

# Aviation News Features



Assembled and Released by the Aviation News Sub-Committee of the Public Relations Committee, Aeronautical Chamber of Commerce of America

**BAROMETER**—"Man-hours" mean more planes. And "man-hours" worked in the American aircraft industry are shooting upward. For a story and illustration of this index to production, see Cols. 6, 7, 8.

**CONVEYOR**—The power-driven overhead conveyor system is spelling mass production of U. S. warplanes. For details of the newest, fastest aid to aircraft output, see Cols. 3 and 4.

**INSTRUMENTS**—Airplanes can't fly without instruments. Altimeters, tachometers, compasses, turn and bank indicators, scores of other aids to flying and navigation are coming from instrument makers in an unbroken flow. How is this being accomplished? See Cols. 4, 5, 6.

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## Plane Production Rate Exceeded Use of Big Bombers for Convoys Told

WASHINGTON, June 00.—(ANF)—The 18,000-a-year airplane production rate scheduled by the U. S. Government when it laid out the first large defense program last fall is already being exceeded by the aircraft industry, Col. John H. Jouett, president of the Aeronautical Chamber of Commerce, declared in a recent statement.

Col. Jouett pointed out that warplane production rose from 1000 in January, 1941, to 1427 in April and disclosed that similar increases were anticipated in months to come.

Outlining recent technical achievements of the aircraft industry which made American warplanes superior to those of all other world powers, he added:

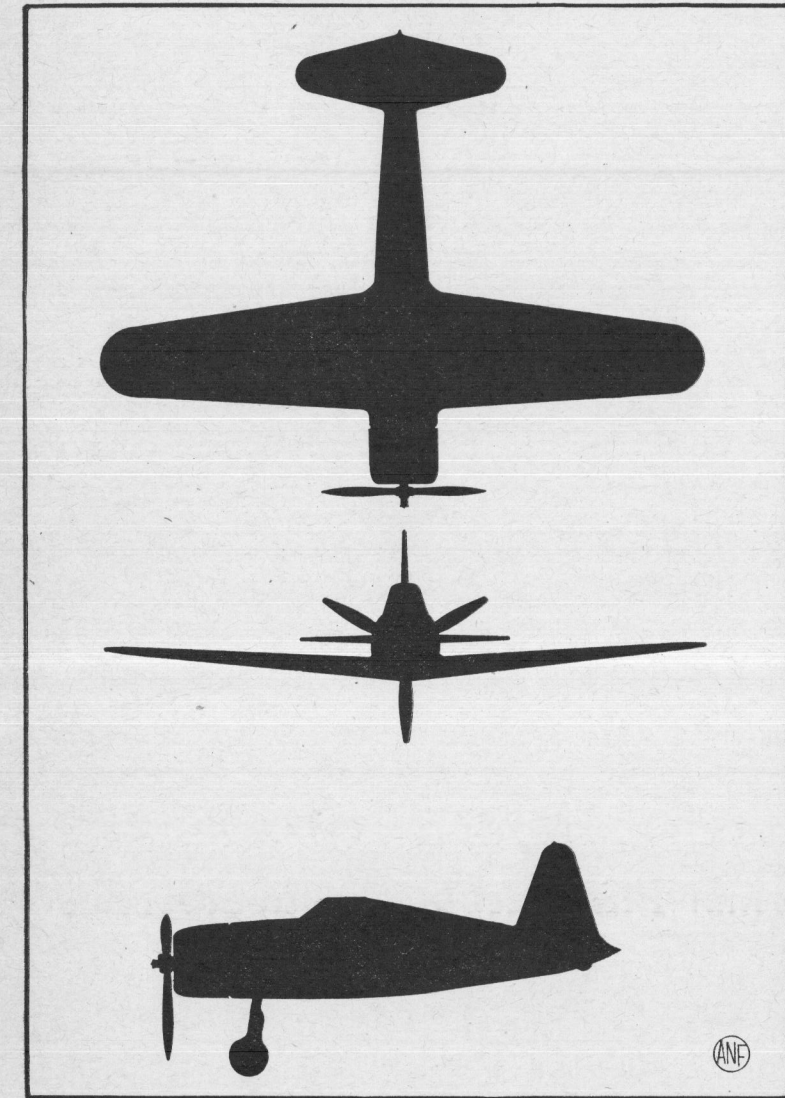
"Our increased production of four-engine long-range bombers can help to solve the convoy problem. Sent out from bases on this side of the Atlantic they can carry enough heavy bombs to sink large ships. They can patrol a zig-zag course over a convoy route, say 200 miles wide, all the way to England with a fair chance of spotting and destroying raiders that might be lurking within striking distance of supply ships in a convoy."

