The nation needs thousands of airplanes for defense. How is the aircraft industry meeting this challenge? You will find the answer in the story on factory expansion. (Cols. 7-8.)

What about new fighting planes for the Army and Navy? That top story in Col. 4 tells about them. And as a new and fascinating version of the timeproven Question & Answer feature, may we suggest

"Aeroquiz"? (Col. 1.) As for art, a postcard addressed to the Aviation News Committee, 7046 Hollywood Blvd., Los Angeles, Calif., will bring you, by return mail, mats or glossy prints of the pictures in this issue.

Volyal-No.No. 2

November 22, 1940

AVIATION NEWS COMMITTEE

LOS ANGELES: 7046 Hollywood Blvd A. M. ROCHLEN

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of Commerce H. E. LAWRENCE Curtiss-Wright

AVERY McBEE Glenn L. Martir

30 Rockefeller Plaza LAUREN D. LYMAN Vice-Chairman

NEW YORK:

United Aircraft Corporation T. C. SULLIVAN **Vultee Aircraft**

HAROLD MANSFIELD **Boeing Aircraft**

Chamber of Commerce from the

Wright Aeronautical Corporation,

now rushing production of motors

develops 125 horsepower per cylinder, making a single cylinder far

more powerful than the entire en-

MUST BE LIGHTER

On the other hand, an aircraft

motor must develop 12 times more

power per pound of weight than

The life of a 14-cylinder Cyclone

Receipe for testing the preci-

Dismantle four 14-cylinder

engines. Place the 22,000-odd

engine factory of the Wright

Aeronautical Corporation in

Paterson, N. J., to test the in-

at 100,000-mile intervals, or prac-

tically twice the life of the average

THOUSANDS OF PARTS

requiring 5000 man hours of work

and some 35,000 operations for each

In all, there are 45,000 inspection

operations involved in building a

single motor, and some of the

parts are accurate to 1-2,000,000th

Despite all this, aircraft motor

tribution to the work of arming

MORE JOBS, MORE PAY

airplane factories are working

"around the clock" for national de-

fense, employment in the aircraft

industry has risen 142.8 per cent in

a year, while weekly payrolls are up

174.7 per cent and average weekly

earnings have increased 13.1 per

cent over 1939. In other sections

of the country, aircraft production

for national defense has caused

similar stimulation of employment.

In California, where seven major

the thinnest spider web.

America in the air.

the ordinary gasoline engine.

sion of aircraft motor parts:

four complete engines. They did just that at the

gine of most automobiles.

One of the big Wright Cyclones

for national defense:

Speaking of Power, Here Are Some Facts About Big Aircraft Motors Single Cylinder Produces More Horsepower Than

Entire Engine of Your Auto PATERSON, N. J., Nov. 00.—The average motorist is apt to consider

the engine of his automobile a mighty powerful and efficient piece of machinery. And so it is. But the motorist's pride might suffer if he compared his car's motor with the power plants of our airliners and military planes. sons gleaned by the Aviation News Committee of the Aeronautical

AEROQUIZ Motor Is Aided by Supercharging

Q-What is a supercharged mo-

A-One in which air is fed to the carburetors at approximately sea level density, though the plane may be operating at altitudes where the air is extremely "thin." This makes for peak performance at high altitudes.

Q-What percentage of the cost of building an airplane goes for

A-An average of 44 cents of ev ery airplane sales dollar and 25 cents of every engine sales dollar goes to shop labor.

Q-How high can our fighting

A—The Army Air Corps reports the famous Bell Airacobra pursuit can operate "above 36,000 feet."

Q-How much gasoline can the

A-The fuel capacity of the 80ton B-19, now nearing completion at the Douglas factory in California, is 11,000 gallons, approximately the capacity of the average railway tank car.

