

of about 200 samples of meteorite material. Their age agrees with that of terrestrial rocks—between 100 and 3,000 million years. This shows that earth-originated and cosmic materials both have their origin in the solar system.

As radioactive elements break down into lighter ones, Dr. Evans indicated, heat is generated. This source of heat, he declared, "is more than adequate to supply all the heat lost from the earth

by conduction through its crust, as well as to supply the energy for all mountain building processes, including earthquakes and volcanoes; to supply an excess of heat sufficient to cause convection heat currents in the underlying rocks and hence to provide the energy and mechanical requirements needed to make possible the gradual drift or motion of continents across the earth's surface."

*Science News Letter, June 30, 1934*

PSYCHOLOGY

## Value of Advertisement Increases With Size

**T**HAT the value of an advertisement increases with size, but that the increase in value is not in direct proportion to the increase in area, was confirmed in tests reported by Leonard W. Ferguson, of the Psychology Department, Stanford University, to members of the American Association for the Advancement of Science.

Three methods were used in the tests: the subjects were allowed to look through a magazine and then try to remember advertisements seen; the number of inquiries in proportion to size of advertisement was computed; and, third, the subjects were required to pick out from a group of advertisements those he had previously seen in a magazine through which he had been asked to look. An average of all three methods indicated a direct increase in value in proportion to size, but the inquiry and recognition methods indicated that the value increases more nearly in proportion to the square root of the area. An average of 22 other ratios, previously reported by scientists, confirmed the square-root ratio result.

*Science News Letter, June 30, 1934*

AVIATION

# Smoke and Soot Reveal Air Currents on Airplane

**T**HIN fleecy layers of white smoke, the same kind as that used in sky writing and smoke screens, are being used to permit scientists actually to see the otherwise invisible air currents and eddies around the wings, body, and tail of airplanes, during both flight and in experiments in wind tunnels.

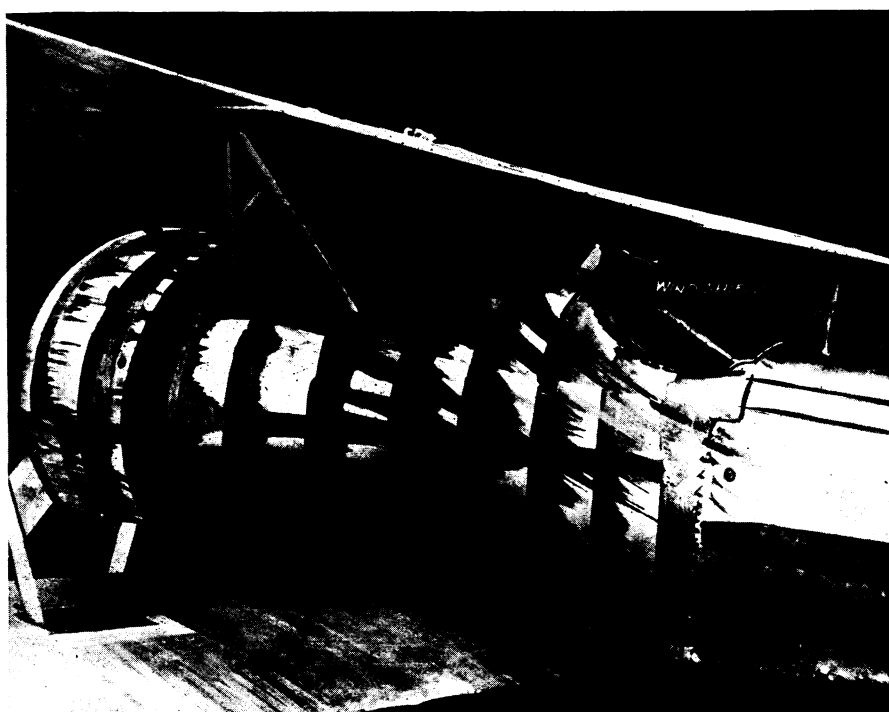
In other tests conducted at Langley Field, Virginia, under the National Advisory Committee for Aeronautics, airplanes take on the appearance of having just come through a blizzard, except that the tell-tale marks left by wind whistling through struts and over ailerons are black streaks of soot instead of trails of white snow. Streamers of fine silk threads are also used, and photographs are taken during different maneuvers to show what happens close to a wing surface during a bank, stall, or glide.

The forces which various parts of an airplane must resist in flight and maneuver can easily be measured in a laboratory. Data taken in tests on small-scale models or even full-sized airplanes are useful in designing new features, but these experiments are of the trial-and-error variety. The scientist finds out what the result will be although he can not see what takes place. However, by shooting thin sheets of dense white smoke through a wind tunnel it is possible to discover what happens, since all the small whirlpools and cross-currents of air give a startling smoke-picture of what occurs in an ordinarily invisible medium.

The soot for discovering air-channels

is a paste made up of lampblack and kerosene. This is painted zebra-like on the various surfaces in streaks at right angles to the direction from which the wind is expected to come. The plane is subjected to a gale, either in the wind tunnel or in actual flight. The mixture, streaked away by the wind from the original lines, is allowed to dry. Resembling a smudged ink line, the daubed surfaces indicate the curving streams of air.

*Science News Letter, June 30, 1934*



"SEEING" INVISIBLE AIR CURRENTS

*A plane flown after mixture of soot and kerosene has been painted in vertical strips on wings and body. The streaking of soot indicates downward currents acting on airplane.*