



planes

Vol. 7 No. 2, March, 1951

OFFICIAL PUBLICATION OF THE AIRCRAFT INDUSTRIES ASSOCIATION OF AMERICA

BROADER AIRCRAFT INDUSTRY BASE URGED

Planes Materials, Parts Delivery Is Serious Problem

Deliveries on many raw materials, parts and components for aircraft are now stretching well into the future, as a result of the semi-mobilization program, and have created one of the most serious problems in production planning ever faced by the aircraft industry.

At the same time costs of some parts and materials have zoomed as much as 50% since Korea, fed by a round of price increases in December running from 5% to 15% as a result of the hike in the base price of steel and actions taken by the Economic Stabilization Agency towards controls, according to delivery and price trends compiled by the Industry Planning Service of the Aircraft Industries Association.

Schedules Affected

The extended delivery dates on materials are now threatening a breakdown of the aircraft delivery schedules planned to meet the sharply increased goals of the military services.

Normally the aircraft industry relies upon warehouses to supply most of the many raw materials needed. But such basic items as aluminum, magnesium, steel and copper have reached such a low point in warehouses as a result of depletion between the start of fighting in Korea and the initiation of a priorities system in October it is impossible for them to replenish inventories under present procedures.

Some Deliveries 'Indefinite'

"Some means will have to be found to give these warehouses priority assistance in order that they may continue to perform their normal and vital function in the distributing system," the AIA's Industry Planning System warns.

Steel mills are now taking orders for delivery with no guarantee of any particular month. The three major aluminum producers by mid-December had closed their schedules on DO rated orders through April.

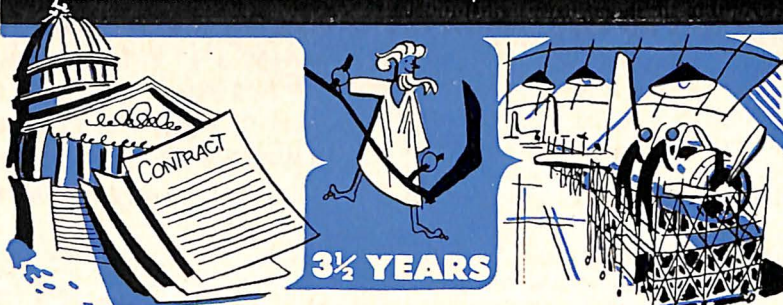
No solution is yet in sight for critical shortages in many special components. For instance, radio tubes for both aircraft and missiles now require at the very least 26 weeks delivery, but most are promised "indefinitely" even on rated orders. Practically all electrical items are rapidly coming into the same category, and the industry believes that a comprehensive

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Time-Lag Lessons from World War II in Mobilization for Aircraft Expansion

"Air Industrial Preparedness", a truly foresighted booklet, was issued in May 1947 by the Air Materiel Command. It said in part:

"In planning any future industrial mobilization for production of air weapons, certain fundamental facts of World War II experience stand out: . . ."



A "The average time lag from Government go-ahead on a plane model until the contractor reached volume production was 3 1/2 years."



B "The average time lag from initiating construction on a new aircraft plant until the first airplane was rolled out the door was 1 1/2 years."



C "The automobile industry made an invaluable contribution, manufacturing about 10% of our planes, supplying half of the total engines . . . but around three years were required for this mass production."

"The specialized aircraft industry produced half of the aircraft engines, and accounted for 90% of the airframes assembled (using their own fabrications as well as sub-assemblies produced by outside sources)"
"Planes" Source: Air Materiel Command

Headaches of Air Power Expansion Softened by Association's Activity

The expansion of aircraft production called for under the defense program has brought about a sharp increase in the number of industry-wide problems that must be coordinated and administered by the aircraft industry's national trade association—The Aircraft Industries Association of America.

The AIA organized new committees to deal with the problems of

materials, priorities and allocations; another on improved manufacturing methods; and still another to participate in the research and development programs to be carried on in the Air Force's Arnold Engineering Development Center.

In addition, the established committees of the Association which regularly cooperate with the

—See EXPANSION page 3—

Management And Adequate Skills Are Top Factors

Written especially for PLANES

By Rep. Carl Hinshaw

Republican, Calif. Member Interstate and Foreign Commerce Committee

In coping with the preparedness problems facing us today, air power is of paramount importance. The way in which we go about building up our air power and assuring an adequate potential for the unpredictable needs of the future is therefore a vital consideration for the military planners, the industry, and the Congress.



