

MEDICINE

Cell Growth in Cancer

► THE CHANCES of curing cancer may hinge on the number of tumor cells capable of growth, the National Academy of Sciences meeting was told in Philadelphia.

Dr. Mortimer L. Mendelsohn of the University of Pennsylvania School of Medicine reported that the chances of curing a tumor at any particular dose of radiation are roughly proportional to the number of cells in the tumor capable of growth.

Chemical approaches to cancer treatment depend on cell reproduction. This means that only the proliferating, or multiplying, cells take up the "poison." A fraction of cells that are temporarily non-growing is immune to the effects of chemical agents.

Speaking on the "growth fraction," defined as the ratio of multiplying to total cells, Dr. Mendelsohn said that a reliable indication of cell division is the incorporation of thymidine into the nuclei of cells. The cells, which are labeled with radioactive tritium, can be identified on an autoradiograph.

The assumption that the tumor can be represented by only two cell populations may be an oversimplification, Dr. Mendelsohn said, and further studies will be needed to confirm the results.

Experiments with breast tumors in mice, however, show the "growth fraction" is reasonably stable in any one tumor between the second and ninth days after injection with tritium-labeled thymidine.

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Abnormal Leukemia Cells

► THE CAUSE of the malignant nature of one type of leukemia cells may be that one of the chromosomes is unusually small.

Drs. Peter C. Nowell, University of Pennsylvania, and David A. Hungerford, Institute for Cancer Research, both of Philadelphia, told the National Academy of Sciences meeting in Philadelphia that they found an abnormal chromosome in the leukemia cells of each of seven persons with chronic granulocytic leukemia. Apparently a portion had been lost from the small chromosome.

In two other types of human leukemia, acute granulocytic and acute childhood leukemia, they found no change. They said

AERONAUTICS

Fly 3 Times Sound Speed

► TRANSPORT AIRPLANES capable of carrying 150 passengers at two or three times the speed of sound are being designed by the Russians, two engineers from the Boeing Airplane Company reported.

If the United States is to maintain its present position as a leader in the manufacture of commercial aircraft, Government financial support of industrial research, development and hardware programs in supersonic aircraft must be assured, Lloyd Goodmanson and Lars G. Romberg said.

They spoke at an Air Force-Navy-Industry Propulsion Lubricants Conference in San Antonio, Tex., co-sponsored by Wright Air Development Division, Dayton, Ohio, and Southwest Research Institute at San Antonio.

Such aircraft would operate in the 2,000-mile-plus range, they said. They predicted that traffic in this range would increase by

that if the fundamental abnormality in these diseases is in the chromosomes or in their parts, the change is too small to be seen without more refined methods.

The investigators said that no "such specific abnormality" had previously been demonstrated. Very recent improvements in their technique made possible the detailed study of the chromosomes of human blood and bone marrow cells necessary to find the abnormality.

Although it has long been suggested that the basic abnormality in tumor cells might be found in their chromosomes or component genes, this finding in chronic granulocytic leukemia is the first reported of a specific chromosome change associated with a particular type of cancer.

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five times within the next decade. Such ships would fly at 60,000 to 80,000 feet. They would not require increased runway lengths since they would be powered by turbofans.

By 1970 such ships will be taking air travelers in five hours from New York to Cairo, a distance of more than 5,000 miles, about the same time a jet takes to go today from New York to San Francisco, the Boeing engineers predicted.

Such supersonic flights will have to be made largely above water and over sparsely populated areas because of sonic boom, which is hard on the eardrums but even harder on windows that may be broken, they said.

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TECHNOLOGY

Jet Engine From J-57 Used for Ground Power

► THE COMBINATION of aircraft power with an industrial need has resulted in harnessing a jet engine as a gas-powered turbine. The stationary power source is now pumping 600,000,000 cubic feet of natural gas a day.

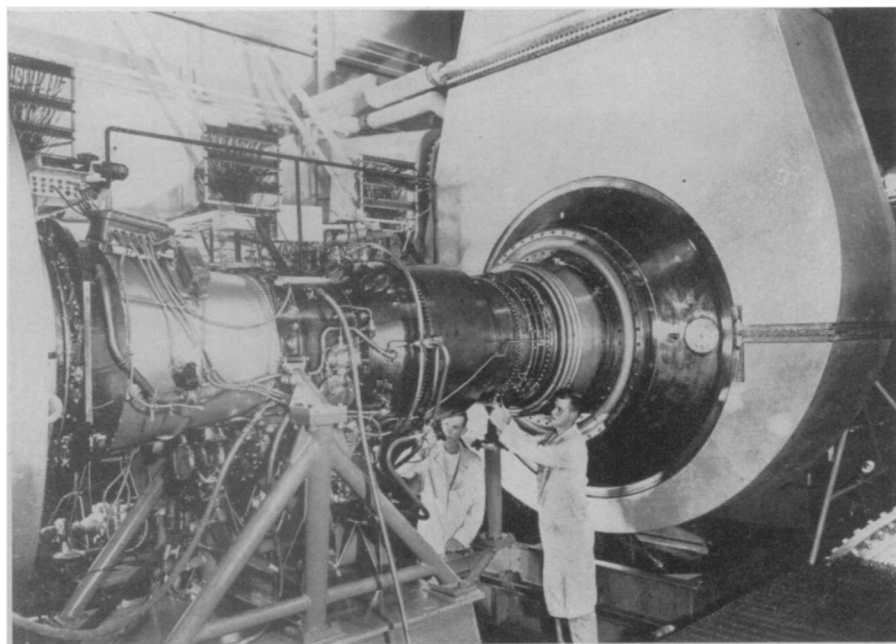
The advantage of the RT-248 gas turbine is that it provides tremendous power in a "small package."

A Pratt & Whitney Aircraft J-57 jet engine was adapted to run on natural gas in the RT-248 gas turbine, designed by The Cooper-Bessemer Corporation, Mount Vernon, Ohio.

The RT-248 is expected to find wide use in the natural gas, petroleum and petrochemical industries. A variation of this gas turbine is also expected to provide electric power, both for homes and industry, and to power ships. Plans for municipal electric plants with this gas turbine are now under study.

Less than four hours are needed to remove the jet engine section and replace it when necessary. Conventional engines require weeks of shutdown for overhaul.

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JET POWER FOR INDUSTRY AND HOMES—FIRST OF ITS KIND