AVIATION

Higher Octane Aviation Fuels Would Save $1,000 a Trip

Meeting Learns of New Airplane So Far Only on Paper Which Will Be Capable of Much Higher Speeds

HOW THE commercial airlines potentially could save over $1,000 per trans-continental trip from New York to Los Angeles was described at the National Aeronautic Meeting sponsored by the Society of Automotive Engineers. This is equivalent to carrying about seven extra passengers per trip at present one-way fare rates.

Using the super 100 octane antiknock gasolines, after making the engine-design changes made possible by these fuels, is the way the theoretical economy could be achieved, it was disclosed in the technical report of D. P. Barnard of the Standard Oil Company of Indiana.

Each increase of one single unit in the octane rating of aviation fuels is worth up to five cents a gallon of gasoline, he showed in a study of the values of octane number improvements in aviation gasolines in terms of increased earning power of the current type transport planes, when proper provisions have been made in the original designs.

On a trans-continental flight from Newark to Los Angeles, with an airline distance of 2,524 miles, the benefit would be about $68 for the increase of a single number in the octane rating. Theoretically, at least, a jump from the present 87 octane fuels to the 100 octane gasolines would thus yield a potential saving of $1,064 for each trans-continental flight. With a fare of approximately $140, one way, this is essentially the equivalent of carrying over seven extra passengers per flight.

The advantage of using high octane fuel for military craft was not computed by Mr. Barnard but he rated its value as even higher because small pursuit planes show improved performance in climb and speed, while big bombers have increased range and greater load carrying capacity.

New Plane Planned

National Advisory Committee for Aeronautics scientists at Langley Field, Va., have designed a large hypothetical airplane, at present only on paper, which would seem to have less drag than modern transport planes and may have higher speeds than present craft of comparable power rating.

If the calculations, disclosed by Eastman N. Jacobs, some day become a practical reality they may bring improvements paralleling the development of the engine cowling of NACA which in recent years has revolutionized airplane design and increased airplane speeds.

Mr. Jacobs' hypothetical large airplane is the outgrowth of his studies on the major unsolved problem which stands in the way of further aeronautical progress—the flow of air over the wings of airplanes, or around airfoils, as they are called.

Scientists, pointed out Mr. Jacobs, can put small models of wing cross sections in wind tunnels and make their findings but there is no way of knowing whether the same things will occur in actual flight. "The situation," he declared, "with regard to the airfoil drag is particularly serious, because we have no equipment capable of studying the subject experimentally in the higher full-scale range of Reynolds Number in which we are at present most interested."

Applied Theory

Undeterred by this present lack of experimental equipment, Mr. Jacobs tackled by theory the problem of smooth, or laminar, flow and turbulent flow. Smooth flow of air over an airplane's wings makes for higher speeds while the rough turbulent flow brings in the drag which is the bug-a-boo of all airplane designers.

"If the turbulence is zero, as it sometimes is in free air, the theory, carried to its logical conclusion, seems to indicate that the transition point will not move forward toward the leading edge of the airfoil as it does in the wind tunnel," Mr. Jacobs reported. "If this supposition is true and other disturbances, such as turbulence originating near the nose or due to surface roughness, do not alter the situation, such a conclusion has considerable practical signficance. This practical significance is indicated by comparing the drag and speed of a large hypothetical airplane, designed to take advantage of the laminar flow over its forward surfaces, with the drag and speed of a modern transport airplane."

The conclusion, Mr. Jacobs indicated, is that material gains might be possible, but he quickly goes on to add that there is no certain knowledge. He suggests careful experiments with suitable equipment to determine whether the indicated gains are really possible in practice.

Passenger Comfort

Added passenger comforts which the next five years of aviation will bring were traced at the same meeting by H. O. West, superintendent of engineering of the United Air Lines Transport Corporation.

While sleeper planes have been used more than a year, the first planes originally designed for this purpose are just now coming into use, Mr. West said. At present the berth arrangement long used by the Pullman railroad cars will be followed. Eventually, however, something will have to be done to overcome fundamental handicaps of carrying an earth-bound sleeping arrangement to the airways. One such difficulty is that the passengers have nowhere to go, in the plane, while the steward is making up the berths. Thus future plans must devise a berth which can be made up easily and yet much more quickly than present types.

With longer overnight trips two meals must be served aloft and adequate galley facilities will be required. Hot meals should be served; but mainly the need is for maintaining heated, precooked food at its proper temperature. Refrigerators too will be required, to preserve perishable foods.

On the large airliners of the future, on day service, swivel chairs and divans will be the rule. Lighting of the cabin may very well be indirect, with a separate generator for the lighting current. Ventilation is probably adequate in present planes but when high flying is accomplished the cabin will have to be air-sealed, and then the air will probably have to be recirculated. This will involve the use of filters to remove the smell of smoke and other odors.