Hinshaw

We have had sufficient experience to meet this problem in an orderly and realistic manner—and the first requisite, as I see it, is to broaden the base of the basic, experienced aircraft industry.

This was clearly recognized by the Congressional Air Policy Board of the 80th Congress and their recommendations were intended to be implemented by appropriations made by the Congress for the construction of aircraft. As is well known, the president directed the impounding of the additional funds appropriated in 1948 and 1949.

Fortunately, we still have the management skills and know-how which built aircraft production during World War II into the biggest single industry the world has ever known.

Assuring Future Capacity

We are fortunate, also, in our mass production industries which can ably supplement the aircraft industry as the need arises. In the last war, automobile firms produced about 10% of our planes and half of the total engines, and again will have a substantial part if complete mobilization comes.

Because no one, except possibly the men in the Kremlin, can tell us whether we may find ourselves in actual war this spring, next fall, next year—or never—our present mobilization is aimed largely at the expansion of production capacity. We need to produce at an accelerated rate our best planes in sufficient quantity for defense and adequate striking power while making sure we have

—See HINSHAW page 4—

PLANES

Planes is published by the Aircraft Industries Association of America, Inc., the national trade association of the manufacturers of military, transport, and personal aircraft, helicopters, flying missiles and their accessories, instruments and components.

The purpose of *Planes* is to:

Foster a better public understanding of Air Power and the requirements essential to preservation of American leadership in the air;
Illustrate and explain the special problems of the aircraft industry and its vital role in our national security.

Publication Office: 610 Shoreham Building, Washington 5, D. C.

New York Office: 350 Fifth Avenue, New York 1, New York.

Los Angeles Office: 7660 Beverly Boulevard, Los Angeles 36, California.

ALL MATERIAL MAY BE REPRODUCED—MATS OF ALL CHARTS ARE AVAILABLE

Aircraft Goals and the NPA

By DeWitt C. Ramsey (Admiral, U.S.N., Ret.)
President, Aircraft Industries Association

Information to the effect that organizational changes in the National Production Authority will elevate its aircraft section to divisional status is welcomed by the aircraft manufacturing industry as a step in the right direction.

This is an improvement, to be sure. Aircraft material matters have been handled heretofore under the Transportation Equipment Division of NPA. Now, they move up an echelon. The industry is happy to go along with this change and hopes it will aid in the solution of many of our pressing problems.

But we are still far from the high-priority level which the Aircraft Production Board gave us during World War II, when bottlenecks were broken almost as fast as they developed. Because the production of aircraft for America and her allies was considered of major importance, the Aircraft Production Board was placed directly under the War Production Board. In fact, its chairman was Charles E. Wilson, the present Director of Defense Mobilization, who then was also executive vice-chairman of the War Production Board.

Without the magnificent work of the Aircraft Production Board, the industry could never have achieved the rate and excellence of production which did so much toward hastening the end of the war. Every phase of aircraft planning, scheduling, procurement, manpower and production was kept under constant control through the several divisions of the Board. Priority ratings for facilities and materials were handled wisely and promptly.

One after another, the problems which successively threatened production of aircraft were attacked with the full powers of the Board. Through its executive agency, the Aircraft Resources Control Office, under Mr. T. P. Wright, the Board, coordinating with the Armed Services, scheduled and published all aircraft and engine programs. It dealt with components, materials, tools and priorities. It coordinated conservation and standardization of materials.

During the early days of the war, machine tools became the critical item in aircraft production. Later, they combined with plant facilities to plague the industry. Then, early in 1943, materials became the chief worry; but before the year was out, and largely through the efforts of the Board, this problem was solved and gave way to the manpower bottleneck. Again, through cooperation with the services, most aircraft manufacturing was brought into reasonable balance.

One of the most important functions of the Aircraft Production Board was sound scheduling. Working closely with industry, the Air Force and the Navy, it so allocated materials that the precise requirements of all critical and badly-needed aircraft types were filled promptly and the waste of over-allotment was avoided.

Effective utilization of plant personnel through APB programming contributed largely to manufacturing efficiency. This system measured labor utilization in terms of pounds of output per day per employee, and the index of the industry was raised to such an extent that the equivalent of hundreds of thousands of persons was saved in 1943-44.