Alfred P. Sloan, Jr. Clears Atmosphere Says Year Is Needed for

Defense Production NEW YORK, Nov. 00.—Speaking before the Academy of Political Science here recently, Alfred P. Sloan, Jr., chairman of General Motors Corporation, declared:

"Our available assets for defense are management, technical skill, efficient workers, ability to organize and capacity to construct such different instruments of production as

now are needed. "The problem is new plants, new machinery, special tools required by the new plants, the necessary personnel and its evolution into effective work-

ing organizations. At the best a year is needed between the inception of a defense project and production, months more to develop the maximum capacity and effi-

New Flying Forts for U.S. Air Corps

PLANE FACTS:

New type gun turrets and more powerful motors characterize the B-17C, latest of the famous fam-

The ships, ordered by the U. S. Army Air Corps, are now being completed at the Seattle, Washington, plant of Boeing Aircraft Company at the rate of one ship every two working days. The newest Flying Fortresses are four-motored low-wing bombers, capable of speeds in excess of 300 miles per hour and with a cruising range of more than 3000 miles. Machine gun "blisters" of the earlier Flying Fortress models have been replaced by flat type turrets.

How are we doing on national defense aircraft production? Well, General George Brett of the Army Air Corps and Admiral J. H. Towers of the Navy Bureau of Aeronautics agreed recently that the aircraft programs of both services will be completed well ahead of schedule!

So extensive is the Consolidated Aircraft Corporation plant at San Diego, California, that employes se bicycles to travel from building to building.

Twenty-one PT-14 training planes are leaving the plant of the Waco Aircraft Company at Troy, Ohio, each week. The ships will be utilized for the Civilian Pilot Train-

Let Rivets Fall Where They May— Machine at Plane Plant

Sorts Such Things BALTIMORE, Nov. 00.-A new rivet-sorting machine which is expected to make a substantial contribution to the company's national defense production efficiency has been invented by shop technicians at The Glenn L. Martin Company

at Baltimore. Rivets have a habit of getting mixed up, falling on the floor and otherwise ending up with waste parts in a large box. Shake scrap metals. Airplane rivets are well. Then reassemble into worth about \$1.00 a pound. Ordinarily they are hand-sorted at the rate of about 1000 a day. The new device, which will thus save something like \$12.500 annually, first eliminates the scrap metal, filings, terchangeability of parts. The etc., from the swept-up rivets, and four reassembled motors functhen separates the round-headed from the flat-headed types. When this process is completed, the two varieties are separated as to length is approximately two million miles. and dropped into receptacles, the Routine overhaul is required only

entire process being automatic. More than 150 diferent sizes and types of rivets are used in the construction of the larger-sized air-

To achieve this efficiency and precision, the aircraft motor has **Buying of Material by** 5500 parts, which must be machined, inspected and assembled,

Plane Factories Zooms LOS ANGELES, Nov. 00.-How national defense production is stimulating purchasing of materials by the aircraft industry is illustrated by the following announcement by North American Aviation, Inc.:

of an inch-200 times finer than In 1936 the company bought \$895,000 worth of materials. In 1939 this had soared to \$13,500,000. manufacturers are forging ahead In 1940 the company estimates its into mass production as their conpurchases will pass the \$35,000,000

> INSURANCE BROADENED Removal of air travel restrictions in its insurance policies for the entire western hemisphere has been announced by the Mutual Life Insurance Companies of New York. The new liberalized clauses in such policies apply to removing restrictions on all American-flag passenger air travel on regular routes between established airports in the West Indies, Central America and South America.

Conditions Is Possible

craft motor, from rough casting to

Army, Navy

Get Newest

U. S. Producing Swift,

Versatile Defense

Aircraft

(Note: This is the second of two arti-

cles dealing with the newest American

defense airplanes. It describes types

of military aircraft being developed and

produced in eastern factories. The first

article described products of factories

NEW YORK, Nov. 00.-Down the

assembly lines of rapidly-expand-

ing factories in New York, Mary-

land, Connecticut and other east-

ern states are rolling today some

of the swiftest, most deadly and

most versatile fighting aircraft the

Mere mention of some of the

names—the Airacobra, the P-40, the

Skyrocket, the PBM—brings a thrill

of pride to air-conscious Americans.

as aircraft plants in the eastern

United States, like those on the

Pacific Coast, work night and day

THE NEW AIRACUDA

A few days ago the Army Air

Corps announced delivery of the

first of the new Bell Airacudas.

swift and formidable twin-engine

planes, officially designated as

"fighters." which carry bombs

have five-man crews and are

armed with cannons and machine

guns firing from the front, sides

Aircraft factory are the Airacobras,

bullet-like interceptor pursuits

armed with cannon firing through

the propeller hub and credited by

their makers with a maximum

speed of "about 400 miles per hour."

