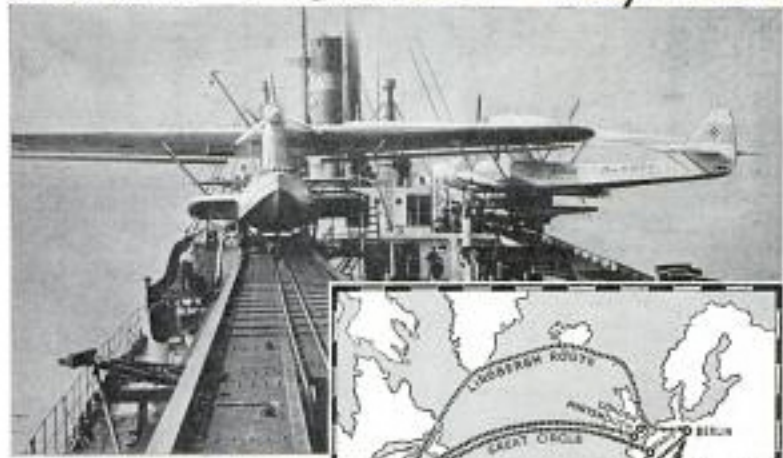


U.S. *to* EUROPE *by* AIR



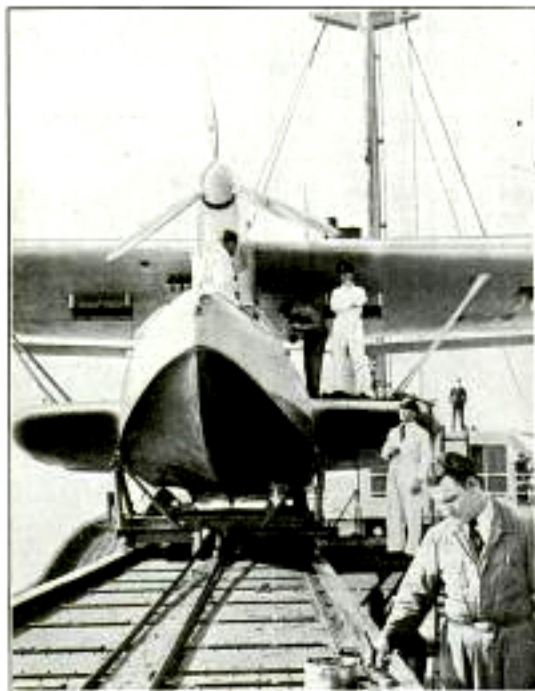
By Julian Leggett

YESTERDAY'S dream of daily air travel between the United States and Europe is moving rapidly toward the point of reality. Within twelve months, aeronautical authorities agree, weekly service will be established and daily service is just a step beyond.

Feasibility of regular transatlantic travel by air has been demonstrated by the flights of Germany's giant dirigible, the "Hindenburg." Several hundred passengers and tons of mail have been transported in safety and so commonplace have the flights become that arrival of the big ship at either of its destinations, Frankfurt or Lakehurst, N. J.,



Top, Flying boat on catapult. Bottom, dotted lines show U. S.-Europe routes. Solid line shows German route to South America.



Top, cleanup ring of ten-ton flying boat being prepared for launching from catapult aboard "mother ship." Bottom, flying boat lands after Azores-to-U. S. flight

cess of the dirigible, from a commercial standpoint, has been based on the novelty of the trip rather than on the amount of time saved. The "Hindenburg's" speed is limited to between eighty and ninety miles per hour under favorable conditions, only half that which might be achieved by using flying boats.

With the intention of instituting flying-boat service as quickly as equipment can be provided, companies in the United States, Germany, France, England and Holland are surveying routes and training crews for transatlantic duty. Pan American Airways System in this country is actively engaged in preliminary work, gathering weather

creates little more excitement than the docking of an ocean liner at New York.

But service faster than that afforded by the "Hindenburg" or any other dirigible is regarded as necessary if air travel to Europe is to be a paying proposition. Suc-

cess information, surveying air lanes and co-operating with air transportation companies in Europe.

While each company recognizes the advantage of being the first to offer weekly or daily service, there is little competitive

research work being done. All operate under an agreement calling for exchange of information on routes and weather and all apparently realize the necessity for such service to be entirely safe and capable of operating on schedule.

There will be two routes to Europe, one by the great circle course between Newfoundland and Ireland, the other by the Azores. The great circle route has the advantage of being shorter, while the Azores lane offers safety from winter storms and provides a point at which the journey may be interrupted for servicing the ships.

