bill for keeping a man alive at the sun's center would be 50 million dollars a minute."

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