HOTELS

Above, looking from tip of Boeing clipper's right wing to tip of left wing, 152 feet. Below, artist's sketch of 100-passenger ship expected to be the Clipper of Tomorrow. It would be about twice as large as today's modern transports

LOCOMOTIVE power and all the services and conveniences of the modern hotel have been incorporated into new giants of the airways which are ready to speed the American traveler over land or sea in safety once considered impossible to achieve in aviation.

Steam heating, air-conditioning, hot and cold running water, artistic decorations, individual service from carefully trained attendants, electrically operated kitchen and home appliances, telephones, luxurious berths and even bridal suites—these are a few of the features of the latest aircraft intended for use on regular runs.

Of three super-airliners which have been completed and tested successfully two either are in service or soon will be flying scheduled routes.

Largest of the three is the Boeing "314," Pan American Airways clipper, a seventy-four passenger cruiser that is the first commercial airplane capable of carrying a sizable load of passengers and cargo across either the Atlantic or Pacific ocean.

Weighing 82,500 pounds and driven by four 1,500-horsepower engines, any two of which are able to keep the giant craft in the air while work is being done on the others, the "314" has twice as much power as the average railroad locomotive and a range of 4,000 miles with forty passengers aboard. Its top speed is approximately 200 miles per hour. Catwalks through the wings lead to the engine nacelles, each roomy enough for several men to work. Full feathering propellers permit the stop-

on the WING

ping of engines completely during flight so that mechanics may service or repair the huge motors.

This "Queen Mary of the air" is the first airplane with two full decks, connected by a spiral staircase. It has eighteen separate rooms within the hull proper, not counting the four "engine rooms." The ship measures 100 feet long and has a wing span of 152 feet, nearly one-half the length of a city block. The hull has an inside volume equal to that of a five-room house including basement, and the craft's thermostatically controlled system produces nearly five times as much heat as the heating plant of a modern seven-room house. Fuel tanks hold enough gasoline to

Above, Douglas "DC-4" climbing on only two engines. Note that two propellers are idle. Below, cockpit in "mock-up" of the Boeing "Stratoliner's" pilots' compartment

drive an automobile two and one-half times around the world, 4,300 gallons, and the cargo holds have a capacity of 10,000 pounds of mail and air express. There are approximately 50,000 different parts in the clipper, assembled with 15,200 bolts and 1,000,000 rivets. The electrical system contains eleven and one-half miles of wiring, installed in 400 runs of conduit, and outlets for 160 light bulbs.

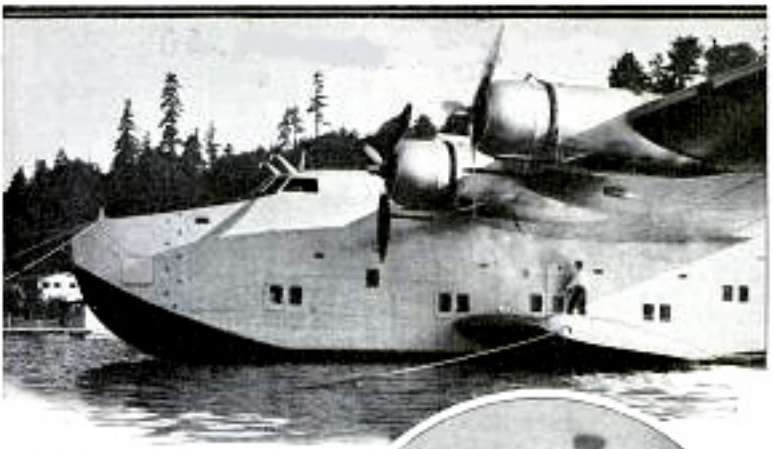
On the passenger deck are nine separate sections, including five standard compartments accommodating ten passengers each and a half-size compartment for four. The central section is a large room that may be used as lounge or dining saloon and the aftmost section is a de luxe compartment which may be used as a bridal suite.

Berths are six feet three inches long and thirty-two inches wide, with thirty-five inches of headroom. Handsomely styled furniture in the rooms is built with light aluminum frames and is cushioned with a newly developed pillowy substance made of curled horsehair impregnated with liquid rubber. Color schemes of the upholstery, wall and ceiling lining, deep carpets and trimmings vary in different compartments. Double windows in each compartment are fitted with Venetian blinds.

The bridal suite is attractively furnished with a triple seat, davenport type convertible into upper and lower berth, built-in settee, dressing table, two end tables, mirrors, washstand and cabinet and an overstuffed chair.