Today, the aircraft industry again is charged with the responsibility of building rapidly the aircraft needed to assure the country adequate air defenses and adequate striking power, as well as with developing a production potential which can be quickly utilized to build the most powerful air force in the world. Current schedules allow little time to achieve our objectives.

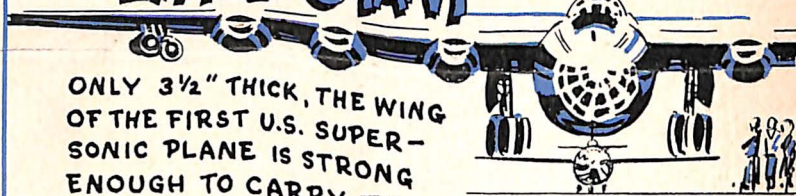
The industry hopes this latest organizational change in NPA will expedite its production and materially alleviate our critical materials situation. It is true that the country has committed itself only to partial

PLANE VIEWS



WERE CARRIED SAFELY ONE MILE IN AN AIRPLANE, IT WOULD BARELY BE EQUIVALENT TO THE RECORD OF MILITARY AIR TRANSPORT SERVICE AND ALLIED SERVICES SUCH AS AIR RESCUE. (UP TO THE END OF 1950 THEY HAD FLOWN 2,000,000,000 PASSENGER MILES WITHOUT A FATALITY.)

LITTLE GIANT



ONLY 3 1/2" THICK, THE WING OF THE FIRST U.S. SUPER-SONIC PLANE IS STRONG ENOUGH TO CARRY THE WEIGHT OF THE BIGGEST U.S. INTERCONTINENTAL BOMBER.

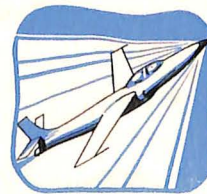


BY AIRCRAFT INDUSTRIES ASSOCIATION OF AMERICA

PLANES QUIZ

Seventy per cent score on this quiz is excellent. Sixty per cent is good. Answers on Page three.

- Today's military plane types weigh more than twice as much on the average as their World War II counterparts. True? False?
- A Russian aircraft worker would have to work (a) five, (b) ten, (c) 15 times longer than an American aircraft worker to buy the following groceries at today's prices: 2 pounds beefsteak, loaf of bread, 5 pounds sugar, 2 quarts milk, pound of butter, 2 dozen eggs, 5 pounds flour, 3 pork chops and 5 pounds of potatoes?
- U. S. civilian pilots in the teen ages now total (a) 3%, (b) 5%, (c) 10% of all civilian pilots?
- How far can a person see from an airplane flying at heights of 10,000 feet and 20,000 feet?
- Federal taxes paid by airlines sometimes exceed the amount of mail pay received from the government. True? False?
- What famous airplane is called "Glamorous Glennis"?
- The first airplane landing on a ship deck was made (a) 15 years ago; (b) 25 years ago; (c) 40 years ago?
- "Hands off" flying with automatic pilots is now possible in helicopters. True? False?
- What is the origin of the term "Mach number" as a measure of the speed of flight?
- Military airplanes may actually cost less this year than last year. Why?



mobilization as yet, but the conviction remains that, if we are to do the kind of job we must do in the time expected, we shall need the help and power and coordinating functions of an Aircraft Production Board organized on the highest practicable level within the Office of Defense Mobilization. After all, the critical phase of our remobilization, in or out of a shooting war, is now, when both air strength and future potential are being built.

EXPANSION

(Continued from page 1)

armed services in transmitting industry views and recommendations on such matters as procurement specifications, standardization of parts used in military planes, procurement regulations, renegotiation regulations, spare parts procedures, and other procedures affecting military contracting have all had their work load increased substantially.

In turn, this has meant a substantial increase in activity on the part of Association personnel who staff and administer the work of the various committees.

One measure of the increase in Association activities is that of the number of bulletins transmitting and explaining or interpreting regulations prepared and sent out by the Association to its members. For the last six months of 1950, the total number of bulletins rose by 33 per cent compared to the number issued in the same period of the preceding year.

Most of the increase in bulletins issued occurred in the Industry Planning Service and the Technical Service, the AIA agencies most concerned with military contracting regulations and procedures, and exchange of industry-wide technical information.

The Industry Planning Service acts as liaison on matters of industry - government cooperation and regulation, procurement policy and legislation, and mobilization planning. In the first six months of Korean hostilities, the Industry Planning Service prepared and distributed 338 bulletins and memoranda—at the rate of nearly three per day—to help the aircraft industry shift into higher production on short notice despite the terrific hurdles.

