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MEDICINE

Machine Spots Cancer

A machine capable of quickly detecting the early stages of one kind of cancer promises to provide doctors with the means for more efficient test analyses.

➤ A MACHINE for instantly detecting the early stages of uterine cancer in women is now undergoing advanced testing by the National Cancer Institute, Bethesda, Md., at the University of Tennessee in Memphis.

Called the Cytoanalyzer, the machine scans microscope slides containing specimens from vaginal smears and can indicate within less than a thousandth of a second if the cells look suspicious enough for further study by a pathologist.

The importance of the Cytoanalyzer is that it may be able to eliminate the scarcity of trained technicians now needed to analyze test results, Surgeon General Leroy E. Burney, U. S. Public Health Service, said.

At present, each slide must be examined individually under a microscope, and any suspicious specimens are referred to a pathologist. But if the Cytoanalyzer is sufficiently perfected it will be able to screen slides almost as fast as they are fed into the machine.

"We are hopeful that this will allow for millions of additional cell examinations without the training of thousands of additional persons," Dr. John R. Heller, director of the National Cancer Institute, reported.

The machine has four main sections: a scanning microscope, a computer and analyzer, and a recorder.

The scanner examines the slide and converts the optical picture it sees into an electric current. The current varies according to the size and density of the cells, and is

fed into the computer section which distinguishes between signals arising from normal and suspicious cells and makes a graph of the cells' nuclear measurements on an oscilloscope tube. A permanent record of the graph is then made by a camera in the recorder which records the decision of the automatic smear classifier.

The Cytoanalyzer which will be in operation in Memphis was developed by the Airborne Instruments Laboratory, Inc., Mineola, N. Y., under grants from the National Cancer Institute and the American Cancer Society.

Science News Letter, August 24, 1957

CHEMISTRY

Auto Exhaust Blamed for Smog and Air Pollution

➤SUSPICION that automobile exhaust gases are the main cause of smog and other polluted air conditions found in major cities has been confirmed.

Four scientists have also isolated and identified the mysterious "compound X," first discovered in polluted air during 1956 and believed to contribute to smog formation.

The scientific sleuthing of two mechanical smog detectives, "Silent Sam," the stay-at-home laboratory instrument, and his trailer-mounted roving twin, was described at the meeting of the American Petroleum Institute in Philadelphia. Both "Sams" are especially-built, long-path infrared spectrometers that can spot as little as five parts of pollutant in 100,000,000 parts of air.

The original instrument is permanently housed in the Franklin Institute, Philadelphia.

Franklin Institute scientists reported making artificial smog and comparing its chemical analysis with the composition of automobile exhaust gases. The two were very similar. Then a mobile team collected samples of Los Angeles smog, as well as air samples from heavy traffic intersections and found the two similar. By taking samples at night when there could be no photochemical reaction due to the sun, the scientists eliminated many other possible types of combustion as causing smog.

The scientists also found several typical polluted air samples were closely similar to automobile exhaust diluted with air.

Drs. W. E. Scott, E. R. Stephens, P. L. Hanst and R. C. Doerr of the Institute isolated "compound X" and determined its composition and approximate structure. It has been identified as peroxyacyl nitrite and is believed to be involved in photochemical reactions leading to smog formation.

Science News Letter, August 24, 1957

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