Still a third route, by way of Greenland, Iceland and the Orkney islands, is available, but the distance is greater and travel would be almost impossible in winter. The third route was surveyed by Col. Charles A. Lindbergh several years ago.

Germany's Deutsche Lufthansa Airline recently made experimental flights over the Azores route, for the purpose of obtaining weather data and of testing the practicability of launching huge flying boats by catapult from "mother" ships stationed at points on the route. Two ten-ton planes equipped to land on the water were used in the tests, the "Zephyr" and the "Aeolus." Catapulted from the "Schwabland," a ship equipped especially for hurling the flying boats into the air, the "Zephyr" flew directly from the Azores to the United States, a distance of 2,380 miles in twenty-two hours and fourteen minutes. This was an average speed of 108 miles per hour. The "Aeolus" flew by way of Bermuda, where an overnight stop was made, and covered 2,833 miles in twenty-four hours and nineteen minutes, an average of 116 miles per hour.

While no attempt was made to establish a speed record, these two flights demonstrated how much faster service can be offered by using flying boats.

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U. S. to Europe by Air

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Present plans of Deutsche Lufthansa call for the "Schwabland" and another, but larger, catapult ship to be stationed in the North Atlantic, one at the Azores and the other off Bermuda. These ships will be able to handle the twin-motored Dornier Wal flying boats with which the service will be started, possibly in the spring of 1937.

The catapult ship is powered with Diesel engines. Its equipment for launching the ten-ton planes weighs more than 100 tons and is designed to handle aircraft up to sixteen and one-half tons gross weight. Air compressed to a pressure of 2,300 pounds per square inch is used to give an acceleration of about 112 feet per second to the plane, resulting in a speed of ninety miles per hour at the point where the plane leaves the runway. This remarkable speed is built up in a run of slightly more than 100 feet.

An electric crane hoists the flying boats from the water. In rough weather the crane can be folded on deck. A powerful searchlight, necessary for spotting the planes on the water in night landings, also is part of the equipment. A "towing sail," attached to the stern and floating on the water, creates a smooth "wake" behind the ship when it is in motion. Flying boats can land on this wake with less danger than in the open sea.

The flying boats, "Zephyr" and "Aeolus," also are equipped with Diesel engines, two to each plane. Each engine is rated at 500 horsepower. Mounted in tandem above the wing, one engine drives a tractor propeller and the other a pusher. Fuel economy of these power plants is unusually high, in contrast to that of gasoline motors.

Choice of the catapult ship and flying boat for the new service probably resulted from Lufthansa's operation of similar equipment in the South Atlantic. From Berlin to Santiago, Chile, a distance of 9,500 miles, planes have been making bi-weekly trips with mail for several months. The 1,960-mile jump across the Atlantic to the nearest point in South America is accomplished by catapulting the flying boats from ships stationed near each end of the water hop. Thus, the flying boats have

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been able to start their flights with a maximum load without risking a takeoff from the open sea.

England is building a fleet of flying boats which may be placed in service on the great circle route sometime next summer. Imperial Airways, which maintains a vast system of air lines to the far-flung corners of the British Empire, is in charge of the construction, as well as training crews for transatlantic duty. Completion of this fleet is expected to mark inauguration of several test flights between Portsmouth or London and New York. On the outcome of the flights will depend the start of regular air travel between the two countries.

France, too, is beyond the point of toying with the dream of North Atlantic service. Huge ocean-going air liners are being constructed. One already has made a test flight, in easy stages, to this country by way of the Azores. From Paris to New York, the French planes would have the choice of the great circle course or the Azores-Bermuda route, leaving the coast of Europe at Lisbon.

During the summer England and France might be expected to fly passengers and

mail over the shortest route, but winter probably would cause both nations to use the Azores route.

Holland's plans for transatlantic service are not sufficiently advanced for announcement of the route which Dutch air liners might use, but some authorities believe the Azores would be considered most favorably, due to the safety factor and its year-round possibilities.

Just now Pan American Airways is busy with inauguration of passenger travel on its Pacific line, but the results obtained on test flights with big flying boats on the California-Manila route are expected to have some influence on plans for Atlantic service. Pan American would have the choice of the great circle or the Lindbergh route in the north and the Azores route in the south. The idea of anchoring catapult ships, similar to those used by Lufthansa, off Ireland and off Newfoundland has been suggested by aviation experts as one possible aid to flying the northern route, but no tests have been made. Another suggestion is construction of floating airports in the Atlantic for the convenience of transatlantic planes.

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