

EMPLOYMENT. Eastern aircraft builders are hiring three times as many new workers weekly as last year. (See Cols. 5, 6, 7 and 8.)

PRODUCTION. Rapidly stepped up airplane production, already more than 1,000 a month, will hit 1,500 monthly by midsummer. (See Col. 3.)

ENGINEERING. By Guerin Process aluminum parts are pressed out in quantity production. Hard rubber, compressed to the strength of steel, amazingly cuts the aluminum. (See Cols. 4, 5 and 6.)

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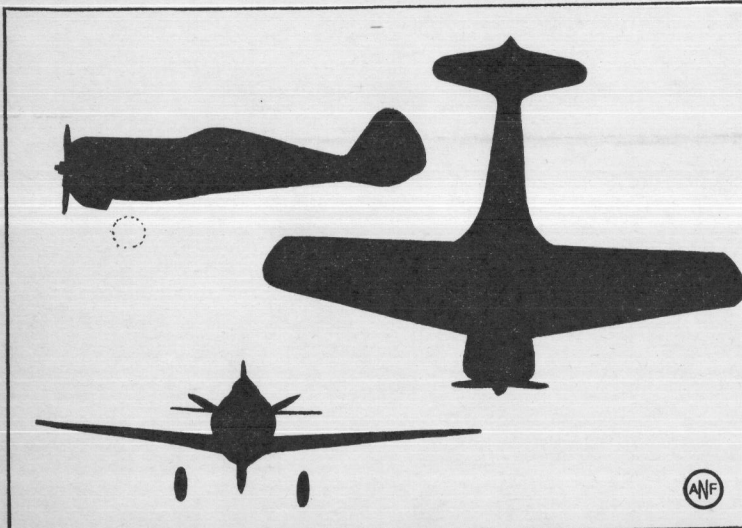
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RELEASE MARCH 1

Know America's Planes

CURTISS-WRIGHT 21B



It can climb a mile, almost straight up, in 60 seconds—can the Curtiss Wright 21B interceptor, three silhouette views of which appear above. Small yet formidable, the 21B symbolizes the amazing range of military aircraft now being produced in the United States—from light trainers to the world's biggest bombers. Note in these sketches the "teardrop" design—rounded nose and sharp slope toward the tail structure—and the "overhang" on the lower side of the engine cowling, which are characteristic of the 21B, a ship designed primarily to intercept invading bombers quickly.

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Aircraft Inspections Constant as Plane Is Being Manufactured
Scrutiny Continues Until Completed Plane Is Ready for Delivery to Purchaser

Inspection, an important factor in the superiority of American airplanes, is the subject of this article, the second of two on this important phase of aircraft production.

Inspection, one of the most important phases of aircraft manufacture, starts with the arrival of raw materials at the factory and continues until the finished airplane rolls out the hangar doors for final pre-test flight examination.

The earlier stages of inspection, described in the first article of this series, include careful testing of all raw materials and parts, checking of accessories and pieces of equipment, and supervision of fabrication.

INSPECTION CONTINUOUS
The later—and equally important—phases of inspection start when the first frame is hung in the fuselage jig and continues as the ship passes down the line to have parts and assemblies installed.

Inspection ends only when the completed craft is ready for delivery to its purchaser.

Subassembly inspectors are on duty at all times to watch parts as they are being assembled. Rivets, nuts, bolts and clamps must be as specified on the blue print and they must be fitted together properly. The tools used by the workmen are passed on by the inspector, as is the quality of workmanship.

MORE PARTS TESTING
Tanks, motor mounts, landing gears, nacelles, wings, tail and control surfaces, hydraulics, instruments, cable and electrical installations, and motors—all of which have already been carefully checked—are given additional inspection during final assembly.

Once the ship is completed, shop practice in many plants permits it to stand on the assembly line for a day or two. Groups of engineers, inspectors and other experts climb over and through it, hunting for any little defects which may have

slipped past the departmental inspectors.
If something, no matter how trivial, seems to require attention, the finder makes a note on a large card which hangs from the nose of the plane. Almost before he has finished his scrawl, that something is receiving careful attention.
Inspectors are chosen for their ability to perform specific checks. Most of them come from the

bench where they developed a pride in their workmanship. Many final assembly and flight inspectors have seen actual flying service with the Federal government, with commercial airlines and in private operations. All of them are fitted for their particular assignment and are permitted to operate in that assignment only.

