

Is the Electric Airplane Possible?

HENRY WOODHOUSE, the well-known aviation expert, recently gave out a report that there had been plans disclosed in Chicago for a radically new type of flying craft, to be propelled by electricity entirely, and therefore to be of such great power and efficiency as to be able to make flight around the world.

This wonderful new flying machine, he said, was designed for propulsion thru the air by electric motors driving the propeller blades, with a total horsepower of 6,000. The airplane is also credited with being capable of carrying from 75 to 100 passengers, and the wings are to have a spread of 240 feet, while the airship itself is 180 feet in length. The appearance of this new flying craft is shown in the accompanying illustration.

WHAT DR. WILLIAM WHITNEY CHRISTMAS THINKS OF THE ELECTRIC AIRPLANE.

Before going further, it would be well to listen to what a leading aviation expert, Dr. William Whitney Christmas of New York, has to say with respect to electrically-driven airplanes. Dr. Christmas is the inventor of the famous "Christmas Bullet," whose cantilever supporting wings are flexible like a bird's, but not to the same extent. The "Christmas Bullet" is the fastest plane in the world and has made 200 miles an hour on official test, when fitted with a liberty motor. Recent unofficial reports from France, mention a new record for an airplane flight of 226 miles per hour. Dr. Christmas has been connected with aviation matters from the days of Professor Langley, and his views upon the subject of airplanes are therefore of interest to us.

Dr. Christmas said: "In suggesting that airplanes be driven by electricity, I realize that I am making myself open to severe condemnation by many well informed gentlemen who say that it cannot be done. Nevertheless, I am of the opinion that the ultimate craft of the air will be electrically driven.

"It is not my part to say how this is going to be accomplished, but to argue from the present failings of the aviation gas engine to the conveniences of electric motors.

"As is well known, an airplane depends upon its motor to stay in the air and the very delicate adjustments required on common aviation motors make them not entirely reliable. There are so many parts that can wear out or get out of adjustment,

What An Eminent Airplane Engineer Says

that it is a wonder they show up as well as they do.

"I do not mean that they are altogether unsatisfactory, but I do say that they can be improved upon by substituting a common electric motor.

"The electric motor is compact. While the present day motors are heavier and bulkier per horsepower than most aviation engines, this is because aviation engines have been refined for the particular service on airplanes and electric motors have not. Now if our electrical geniuses put their heads down to the job of developing a fine aviation motor, they will doubtless come within the same limits that the gas engine men have attained.

"The problem of supplying the electric energy to the motor on electrically-driven airplanes is, as we might surmise, some problem! However, it is not insolvable, and there are three obvious ways to be suggested. One—to carry storage batteries; two—to transfer electrical energy by *wire* or *wireless*, i. e., as by means of a depending trolley cable between the airplane and a contact or third rail, over the contact rails of which would run a contact shoe at the lower end of the cable; and the wireless transmission of energy, referring to the ideas of Dr. Nikola Tesla, of course not developed yet to the stage of practicability; and third—a gasoline-electric airplane in which great constancy of power and beautiful control of driving screws are obtainable. In this scheme the gasoline engines drive dynamos which generate electric current, and this current is then controlled as desired by the pilot, and fed to one or more electrically-driven motors to which the screws or propellers are attached."

THE GASOLINE-ELECTRIC AIRPLANE TO THE FORE.

As the accompanying illustration shows, the layout and arrangement of the electric propelling mechanism on the newly proposed airplane described by Mr. Woodhouse, is along well-known and thoroly tried engineering lines and corresponds to the electric drive on our newest battleships.

There is not a very great loss in converting the mechanical energy developed in the gasoline engines (of which there are two in this case) into electrical energy as

developed by the dynamos; and these losses are more than compensated for in applying the electrical drive to the airship, by virtue of the much smoother operating control and driving qualities. One thing is certain—that with this arrangement of gasoline-electric propulsion we know it will work!—providing we build our electric machinery sufficiently light, as Dr. Christmas has pointed out, so as not to over-burden the flying craft with useless dead-weight.

The *power-plant* here shown, comprises 6,000 horsepower of electric motors driving the four screws, or each motor produces 1,500 horsepower. The motors may be operated in pairs in case one generating set should fail, and therefore the two inside or else the two outside screws can be used.

The two dynamos develop 3,000 H.P. each and are driven by two 3,200 H.P. gasoline engines. The pilot in his cabin, atop the main body of the aircraft, has full control of the speed of the propelling screws at all times. Where the propellers can be so accurately and easily controlled, as in the case with the electric drive, the ease of handling of the airship is greatly enhanced, as for instance by speeding up the screws on one side, and reducing their speed on the other side, etc., especially in bad weather. With electrified airships there comes many other niceties for long distance journeys, such as electric cooking, electric heating, electricity for operating a powerful radio set, electric lights, and an electrical gyroscopic compass.

As will be noted from the illustration, the radio antenna in this machine follows the latest departure in this direction, and the wires constituting the antenna are placed inside the wings.

Objection might be raised on this point that there is considerable danger of fires owing to electric discharges from the antenna wires, but it might be said that the latest idea in building such machines is to cover the wings with sheet aluminum or aluminum alloy sheeting, in the same manner as some of the German and other foreign planes have been successfully built.