Appearing in ever-increasing numbers for the Air Corps are the

famous Curtiss P-40s. Like the

Airacobra, the P-40 is an ex-

tremely fast, highly streamlined

single-seat pursuit powered by an

Allison engine. The P-40 is her-

alded as one of the most maneu-

verable fighting planes in the

SHIPBOARD FIGHTERS

board fighters are three new sin-

gle-seaters—the Brewster F2-A1,

the Grumman F4-F3 and the Grum-

man Skyrocket. The Skyrocket.

among the newest of our aircraft,

Wright Cyclones and is reported to

be one of the fastest-climbing

Highly important to the defense

needs of both the Army and Navy

are two new types now building

in Baltimore. Destined for the Navy are the Martin PBM type of

long range patrol and bombard-ment flying boats, designed for pa-

trol and defense missions far at

sea. For the Army is the Martin

B-26, a new twin-engined bomber

whose performance cannot be dis-

closed. But it is said that the B-25

will be the world's fastest bomber,

Recently delivered to the Army

is the new Republic YP-43 pursuit

interceptor, a faster model of the

Republic P-35 with which several

squadrons of the GHQ air force are

FOR THE NAVY

ingly baffling designations) are

characteristic of the Vought-Sikor-

sky OS2V-1, OS2V-2 and SB2U-3,

being produced for the Navy and

Marine Corps (OS stands for "ob-

servation scout" and SB for "scout

bomber"). The former are speedy,

heavily armored monoplanes with

interchangeable pontoons and

landing wheels, intended primarily

for scouting, gunfire spotting and

other naval jobs. The SB2U-3, a

Marine Corps ship, is a scout dive

bomber with folding wings to be

To train the men who fly these

fighting services, produc-

varied types of aircraft for Uncle

tion is being pushed on such train-

ing planes as the Fairchild, Waco

High performance (and seem-

now equipped.

carrier-based.

carrying a heavy load of bombs.

ered by two 1200 h

planes in the world.

Designed for the Navy as ship-

Also in production at the Bell

and rear.

to arm America in the air.

Actual production is being speeded up on a majority of these planes

on the West Coast.)

world has ever seen.

War Planes

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



Airplane, Engine and Propeller Factory Working Space

The aircraft industry is meeting the need for thousands military airplanes with a history-making program of plant expansions. Against a background of men and steel at a new factory building, this chart, prepared by the Aeronautical Chamber of Commerce of America, shows how airplane, engine and propeller manufacturers of the nation have increased the size of their factories since the outbreak of the war in Europe and how, by the time present expansion programs are completed, the total working area will have grown to more than 33,000,000 square feet.

(EDITORS: IF YOU HAVE NOT ALREADY REQUESTED SAME, MAT OR GLOSSY PRINT OF THE ABOVE WILL BE MAILED ON REQUEST. WRITE TO AVIATION NEWS COMMITTEE, 7046 HOLLYWOOD BLVD., LOS ANGELES, CALIF.)

Expanding Plane Plants Mean More Residents, Bigger Payrolls

Case of San Diego Shows How Industry Adds to Prosperity of Typical Community

SAN DIEGO, Nov. 00.—Millions of dollars are being spent on plant expansions and thousands of skilled workers are being added to payrolls as aircraft manufacturers race into the creation of a mighty air force What effect is this vast expansion, this upsurge of employment,

having on the economic structure of communities where airplane plants are located? To answer this question, a researcher for the Aviation News Committee of the Aeronautical Chamber of Commerce of America visited San Di-

FEW INDUSTRIES

The 1930 census gave San Diego population of 147,995. Its limited basic industries—tuna fishing, boat building, some manufacturing -hardly classified it as an industrial community. But Army and Navy bases were located here and the city's prosperity consequently rested heavily upon payrolls of service personnel, which consequently fluctuated with the comings and goings of the Fleet.