Modern tables between casually arranged overstuffed chairs offer accommodations for fourteen passengers at a time in the dining saloon. The

Top, Douglas "DC-4" has nose wheel for safe landing. It retracts when the ship is in the air. Center, Boeing clipper taking off. Bottom, cutaway view of Boeing clipper shows passengers' comfortable quarters on the main deck



galley is equipped with cupboards, serving tables, drawers and thermos containers for serving meals to the plane's seventy-four passengers and crew of eight. Between meals it may be converted into a bar.

The clipper's control deck provides liberal working space for the flight crew of six. At the forward end are the pilot's and co-pilot's stations and behind the pilot is the navigator's station, with a broad table for full-sized nautical charts. Across from the navigator is the radio operator's desk, with complete equipment including radio direction finder, three transmitters and four receivers. Behind the navigator is the master's desk and

(Continued on page 114A)

Top, clipper at its moorings. Circle, officials test passenger compartment. Bottom, clipper landing after test flight. Note wing flaps in lowered position to decrease speed

Hotels on the Wing

(Continued from page 405)

overstuffed chair, while the rearmost station is the flight engineer's quarters, with desk and expansive instrument and control panels. The engineer handles fuel valves, mixture controls, temperature controls, propeller adjustment controls and engine synchronization.

Second of the new air giants is the Douglas "DC-4," largest commercial land plane in the world. Truly a hotel on wings with accommodations for forty-two guests by day or thirty by night, it has a top speed of four miles per minute. A crew of five operates the huge ship.

Its steam-heating system automatically maintains a temperature of seventy degrees inside the cabin. Air, individually regulated by each passenger, is forced into the cabin at the rate of 1,250 cubic feet per minute. Two auxiliary engines, working independently of four giant motors generating a total of 5,600 horsepower, supply electricity to light the ship, cook food or operate hair curlers and electric shavers.

The "DC-4" has a comfortable ladies' lounge and men's dressing room and even a private compartment which may be used as a bridal suite. There are telephones for the crew and a dictaphone for businessmen who want to work while traveling.

The "DC-4" was built to the order of United Air Lines, Transcontinental and Western Air, American Airlines, Pan-American Airways and Eastern Air Lines. All production models will have supercharged cabins for substratosphere travel. This ship has a "tricycle" landing gear, which incorporates a nose wheel to permit shorter and safer take-offs and landings and prevent nosing over if brakes are applied suddenly or the wheels strike an obstruction. The gear is ideal for "blind landings."

"Upper level" flying becomes more than a dream with introduction of another Boeing ship, known as the "Stratoliner." This craft is designed to carry thirty-three passengers by day or twenty-five in luxurious night accommodations at speeds above four miles per minute through the smooth, rarefied atmosphere found at 14,000 to 20,000 feet.

The "Stratoliner's" path lies below the true stratosphere but above the heavy air belt that brews surface weather conditions. At 20,000 feet winds are considerably more constant than at normal flight levels and the air is virtually free from the turbulence that sometimes gives airplanes a "rough ride" on lower levels. Storm clouds and icing conditions, both flying hazards, usually lie below this flight belt. And the air is so rarefied that high speeds at normal cruising power are practical.

While the "Stratoliner" is propelled by four engines, each providing 1,100 horsepower for take-off, only 2,500 horsepower is necessary to drive it 240 miles per hour at 20,000 feet. So great is the amount of reserve power, complete loss of power of one engine during take-off creates no danger. In fact, any two of the four engines can maintain an altitude of 10,000 feet and speeds up to 170 miles per hour, with the air liner fully loaded.

Natural low-level atmospheric conditions for "upper level" passengers are created by automatic temperature and pressure-regulating devices within the sealed cabin. The pressure controls make it possible to bring the ship from 15,000 feet to sea level at 565 feet per minute without discomfort to passengers.