So heavy is the burden of flying the larger planes of the present that in the future there will probably be a three-man crew, besides the steward or

hostess, said Mr. West. This third man will be called the flight engineer. He will be thoroughly familiar with the mechanical function of the entire plane. Seated in the cockpit behind the co-pilot, the flight engineer will have his own instrument panel and will relieve the pilots from much detail outside the navigation of the plane.

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ANTHROPOLOGY

Has Lost Pale-Face Tribe Been Traced to New Guinea?

DISCOVERY of a new tribe of light-skinned natives, in the treacherous depths of New Guinea, is stirring anthropologists to ask:

Did roving seafarers, some primitive branch of the white race, find their way to New Guinea in the South Pacific, there to lose themselves in the heart of an island jungle?

That this did happen long ago, giving pale-face ancestry to a tribe that now numbers some 50,000 people, is the conviction of Jack Hides, discoverer of the tribe. These people in their lost world still live in the Stone Age. But they are not benighted savages. They raise spinach—much discussed vegetable in civilized circles. And they seemed extraordinarily healthy to their discoverer.

Mr. Hides, who brought this tribe of the interior to scientific notice, is a resident magistrate of New Guinea. His discovery, he finds, has awakened much interest among anthropologists. It suggested that New Guinea was settled by both whites and blacks—some branch of the Indo-European race, as well as the negroid people from Asia.

To Science Service, Mr. Hides gave the following description of how the unknown people impressed him:

"These people were short in stature. They were light-skinned, something similar to the Malays. They had large mops of brown-tinged hair, high cheek bones, and yet rather good features. They were bow and arrow people, and made beautiful axes of stone. They call themselves the Tarifuroro.

"Their methods of agriculture were the best I had ever seen. Their terraced gardens of an unusual squareness, marked off by pretty hedges of croton and hibiscus, were not unlike the Chinese market gardens we see in Australia.

"They grow sugar cane, ginger, bananas, sweet potatoes, spinach, mimica, and native asparagus. There were no taro or yams. They often brought us pretty baskets of brown salt, which they obtained by burning logs of certain wood.

"I believe that farther to the westward of these people in the adjoining valley, which is even larger than the Tarifuroro, we will find an even larger population, and a more clearly defined Asiatic type.

"My reason for stating this is, as I traveled eastward across the Tari and Purari tableland, I found the light-skinned people merging into the darker-skinned Papuans, until just before I crossed the limestone barrier again, I found the real black Papuan men using the same methods of agriculture as the light-skinned Tarifuroro. It rather suggested to me that, at one time, these light-skinned people inhabited the whole of this tableland and were driven back westwards by the more virile Papuans."

Mr. Hides found the light-skinned tribe when he made an exploring journey, accompanied by a patrol officer, nine native policemen and 28 native carriers. Traveling up the Strickland River in a schooner, and thence up an unknown river to its source in dugout canoes, the party then climbed a difficult limestone barrier and found themselves on a high plateau inhabited by unknown thousands of New Guineans.

Doubt Expressed

It is not necessary to picture a white invasion of New Guinea, to account for the natives seen by Mr. Hides.

This is the view taken by an anthropologist noted for his studies of pygmies in New Guinea mountains. Matthew W. Stirling, chief of the Bureau of American Ethnology, says:

"There is an anthropological theory that an early wave of white migration swept across southern Asia to the Pacific. It is not impossible, if this be true, that traces of it might be discovered in the East Indies. Such an explanation has been offered for the Ainus of Japan and for the Polynesians.

OLD DOUBT

Mr. Howard shown examining the fossil horns of a musk ox-like animal and a stone weapon point found near the skull. Such inconclusive discoveries in various parts of America have long puzzled scientists. They could not agree whether ancient hunters were present when this kind of game roamed the country, or whether coincidence brought blade and beast near together.

"It is my opinion, however, that Mr. Hides probably encountered a new branch of the short-statured, light-skinned mountain peoples of the interior of New Guinea and passed from these to eastward toward the decidedly black-skinned Melanesians and was impressed by the contrast in skin color."

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PHYSIOLOGY

Illinois Giant Reported To Be Still Growing

HEIGHT: 8 feet, 3¼ inches; weight: 395 pounds; still growing.

That is the amazing record of 18-year-old Robert Wadlow of Alton, Ill., according to the latest authoritative medical record. The measurements, based on the boy's own testimony and hospital records, are given by Dr. Charles D. Humberd of Barnard, Mo., (*Journal, American Medical Association,* Feb. 13). In the medical report, the young Illinois giant's identity is concealed by the initials, R. W.

The great Barnum laid down minimum requirements for giants in his famous sideshows. But he required a mere 7 feet, 2 inches. The Illinois giant already exceeds this modest requirement