

MEDICINE

Stomach Cancer Detection

Cytological diagnosis is now being applied to the detection of cancer of the stomach. The method has proved accurate in 60% of the cases examined so far.

► THE possibility that deaths from stomach cancer may be reduced considerably with further development of a diagnostic test now in the experimental stage was visualized in a report made to the meeting of the California Medical Association in San Diego.

The test is an application of the cytological diagnosis technique, which has been used recently with increasing success in detecting cancer of the lung and of the cervix. This report was made by University of California Medical School physicians who have pioneered much of the application of this technique.

The significance of the test lies in the promise that it can be used successfully in detecting stomach cancer in the early stages. Stomach cancer is one of the most difficult forms of the disease to detect. It is easily confused with ulcers and other stomach disorders. Even in the late stages, it is sometimes impossible to detect it by X-rays, the most reliable test now in general use.

By the time it can be demonstrated that cancer is present, it is often too late to treat the ailment successfully. Because stomach cancers usually are so far advanced, before surgery is attempted, doctors are able to cure only about 25% of patients at the present time.

Although the cytological test for stomach cancer is not yet ready for general use, the University of California physicians foresee the possibility that it may be used in the future as one of the many aids of the physician in attempting to determine the stomach disorders in his patients. One of its advantages is its simplicity.

In cytological diagnosis, fluid samples are taken from suspected areas, stained, and examined under a microscope. Where cancer exists, cancer cells may be expected to be present in the fluids. Sputum, for instance, contains cancer cells when cancer is present in the lungs. Trained technicians can tell the difference between normal and cancer cells.

Cytological diagnosis for cervical and lung cancer is now accurate in 90% of cases examined at the University of California Medical School, and this is a superior record.

It was tried first several years ago. Fluid samples were taken from the stomach and examined in the usual way. Scientists over the country have been successful in about 60% of cases, which compares favorably with any other stomach cancer test.

Last year, the San Francisco scientists began work on a method of improving the

test. One difficulty had been caused by a heavy coating of mucus overlying the stomach wall, a coating which is particularly heavy over cancer areas. This prevented the obtaining of samples directly from surface of the stomach wall.

A solution containing papain, a digestive enzyme obtained from the tropical fruit, papaya, was tried in an effort to dissolve this mucus. The effort was successful, and it permits doctors now to obtain more suitable fluid samples directly from the stom-

ach wall.

Since this development, it has been possible to try the new technique on only four patients later proven to have cancer of the stomach. In all four cases, however, cancer was diagnosed by the test.

This is too few cases to determine just how efficient the new technique will be. However, the scientists said that on the basis of success in the case of lung and cervical cancer, similar results may be expected.

Training of technicians to apply the new technique is sponsored by the American Cancer Society. Upon the experience and training of the technicians depends the reliability of this test. The research was sponsored largely by the U. S. Public Health Service.

The physicians reporting the new development were Drs. Herbert F. Traut, Milton Rosenthal, Richard Skahen, Morris E. Dailey and Chu Hui Chang.

Science News Letter, May 13, 1950

NUCLEAR PHYSICS

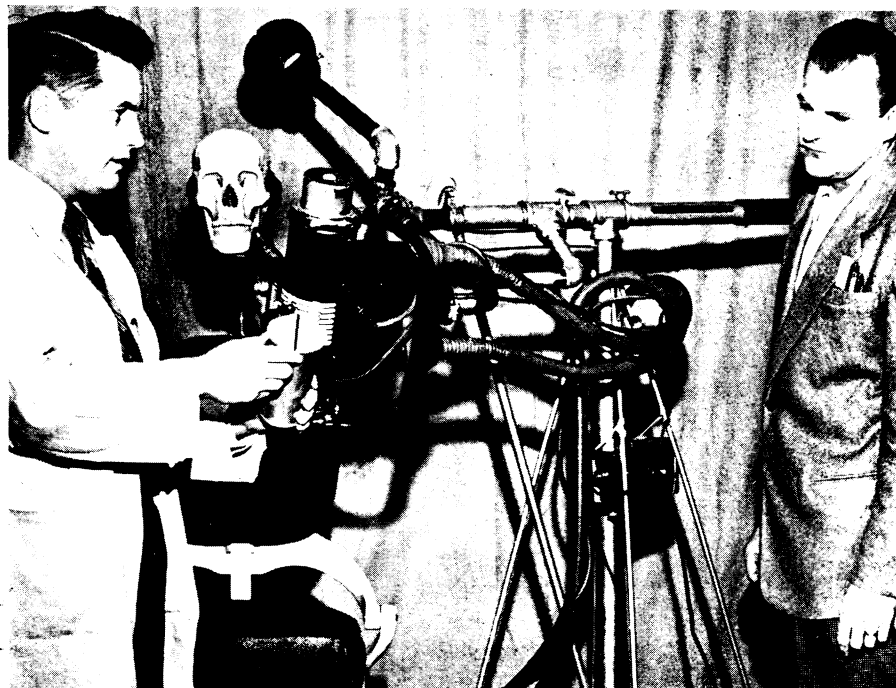
Dineutron Found

► THE double-weight neutron, for some time considered a possibility among atomic particles, actually exists.

