

MEDICINE

Fighting Cancer

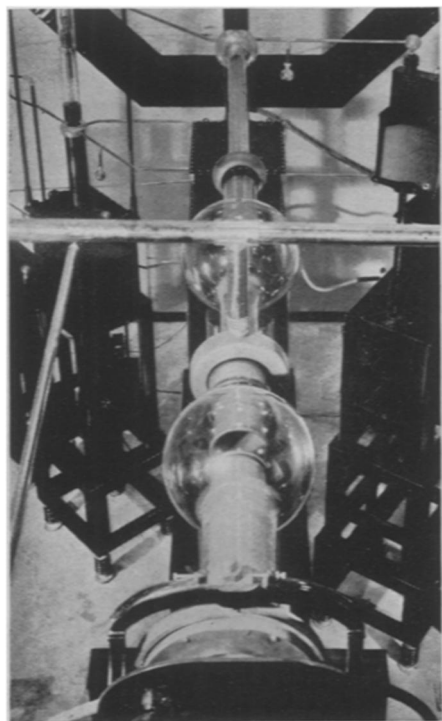
Ignorance Greatest Cause of Cancer Deaths; Doctors Need to Refer Suspicious Cases to Experts

By JANE STAFFORD

DEATH takes 130,000 cancer patients every year in the United States. On their death certificates, on every one of the 130,000, cancer appears as the cause of death. Cancer killed these people, but in the vast majority of cases it was ignorance, not cancer, that was the cause of death.

A woman patient was ushered into the office of a well-known physician who has been a cancer specialist for 30 years. The patient and the doctor had been classmates in high school. The doctor was horrified to discover that his former classmate had a cancer of the breast which had spread to neck and armpit.

"Why, Ruth," he exclaimed. "Why didn't you come to see me about this long ago?"



CANNON OF MERCY

Cancer patients at Mercy Hospital in Chicago may receive treatment with X-rays from this giant million-volt tube. It is installed in a special room, heavily insulated with lead, to protect operators and patient.

She told him she had been to a physician in their home town. She had read an article that said a lump in the breast might be dangerous. She had a lump in her breast and she told her doctor about it. He examined her, told her she was all right, told her not to get cancer-phobia (fear of cancer), to go home and forget about it.

A few months later she read another article and went again to her physician. He laughed at her fears, assured her she had no cancer, nothing to worry about.

Finally, when a lump developed under her arm and another on her neck, she traveled way across the state to see her old school friend, the famous cancer specialist. By that time it was too late to remove the cancer. She was treated by the best possible methods, and her life was prolonged for several years. Then she died, cut down in the middle of her life, leaving half-grown children without a mother's care.

Her life might have been saved if she had had adequate treatment early, the specialist believes. He considers the doctor who saw her and failed to recognize the cancer, or to have her examined by a specialist, to be little less than a murderer.

Pain Not Early Symptom

Like that patient, the lives of half the persons who die of cancer every year could be saved if it were not for ignorance. Many of these victims are themselves ignorant of the early signs of cancer. Many physicians are ignorant of how to diagnose and treat the malady. The average person thinks pain is a sure sign. Pain does not develop until the cancer is far advanced.

Many physicians are ignorant about cancer because they do not see enough cases in the early stages to become familiar with the first symptoms. The general practitioner probably sees only two or three cancer patients in a year. Diseases like pneumonia, heart disease and scarlet fever make up the bulk of his practice, and he has learned to diagnose and treat them. Medical schools and medical societies might teach the doctors. Laymen and women, however, can

also help to prevent cancer deaths by learning the first danger signals of cancer and by going to a competent doctor at the first warning.

Cancer, however, is everyone's problem. Anyone can be afflicted. Generally cancer does not attack until the victim has reached middle age, although cases have occurred in infants and young persons. The reason for this, probably, is that it takes a long period for cancer to develop. Cancer can be produced in laboratory animals by painting their skin with coal tar or by injecting certain chemicals under the skin. The first injection or the first skin application, however, is not immediately followed by cancer. Only after many such injections, carried out over a long period, does cancer develop.

