

which four basilican churches radiate. It is the earliest known church of this design.

Antioch, famed of old for its luxurious splendor, has never before been systematically excavated. The current expedition has been working there since 1932 and now, according to Prof. Morey:

"The topography of the city is beginning to take on form, starting from the famous central street on which Tiberius built his colonnades, and the buildings on the island on the Orontes river, where the excavations commenced, and where the immense circus and the large baths apparently connected with the imperial palace have been laid bare."

He also disclosed that, with the original five-year concession expiring this year, negotiations are being conducted with the state of Syria to renew it for six years, the maximum period allowed by Syrian law for archaeological concessions.

In addition, permission is being sought for excavations in Seleucia, the port for Antioch, an area which would add about one-third to the territory included in the original concession. Located at the foot of Musa Dagh, Seleucia is believed to have many important art objects in an exceptionally fine state of preservation.

Institutions cooperating in the work are the Louvre, the Baltimore Museum of Art, Worcester Art Museum, and Princeton University, and the finds are divided between them.

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#### MEDICINE

### Fertility Vitamin Lack May Be Cancer Cause

LACK of the fertility vitamin E may lead to the development of cancer, it appears from experiments with chicks reported by F. B. Adamstone of the University of Illinois to the *American Journal of Cancer* (November).

The results obtained by Mr. Adamstone apply only to chicks and to one type of tissue. They are, however, significant and may furnish an important clue to the cause of at least one type of cancerous disease.

When the chicks were fed for prolonged periods on a diet normal in all respects except for its complete lack of vitamin E, all the chicks died, some of them suddenly, others after an illness. Examination after death disclosed the growth of new, cancer-like tissue

which was destroying the normal tissue of liver, heart, pancreas, gizzard, spleen and lungs.

The tumors belong in the class known as lymphoblastoma and appear very much like the tumors found in typical cases of leukemia in the fowl, though Mr. Adamstone makes no claim that the two conditions are identical.

"The fact that it has been possible by means of a dietary limitation to bring about the development of excessive tissue growths, and to set up changes in the character of certain cells which cause them to assume a destructive relation to their neighbors," appears to Mr. Adamstone "to be significant."

#### GENERAL SCIENCE

## Story of Human Error Is Told by Scientists

THE STRONG accent of all accounts of science's progress is upon the successes. In the long historical vista there are a few notable and often-sung constructive moments. Pythagoras, Aristotle, Archimedes, Roger Bacon, Galileo, Newton, Harvey and the succession of great figures of the modern era are known for great achievements.

This success story of science is justified but it can be argued that the most vital aspect of scientific thought is the surmounting and correcting of error. A new book, "The Story of Human Error" (D. Appleton-Century) edited by Dr. Joseph Jastrow, one of America's pioneer psychologists, parades the errors of science. It glories in them, in a sense. It shows how out of error truth has arisen. Sixteen eminent scientists have recorded in a readable manner the error in various fields of science ranging from astronomy to psychiatry.

Here are some of the to-us-strange ideas men have believed and even defended with their lives:

The earth is flat.

The universe is centered in our own planet.

Eternal fire burns in the depths of the earth.

There are only four elements: earth, fire, water, air.

Blood is warmed by the heart.

Madness is a punishment for sin.

There are, of course, many others, the telling of which makes us appreciative of the fact that has been ferreted out of the overwhelming error of the past.

The explanation of why lack of vitamin E may have a part in causing cancer is to be found in the relation of this vitamin to the process of cell division. This is the process by which new cells are formed. Normal cell division seems to require an abundance of vitamin E. Paradoxically, abnormal cell division has been reported when vitamin E was lacking in the diet.

These observations suggest that deficiency of vitamin E sets up some condition favorable to excessive formation of new cells. Cancer has long been recognized as a condition in which new cells are formed at an excessive rate.

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"The use of intelligence is the highest privilege and the deadliest menace of humanity," Dr. Jastrow comments as the result of editing this book. "By the increase of understanding and organization, man has largely transferred the control of his destiny from Nature to his own decisions. It is a sobering or a despondent reflection that the inability to enlist intelligence in the service of an enlightened, tolerant dispensation may annihilate—as if by a ghastly super-gas-bomb of malign stupidity—the cumulative heritage of thought and enterprise. On the one hand the brilliant triumphs of logical discipline; and, in dismal contrast, the undisciplined warrings of nations over fleshpots and messes of pottage; the resources of Nature under superb orderly dominion, and the contentions of men under unruly strivings of warped judgments. The atmosphere of laboratory and council-chamber seem so alien as to deny their common origin in sapience. In that perspective the story of human error in the sciences may be lowered in significance, compared with the Herculean task of bringing intelligence to correct the follies of ambitions of empire and tyrannical control. When, in the twentieth century, master minds of science may become hounded political exiles, and scientists of distinction sacrifice their loyalty to truth to remain under the protection of perverted authority, the shock compels a reevaluation of pen and sword."

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