

MEDICINE

Cure For Cancer May Be Found In Defensive Diet

Tar Cancer in Mice Influenced by Substances in Diet Which Change the Chemistry of Organic Fluids

THE REAL "cure" of cancer is to be achieved by reestablishing the body's defenses against malignant growth, predict Drs. J. Maisin and Y. Pourbaix, of the Cancer Institute of the University of Louvain.

The means of accomplishing this—suitable diet or possibly chemicals obtained from certain animal organs—are indicated by studies just reported in *The American Journal of Cancer* (June).

For the present cancer patients cannot hope to be cured by diet. They must still rely on surgery, X-rays or radium. The work of the Belgian scientists is still in the experimental stage and their results, promising though they seem, have been obtained only with mice suffering from one form of cancer. The studies are not reported as a cure for cancer but as a signpost for scientists, pointing what seems to be a logical and promising way to an ultimate cure of cancer.

"The experimental results here recorded," the scientists state in conclusion of their scientific report, "may be interpreted as indicating that it is possible to influence the evolution of tar cancer in one direction or the other by diet.

"Our results show unquestionably that chemical factors can be found which protect against cancer or lower the resistance to definite carcinogenic (cancer-producing) substances."

The scientists proceed in the cancer problem on the theory that it is a constitutional disease rather than a local ailment. Consequently they think treatment should be aimed at strengthening the body's defenses, rather than at destroying the cancerous growth. Cancer in their opinion is the "peculiar response of injured cells" of an animal—mouse or man—that has been intoxicated by organic poisons. These poisons may be certain chemicals, as in tar cancers, or they may possibly be poisons produced by the "germs" of chronic infection, or they may be still other poisons that get into the body.

Rebuild the body's natural defenses and the body will be able itself to destroy and dispose of the cancer, they reason.

"By our experiments," they report, "we have demonstrated that in changing by diet the chemical composition of the organic fluids of an intoxicated animal it is fairly easy to modify its cancer response.

"It is reasonable to assume that by further studies it will be possible to find organic chemical compounds which, injected or given in the diet, will protect against the poisoning which leads to a typical growth and cancer.

"We believe, also, that in this way it will be possible to make a cancer slowly disappear, by reestablishing the organic defenses which will take care of the growth.

"Such a cure of cancer seems more logical than a specific remedy with power to kill cancer cells and leave untouched normal cells."

The experiments on which these conclusions are based took many years of work and their report covers many pages in the scientific journal. In summary they are:

Mice develop cancer when their skins are painted with tar. (Men also develop

cancer from exposure to tar, as seen in chimney sweeps' cancer and mule spinners' cancer.) When the mice are fed ground up bits of certain organs—liver, pancreas and the lining of the lower digestive tract—the tar cancers develop sooner and grow faster than usual, Drs. Maisin and Pourbaix report. When the mice are fed certain other organs—brain, thymus gland, and bone marrow among others—the tar cancers do not develop as soon as usual. Apparently the latter group of organs contain a substance that checks or stops the growth of the tar cancers.

This is not quite all the story, however. Chemical treatment of the various organs fed to the mice showed that each organ apparently contained one substance that checked the growth of cancer and another that promoted the growth of the cancer. It is through the interaction of these two substances in the various organs or through their proper balance that the healthy body has a system for regulating cell growth, in the opinion of Drs. Maisin and Pourbaix. Cancer is a state of abnormal cell growth.

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BOTANY

Breeding for High and Low Produces Strange Contrast

A STRIKING example of the results which can be obtained by selection in plants is furnished by a corn experiment which has been carried on for over a generation at the University of Illinois. (Turn to Page 4)



BREEDING HIGH AND LOW

The tall stalks with their loftily borne ears were bred from seed taken from the same field of corn that produced the dwarf stalks on the right, with ears that hardly clear the ground when ripe.

In the fall of 1902, the late Dr. Cyril G. Hopkins, then head of the agronomy department at the University, went into a field of Leaming corn. He selected the ears growing highest on the stalks and the ears growing lowest, and kept them for seed.

The following spring these ears were planted in separate plots, which were called the low-ear and the high-ear plots. Observations made in the plots that same fall showed that the selection was already yielding results. The ears in the high-ear plots averaged 56.4 inches from the ground and in the low-ear plot the ears averaged 42.8 inches from the ground.

Year after year this work was continued, the highest growing ears being saved from the high-ear plot and the lowest growing ears from the low-ear plot and planted. Six years after the ex-

periment began there was a difference of 34.2 inches in the average height of ears between these plots and an average difference of 34.7 inches in the height of the respective corn plants.