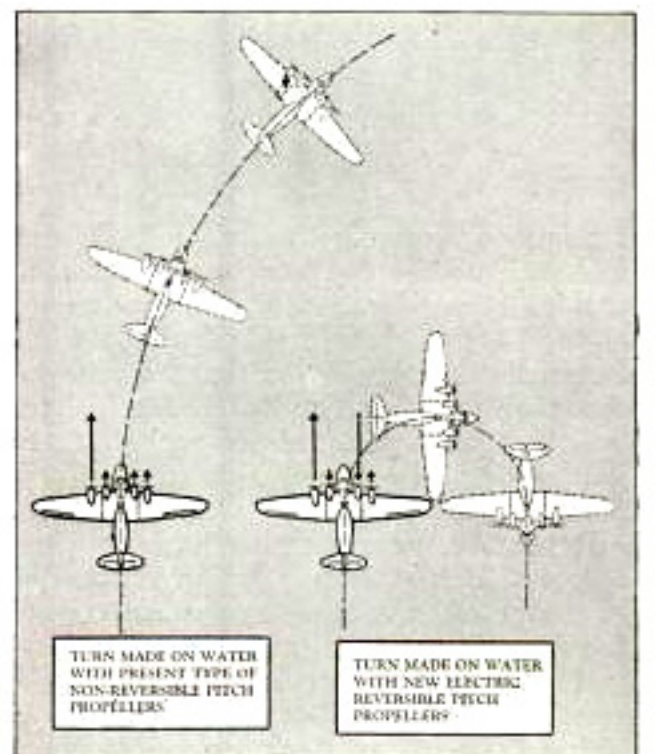
Fresh air, drawn through the leading edge of each wing, is compressed by two engine-driven superchargers and circulated through the cabin after being heated by freeze-proof steam radiators, and then is discharged through an exhaust chamber.

The right-hand side of the passenger cabin is divided into four compartments, each containing davenport-type seats for six passengers. Along the left side are nine reclining chairs. At night, each compartment makes up into two sets of upper and lower berths, each of which is six feet seven inches long. Windows, fresh-air inlets, reading lights and call buttons are placed in both upper and lower berths. The ship also offers the conveniences of women's and men's dressing rooms with every facility for the toilet. A galley permits the serving of hot meals in flight.

In addition to hotel-like comfort and luxury, each of the super-airliners offers one or more of these new safety features: Four-engine power, pressure cabins for high flying, inclusion of flight engineer in the crew to relieve pilots of engineer duties, and the tricycle landing gear.

Pilot Reverses Propeller Pitch to Turn Flying Boat Quickly

Development of an electrically operated reversible-pitch propeller that creates a backward thrust to facilitate maneuvering big flying boats on the water has just been announced. Curtiss-Wright engineers designed the propeller with the cooperation of navy aeronautical experts particularly

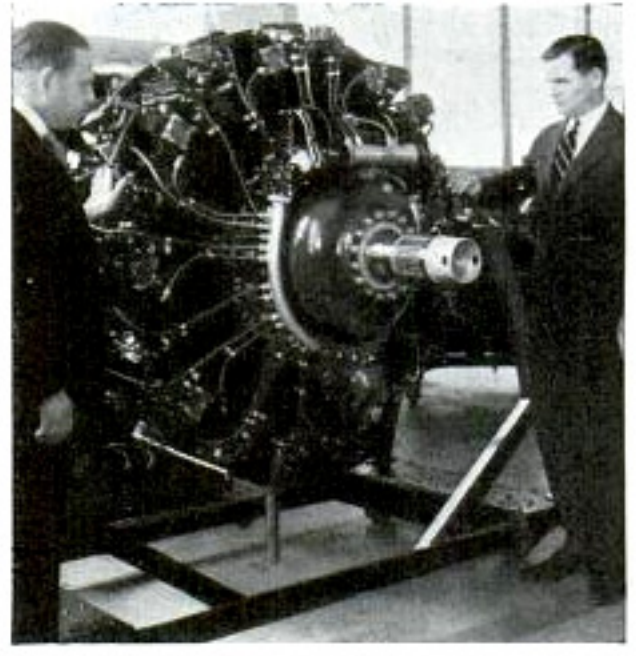


Length of arrows indicates relative amount of power applied to propellers in executing right turn

for use on four-engined patrol planes or commercial flying boats. By operating two propellers in reverse pitch and two in normal position, the blades can be used as brakes to slow down the ship, to turn it sharply within the radius of its own wing span or even to back up. The change to reverse pitch is made quickly and simply by moving an electric switch in the cockpit. The reversible propellers may eventually be installed on land planes to act as air brakes for slow landings.

