

AERONAUTICS

CAA Is Searching For Crash-Proof Gasoline Tank

Advances in Bullet-Proof Fuel Tanks Have Stimulated Research on Tanks That Will Not Cause Explosions

FUEL tanks of air transports of the future will not spray burning gasoline to add to crash horrors if research work now under way achieves success.

The Civil Aeronautics Administration is now studying this problem and John W. Baird, CAA engineer, asked for comments and suggestions from the industry in a paper before the National Aeronautics Meeting of the Society of Automotive Engineers in New York.

Recent advances in bullet-proof and self-sealing fuel tanks on military and naval airplanes have stimulated anew the work of developing for commercial craft tanks that will not cause explosions and fire after accidents.

The type of fuel tanks now used for military planes does not offer the best solution of a crash-proof tank for civil airplanes, Mr. Baird said, because the increase in weight due to the adoption of self-sealing tanks in an airplane of a fuel capacity of 1,000 gallons would amount to around 1,000 pounds.

Various types of crash-proof tanks now being developed, it is expected, will compare in weight with conventional metallic tanks.

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Birds a Hazard to Planes

COLLISION with birds, particularly large specimens, is a real hazard to transport planes, sometimes causing destruction of the plane and threatening the life of pilot or passengers, Allen L. Morse, chief of the aircraft development section of the Civil Aeronautics Administration, told the national aeronautic meeting.

Airplane accidents involving bird collision, Mr. Morse said, have amounted to 61 since 1939, two-thirds of which occurred at night, and more than one-third shattering or penetrating the windshield.

Mr. Morse told of one pilot whose plane collided with a flock of five swans at night. One swan penetrated the leading edge of the left wing; the second almost tore off the left vertical stabilizer,

jamming the rudders, the third swan struck and dented the engine cowl, and later two swans went through the propeller. A portion of a swan, taken from the wing after landing, weighed 11½ pounds. Wild swans weigh as much as 20 pounds.

Such reports show that impact forces in collisions with birds are enormous. Even small birds, Mr. Morse went on, not only have penetrated the windshield, but in one instance continued through the bulkhead, traveled the length of the cabin, penetrated the rear cabin wall, and lodged finally in the baggage compartment. Fortunately in this case neither passengers nor crew were struck.

For use in tests to devise adequate protection against birds, Mr. Morse called for development of a high-pressure air catapult which could shoot freshly-killed carcasses against a plane windshield, thus simulating actual flight-collision. Freshly-killed birds are necessary, since their bodies offer the same resistance as live birds.

Meanwhile windshield combinations of glass and plastics offer some protection. It is to further test these combinations that the high-pressure catapult is needed.

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AERONAUTICS

Two-Engine Transition Training Plane Designed

A NEW type of transition training plane, to bridge the tremendous gap between the ordinary light trainer and the complex, heavy, two- or four-engine tactical plane, with its multiple instruments and controls, has been designed by the Army Air Corps, it is announced at Wright Field. Another new type of training plane is designed especially for the instruction of navigators and bombardiers.

To try to fly a multi-engine airplane immediately after completion of training in single-engine trainers, officials said, would be something like trying the big jump after the first few skiing lessons.

A composite view of the four new models of pilot-trainers, just announced, would show a low-wing monoplane with a 40-foot wing span and powered with two radial engines in the 270-horsepower class. They have the same general performance and operation characteristics of their tactical big brothers, and a gross weight of 5,125 pounds.



TRANSITION TRAINER

Pilots who have learned to fly in a small single-engine training plane will now be able to continue their training in a two-motor trainer having the general handling characteristics of larger heavy multi-engine fighters and bombers. This AT-8 (Cessna) is the first twin-engine transition trainer produced for the Air Corps from designs just announced at Wright Field. The photograph is an official Army Air Corps picture.



FOR BOMBARDIERS

Combat crews may now receive instruction in an airplane having many characteristics of the newest tactical craft. This AT-11 (Beech) is equipped with machine gun turret and bomb racks. The photograph is an official one released by the Army Air Corps at Wright Field.

As much as 2,000 pounds heavier, and developing 75% more power than pilot-trainers, are the two new models designed for navigator-bombardier training. One of these carries a crew of five and is equipped with a chart table, a

periodic compass, stabilized drift sight for student navigators and a celestial navigation dome for sextant readings.

The other, which carries a crew of three or four, has a machine gun turret and bomb racks.

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POPULATION

Japan and Germany May One Day Be Enemies

In Addition To War of Machines, Battle for Numbers In Population Is Waging Between the East and West

UNDER cover of this war of machines, a battle for superiority in population increase is taking place between the East and the West, with the East easily the victor—a fact which one day may bring Japan and Germany face to face in an epochal strife for world dominance. These are the views of Dr. W. S. Thompson, of Miami University, Oxford, Ohio, Director, Scripps Foundation for Research in Population Problems.

Dr. Thompson points to India, where the n ultitudes have increased by 48 millions during the past decade, the largest population increase in India's history. Her total population now stands at about 400 millions, three times that of the United States.

By comparison, the United States has done poorly. Our greatest population increase was only 17 millions in the decade, 1920-30, an increase of 16.1%. In the decade during which India's people increased 48 millions, we increased only about 9 millions, according to the latest census. The rate of increase for this decade was only 7.2%.

Concealed in these figures for the United States is a steadily declining birth rate. Our population increases only because our death rate has dropped nearly as fast, while immigration made up the difference.

But immigration into the United States has virtually ended. Whether it will ever begin again and reach its

former proportions, no one can now say.

Behind this increase in Eastern peoples and decline in Western peoples are industrial causes, Dr. Thompson believes. As a nation becomes industrialized, earns greater income, its sanitary measures improve and its death rate drops sharply. The decrease in deaths, for a time, more than makes up for the simultaneous decrease in births due to industrial society. This decrease in births is due to the population shift from farms to the cities where contraceptive information and devices are more readily had.

Western nations passed through this phase of development in the last century and early in this century. But the East is just beginning to become industrialized, Japan far in the lead, of course. Industrialization of the East will certainly be sped by a Japanese victory. But there is a great difference in industrial potentialities between the East and the West, Dr. Thompson points out.

The East has less iron and coal resources than the West. Hence industrialization can only go so far, and it thus becomes doubtful if the East will ever develop as great an urban population. Even Japan, whose population has to a great extent shifted to the cities, cannot equal Germany or the United States in urban population.

India, however, is 30 years behind Japan in development of her industries. India's dawning industrial era, plus the sanitation efforts of Great Britain, are, Dr. Thompson believes, the reason for the 48 millions population increase of this past decade. In the previous decade, India's population increased from 318 millions to 352 millions, an increase of only 34 millions.

Combining these facts, Dr. Thompson reaches an over-all picture of Western population decline, and a swiftly growing, gradually industrialized East. One day, Dr. Thompson concludes, this trend may bring Japan and Germany face to face in a war for world dominance.

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For years *barn owls* have nested in one of the towers of the Smithsonian Institution in Washington.

The *house wren* will sometimes build its nest in an old hat, an empty tin can, or in the coatpocket of a scarecrow.

That old saying about dew in the morning being a sign of clear *weather* is backed by scientific evidence—when the night sky is cloudy, little or no dew is precipitated.