For Longer Lives

Most persons in this country can count on living to middle age. Very many of them can count on living longer if they have the courage to learn cancer's warning signals and to heed them promptly.

Medical scientists in laboratories all over the world are bending over microscopes, mixing and testing complex chemicals, examining patients and animals, trying to find out why people get cancer. Hundreds of thousands of persons are hoping that doctors will find a germ or a chemical or some single factor that is the cause of cancer.

Lives of cancer patients can be saved, however, without waiting for the results of these investigations. In fact, if and when a single cause for cancer is found, it may not provide any better method for treating cancer than is now available. Modern methods of treating tuberculosis, for example, save hundreds of thousands of lives annually, but they do not depend on the knowledge that tuberculosis is caused by the tubercle bacillus.

Many causes, that is, many conditions which can produce cancer in laboratory animals, have already been discovered. Some of these may play a part in causing cancer in human animals. Chemicals from coal tar cause cancers in mice. Some of these chemicals cause cancer in humans, such as chimney sweeps' cancer and mule spinners' cancer. The composition of these chemicals is very

much like that of chemicals formed in the body—bile acids and sex hormones. It may be, although it is not yet proved, that an occasional mistake or change in the body's chemistry results in the formation within the body of a cancer-causing chemical instead of one of the similar but harmless chemicals that ordinarily are manufactured in the body.

Viruses in Animals

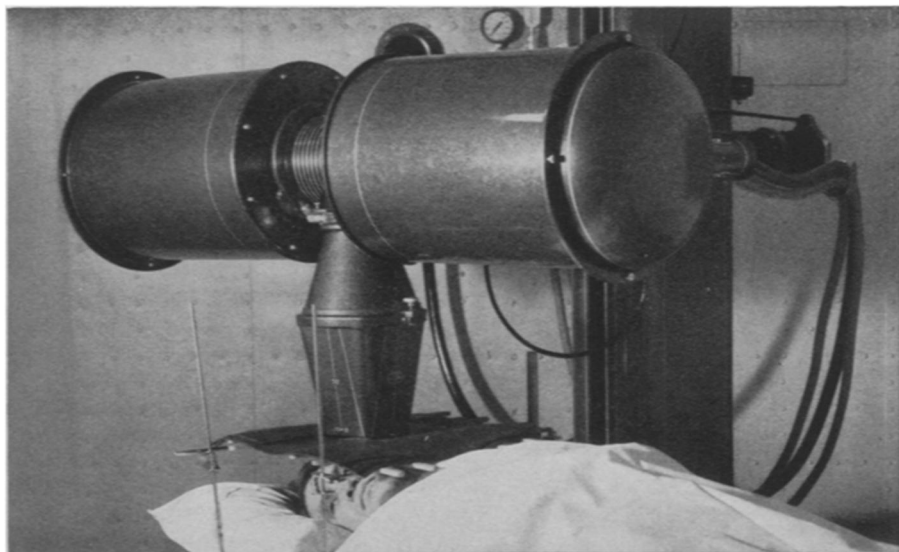
One kind of cancer in rabbits, a warty condition called papilloma, can be produced by injecting juices squeezed from the wart-like growths. This, however, is a rabbit ailment and never occurs in human beings. Similarly, a virus has been obtained from a cancer-like chicken tumor which, when injected into fowl, causes the growth of new tumors or cancers. This does not mean, however, that cancer in man is caused by a virus. Mice develop cancers spontaneously and the cancers are very like those seen in men and women. By selective breeding, a family or strain of mice can be developed in which mice in every generation will develop cancer. This does not necessarily mean, however, that human cancer is inherited.

Cancer is probably not a single disease but many diseases, each with a different cause. Prolonged irritation of one sort or another will produce cancer in an individual with an inherent susceptibility to the condition. This is a generally accepted theory of how all and any kinds of cancer develop. From a practical viewpoint it leaves much to be desired because no one can put his finger on the inherent susceptibility and say, "Here it is; let's breed it out of the human race," and no one can tell all the possible kinds of irritation that should be avoided because they might play a part in causing cancer development.

