MEDICINE

Cancer Treatment Test

The ratio of the amount of two chemicals in the blood reveals the effectiveness of a cancer treatment and also shows the progress that cancer patients make.

➤ A BLOOD test that will tell within 24 hours whether a new cancer treatment is going to be effective or not has been developed by Dr. P. M. West and Jessamine Hilliard of the University of California at Los Angeles Medical School in cooperation with the Birmingham Veterans Administration Hospital.

A second feature of the test, its ability to show the progress of individual cancer patients, has already led to its being adopted as a standard procedure at the Birmingham Hospital. Any change in the patient's condition, whether accelerated spread of the cancer or sudden development of resistance, is promptly detected by the method.

The test involves charting the ratio of the amount of two chemicals in the blood. The chemicals are enzyme inhibitors, so-called because they slow down the action of enzymes. Familiar example of an enzyme is pepsin which helps digestion of food in the stomach. The many other enzymes of the body play equally important parts in body chemical processes.

The enzymes concerned in the cancer treatment test are rennin and chymotrypsin. The concentration of the chymotrypsin slow-downer, or inhibitor, is directly related to tumor growth, while the concentration of the rennin inhibitor reflects the resistance of the patient.

When cancer treatment is effective, the concentration of the rennin inhibitor is elevated well above that of the chymotrypsin inhibitor. When the treatment is not effective and the patient is failing, the chymotrypsin inhibitor rises sharply and the rennin inhibitor drops to a low level.

Unusual growth, such as occurs not only in cancer but in post-surgical cases, pregnancy and many infections, also affects the two inhibitors. The test, therefore, is never interpreted in terms of tumor growth unless interfering complications are absent. The test is not for cancer itself, and is not used unless a diagnosis of cancer has been made by the usual methods.

Science News Letter, July 30, 1949

AERONAUTICS

Suction Slots Reduce Drag

➤ AMERICAN planes of the Flying-Wing type may soon have long slots extending along the wing surface through which air will be sucked into the plane from the outer layer close to the surface, the so-called boundary layer which causes heavy drag. Research looking forward to use of such slots is well along by engineers of Northrop Aircraft, Inc., Hawthorne, Calif., makers of the present Flying Wings.

Scientists describe the boundary layer as the blanket of air made up of paper-thin layers which slide over each other immediately adjacent to the surface of an airplane in flight. This air envelope develops miniature eddies and turbulences, which claw at the surface of the airplane, creating a large part of the drag which holds the plane back.

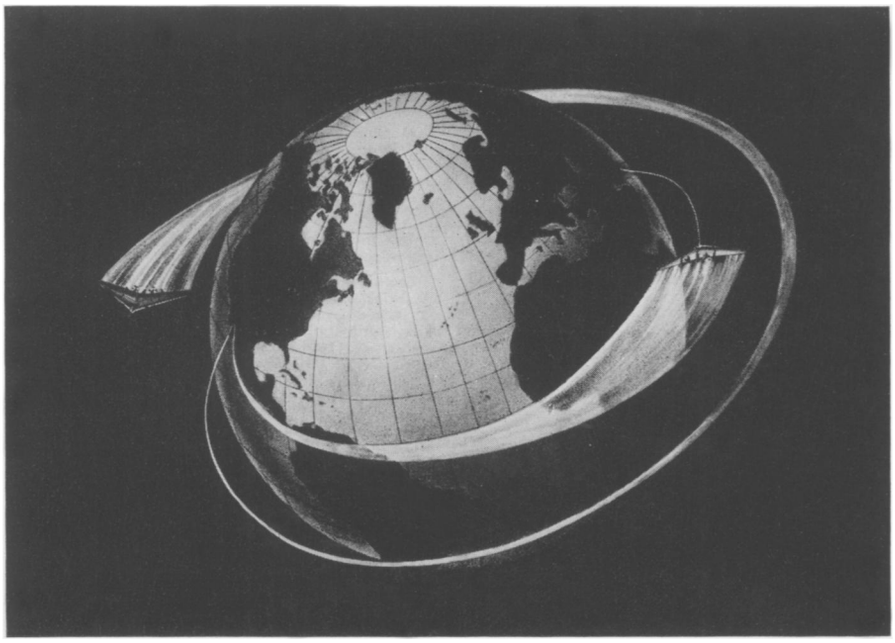
The idea behind the use of slots on the wings to remove part of the boundary layer and thus decrease drag is not new. The British, late in 1947, announced a twin-jet flying wing type of plane already at that time making flight tests which had a slot running spanwise across a large part of the wing through which boundary layer air was sucked.

The National Advisory Committee for Aeronautics, in its laboratories and wind tunnels at Langley Field, Va., has carried out considerable research on the slotted wing and has already issued a report indicating its belief that the method offers substantial improvement on thick, high-lift wings. The research is directed toward the reduction of drag in the relatively thin-section wings characteristic of modern, high-speed airplanes to extend their range.

Northrop's research program is directed toward controlling the boundary layer by means of narrow slots arranged in ranks. A pump in the airplane creates suction in the slots, whisking off the boundary layer air into the plane itself, and exhausting it behind. By continually drawing off the lower boundary layer air the heavy "build up" which leads to drag-inducing turbulence is avoided, and the atmospheric blanket which surrounds the airplane remains thin and smooth.

With the use of slots on the wings of planes of the Flying Wing type, decreased drag will save much fuel and give the aircraft far greater range. Northrop states that its engineers think that a Flying Wing so equipped could be operated on one-fourth the power required for a similar airplane not so equipped. These engineers estimate that the B-49 Flying Wing, with boundary layer control, could make a non-stop flight, without refueling, around the earth at the equator.

Science News Letter, July 30, 1949



ROUND-THE-WORLD RANGE—Flying Wings equipped with boundary layer control which reduces drag would be capable of flying non-stop around the globe, returning to the take-off point without refueling. This drawing illustrates the possible increase in range with this device although Flying Wings incorporating this device are not being built at present.