

**PERFECT MATCH!**

With the FBI's new comparison microscope shown on page 310, two threads can be brought together and blended optically until, if they match, they appear as a single strand. At the bottom is shown the relative size of the threads without magnification.

AERONAUTICS

N. A. C. A. Laboratories Are Devoted to High Speed Planes

New Wing and Other Projects Are Designed To Make The 500- or 600-Mile-an-Hour Plane a Reality

JUST in case you do not believe this is a speed-mad age, come down to a unique aeronautical laboratory in Langley Field, Va., where the world is in a 600-mile-an-hour whirl.

You may wonder at the wisdom of going so fast, but it's exciting and breathtaking anyway—even to the skeptic who doesn't want to go from New York to Los Angeles in four and a half hours. It's 19 wind tunnels, a dozen laboratories. It's 200 engineers and almost as many research projects driving ever harder at catching up with the speed of sound.

As transatlantic cables flash word of new speed records and of military planes in Europe so fast they can almost race a rifle bullet, Langley Memorial Aeronautical Laboratory, Uncle Sam's little known air research center, is turning more and more of its attention to extreme high speed flight. Its engineers are verbally tossing hundreds of miles an hour around as never before.

The wing for a 500-mile-an-hour airplane, which will probably make its debut within two years, has already been

born there. Still more startling developments of a similar nature are on their way.

From the laboratory, operated by the National Advisory Committee for Aeronautics, have come in the past hundreds of developments that have boosted airplane speeds to their present level, and with them have come means for making airplanes safer and more reliable. But the public will be hearing less of the latter phases of the Committee's activities in the next few months as an air force expansion program preempts the attention of the scientists. They, more than anyone else in the United States, must see to it that this air force is based on knowledge that will make it better than any other in the world.

A few years ago the famous N.A.C.A. cowling, to fit around projecting cylinders of air-cooled radial engines, was perfectly satisfactory for all existing planes. But within the last year the trend toward higher speeds has forced the laboratory scientists to redo the earlier job and produce a cowling suited for the speediest Army pursuit ships fitted with radial power plants.

Exact studies of costly flush riveting

have been worked out also, so that designers in the great aircraft plants may know how much additional speed can be gained. The speed-seeking N.A.C.A. scientists have even investigated the effect of seemingly slight surface irregularities on wings and found that smoothing them out adds to speed. The effects of different kinds of coating—bare, lacquered, painted—have also been studied with this same end in mind: hatching in five or six years' time the 600-mile-an-hour airplane. Because, even if a ten-mile-a-minute clip seems a little fast to you and me, it isn't to the men piloting America's national defense on the Front Aloft.

Science News Letter, May 20, 1939

PHYSICS

G-Men Fight Crime With Powerful New Microscope

NEWEST weapon of the G-men against crime is a specially built precision microscope so powerful it makes a split human hair look as large as a piece of government red tape.

With the new instrument, described by E. P. Coffey, chief of the FBI's Technical Laboratory, speaking before the New York Microscopical Society, a single hair from the clutched hand of a victim can be compared in magnified form with the hair from the head of the suspect. The two can be blended optically until, if they match, they will appear to the eye at the instrument as if they were a single hair. Color is revealed in tiny threads so small that they appear colorless to the unaided eye.

Human and animal hairs can be cut either lengthwise or crosswise and the sections studied for comparison of individual cells. The magnification of this instrument is much greater than that of the comparison microscope already in use for matching bullets. This new microscope magnifies 1125 times.

A new microchemistry laboratory at FBI headquarters, where instruments, beakers, scales, and so on are on a doll-house scale, was also revealed by Mr. Coffey. In this laboratory a tiny fleck of blood from a stained bit of clothing can be analyzed to determine what animal it came from and, if human, even the blood group of the victim.

Science News Letter, May 20, 1939

A Stone Age woman whose skeleton was found in the Crimean Peninsula had the end joints of the little fingers cut off—a custom known in recent times among primitives.