

AERONAUTICS

Delta-Wing Plane Design

Triangular platform is being studied for planes flying at supersonic speeds. Basic rules of aerodynamics are different for supersonic planes.

► A TRIANGULAR platform called the delta-wing is being studied as a possible design for planes flying at supersonic speeds, Dr. Th. von Karman, director of the Daniel Guggenheim School of Aeronautics at the California Institute of Technology, revealed in the Institute of Aeronautical Sciences tenth annual Wright Brothers Memorial lecture.

A derivation of the sweepback wing, the delta-wing has been described as looking like the paper airplanes you used to make in school with a fuselage through the middle.

Speaking on the 43rd anniversary of the famous flight by the Wright Brothers, Dr. von Karman said the delta-wing has considerable theoretical interest, "since, in the case of delta wings with certain simple angle of attack distributions, the direct problem of the wing theory can be solved in a relatively easy way."

Outlining the mathematical possibilities of delta-wing design in supersonic flight, Dr. von Karman reported, "The final answer on the practical merit of the delta wing will be given by further comprehensive theoretical and experimental investigations."

It was learned that the National Advisory Committee for Aeronautics has the delta wing under study.

When man approaches the speed of sound with air speeds of 600 to 760 miles per hour, the basic rules of aerodynamics change and new rules control flight, the lecturer declared.

"The basic rules of supersonic aerodynamics are entirely different from the basic rules of subsonic aerodynamics," Dr. von Karman said, explaining how new propulsion devices with powerful thrust and new design concepts have disproved the older theory that crashing the "barrier" of sonic speed was impossible.

Dr. von Karman listed three new rules that will affect flight at supersonic as the rule of forbidden signals, the zone of action and zone of silence, and the rule of concentrated action.

Forbidden signals, he described as the fact that pressure changes produced by

a body moving with speed faster than sound cannot reach points ahead of the body.

In zone of action and zone of silence, a point sound source moving faster than sound restricts all action to the interior of a theoretical cone. Outside this cone is the zone of silence.

Changes in the distribution of pressure effects at supersonic speeds compared with speeds below the velocity of sound waves differ under what Dr. von Karman terms "the rule of concentrated action."

"We are at the stage when this branch of aerodynamics should cease to be a collection of mathematical formulas and half digested facts . . . and be considered by the aeronautical engineer as a necessary prerequisite to his art," the lecturer said.

Science News Letter, December 28, 1946

ELECTRONICS

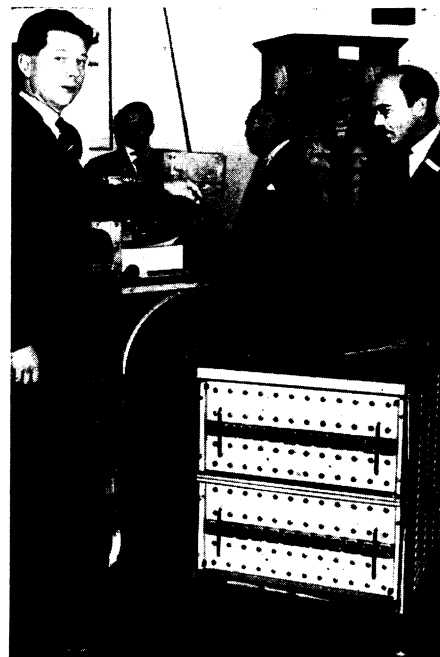
New Automatic Machine Analyzes Brain Waves

► FIRST DEMONSTRATION in this country of a new automatic brain wave analyzer was made recently by its inventor, W. Grey Walter, Bristol, England, at the Eastern Association of Electroencephalographers meeting in Boston.

Dr. Walter claims the new analyzer will be useful in diagnosis of brain tumors and aid in the detection of mental conditions which develop into dangerous behavior irregularities. The electronic machine can tune in on 24 separate frequencies and record the impulses consecutively. It is hooked up in tandem with a standard encephalograph so that while the impulses are recorded in black ink, the analysis is recorded in red ink on the same tape.

Electroencephalographs measure the minute electrical current generated by the billions of cells in the human brain. The new instrument is designed to reduce the hours of time needed to analyze the chart which records the currents on a standard instrument.

Dr. Frederick Gibbs of the University of Illinois Psychiatric Institute said that



MECHANICAL PSYCHIATRIST
—W. Grey Walter, left, explains his new brain wave analyzer to Dr. Robert S. Schwab, assistant neurologist at Massachusetts General Hospital.

the new analyzer failed to take account of wave forms which appear for extremely short intervals and may be clinically important. Other scientists at the Boston demonstration believed that the invention might be valuable as a supplement to existing instruments and as a research tool.

Science News Letter, December 28, 1946

EMBRYOLOGY

Youngest Human Embryo Only Four Days Old

► A HUMAN embryo only about four days old, counting from the date when the egg it started from was discharged from its mother's ovary, has been obtained by Dr. Arthur T. Hertig of the Harvard Medical School and added to the Carnegie Institution's collection of human embryos.

This embryo is the first and only authenticated one so far obtained before attachment to the uterus in the mother's body. It is in the stage of segmentation and consists of several cells. Because some of these have more than one nucleus and because the cells are of unequal size, it is believed that the embryo was diseased and would not have developed into a normal, healthy baby.

Science News Letter, December 28, 1946