Col. Jouett revealed the aircraft industry, which in the last four months increased plant space from 25,500,000 square feet to 32,800,000 square feet, will within the next few months increase plant space to more than 50,000,000 square feet. Employees in the same period will be increased from 237,000 to more than half a million.

RELEASE JUNE 15

## Know America's Planes

VULTEE VANGUARD



Fast, heavily-armed fighter planes are being produced in ever-growing numbers by the American aircraft industry to meet the needs of the embattled British and our own air force. Here is a fine example of this type of aircraft—the Vultee Vanguard interceptor pursuit designated as the P-48. The Pratt & Whitney 1200-horsepower Twin Wasps give the Vanguard a speed of 350 miles per hour, while six machine guns, two of them .50 caliber weapons, provide heavy fire power. Points of identification include the widely-spaced landing wheels (which are fully retractable), the long, sleek nose and the roomy cockpit housing, providing excellent visibility.

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## Production of Planes Is Streamlined by New Powered Assembly Line

### An Overhead Conveyor Speeds Building of U. S. Aircraft

VULTEE FIELD, Calif., June 00.—(ANF)—More than a mile of overhead conveyors, slashing final assembly time in half and required floor space by 33 per cent! That is the answer of one leading airplane manufacturer to the need for mass production, as the nation's aircraft industry gears for a history-making output of warplanes.

Recently completed at the California factory of Vultee Aircraft, Inc., is what President Richard W. Miller describes as the first powered mechanized final assembly line in the industry, resulting in a fourfold increase in production.

"COULDN'T BE DONE" "The problem of gearing parts production to final assembly and the split-second timing of operations, especially in view of changes in specifications during the course of a contract, has heretofore led industrial engineers to the conclusion that powered assembly lines could not readily be adapted to the aircraft industry," Mr. Miller explained.

"However, Vultee, with the largest order ever placed in number of units for any one type of airplane, has been able to develop this new production system to a degree far beyond expectations."

Vultee's final assembly conveyor system involves a total of 6280 feet of overhead rail, the line being so designed that at every point there is a floor area free from machinery and obstructions, permitting complete access to the undercarriage of the plane.

**FEEDER LINES** Feeder lines reach out into various sub-assembly departments to carry completed major units of each plane into position for final assembly.

One such line extends into the tubular fuselage section. Another taps the heart of the center-section department. A third brings outer wings to their exact assembly station; still another feeds complete tail sections into the final line. During the course of their journey, the major sub-assemblies pass through two paint rooms—still on their conveyor tracks—and are spray painted.

The actual final assembly line involves a total of 46 stations, at each of which a carefully planned series of operations is performed by a crew which remains at the station. Operations have been arranged so that they are completed in a given period, at the end of which the plane automatically moves to the next station.

**STOCK AT HAND** During the fuselage assembly stage the plane is supported from a monorail conveyor, supplemented by stabilizing outrigger. Along this line is a continuous stock of parts, divided into sections so that supplies in any particular area correspond with the nearest assembly station. Stock clerks continually replace parts in trays and bins.

Powered sections of the conveyor system are chain driven and the speed is controllable according to the output rate required.