From an aeronautical standpoint San Diego had two distinct advantages-almost perfect weather and an excellent airport practically in the center of the city. In 1935, Major R. H. Fleet decided to bring his Consolidated Aircraft Corporation to San Diego. At that time the city's industrial

payroll was \$15,000,000. Today San Diego has four aircraft and aircraft parts plants-Consolidated, Ryan Aeronautical Company, Solar Aircraft Company, Rohr Aircraft Company-employing more than 14,000 workers. Largely as a result of the coming of this industry, San Diego's industrial payroll has risen to approximately \$20,000,000 in 1940. Two new theaters and between 25 and 30 grocery stores have been

And what of the future?

20,400 NEW WORKERS Consolidated Aircraft, now hiring workers at a rate of 300 weekly, expects to add 13,000 new employes to its payroll within the next eight

also expanding rapidly. Result: the four plants will have taken on 20,400 additional workers by the summer of 1941.

Statisticians estimate that some 16,400 of these men will be drawn from outside the San Diego area. Of this number, they say, 9840 will be married. Bringing their families with them, they will increase San Diego's population by an estimated

Already the influx of aircraft workers has resulted in stimulation of home construction. Increased payrolls are attracting new businesses. And the coming of nearly 10,000 tax-paying families will, it is estimated, mean the employment of more than 200 additional school teachers and the building of a like number of class rooms in the San Diego schools.

Many Nations Buy U. S. Plane Motors Foreign Orders Aid Plants to Gear Up

While "gearing up" for unprecedented production for national defense, manufacturers of airplane engines in the United States were able to ship \$5.065.151 worth of their products to many parts of the world during September, the Aeronautical Chamber of Commerce of America reports. Principal buyer of American air-

craft motors during the month was Great Britain, which took 248 engines with a total value of \$3,355,-835. Among other countries making engine purchases were Canada, Australia, Mexico, Brazil, Chile, Ecuador, British Guiana, China, Netherlands Indies, Burma, Union of South Africa and Mozambique.

Release Nov. 22

EXPANDING FOR DEFENSE Aircraft Plants Rush **Big Expansion Program**

Work Being Speeded on Projects to Step Up **Production of National Defense**

Air Force for U. S.

Skeletons of steel rise magically against the sky, riveting machines chatter incessantly . . . riggers, steel and concrete workers, masons, carpenters swarm, day and night. over what a few weeks ago were barren fields. . . .

In full swing from the Atlantic to the Pacific is one of the greatest programs of industrial expansion in historythe answer of the American aircraft industry to the nation's cry for more and more airplanes for defense.

By 1942, when this program is completed, the leading airplane, motor and propeller manufacturers of the land will have a total working space of 33,370,822 square feet, an area big enough to hold 580 football fields! These same companies have already, in a matter of 13 months, increased their total working area from 9,123,143 square feet to 16,703,230 square feet.

Such were the findings of a November survey by the Aviation News Committee of the Aeronautical Chamber of Commerce of America. So rapidly is the dynamic picture of aircraft plant expansion changing that a complete survey in December by Colonel J. H. Jouett, president of the Aeronautical Chamber, will be made to keep the nation abreast

The Aviation News Committee's survey showed the following activity:

WEST COAST

LOS ANGELES, Nov. 00.-An area equivalent to 82 city blocks devoted to the building of aircraft for American defense!

This is the goal six leading Pacific Coast aircraft factories will achieve when they complete present expansion schedules in their drive to reach peak production.

When the European war broke in September, 1939, total working space for the six companies was 4,188,143 square feet. Today that total has climbed to 7,909,230 square When the expansion programs are completed, the total working space of the six plants will be 15,888,110 square feet.