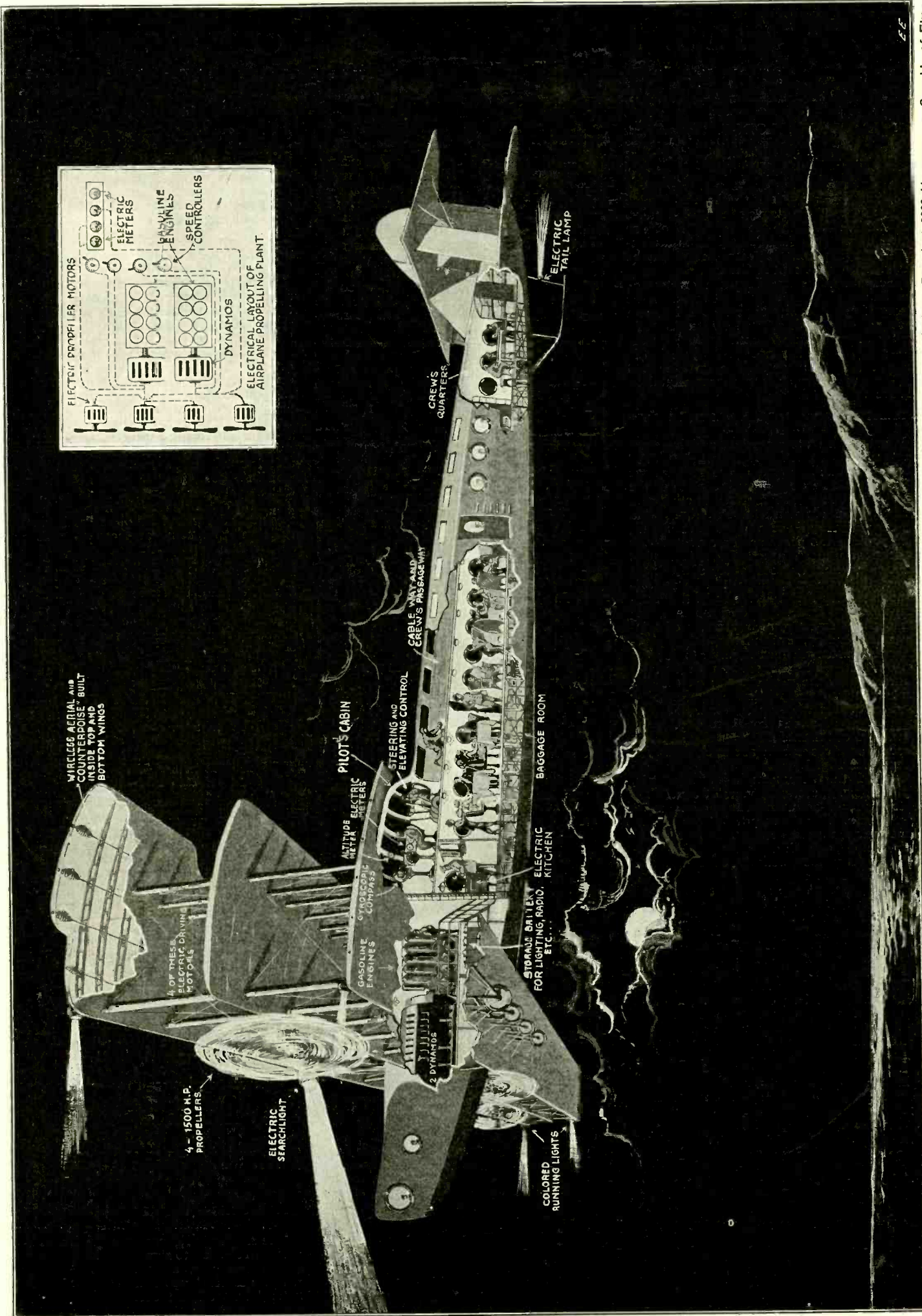
As will be seen, there is room for a limited amount of baggage on such an airplane, and for night trips, sleeping quarters may be provided on the order of the well-known Pullman car accommodations—that is, by converting the seats into berths. Powerful electric searchlights are available for flying at night, and especially for landing purposes, while port and starboard lights or *markers* are fitted on all such planes at the present time.

Heard German Conversation One Mile Away

It is a common knowledge, especially among men of the U. S. Signal Corps who served with the A. E. F., that by means of the wonderful 6, 8 and 10 stage audion amplifiers, available in the present war, and by placing a parallel loop of wire over a few hundred feet near the front lines, that enemy conversations could be easily and accurately intercepted and amplified. As we have just said, this phenomena is more or less well known, but it is not generally known, we believe, that, as recently pointed out by a U. S. radio expert who invented the amplifying radio buzzer system used in trench and field warfare car-

ried on by the Allied troops, it was possible by the use of the high power ten-step amplifiers, both French and American type, to overhear telephone conversation and also telegraphic signals whenever the Germans happened to communicate over wires, at a distance of one mile behind the front line trenches. Interrogated at this point, the expert explained that not such a long wire loop was necessary as might be supposed, but that a wire about 250 feet long, placed parallel to the German trenches, was all that was necessary, and just to show that the "Yanks" had the "Boche" on the run long before he en-

tered his trenches, underground dugouts and wine cellars, it is a matter of record that the Allied troops, in many instances, and particularly toward the close of the war, found whole sections of German telephone instruments over a considerable area near the front lines entirely sealed with red labels marked "Verboten," and, furthermore, some of the captives stated that their troops had been ordered not to use the telephone at all under any consideration, even where the wires were laid in iron pipes. Many other valuable uses were made of these eight and ten-step vacuum amplifiers, some of which will be described in future articles.



Electric Drive for Battleships Has Proven Eminently Satisfactory; Why Not Try It for Aircraft? Here We Have a Newly Proposed Electric Drive Airplane Rated at 6000 Horsepower, Capable of Flying Across the Continent with a Load of 100 Passengers and Baggage. Inset Cut Shows Electric Control Features.

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