Wild Spree of Growth

Cancer occurs when certain tiny cells of the body, called rest cells because they have reached a rest period in growth and development, go on a wild spree of growth, reproducing themselves at top speed and, because of their increasing numbers, crowding out other cells that are vitally needed by the body. What causes this growth spree is not known. No way of preventing it is known. If it is detected before it has gone very far, however, it can be stopped by cutting out the cells or destroying them with X-rays or radium.

Half the patients who die of cancer every year could be saved if they were properly treated in the early stages of



X-RAYS FOR VETERANS

This powerful but conveniently built X-ray tube administers treatment to deep tissues. It is in use in a hospital of the U. S. Veterans Administration.

the disease. Early cancer can be destroyed by radium or X-rays, or cut out by the surgeon's knife.

The problem is not to find a cure for cancer but to find cancer when it is curable.

The two most unfortunate things about cancer are: (1) In the early stages of cancer there is no pain or discomfort; (2) Although cancer begins locally, in just one spot, it soon spreads to take in a large area and to attack distant parts of the body.

Lord Moynihan's Wish

The eminent English physician, Lord Moynihan, once said, "If I had only one prayer, it would be that early cancer would give pain." That prayer has been echoed in the hearts of all physicians who see cancer patients too late. It has been said that no one would die of cancer if early cancer had the pain of a jumping toothache.

Cancer of the breast and cancer of the uterus or womb kill most of the 80,000 to 90,000 women who die of cancer every year in the United States. Most of these lives could be saved because cancers of breast, uterus and skin are the most readily curable of all forms of cancer, and they give the plainest early warning signals.

Cancer of the breast starts as a small lump. A single lump in the breast of any woman over the age of 30 years is serious. Unusual bleeding is a danger signal of cancer of the uterus. Women should not wait, however, for this warn-

ing. Cancer specialists agree that women who have had children should go every year to their doctors for examination and repair, if necessary, of the child-bearing organs.

More Women Victims

More women than men die of cancer. The ratio is approximately 60 to 40. As if to compensate for this uneven distribution, the majority of cancers in women are of the type that can be diagnosed early and treated effectively.

Cancer of the stomach causes most cancer deaths among men. Two-thirds, approximately, of stomach cancers are found in men. In about half these cases, unfortunately, no warning signal is given in time for the victim to be saved. In the other half of the cases of stomach cancer, the early symptoms are those of indigestion. All persons, men and women, who have chronic indigestion that does not respond to medical treatment should have X-ray examinations to see if cancer is present.

Cancer of the skin, mouth and lip is another form that is much more common among men than women. These cancers can be cured in almost 90 per cent. of the cases, but if allowed to go untreated, they may destroy irreparably large areas. Woman's vanity is considered a saving grace in such conditions, because few women would go for long with a large warty spot on the face. Women also seem to take better care of their teeth, and jagged edges of a broken tooth, or poorly fitting false teeth,

may cause enough irritation in the mouth to bring on cancer.

The job of finding cancer while it is still curable by surgery, X-rays or radium must be shared by patients and physicians. There is not now any single diagnostic test for cancer, as there is for diabetes, nor is there likely to be such a test in the future. The condition does not lend itself to such testing, because in the early stages it does not produce any change that would show in the blood. It does give warning signals. The important point is to learn these signals and heed them.

They must be heeded not only by patient but by physician. All doctors should know that early diagnosis of cancer is not made with the eye or the finger but with the microscope. This means that a bit of tissue from the suspected cancer must be cut out for microscopic examination. The procedure can be quickly and safely done, under local anesthetic so there is no pain. The doctor who delivers a baby, in the opinion of one cancer specialist, is responsible for seeing that the mother does not have cancer. This means that he must repair any tears of the uterus that occur and must see that the patient is regularly examined throughout her life to detect the earliest signs of cancer if it should develop.