Many Technical Bulletins

In addition, committees staffed by this Service were concerned with developing recommendations with regard to selective service, recall of reservists, new policy with regard to spare parts, wage stabilization and other industrial relations problems, patents and product insurance, and other similar matters closely related to military contracting. This Service also developed industry recommendations and policies to be followed under wage stabilization.

During the first six months of Korean war, AIA's Technical Service issued 520 technical bulletins and memoranda—an increase of 100 above the normal rate for a similar "peacetime" period.

Increased accent has been given the handling of materials in the emergency and extending to the whole industry experience gained in extensive previous projects for improvement of production methods and fabricating techniques.

Major committees in the Technical Services are: Aircraft, Airworthiness Requirements, National Aircraft Standards, Research and Testing, Engine, and Propeller Committees.

Facts and Figures

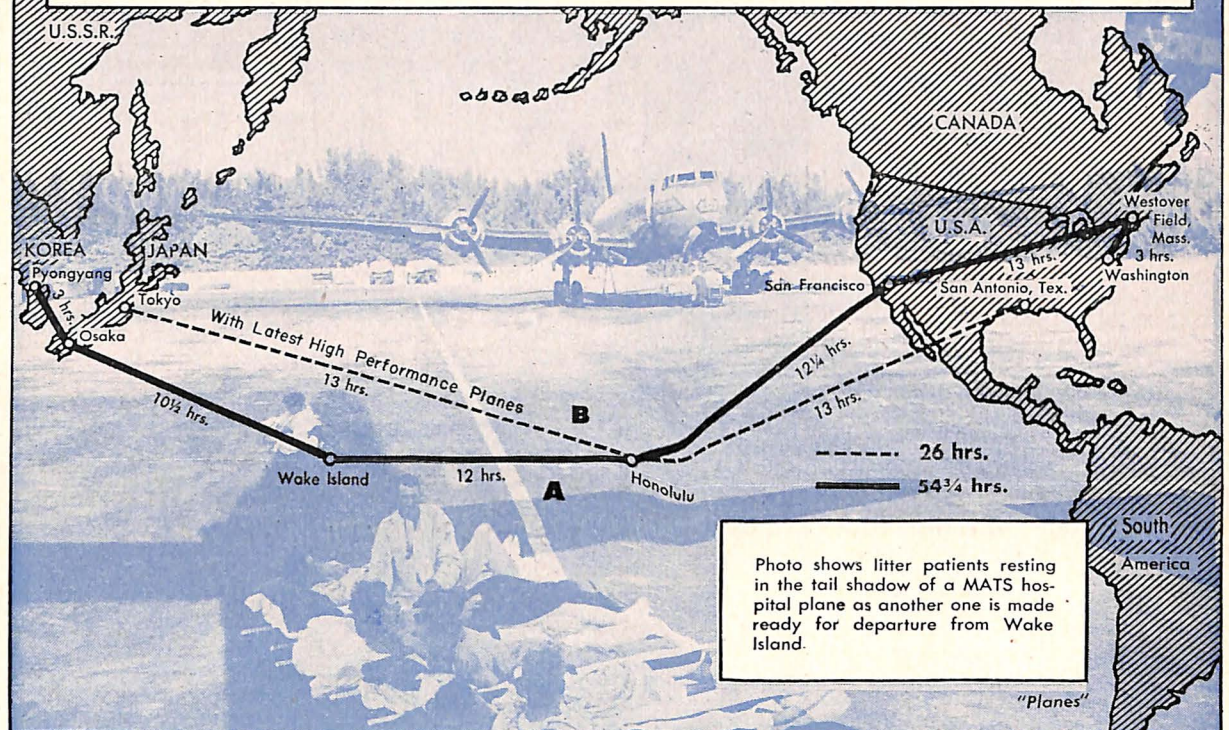
California farmers are the largest users of aerial crop dusters in the U. S. More than 4,000,000 acres were treated in that state in 1950.

Post Office Department reports that helicopter mail delivery to the Chicago suburbs expedites first morning delivery six to 24 hours on approximately 90% of the mail carried.

Air Evacuation Speeds War Casualties to "Home" Care!

A The route below shows how an "average" war casualty was flown from the Korean battlefield to Walter Reed Hospital in Washington, D. C., in less than 55 hours.