After a quarter-century of this continuous selection, measurements showed the striking differences that had taken place. Strains of corn so unlike in their appearance had been developed that it seemed almost unbelievable they could have had a common origin. The average height of the ears in the low-ear plot was only 8.1 inches, while the ears in the high-ear plot averaged 126.5 inches from the ground.

The studies have also brought out the fact that the low-ear strain became much earlier in maturity than the high-ear strain, and also exceeded the high-ear strain in yields per acre.

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GENERAL SCIENCE

Physician Stops Human Heart And Starts It Again at Will

CENTER of interest in the medical exhibit at the summer meeting of the American Association for the Advancement of Science was a demonstration of the causes and prevention of heart disease, by Dr. M. H. Nathanson of Minneapolis. The physician has found a number of middle-aged people whose hearts he can stop at will, by pressure on a certain nerve in the center of the throat, and then start again with adrenalin and related drugs.

Dr. Nathanson uses this procedure in critical tests of relative values of various heart medicines, as well as for the scientific study of the two principal causes of "heart failure," cardiac standstill and ventricular fibrillation.

Another medical exhibit showed the usefulness of a preparation known as thorium dioxide sol in the more accurate X-ray diagnosis of cancers, tumors and other malignant conditions of the internal organs. This substance shows a tendency to concentrate in such sick tissues, so that they cast denser shadows on photographic plates when X-rays are turned on the suspected body regions.

Ancient Americans

An exhibit attracting much interest was one bearing on the still-vexing riddle of ancient man in America, arranged by Prof. A. E. Jenks of the University

of Minnesota. Outstanding in this display was the skeleton of a human being found in that state, associated with stone dart points of the Yuma and Folsom types, closely resembling similar weapons that have been appearing in increasing numbers in apparently quite ancient deposits. Some of them, found in the southwest, have been mixed with the bones of extinct species of bisons. Other flint points of the same type, not associated with human remains, have also been discovered in Minnesota.

Even older than the "Brown's Valley" skeleton found with these dart points is a famous skeleton, known as "Minnesota Man," discovered by Prof. Jenks some time ago. This was on display, together with the implements and ornaments associated with it.

Was prehistoric man in America a hunter of mastodons and mammoths, as ancient European man was?

This question, to which science as yet has no positive answer, is raised by a group of ivory objects collected in the upper Mississippi River Valley displayed by Dr. Jenks.

The collection is not large; two ornamented armbands, much broken; a three-cornered scraper with sawlike teeth on one side accurately carved in imitation of bear's teeth; and a tubular pipe, shaped like half of an enormously thick cigar,

constitute the whole of it. Part of the objects were found buried below ground level, under an Indian mound that had nothing in it.

They are all made of genuine elephant ivory. The workmanship is clean-cut and symmetrical, and the ornamentation, though simple, is competently applied. But whether the long-dead hunters slew the beasts and carved their ivory fresh, or whether they merely found it, or dug it up as fossil ivory, as men still do in Alaska and Siberia, there is at present no way of knowing.

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ANTHROPOLOGY

Chinese Conflict Involves Region of Peking Man

ASIATIC man's most ancient home lies in the section of China on which Japan has fixed a determined eye. In this neighborhood some of China's greatest archaeological discoveries have been coming to light.

Bleak limestone cliffs in this region have revealed Peking Man, China's oldest inhabitant and one of the world's earliest cave dwellers. Located within forty miles of Peiping, a cave at Chou Kou Tien has recently become one of the famous and significant places of the earth, for the early history of man.

Since the first discovery that China was inhabited far back in the Old Stone Age, much has been learned about the life and times of Peking Man. Excavations of the cave by the late Dr. Davidson Black, Canadian scientist, and by Chinese scientists have shown that Peking Man hunted horses, deer, elephants and other wild animals of the early part of the Old Stone Age. Peking Man made a variety of stone tools and he knew how to build fires.

If China's earliest inhabitant represented a branch line of the ugly Neanderthal race which spread over Europe and the Near East in the middle of the Old Stone Age, some 60,000 years ago, he was a remarkably early appearance of that breed. The cave at Chou Kou Tien has added many new facts to the knowledge of man's early attempts to possess the earth.

Excavations at the cave continue to yield information. A discovery last year showed that the cave was inhabited successively by baboons, Peking Man, and early Modern Man, who lived almost as simply as old Peking Man himself. The series of cave tenants was pronounced a "coincidence" by Dr. Black.

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