parts of the country, though nowhere so abundantly as it does in the Omaha region. Hemp is also cultivated in hidden illicit patches—it has even been found being nursed in city window boxes. But a concerted drive next spring, with CCC men or relief workers to scythe it down, would undoubtedly help to reduce materially the available hemp supplies in this country.

Science News Letter, January 15, 1938

AVIATION

Future of Aviation Progress Lies in Invisible Film of Air

Laminar Boundary Layer, Only Few Hundredths of Inch, Is Key to Perfection of Streamlining of Modern Plane

THE FUTURE of aviation is linked with an invisible film of air only a few hundredths of an inch thick. So nearly perfect is the streamlining of modern airplanes that even the protruding heads of tiny rivets can cut miles an hour from the speed of a plane and greatly lower its flight performance.

The crucial air film is known as the laminar boundary layer between the wing of a plane and the air through which it flies. If the air passes smoothly over the wing all is well. If the air becomes turbulent air resistance is increased and speed and climbing ability are decreased.

Great advances in knowledge of the behavior of this invisible air boundary have been made possible by studies in wind tunnels. But now it is becoming apparent that the day may be approaching when wind tunnel tests, alone, will not be the last word in aeronautical research.

Speaking at the first Wright Brothers' Lecture of the Institute of the Aeronautical Sciences, the British air expert, Prof. B. Melville Jones of Cambridge University, pointed out that free flight study of real airplanes may soon supply the final check on research.

Flight in smooth air, free from small-scale turbulence is needed, he indicated, to disclose some of the parasitic air friction losses now being studied. A slight unsteadiness may persist in wind tunnels which produces effects differing from those of actual flight.

Key point of investigations is a study of the so-called transition point where the smooth, laminar flow of air turns into the turbulent pattern that robs planes of their performance. The transition point should occur as far back on the wing, away from the leading edge, as is possible. In free flight tests, Prof. Jones disclosed, a thin layer of tinfoil only one five-hundredth of an inch thick was sufficient to shift the transition point forward and produce drag.

In another test the almost imperceptible film of mist on a plane's wing, after flying through a cloud, produced the same kind of increased drag.

Wind tunnels are not doomed as a tool of aeronautical research, Prof. Jones indicated to his distinguished audience that included Orville Wright who flew the first airplane. Rather the advances of wind tunnel tests are supplemented by actual flights.

Science News Letter, January 15, 1938

ENGINEERING

Radio Control of Models Offers Hams New Field

THE much-pushed-around radio amateurs who have continually "worked" the unexploited portions of the radio spectrum of wavelengths, and then found themselves pushed out as soon as commercial possibilities came into being, now have a new field of activity. It is remote-control by radio of small model airplanes.

Model airplanes, both sailplanes and craft powered with gasoline engines, have become increasingly popular throughout the nation because of their performance in distance, speed and altitude. And with some of them now 13 feet in wingspan, they are not so tiny either.

The increasing numbers of such powered models around airports has now led to a legislative ban on their uncontrolled use despite cries from the model plane enthusiasts. And in answer to those cries has come a response from the radio "hams." The solution is radio robot control of model airplanes so that they come outside the "uncontrolled" phrase in the laws.

Two Hartford radio amateurs, Ross A. Hull and R. B. Bourne, describe in the technical radio (*Turn to Page 47*)

RADIO CONTROLS MODEL PLANE

This model plane's rudder is controlled by radio controls devised by two Hartford, Conn., amateur radio operators. A model sailplane, the ship is as yet controlled only in part by the radio signals. It is the latest field to be entered by the "ham" operators, who have pioneered radio developments in dozens of ways.