B Dotted line shows "streamlined" route over which doubled-decked MATS hospital ships can now fly patients from Tokyo to Kelly AFB, Texas, in 26 hours with only one stop.



Newest Long Range Flying Hospitals Develop Global Life Saving Service

Long range flying hospitals have become one of the greatest vehicles for life saving in the tragic history of wars and military evacuations.

Here is the capsule story of what they did for one man, and it can be multiplied by many thousands:

On a bitter November day as a battalion of the First Cavalry Division slogged forward in Korea, a Red anti-tank shell crashed through a jeep. Seconds later, 1st Lt. Robert L. Engelen, 27, of Gary, Ind., lay in a roadside ditch, one foot shattered into pulp. Medical corpsmen got him back to an evacuation hospital at Pyongyang and in a few hours he was lifted into a transport plane which sped him and other wounded to Osaka, Japan. There preliminary hospitalization included amputation of the shattered foot, and Lieut. Engelen was introduced to the marvel of large scale air evacuation as developed by the Military Air Transport Service.

On the morning of Dec. 2 a four-engined MATS hospital ship took off from an Osaka runway with Lt. Engelen and 31 other litter patients aboard, tended by a nurse and two corpsmen. Three days later he was in a comfortable bed, with the maximum of medical care, in the Army's Walter Reed Hospital in Washington, D. C. The stages of the air journey were: Osaka to Wake Island, 10 1/2 hours; Wake to Honolulu, 12 hours; Honolulu to Travis AFB, California, 12 1/4 hours; Travis to Westover AFB, Mass, 13 hours; Westover to Washington, 3 hours.

Flight Time Reduced

Since then, with our most modern double-decked four-engined planes MATS has streamlined its magnificent life-saving operation,

making many of its flights one-stop trips to hospitalization "back home." These big planes make the flight from Tokyo, Japan, to Honolulu in 13 hours, and thence to Kelly AFB, San Antonio, Tex., in another 13 hours.

Not only the fastest, it has proved the most comfortable, most efficient and most medically desirable method of transportation. It saves money and time and provides an incalculable lift for the morale of the wounded and sick and their families.

3,192 Moved in 6 Hours

During the U.N. withdrawals in North Korea, the Fifth Air Force and the Troop Carrier Command flew 14,182 patients from Korea to Japan in one eight-day period, 3,192 of them in six hours.

MATS hospital ships returning to Japan from the U. S. make it a two-way pay route by carrying such high priority cargo as blood plasma, rockets, medical supplies, .30 calibre ammunition, tank parts, aircraft parts, machine gun mounts, radio batteries and machine parts—sometimes up to 100 tons a day.

Following is the statistical story of patients flown by MATS from the Pacific during the first six months of the Korean war:

Month	Korean Casualties	Other Patients	Pacific Total
July	80	455	535
Aug.	935	443	1,378
Sept.	2,690	554	3,244
Oct.	1,889	749	2,638
Nov.	1,376	416	1,792
Dec.	5,492	870	6,352
Total	12,462	3,487	15,939

Answers to Planes Quiz

- True. Besides weighing twice as much on the average, they are infinitely more complex and take four times as many man hours to build.
- (c) 15 times. The average California aircraft worker would have to work 4 hours and 42 minutes, the average Russian 57 hours and 29 minutes. Other comparisons: In Canada, 6 hrs. 2 min.; England, 6 hrs. 58 min.; Sweden, 7 hrs. 48 min.; France, 18 hrs. 36 min.; Italy, 23 hrs. 36 min.
- (a) 3%. Thus we have fewer teen age pilots now than at the start of World War II when the U. S. pilot total had been doubled annually by the CPTP program.
- Tests indicate that at 10,000 feet the range of vision is approximately 123 miles, and at 20,000 feet, 173 miles.
- True. During 1950 one transcontinental airline received \$6,077,000 mail pay, and paid \$11,400,000 in federal income and excess profits taxes.
- The X-1, first U.S. rocket-powered supersonic plane; now in the Smithsonian Institution.
- (c). On Jan. 18, 1911, Navy pilot Eugene Ely landed a Curtiss by-plane on a platform on a Navy ship in San Francisco bay and later took off successfully.
- True. The Navy announced recently that one of its major helicopter types had successfully met all needs for automatic flying at all altitudes.
- The Mach number is the ratio of the speed of flight to the speed of sound (thus Mach 1 is flight at the speed of sound). The ratio was first established by photographing cannon balls, in the 1880's by Prof. Ernst Mach, German physicist.
- It is estimated average flyaway cost of an Air Force plane in fiscal year 1951 will be less than in 1950 because of cost savings due to quantity production, and despite steep increases in prices of materials and components.