In experiments at the Los Alamos Scientific Laboratory, where atomic bomb work is being done, definite evidence has been

obtained for the dineutron, a particle of neutral electrical charge that is double the weight of the ordinary neutron, trigger of the fission atomic bomb.

Tritons, hearts of hydrogen isotope three, were flung at other tritons by an electro-



TWO IN ONE—A new type of X-ray machine that can take all the upper or lower teeth on one film is explained by Dr. Robert J. Nelson to John Kumpula at the University of Washington School of Dentistry. With the patient in a fixed position in the dental chair, the machine moves and the chair revolves slowly in making the X-ray picture. Heretofore 18 pictures were required for a full X-ray and one-half hour, as compared to 10 minutes with "panographic radiography," was required for taking them.

static generator atom-smasher. Out of the two tritons' exploding and combining come one atom of ordinary helium and the dineutron, which lives for a very short time and then becomes two ordinary neutrons. Although a considerable amount of energy is released, this is not believed to be the most likely of the reactions that would be used in the hydrogen or H-bomb.

An unannounced group at the bomb laboratory, represented by Harold M. Agnew, told the American Physical Society in Washington about this discovery.

Tritium is made in atomic piles, competing with plutonium manufacture needed

for fission or A-bombs. It is three times the weight of ordinary hydrogen. It is radioactive and decays when left to itself, half of it disappearing in about 30 years.

The dineutron, now proved to exist, is analogous to double-weight hydrogen or deuterium weighing the same.

A strange new kind of heavy helium, mass five instead of the usual four, has been found in the tritium-tritium reaction by scientists at the Canadian atomic energy laboratories at Chalk River. Helium five decays into ordinary helium and a neutron shortly after formation.

Science News Letter, May 13, 1950

States Technical Conference on Air Pollution.

"I would not have you conclude that city air causes cancer in man," Dr. Scheele said. He reported, however, that a single injection below the skin of these soluble tar particles produced malignant tumors (cancer) in mice.

The substances were collected from the air in streets, homes, offices and schools. Analysis at the Public Health Service's National Cancer Institute "have at least raised serious questions as to the role of community air pollution in the causation of cancer," Dr. Scheele stated.

Science News Letter, May 13, 1950

ENGINEERING

Smog Control Advantages

➤ A LESSON for other cities is contained in the accomplishments of Los Angeles during the past few years in lessening the eye-and-throat irritation caused by chemical wastes in atmospheric smog. Salvaging the chemicals, in the industrial plants where made, is producing valuable products.

Some 822 tons of sulfur dioxide formerly entered the Los Angeles atmosphere each day, the American Society of Civil Engineers was told by Gordon P. Larson, director of the Los Angeles County Air Pollution Control District. Sulfur is now being produced in one plant at the rate of 50 tons a day from gases that were formerly burned to produce 100 tons of sulfur dioxide in the atmosphere.

The sulfur dioxide in the Los Angeles overcast condition known as smog is released by refineries, chemical plants and the burning of fuel oil by other industries. Coal is not to blame since not much coal is used in the region. The sulfur chemical quickly oxidizes in the air to form sulfuric acid. It is the acid that is particularly irritating to human eyes and throats.

In the two years since the pollution control drive began, sulfur dioxide pollution

has been much lessened, Mr. Larson indicated. At the beginning of the drive some 100 tons of metallic oxide fumes were being discharged into the air.

Dusts and oil mists add their share to the pollution from rock processing plants, milling, coffee roasting, manufacturing of roofing materials and paint spraying operations, he said. The total number of all sources amounts to many thousands.

Control is by voluntary action on the part of industries, or by court action. Over 300 violators a month are being cited in the drive to eliminate Los Angeles smog, he stated.

Science News Letter, May 13, 1950

MEDICINE

Tar in Air May Cause Cancer

➤ A POSSIBLE cause of cancer may be particles of tar which constitute 10% of the dust in ordinary city air, Dr. Leonard A. Scheele, Surgeon General of the U. S. Public Health Service, said at the United

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Question Box

MEDICINE

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What method is now being used to detect cancer of the stomach? p. 291.

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