All these thousands of operations are absolutely necessary, for aeronautical engineers point out that failure of the smallest part of a high-speed airplane may lead to disaster.

Aviation News Features



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

Aircraft Makers Can Meet Needs of Defense Plan

Output of 1,500 Units Will Be Reached by Midsummer

WASHINGTON, March 00.—(ANF)—New assurances that the American aircraft industry is increasing production rapidly enough to meet the defense needs of the United States and Britain have been given by Col. John H. Jouett, president of the Aeronautical Chamber of Commerce of America. Outlining the progress made in accelerating production during the last three months, Col. Jouett said that American aircraft manufacturers will be turning out 1,500 military airplanes a month by next summer. All leading combat types being delivered now, Col. Jouett said, are equipped with armor, leak-proof fuel tanks and fire power unsurpassed by planes operating in the European war theater.

37,000 MILITARY CRAFT
"The aircraft manufacturers have been given the biggest job ever handed an industry," Col. Jouett said. "This job is to build 37,000 military airplanes for the United States and Britain."
"Last fall a production goal of 1,000 military airplanes for January, 1941, was set by government officials. This figure was set despite the industry's sincere belief that the goal was far too optimistic considering available facilities. Last December a high government official estimated that the industry would fail to meet the January goal set for it by 30 per cent.
"But it gives me great satisfaction to announce that the aircraft industry has done the impossible asked of it. Plane production in November was around 700, in December 800, and in January, over 1,000."

PLANTS NEEDED
Col. Jouett declared that new procurement programs by the United States and British air services were in negotiation, in addition to the present 37,000 plane goal. These new programs probably will call for about 15,000 planes for the United States and about 12,000 planes for Britain. "Whatever the new programs are, our people are more productive floor space, more plants."

Col. Jouett predicted big things for aviation after the war. War, he pointed out, always accelerates scientific development tremendously, and all the improvements in aircraft produced by the current conflict will be harnessed to commercial usage when hostilities cease.

Waco Plant Builds 21 Trainers Weekly
Ohio Factory Speeds Production Schedule

TROY, O., March 00.—(ANF)—Waco Aircraft has applied its highly successful record of commercial aircraft production to supplying basic trainers at the rate of 21 weekly.

To do its part in meeting defense needs, Waco last year volunteered to devote 30 per cent of capacity to production of its training type PT-14 and since has built up output to three airplanes daily, seven days a week.

Last June the PT-14 was given government approval for use in the secondary civilian pilot training courses. Six weeks later the first complete trainer finished tests and was put into service. A production schedule of two daily units was started, since increased to three daily.

Expansion of output has been achieved without a government contract and aircraft are now being supplied to private schools operating under the civilian pilot training program.
The conversion of the facilities of those units formerly producing light commercial aircraft to speedy output of trainers has been an important cog in national defense. Many thousands of young men will be trained this year to man the fighting aircraft now being produced in volume by the larger aircraft plants.

Pratt-Whitney Marks 25,000th Engine Output

The 25,000th airplane engine to be manufactured by the Pratt & Whitney Aircraft Division of the United Aircraft Corp. has just rolled off the assembly line in the firm's plant at East Hartford, Conn. The engine, a 1,850-horsepower Double Wasp, is the latest type developed in the firm's 15-year history.

The engine to be used in the new Vought-Sikorsky XF4U-1 navy fighter, described as being one of the fastest airplanes now being produced in this country. Only recently a modified version of the Pratt & Whitney Double Wasp successfully passed Army tests for engines of 2,000 horsepower.

PROPELLER OUTPUT
Hollow steel propeller output at Curtiss-Wright's Pittsburgh plant will be increased tenfold. Present production rate is 1,000 per month.

PLANE FACTS: Aeronautical Firms Run U.S. Plants

The series of government-owned aircraft plants soon to be operated by individual companies generally have a floor space area of 1,000,000 square feet each and employ up to 15,000 men each. Completely air-conditioned, the units will have no windows. There will be fluorescent lighting systems throughout.

Production of Allison in-line liquid-cooled engines specified as equipment for fast pursuit and interceptor-pursuit models should reach 1,000 by the late fall, according to present schedules.

Aviation Industry Trains Thousands Aircraftmen Schooled for Defense Needs

Vocational training programs transforming thousands of young Americans into craftsmen operating in every important aeronautical plant in the country. . . . Hundreds, soon to be increased to thousands, now preparing for jobs in cities where new plants are being built.