FROM BORDER TO BORDER

From Seattle, Wash., home nest of the famed Boeing Flying Fortress bombers, to San Diego, where Consolidated Aircraft is building a fleet of long-range land bombers and patrol bomber flying boats for the Army and the Navy, the work of expansion is in full swing.

Los Angeles has the greatest concentration of aircraft factories of any single area in the nation and here expansion activities have reached a peak.

HUGE NEW PLANT

Douglas Aircraft Company, busy with the largest military airplane order ever awarded one company is expanding existing facilities and soon will build a vast new factory at nearby Long Beach. Lockheed Aircraft Corporation is erecting new units for greater production of the famed P-38 pursuit interceptors and Hudson bombers.

Vultee Aircraft, Inc., in addition to enlarging its California plant, has taken over Stinson Aircraft and plans big expansions at Nashville, Tenn., and Wayne, Mich. And North American Aviation, Inc. which has been adding constantly to its California plant, is now at work on a huge new windowless, air-conditioned factory near Dallas. Tex.

THE EAST

NEW YORK, Nov. 00.-More space in which to build more airplanes, engines and propellersthis was a vital problem confront-

ing the aircraft industry when it was called upon to create a powerful air force for national defense. How the problem is being met manufacturers in the East and

Mid-West is told graphically in the following figures:
MAJOR COMPANIES Among the major airplane manufacturers in the eastern area are

Glenn L. Martin, Bell Aircraft, Republic Aviation, Grumman Aircraft, Fairchild Aircraft, Vought-Sikorsky division of United Aircraft, Curtiss Aeroplane division of Curtiss-Wright Corporation and the Curtiss-Wright Corporation's St. Louis Airplane division.

These companies have planned or actually have under construction expansion projects calling for creation of 4,917,712 square feet of additional working space. In the period between Sept. 1, 1939, and Nov. 15, 1940, they increased their floor space from 2,535,000 square feet to 3,597,000 square feet. When their expansion programs are completed they will have a grand total of 8,514,712 square feet of working

ENGINE EXPANSION

The story is the same among the engine manufacturers. For the five leading companies—Pratt & Whitney, Wright Aeronautical, Jacobs, Lycoming and Allison-the

Floor space, Sept. 1, 1939, 2,030, 000 square feet; Nov. 15, 1940. 4,677,000 square feet; planned or under construction, 3,211,000 square feet; grand total, 7,888,000 square feet. And for the major propeller

manufacturers — Hamilton Standard and Curtiss:

Sept. 1, 1939, 370,000 square feet; Nov. 15, 1940, 530,000 square feet; planned or under construction 550,000 square feet; grand total, 1,080,000 square feet.

QUOTE **END QUOTE**

"It is cheering to defense leaders to realize the nation's air defense is being carried out for the most part by the expansion of longestablished factories."-William S. Knudsen, commissioner in charge of production, National Defense Commission.

"The development of America's aviation business in the post-war period is likely to be phenomenal because of the rapidly expanding facilities which will permit cheaper production."-Robert E. Gross. president, Lockheed Aircraft Cor-

"The aircraft manufacturers are doing a swell job. The biggest majority of them have been moving heaven and earth to get this defense program going and I think they have done a perfectly grand job. They deserve a lot of credit." -Secretary of Treasury Henry

IT PAYS TO FLY!

With the posting of signs in all purchasing departments offices reading: "Fo All Salesmen: Why Don't You Fly Here?" officials of the Piper Aircraft Corporation at Lock Haven, Pa., have decreed "unrestricted warfare" on all itinerant salesmen who don't fly there to make their calls of solicitation.

"There is no one group of professional men who could take better advantaage of flying than the traveling salesman," says W. T. Piper, head of the corporation,

Engineers Hear of Aircraft Expansion Ready to Meet Schedules, Says S.A.E. Chief

LOS ANGELES, Nov. 00 .- The aircraft industry has expanded "far beyond anything the Government has asked us to do and will be capable of meeting the scheoules laid down by the Government, Arthur Nutt, president of the Society of Automotive Engineers, told that organization's national aircraft production meeting in Los Angeles recently. Mr. Nutt pointed out that the

power of American airplane engines is ahead of that of the rest of the world. In the past 10 years. he stated, power has been doubled and trebled, although engines themselves have remained the same

Sperry Orders Used to **'Educate' Small Firms**

NEW YORK, Nov. 00.-This is the story of how a famous company's executives foresaw, three years ago, the tremendous industrial expansion made necessary by national defense.

