

negative or zero." If it is negative or zero the universe is infinite.

The two-hundred inch telescope now being built in California will see

a larger sample of the universe, Prof. Einstein anticipated, and thus may allow a better answer to this question.

*Science News Letter, January 5, 1935*

MEDICINE

# Seek Cancer Control Through Study of Cell Growth

## First Step is to Stop Cell Increase; Next to Find What Makes Cells Mature In Normal Fashion

**T**EACHING cancer cells to forsake their fast-growing youth and become mature is the ambition of Dr. Frederick S. Hammett of Philadelphia's Lankenau Hospital Research Institute. He reported his latest steps in cancer research to the American Association for the Advancement of Science.

A first important step has been taken through the discovery that a sulfur-containing chemical, called sulfhydryl, is essential both for normal growth and for the riotous growth of "flaming youth" that is one characteristic of cancer cells.

Discover another chemical that will inhibit this wild growth, and Dr. Hammett believes that the first step toward cancer control will have been taken. And sulfoxides, derived from sulfhydryl, might accomplish this if they could be put into the cancer tissues so as to do their work.

This is all very well in theory, but practically, Dr. Hammett pointed out, it is another matter.

### A Research Problem

The preparation of sulfoxides is a research problem in itself. Fortunately, Dr. Gerrit Toennies of the Lankenau Institute is solving this. But the sulfoxides used must be able to reach the cancer tissue without getting destroyed themselves by the life processes of the cells which would tend to break them up into ineffective chemical groups. There is also the probability that any such chemical group that could check the growth of cancer cells might also check other cell growth which is essential to health, such as blood cell formation. Finally, even if malignant growth could eventually be slowed by means of this sort, the effect might be only temporary.

Enormous though the difficulties are,

Dr. Hammett and associates refuse to be discouraged.

"To allow oneself to be sidetracked because of the apparent impossibility of solution of the problem set is to admit that scientific progress is impossible," Dr. Hammett declared with the unbeatable spirit of the true scientist.

### Determiners of Maturity

He has, in fact, another string to his bow. That is to discover the naturally occurring chemical factors which determine cell maturity. Since scientists have found the naturally occurring chemical factor, sulfhydryl, that is of major importance in growth of cells by multiplication, he hopes that he and other scientists will be able to discover what chemical group it is that makes them mature, that is, organize and get ready to take over grown-up functions and activities.

Dr. Hammett and associates have been working at this phase of the problem for three years, and while they have attained some results, the work is being continued and he believes it will be many more years before success is achieved. If they can find the chemical agent responsible for cell maturity, and can develop the practical aspects of the sulfoxides that neutralize sulfhydryl's quality of increasing cell numbers, they will be able not only to stop cancerous growth but to do away with its malignancy.

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Early men and women learned to grow food plants before they learned to make durable pottery, judging by discoveries in Palestine.

Investigation of the low vitality displayed by children in an English school showed that, for one thing, 62 per cent. of them got insufficient sleep.



### HYPER-CUBE

*At the exhibit of the American Association for the Advancement of Science, scientists saw this model with 24 dimensions devised by Paul S. Donchian who has discovered a method of projecting symmetrically into 3-dimensional space the hyper-cube series to any number of dimensions, preserving a standard unit edge. This photograph and that on pages 3 and 13 were snapped by the staff photographer of the Pittsburgh Press.*

PHYSIOLOGY

## Nervous System Likened To Radio Broadcast

**T**HE brain and nervous system should be compared, not to the telephone and switchboard, but to the radio broadcasting system with each nerve a receiving set tuned to pick up its own individual messages, Prof. Paul Weiss, of the University of Chicago, told scientists attending the meeting of the American Association for the Advancement of Science.

The muscles are the operators that tune in their nervous receiving sets to pick up the correct messages, Prof. Weiss said. He bases this conclusion on experiments conducted since 1921 in the transplantation of extra, or supernumerary, limbs and supernumerary muscles on such lowly creatures as salamanders.

Live animals with such transplanted limbs were demonstrated before the meeting. When an extra limb, or series of them even, are transplanted next to the normal limb of the animal, these extra limbs behave like extra sets of