Back of the assembly lines are dozens of other departments, devoted to the numerous stages of fabrication, all of which must operate on split-second timing to insure the smooth flow of finished airplanes onto the flight ramp.

### PLANE FACTS:

*Inspectors Play Important Role*

There is an inspector for every 13 production workers at the Farmingdale, N. Y., plant of the Republic Aviation Corp. Each of the speedy P-43 "Lancer" interceptor planes which the company is now turning out in quantities for the Army Air Corps gets more than 20,000 separate inspection operations.

In construction of the new "blackout" plant of Douglas Aircraft Co. at Long Beach, Calif., 3763 tons of structural steel were raised and riveted into place in 32 days' working time, an average of nearly 120 tons daily.

The weather is "made to order" at the Sperry Gyroscope Co. In the company's all weather laboratory it is possible to test aircraft instruments in temperatures ranging from 40 degrees below to 150 degrees above zero. Humidity, fresh and salt water fogs and sunshine also can be simulated.

The U. S. Air Corps will seek 800 to 1000 reserve officers annually.

### NEW MILITARY MODEL

The War department has conducted tests of a new basic trainer, the XBT-12 produced by Fleetwings, Inc., powered with a 450-horsepower Pratt & Whitney radial engine. Facilities of the XBT-12 provide for a student and instructor in a canopied cockpit.

## MOVING TRACK MEANS FASTER PLANE OUTPUT

Here, step by step, are the various phases in the creation of a military training airplane, as carried out on the new mechanized assembly lines of Vultee Aircraft:

1—Main fuselage section goes on overhead rails, to receive wiring, controls, etc., at consecutive work stations.

2—Monocoque section and tail assembly meet on conveyor and are joined together, after passing through paint shop.

3—Center section rolls through paint shop, then gets landing wheels and shock absorber struts.

4—Power plant is assembled and mounted on engine balcony.

5—Fuselage, tail assembly and center section meet on final assembly line and are quickly bolted together.

6—Engine brings engine down off balcony to final assembly line where it is attached to plane.

7—Plane rolls along line, picking up outer wings, propeller, accessories.

8—Completed plane passes through inspection and rolls out on flight ramp.

## 50 Acres for U. S. Airplane Engines New Plant Is Dedicated at Cincinnati

CINCINNATI, O., June 00.—(ANF)—Reputedly the largest defense structure in America, the Wright Aeronautical Corp.'s sixth factory, which will manufacture one thousand 1700-horsepower engines a month for the nation's ever-growing warplane fleet, was dedicated at Cincinnati on June 12.

The new factory covers 2,120,000 square feet, or approximately 50 acres. The task of erecting the building required 193 working days. Although the plant was formally opened only last week, it has been producing engine parts since last April, when "pilot" or temporary production lines were set up. A force of 2700 men, vanguard of an eventual 12,000 workers who will man the plant, is now on duty. It is expected that peak production will be attained by June, 1942.

Present at the dedicatory ceremonies were Guy W. Vaughan, president of the Curtiss-Wright Corp., and high-ranking officers of the Army, Navy and Washington defense groups. The Wright Aeronautical Corp., a division of Curtiss-Wright, is operating five other plants in or near Paterson, N. J.

### BIG OCEAN HOPPER

The new Boeing 314-type ocean clippers have a fuel capacity of 5400 gallons, sufficient to fly non-stop from New York to Lisbon and still have 1000 miles to spare.

## Instrument Makers on the Job for Defense

### Floor Space, Personnel Doubled to Meet Emergency

NEW YORK, June 00.—(ANF)—Because of a planned, orderly expansion program set in motion months ago, manufacturers of aeronautical instruments are keeping pace with the terrific demand created by the national defense emergency, the Aviation News Committee reported today.