The organization is the Sperry Gyroscope Company, makers of aeronautical devices, sound locators, searchlights, anti-aircraft directors and such marine products as gyro compasses and automatic steering apparatus.

To prepare for an expansion that has permitted a 500 per cent production increase. Sperry three years ago instituted a program of educational orders" to subcontractors, giving smaller organizations a trial in manufacturing parts needed by the company. So successful was the program that today 35 companies, scattered throughout the country, are at work on Sperry

Up 7 Miles-Right on the Ground

Strato-chamber Example of Plane Builders'

Research Work SEATTLE, Nov. 00.—Higher and higher go the aircraft of war-and of peace.

Modern pursuit ships must be able to climb swiftly to 30,000 feet or higher to intercept enemy bombers and their fighter escorts. Airliners of 1940 can operate at 15,000 to 20,000 feet without discomfort to passengers.

Men on the ground—researchers and engineers—have made this

Here, in the factory of the Boeing Aircraft Company, is found an example of the manner in which the nation's aircraft industry has engaged in research to keep America abreast of aeronautical development and prepare for future technological advances.

Boeing engineers have perfected the "strato-chamber," which permits them to duplicate in their laboratories the atmospheric conditions encountered as high as seven miles in the air. Similar experiments have been made by other companies in the United States.

The experimental and development work made possible by this laboratory apparatus is considered of highest importance, to both

This is the first of a series of articles, illustrating by example, the constant research that keeps the aviation industry ahead of prevailing need.

military and commercial aviation. The "strato-chamber" is a threeton steel tank 12 feet long and 51/2 feet in diameter. It is divided into two compartments and is fitted pressure tight doors. One compartment represents the airplane cabin, the other the outside

Through a series of control valves, superchargers, vacuum pumps and a refrigerating system, the compartments are charged with any desired type of atmosphere. Thus it is possible to test controls, pressure seals, windows, structural members and other devices under the same conditions they would encounter in high altitude flight.

In the commercial aviation field, practical supercharged operations have already been demonstrated by the Boeing Stratoliners, in the cabins of which air conditions equivalent to 8000 feet are maintained while the ship is at 15,000 feet, and equivalent to 12,000 feet while the ship is at 20,000 feet.

Engineers say the strato-chamber will permit a study of operating conditions at any level up to and beyond 40,000 feet and, with the addition of stronger pumps. might duplicate conditions up to

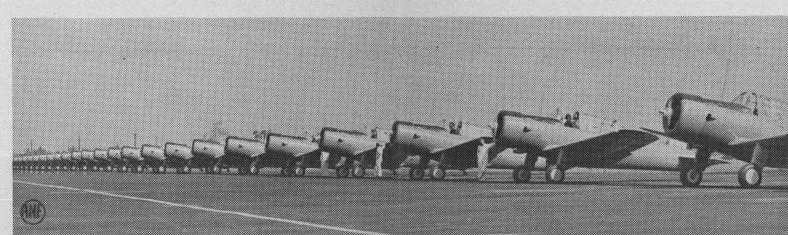
Study of High Altitude

in Laboratory

60,000 feet—more than 11 miles

MOTORS AND MEN Five thousand man hours go into the building of a 14-cylinder air-

months. The smaller plants are THE U. S. AIRCRAFT INDUSTRY TURNS 'EM OUT!



Symbolizing the aircraft industry's quantity production of airplanes for national defense was this record mass delivery of basic trainers to the U.S. Army Air Corps by Vultee Aircraft, Inc., at Downey, Calif. Army pilots flew the 33 ships to the new pilot training center at Moffett Field, near San Francisco.

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