

MEDICINE

New Cancer Theory

► EVIDENCE that cancer is a "deficiency disease" that could be controlled by an as yet unknown substance in body fluids is reported by Drs. L. A. Erf and B. J. Miller, Jefferson Medical College and Hospital, Philadelphia, in *GP* (April), published by the American Academy of General Practice.

There is hope that eventually cancer might be treated in much the same way pernicious anemia is controlled by doses of vitamin B-12.

Experimental studies and those on human patients support the theory that some tumors are due to a lack of substances body cells need in order to mature. Without them, the cells divide continuously and never grow up into functional, adult cells, the scientists report.

This theory of "maturation arrest" explains why some agents such as X-rays and toxic drugs slow down cancer growth. It also explains why antibodies against cancer cells do not exist, they say.

According to the maturation theory, X-

rays help cancer because they destroy some of the cancer cells and release from them the specific maturing substance, adding to the amount that is needed by the patient for self-defense against the remainder of the cancer.

The maturing substances needed by the cells could include enzymes, catalysts, hormones or vitamins, many of which are carried by the blood stream. The deficiency can occur either within the cell itself or as a generalized condition existing around many cells.

The scientists observe that pernicious anemia was known as "cancer of the red blood cells" before 1925.

This disease is characterized by an overwhelming production of immature red cells which infiltrate many organs of the body. The cells never mature, it was discovered, because they lack vitamin B-12, the substance necessary for them to develop into healthy red cells.

Guinea pig blood serum can cause com-

plete remission of some types of transplanted cancer when injected into mice. This indicates, say Drs. Erf and Miller, that the maturing substance needed for human cancers may possibly be found in other biological categories such as plants, bacteria or fungi.

For the past 50 years cancer research has been directed to "killing" cancer cells while little effort has been made to mature them. In rare cases cancer antibodies have been found.

However, these are not effective in controlling the cancer, since there can be no antibodies against something that is absent, the scientists explain.

When antibodies develop against transplantable cancer, the antibodies are against the cancer cell protein, not against the cause of the cancer.

The scientists conclude that analyzing fresh human blood and body fluids in order to isolate and identify the maturing substances is one of the most important medical research projects of the future.

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TECHNOLOGY

Glass Fibers Made to Withstand High Heat

► GLASS FIBERS that can withstand high temperatures of 5,000 degrees Fahrenheit or better are being tailor-made for intended use in jet aircraft and guided missiles.

Glass fiber that can stand up to 2,350 degrees Fahrenheit is already being produced in a pilot plant at the rate of 200 pounds per day, Dr. Alexander Silverman of the department of chemistry, University of Pittsburgh, told the National Academy of Sciences at its annual meeting in Washington.

These fibers are longer, softer and more durable than any others like them, he said. Both higher-melting fibers and special heating systems for producing them are now being studied.

The high-melting glass fibers are obtained directly from high-melting oxides, minerals and their mixtures. This direct change is used, Dr. Silverman explained, "since no classical glass-melting furnaces were capable of attaining the necessary temperatures."

In making the high-melting fibers, the raw materials were mixed with suitable binders, wetted, and converted to a plastic mass that was extruded downward, in continuous rods or tubes, by a screw feed. These were then dried and baked by convection currents and passed through high-temperature burners.

The lower end of the baked extruded material was melted instantly and homogeneously to glass, which was either blown by compressed air or steam into bulk fibers, or drawn into monofilaments.

The capacity of the pilot plant producing bulk fiber that can withstand heats of 2,350 degrees Fahrenheit can be increased to one ton a day, Dr. Silverman said.

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AERONAUTICS

Glass Skyport for Britain

► A PLAN to erect a 500-foot high skyport, supported by three glass-clad towers, in central London has been suggested by the Glass Age Development Committee, formed two years ago to propose architectural means of answering the planning requirements of the year 2000.

Skyport One, as the scheme is called, was evolved from a close study of the requirements of scheduled short-haul air services. New aircraft will be able to make vertical take-offs and landings like a helicopter and their flight will be similar to that of ordinary jet or turbine-prop airliners.

It is assumed the aircraft using the Skyport, one of a number of air stops in the London area, will be operating chiefly on inter-city services within Britain and to France and nearer countries in northwest Europe.

A clover-leaf landing platform, with three sections each 120 feet in diameter, will provide space for handling 24 aircraft an hour, allowing each aircraft seven-and-one-half minutes to land, unload, reload and take off.

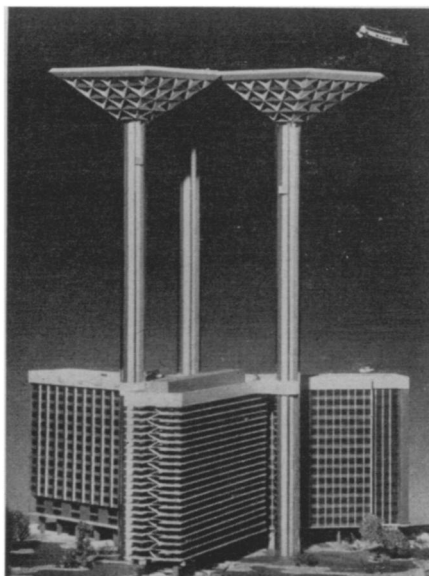
The three shafts supporting the flying platform consist of finned structural drums encased in outer cylinders of glass behind which the high speed elevators, serving the superstructure at the rate of one every 45 seconds, will be visible.

The shafts straddle a triple-wing building with a subsidiary landing deck on its roof for the use of private aircraft and non-scheduled flights.

Associated with Skyport One are a base-

ment bus station and a subway station, to which depth elevator shafts will be sunk.

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GLASS SKYPORT — The photograph shows a day view of a model of Skyport I with the early morning sunlight on the glass supporting columns. The triple-wing building provides space for offices, a hotel for transients and parking areas.