Instrument makers have doubled floor space and personnel, have added new shifts and have turned to widespread subcontracting to assure an unbroken flow of such delicate equipment as altimeters, artificial horizons, tachometers, direction finders, air speed indicators, radios, compasses, robot pilots, turn and bank indicators and dozens of other devices.

**FIFTY INSTRUMENTS** These instruments are playing an increasingly important role in military, commercial and private flying. Ten years ago the average transport plane carried about 15 instruments, valued at from \$1,000 to \$2,000. Today, most of the big fellows, both military and commercial, must be equipped with 50 or more costly and complicated instruments of a total value of \$15,000 or more.

Planes' instrument panels are fast becoming more and more confusing to the eye of the layman. There is, for example, the gyro-compass or "iron mike" which relieves the human pilots from the manual operation of the plane's controls; and the directional gyro and the gyro-horizon which give the pilot a direct and accurate picture of his course and the altitude of his plane even though he is flying in the overcast or on top of the clouds where there are no visual reference points.

**INCREASED PRODUCTION** In 1928 the Sperry Gyroscope Co. of New York City was producing 60 instruments each month. Now they're turning them out at the rate of 1250 a week. Three of these leading manu-

# 41,000,000 MAN-HOURS FOR U.S. PLANES

## Plane Industry's Backlog May Hit 10 Billion Dollars U.S. and British Orders Already Exceed Five Billion Mark

NEW YORK, June 00.—(ANF)—A backlog that may eventually soar close to the 10-billion-dollar mark! American aircraft producers are facing that possibility as they work around the clock to meet orders already in excess of \$5,000,000,000, the Aviation News Committee reported today.

The airplane manufacturers and allied industries, including most of the major motor car producers, have at the moment on their books orders amounting to an estimated \$5,152,000,000, consisting in the main of business books for the United States Army and Navy and Great Britain.

**BACKLOGS ROCKET** At the close of 1938, the backlog stood at \$186,042,900; by the end of 1939 it had mounted to \$759,378,000, and by midsummer of 1940 it totaled \$2,144,550,000. In January, 1941, it had risen to approximately \$3,500,000,000, exclusive of certain automotive and supplier contracts, the Committee reported. And the monthly output of planes has swelled from around 500 at the middle of 1940 to an estimated 1500 for June, 1941.

In addition to the current expansion plans which have made such a growth possible, new plants for plane, engine and propeller production, now under construction, will enter into the picture within the next six months. When all of these attain maximum monthly production, airplane output in the United States is expected to reach between 25,000 and 30,000 a year. Some defense officials predict, according to the Committee, that this rate will be attained by September, 1941.

**41,000 AIRPLANES** The bulk of the industry's five-billion-dollar backlog comprises orders already laid for 41,000 aircraft—due for completion within the next 14 months. This total includes the 25,000 planes ordered by the U. S. Army and Navy and the 16,000 by Great Britain and allied democracies.

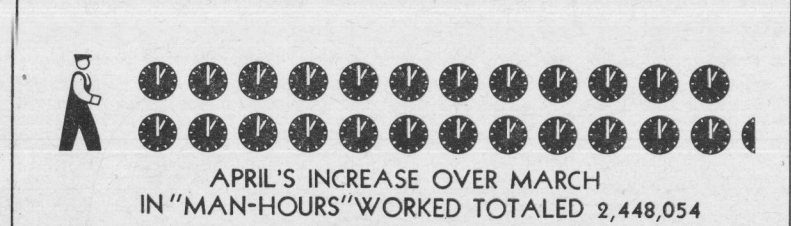
Leaders of the defense program are already formulating plans for supplementary orders of 22,000 to 26,000 airplanes—10,000 of them for Britain, 12,000 for United States defense and the 3600 bombers on which the automotive industry will collaborate with leading aircraft makers.

With the huge plant expansion which is under way, the United States is actually in a position to attain the once undreamed of goal of 50,000 planes a year, the Committee pointed out.