HINSHAW

(Continued from page 1)

the facilities necessary for expansion and all-out production that a global war would require.

This is in line with the three-goal program announced by Charles E. Wilson, Director of Defense Mobilization: "First — to preserve peace by rapidly building up our defense forces . . . to such a height that Russia will refrain from attack; Second—to expand our capacity for producing military supplies . . . ; Third—to maintain and expand our basic economic strength . . ."

In broadening the base of the aircraft industry to assure rapid expansibility, many important factors must be given special consideration. Among these are the time element, the ever-present obsolescence factor, the high degree of skills required, and the necessity for continuous research and development.

Airframe builders are dependent upon thousands of subcontractors and suppliers, which must be carefully selected because they could develop into critical bottlenecks in an intense production effort. Although relatively large orders have been placed and aircraft production now has been stepped up radically from peacetime rates, output is still only a small fraction of the World War II peak. That is the reason, little understood by the public, why large numbers of sub-contracts have not yet been placed.

New Skills Needed

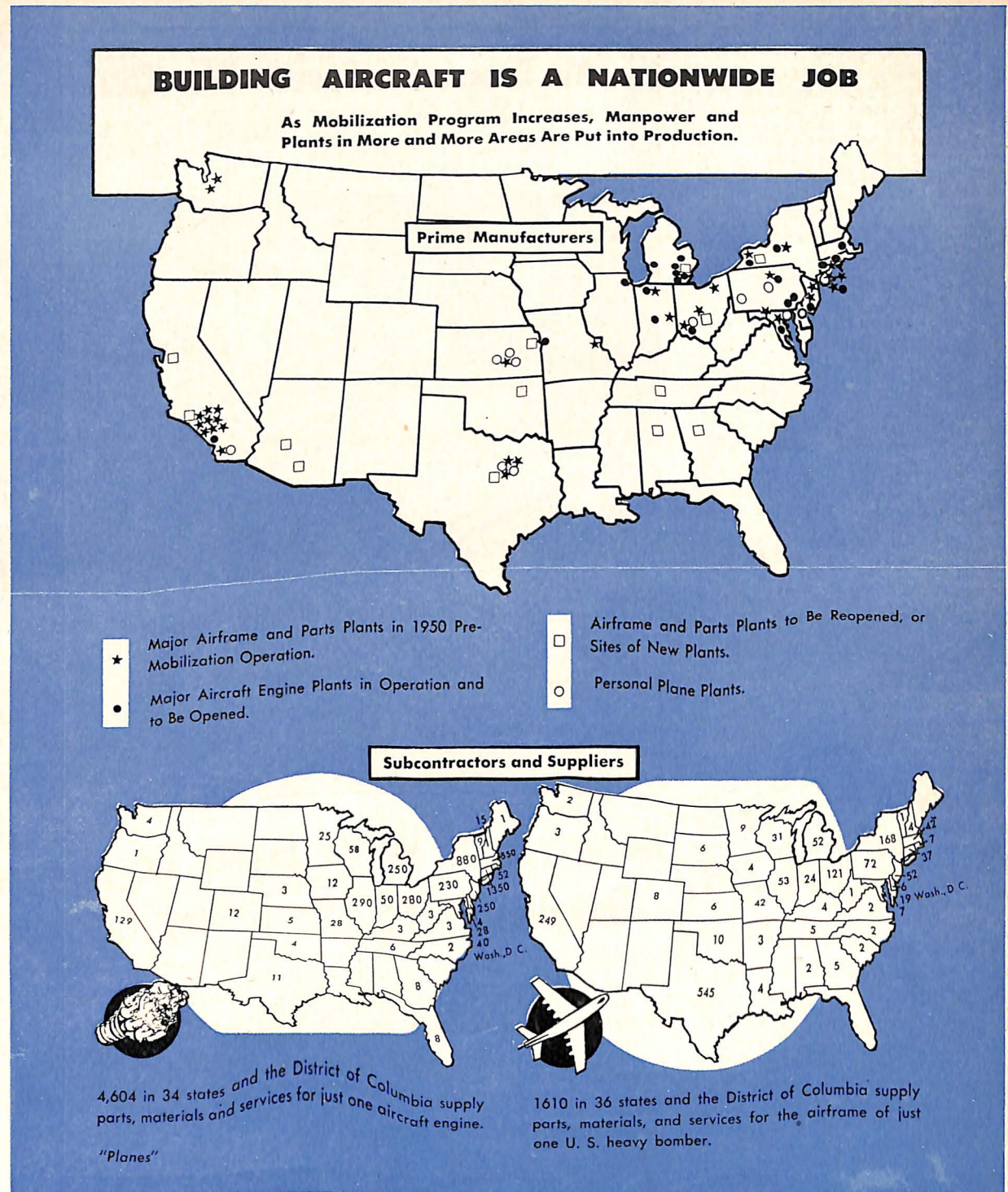
I must emphasize that modern fighters and bombers cannot be rolled off production lines like standard automobiles, for instance, or refrigerators or pots and pans. Today's modern fighter plane—the only kind with which we could successfully face such a power as Russia—weighs on the average twice as much as its World War II counterpart, and it contains two times as much sensitive and complicated electronic equipment. Its engineering and manufacture require a higher degree of skills, higher even than required in the last war, and far higher than required in our justly-famous mass production industries.