This is the picture of the aviation industry's vast effort to train young men to add man-power for defense needs as reported by the Aviation News Committee of Aeronautical Chamber of Commerce.

TRAINING PLAN FOR TEXAS
An example of training men in sections distant from present plant facilities is found at North American Aviation, faced with the task of manning two plants which eventually will employ 25,000 men. In the Dallas, Tex., area, where a huge plant is under construction, a training program has been in effect for months. Plans for training courses to man a Kansas City, Mo., plant in cooperation with educational units have been completed. Within four months 800 will be in training.

North American more than three months ago sent the nucleus of a large training staff to Dallas. There followed quickly hundreds of applications for training. Today the training program in Texas is well under way. Carefully selected men are being taken on at the rate of 200 a month.

PLANT ROUTINE SET UP
Jigs or frames within which are constructed airplane sections and major assemblies were shipped to Dallas from the North American Inglewood, Calif., plant, simulating actual working conditions of an aircraft assembly unit.

Apprentice or pre-employment courses supply the greatest amount of new man-power in training. Such courses are given by high schools, public and privately operated trade schools, in many instances supervised by the personnel director of an aircraft company. Two other methods are: factory conducted apprentice and trade extension courses in nearby schools for further training of employees.

Lockheed Aircraft, employing 21,000, reports that 8,000 men, or more than one-third of its personnel, recently enrolled in 200 extension courses offered in cooperation with nearby public schools.