Science News Letter, February 5, 1938

CHEMISTRY

High Purity Demanded of Cesium for Photocell Use

CESIUM, rare earth that makes the electric eye see, will not work if it contains more than one ounce of impurities in three tons of metal, reports Dr. J. J. Kennedy, of the Maywood Chemical Works, describing the cesium mining and purifying industry to the American Chemical Society.

Mined in the Black Hills of South Dakota, pollucite, the dull and gumlike ore of cesium, worth fifteen dollars a pound, contains from one to 30 per cent. of cesium oxide. Purified by successive stages, and reduced to a metal that burns in air and explodes in water, cesium is used as the sensitive metal in photoelectric cells—the “electric eyes” of industry—and as a “getter” in radio tubes. A radio tube “getter” burns up the last bits of oxygen that the vacuum pump couldn’t catch.

Science News Letter, February 5, 1938

Cottonseed hulls are being used to fill joints between concrete highway slabs.

ENGINEERING

Engineers Seek Answer to Question: What Is a Draft?

What's One Man's Draft May be Nothing to Others; Different Shoetop Climate Gives Most of Us Tough Ankles

JACK SPRAT, who ate no fat, and his wife who ate no lean have nothing on family arguments which arise over drafts. A draft for one person may not be a draft for another, and so the American Society of Heating and Ventilating Engineers have appointed a research committee to investigate the scientific bases of temperature and air movement which constitute a draft.

The report of F. C. Houghton, Carl Gutberlet and Edward Witkowski, working in the Pittsburgh laboratories of the Society, states:

“Drafts are probably the source of more complaints directed against ventilating and air conditioning systems than any other defect. Notwithstanding this fact, the engineer has no way of evaluating what constitutes a draft other than his own personal feelings. There is even a lack of understanding of just what is meant by a draft.”

The sensation commonly called a draft, explain the scientists, is feeling of local coolness in one part of the body while the rest of the body feels warm. Arguments about drafts arise because it is almost impossible for the average person to tell whether the local sense of coolness is caused by a stream of air (a real draft) or by local contact with air that is cooler than the rest of the air in a room. A person may also get a sense of local coolness because of radiation from the body to a cooler surface, like a cold wall or window. This feeling may be interpreted as a draft.

A draft then is any one, or all, of three conditions: excess movement of normal air, contact with cooler air, or radiation of a part of the body to a cold surface. A draft, while literally a movement of air, has come to mean a local coolness in the body and it is this mixed use of a single word which causes confusion.

To determine what combinations of temperature and air movement constitute a draft the research committee has been using test subjects in the laboratory.

To test a draft on the ankles the sub-

ject sits with his feet in separate cardboard boxes into which pours air of known temperature and humidity. Tiny thermo-couples enable investigators to know, at any time, the temperature of the ankles while the subject marks on a chart his feeling about the “draft.” Or, in another test, the stream of air may be directed at the neck.

Two findings have already been obtained. An air velocity increase of 15 feet per minute usually is equivalent to a drop in temperature of one degree. And the ankles stand a much lower temperature before a feeling of coolness is noted. This latter is explained by the fact that one’s feet really dwell in a quite different temperature environment than the rest of the body. In a room where the temperature is 70 degrees at the waistline, the floor—and the feet and ankles—may be subjected to a temperature of 65 degrees.

Science News Letter, February 5, 1938

CHEMISTRY

Fund to Aid Search For New Farm Product Uses

SEARCH for industrial uses for farm products will be speeded up through the use of a \$500,000 grant by the Rackham Fund to Michigan State College. This is the first large-scale expenditure for the purpose, outside official appropriations by federal and state governments, and various grants by The Chemical Foundation. A \$2,000,000 appropriation for similar research is now pending in Congress.

In addition to the researches looking to industrial uses, one special objective of investigators at Michigan State College will be to make (if possible out of cornstalks, sawdust, straw, or other farm wastes) some material to be plowed into the soil for its physical improvement, as fertilizers are used for its chemical improvement. The sought-for material, by rendering the soil lighter and more porous, will increase its water-holding power, and thus indirectly make for better control of both floods and erosion.

Science News Letter, February 5, 1938