**A TON OF TIRE** The tires of the world's largest bomber, the B-19, weigh more than one ton apiece.

A.M. RELEASE JUNE 16

## MORE "MAN-HOURS" = MORE WARPLANES



EQUIVALENT TO ONE HEAVY BOMBER REQUIRES APPROX. 100,000 "MAN-HOURS"

Each clock represents 100,000 "man-hours"

Total "Man-Hours" worked in April were 41,776,032. Translated into completed airplanes, this index was the production equivalent of 400 heavy bombers or 1400 medium bombers.

Source: AVIATION NEWS COMMITTEE, Aeronautical Chamber of Commerce of America (ANF)

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## Aviation's Who's Who

DONALD W. DOUGLAS

In 1909 a U. S. Navy midshipman named Donald W. Douglas happened to watch a flight of the Wright Brothers' flying machine.

What young Douglas saw that day brought the world a pioneer in the science of aerodynamics, a genius in foreseeing the nature and growth of aerial commerce, and a founder of an organization whose achievements were to write new pages in history.

Born in Brooklyn, N. Y., in 1892, Don Douglas was 17 when he received his appointment to the U. S. Naval Academy at Annapolis. Not long after, he was among the few who watched the Wrights demonstrate their frail but famous little biplane at Fort Myer, Va.

After three years of training cruises, navigation and mathematics, young Douglas found his mind was still on wings and the skies instead of ships and the seas. Although his father, William E. Douglas, a New York banker, had hoped Donald would become a naval officer, he resigned in 1912 to enter the Massachusetts Institute of Technology.

Graduating in 1914, he immediately received his first job in aviation, an appointment at the insti-

## 4 New Bomber Plants To Cost \$63,000,000

WASHINGTON, June 00.—(ANF)—Cost of four new bomber assembly plants being constructed in the South and Middle West will total \$63,000,000, the War Department disclosed recently in announcing appointments of William H. Rose as civilian head engineer in charge of construction.

Location, cost and other details on the four plants, all of which are scheduled to be in operation by the end of the year, follow:

At Omaha, Neb. Cost, \$11,200,000. To be operated by Glenn L. Martin Co., with Chrysler Corp. furnishing parts.

At Fort Worth, Tex. Cost, \$22,400,000. To be operated by Consolidated Aircraft Corp., Ford Co., supplying parts.

At Tulsa, Okla. Cost, \$22,000,000. To be operated by Douglas Aircraft Co., Ford Co. furnishing parts.

At Kansas City, Mo. Cost, \$7,400,000. To be operated by North American Aviation, Inc., with General Motors Co. supplying parts.

### TOO FAST TO HEAR

At a recent demonstration in Los Angeles, the Lockheed YP-38, twin-engine pursuit interceptor airplane, flew across the municipal airport so swiftly that it disappeared into the horizon before the 50,000 spectators on the ground were able to hear the thunder of its motors.

## GLASS STOPS BULLETS! Armor Plate Replaces Old Stovelds

Tenth of a series illustrating the manner in which research and experimentation are providing new methods and materials to improve the quality of military aircraft, the following article deals with the development of bullet-resistant glass and armor plating being used on our fighting planes.

Stovelds, car doors and other odds and ends of metal used by pilots as protection from gunfire in World War I have been replaced by special armor plating designed to protect the pilot, the engine, instruments, etc.

Designers and engineers report that the combat aircraft now leaving the production lines of America's airplane plants are so constructed that little serious damage can be done to the structure by small-bore ammunition. Adequate, well-placed armor plating also protects the ship against hits by large shells.

One effective means of protection is bullet-proof glass, according to the Aviation News Committee. In two-inch thicknesses, this glass will stop penetration of .30 caliber ball ammunition at normal impacts. Glass three inches thick will stop .50 caliber bullets.

Armor in the pilot's compartment is designed to protect his head, back and seat, with bullet-proof glass used to protect him from direct frontal fire. All equipment in the pilot's compartment is so placed as to provide as much protection as possible.