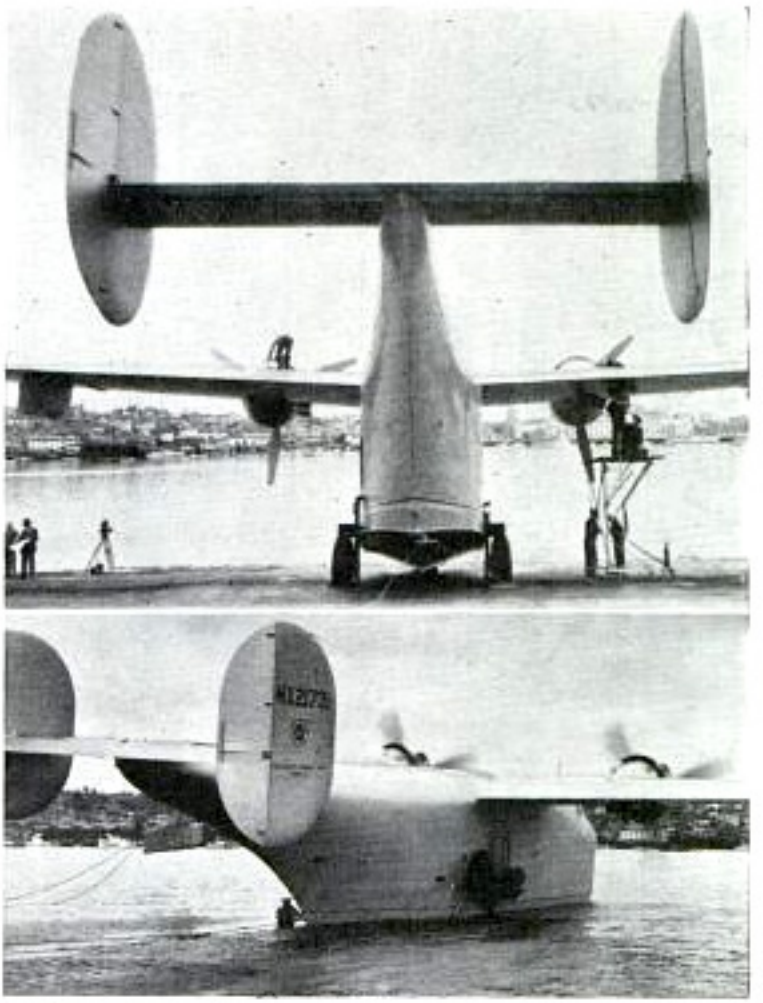
"Twin-Nine" Aircraft Engines Power Giant Flying Boat

Tops in air-cooled aircraft engines is the eighteen-cylinder, 2,000-horsepower motor just completed by the Wright Aeronautical Corporation with the aid of army air corps engineers. Virtually two nine-cylinder engines built on a single crankcase and using a common crankshaft, it is a double-row, radial type and develops 500 more horsepower than the fourteen-cylinder Wright Cyclone which was its forerunner, and which had the highest power rating previously given an American air-cooled radial motor. Two of the new engines form the power plant of the new Consolidated flying boat which made its baptismal flight recently with fifty-two passengers and a crew of five.



Most powerful air-cooled airplane motor built in America is this eighteen-cylinder engine

Super-Powered Flying Boat Boasts a 10,000-Mile Range



With relatively small wings for so vast a flying boat, this ship was lifted easily from the water by its twin 2,000-horsepower air-cooled engines

Powered by two of the largest air-cooled motors ever developed for commercial aircraft, a flying boat that has just had its baptismal dip in San Diego bay boasts a top speed close to 300 miles an hour. Built by the Consolidated Aircraft Corporation, it seats fifty-two passengers and is converted into a sleeper plane at night with beds for twenty-eight. Seventy-three feet from prow to twin tail assembly, the big ship weighs twenty-five tons and is twenty-two feet high from keel to top of the engines. With its motors at their most economical cruising speed of 195 miles an hour the plane has a range of 10,000 miles.

"China Clipper" Is Giant of Pacific Air Fleet

It will be "wings over the Orient" soon for the "China Clipper," luxury liner wesuned for the transpacific passenger service of Pan-American Airways. Latest addition to the fleet that is preparing for regular scheduled flights across the ocean, the "China Clipper" is the largest aircraft built in America. From tip to tip its wings measure 130 feet, and its gross weight is 51,000 pounds. Of the sesquiwing type, this flying boat is powered by four motors developing 3,200 horsepower, and cruises at 157 miles an hour over a 4,000-mile radius. On its maiden flight Capt. Edwin C. Musick and a crew of four flew the "China Clipper" with thirty-eight passengers aboard from Baltimore, where it was built in the Glenn L. Martin plant, to Washington and return in a little more than an hour. The great ship is fully equipped for the comfort of travelers on long hops across the Pacific, and during the night flights the passengers sleep in commodious upper and lower berths.

Above, Double-Deck Berths Are One of the Features of the "China Clipper"

Control Cabin and an Exterior View of the "China Clipper," 51,000-Pound Luxury Liner Intended for Transpacific Service; Its Four Motors Develop 3,200 Horsepower