Up to now, the airframe industry has necessarily maintained a minimum of experienced manufacturing personnel. However, these forces now are being expanded, and must be expanded further as the program progresses. But we must realize that the quality of skills used in the last war are inadequate now for the manufacture of high speed, high performance planes. Just being good at bucking rivets isn't enough, and training women and other unskilled workers for most aircraft jobs will not be easy. Higher skills are required, too, in the plants of subcontractors.

The Obsolescence Factor

Production and management talent obviously is limited. Therefore, in broadening the base, great care should be taken to see that this experience is not unduly diluted.

The lessons learned in World War II should not be forgotten. The Air Materiel Command of the Air Force reminds us that the average time lag from go-ahead on a plane model until the contractor reached volume production was three and a half years. Also, it reminds us that the specialized aircraft industry produced half of the aircraft engines, and accounted



for 90 per cent of the airframes assembled, using their own fabrications as well as sub-assemblies produced by outside sources.

Given the necessary materials, tooling, and manpower (and we must not lose sight of these needs under whatever Government controls continue to evolve), the basic aircraft industry can make a reasonably accurate forecast of its future production rates.

Anyone who has kept even partially informed of the tremendous technological advances in aeronautics during the past few years knows that an airplane can become obsolescent almost as quickly as yesterday's newspaper. A second best airplane is like a second best poker hand; it seldom wins, and can be very expensive. That is why we must keep our basic aircraft industry in a position to continue its research and development unremittably. That is also why we should be reluctant to build vast numbers of airplanes, short of certainty of a shooting war. We must have an adequate number of our current best, and we must be ready with tools, jigs, dies and fixtures to build more and better ones in ever increasing quantities if the need arises.

'Aircraft Year Book' Shows Aviation Gains

Climax of a three-decade campaign "for adequate peace-time air defenses" is featured in the 1950 Aircraft Year Book, official annual of the Aircraft Industries Association.

The 1950 edition of the Year Book, America's standard aviation volume for over three decades, contains a complete review of the events and developments in military and civil aviation, a directory of aircraft statistics, a complete aviation chronology for 1950 and years past, an encyclopedia of little-known facts and historical sidelights. In addition there are chapters on aircraft in production during the year, brief biographies of over 1,000 personalities, outstanding technical developments in the design, manufacturing and research fields, complete official aviation records.

It contains 480 pages. Copies may be obtained for \$6.00 through the Lincoln Press, Inc., publishers, Warner Bldg., 13th & E Sts., N. W., Washington 4, D. C.

MATERIALS

(Continued from page 1)

hensive allocation system will be required at an early date.

Materials for ordinary necessary maintenance, repair and operation are another serious concern, compounded by lack of adequate priority assistance. Laboratory and test equipment, essential to the production of many aeronautical items, likewise need priority assistance.

Serious delays in getting the expanded production program under way have been caused by extreme time lags in the processing of DO ratings for production equipment such as major machine tools, dies and jigs.

Facts and Figures

Purdue University's wholly-owned affiliate, Purdue Aeronautics Corp., owns 20 airplanes, four of them multi-engined, all purchased from corporation earnings. It also owns a large airport. All flight operations at the University have been self-supporting for the past eight years, according to Grove Webster, director.