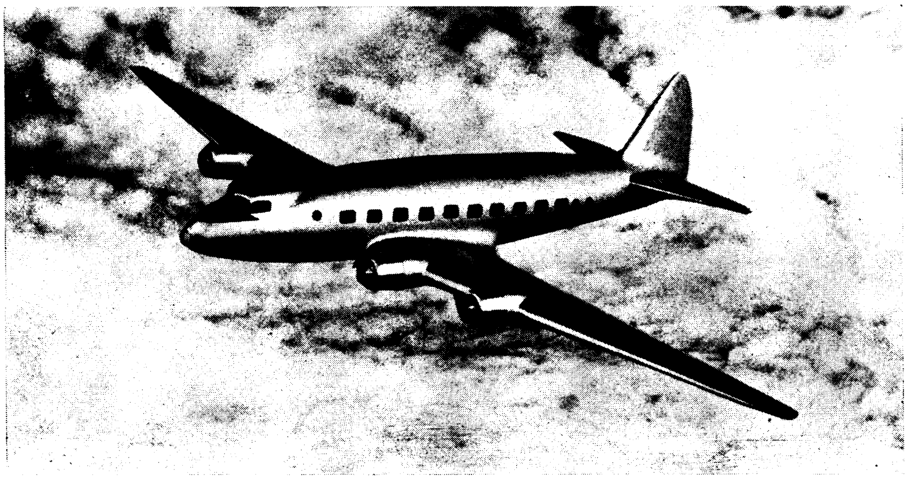

TOMORROW'S PLANE

This photograph is of a model of the airplane of the future as forecast by aeronautical experts sounded out in a survey at the Massachusetts Institute of Technology.

Passenger and cargo accommodations are exceptionally large, the main cabin measuring 10 feet by 40 feet and being divided into 10 sections of two berths each, like those of a Pullman. The pilot's cab is at the forward end of the fuselage, followed by the men's dressing room and galley, and then the main cabin with the ladies' dressing room and passenger entrance just aft. The main cargo space is below the cabin floor and is filled from below through hatches which close flush with the fuselage.

225 Miles Per Hour

The result is an airplane of 20 tons gross weight of which more than six tons is so-called useful weight—crew, passengers, their baggage, fuel and oil and cargo—the last named estimated at about 1000 pounds. Its cruising speed of 225 miles per hour is nearly 50 miles faster than that of our modern transports, its non-stop range of 1250 miles is almost double that of today's transports, yet all at no increase in cost per unit of pay-load.

In their report the scientists also consider briefly the airplane of the future—one that might be in service in five or ten years, that would bring Europe within 24 hours of our shores. The propeller, the fuselage and tail will probably remain much the same, they declare. The engines will almost certainly be of the electric-ignition type now in use—not Diesels. The wings will be generally the same although smaller, due to more effective high lift devices.

With these improvements the airplane of the future should make the same speed as tomorrow's airplane with about 30 per cent less power. And the operating costs would be reduced about five cents per ton-mile as compared with tomorrow's airplane, under the same conditions of speed and cruising range. Safety will be as great and passenger comfort even greater. Transcontinental flights with intermediate stops will still probably be made at about 10,000 feet, although non-stop transoceanic ones may go to 25,000 feet. Higher cruising altitudes increase cost, and thus it is felt that the stratosphere as an avenue for transcontinental air traffic is not immediately commercially available.

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AVIATION-METEOROLOGY

Lake Behind Boulder Dam Will Make Smoother Flying

By PROF. CHARLES F. BROOKS, Director, Blue Hill Observatory, Harvard University.

AIRPLANE travelers over the Grand Canyon region are going to find smoother flying, now that Boulder Lake is backing up behind Boulder Dam.

Heretofore the air in that particular stretch has been notorious for its bumpiness. The bare rock walls of the canyon and the nearly bare dry lower slopes heat tremendously under sunshine. There are always some slopes that face the sun and on which the sun's rays fall perpendicularly. These get the hottest. Near by there are cliffs and slopes which are in the shadow. These may stay cool. The air in contact with the slopes becomes light near the sunned ones and dense by the shaded ones. The denser air pushes the lighter out of the canyon and this lighter air rises in columns or small masses here and there, giving sharp bumps to any passing airplanes.

Now fill the canyon with a lake. Over a large surface the temperature is uniform and the air, therefore, has no local differences in temperature. The sunned side of the canyon above the level of the lake is as a whole warmer than the lake. So the denser air immediately over the lake tends to move as a body toward this sunned wall.

Ideal for Flying

Higher up, of course, there is a flow of air from the heated slopes back over the lake. In fact, without such an overflow of expanded air in the first place there could not have been much movement of the lake air toward the shore, for it would have to have the extra weight of the air above to give it the necessary push.

Over the lake the air must be generally quiet and sinking—ideal conditions for smooth flying.

That the large body of water now accumulating behind Boulder Dam will affect the climate of its immediate shores no one can deny, but how far will its influence extend? In the first place the lake will make the climate more temperate. With the relatively cool body of water present, the heating of the surrounding slopes will cause a tempering lake breeze outward from the lake by day. Such a tempering breeze cannot, however, be expected to extend beyond the valley. A general wind may blow the air farther, but under desert conditions the identity of the lake air would soon be indistinguishable.

Along with the relative coolness there may be expected an increase of moisture. The air would gain in mugginess what it lost in temperature. However, the air is so dry in the first place that the contribution of the lake locally could not produce enough vapor to make a really steamy atmosphere.

Can the vapor from the new lake increase the rainfall? Possibly it can, but if so it is not likely to be enough to be distinguishable by present methods of observation. When the Colorado River broke through its banks in 1906 and formed the Salton Sea, an increase in rainfall was looked for but none was found. The air of the desert is normally so dry that the small contribution that even a large lake can make to the passing wind cannot be enough to produce shower clouds.