AIRCRAFTSMEN AROUND THE CLOCK

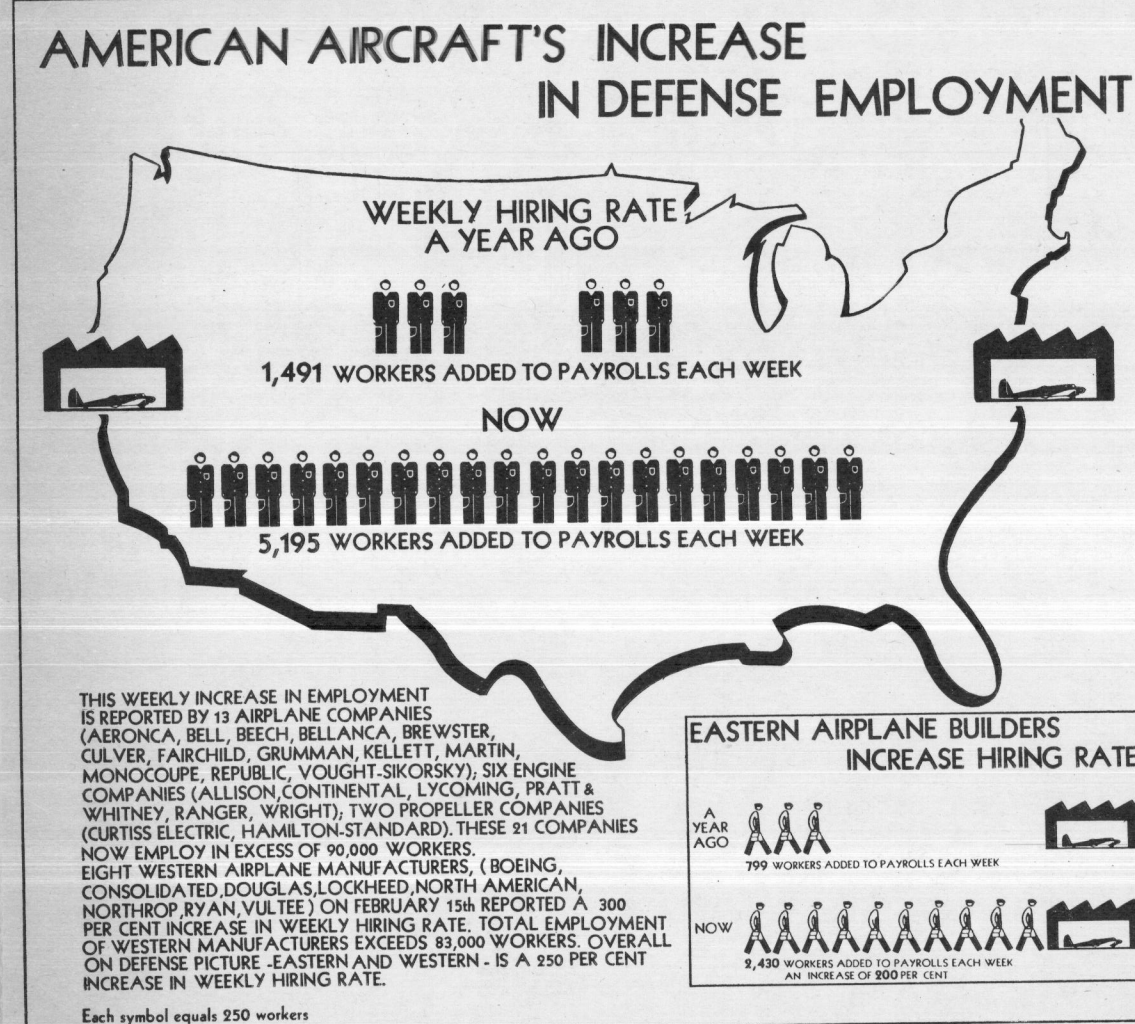
Guerin Process Speeds Plane Production

Guided by skilled aircraftmen, giant hydraulic presses are turning out military aircraft parts at a rate approaching capacity output of more than 44,000 pieces every 24 hours at a single plant. Wing ribs, struts, pieces for fuselage frames and numerous other aluminum parts are turned out in great quantity. This is an example of how men and modern machinery are meeting the challenge for quantity production of aircraft.

PARTS SHAPED BY RUBBER
Strange as it seems, rubber compressed to the hardness of steel placed within huge hydraulic presses can quickly cut and shape intricate metal pieces with precision. By means of the Guerin process now used under a licensing

AIRCRAFT PLANTS HIRE 5,195 WEEKLY

P.M. RELEASE, MARCH 1



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QUOTE and END QUOTE

"The competition for supremacy is constantly developing new tricks on both sides in the present war. . . . We would lose that advantage if we went into tremendous mass production. The self-sealing gas tank, increased armament, heavier armament—we are able to do all these into our airplane adjustments and make for more efficient fighting ships, better bombers. A too early standardization of types would lose the fruits of this free laboratory that England and Germany are operating for us."—Undersecretary of War Robert P. Patterson.

"I consider the American radial air-cooled engine the most reliable airplane engine in the world."—Dr. Geo. W. Lewis, National Advisory Committee for Aeronautics.

"The United States has the only proven 2,000 horsepower engine of any nation in the world. The most powerful engines in use anywhere else in the world do not exceed 1,250 horsepower."—Dr. Jerome C. Hunsaker, Massachusetts Institute of Technology.

Navy Designates Its Airplanes by Letter-Number Combinations
"V" Indicates Heavier-than-air Type; "X" Experimental; Final Letter Shows Name of Maker

Unless you take an active interest in aviation, you have probably been groping as to the meaning of those letters and numbers used in identifying Uncle Sam's airplanes. Devon Francis, president of Aviation Writers Association, has made the task simple, at least for Navy fans, by furnishing a compilation of airplane letter designations.

Models are designated by a group of letters and numbers. Initial letter or letters indicate the class; a following number the model and a final letter the manufacturer. In some instances, the group is followed by another dash and number indicating modifications to a model. A "V" indicates an airplane as of heavier-than-air class; "Z" signifies lighter-than-air craft (balloons, blimps and dirigibles), and an "X" that it is an experimental design.

Here are the general classifications with designations:

CLASS	DESIGNATION	CLASS	DESIGNATION
Bombing	VB	Transport (single-engine)	VG
Fighting	VF	Utility	VJ
Miscellaneous	VM	Observation-Scouting	VOS
Observation	VO	Patrol-Bombing	VPB
Patrol	VP	Scouting-Observation	VSO
Scouting	VS	Torpedo-Bombing	VTB
Torpedo	VT	Utility-Transport	VJR
Training	VTN	Scouting-Bombing	VSB
Transport (multi-engine)	VR		

Following is the key to manufacturers' letter designations: A—Brewster Aeronautical; B—Beech Aircraft; C—Curtiss Aeroplane Division; D—Douglas Aircraft; E—Bellanca Aircraft; F—Grumman Aircraft; G—Great Lakes Aircraft; H—Hall-Aluminum Aircraft; J—North American Aviation; K—Fairchild Aircraft; L—Bell Aircraft; M—Glenn Martin; N—Naval Aircraft Factory; O—Lockheed Aircraft; P—Spartan Aircraft; Q—Stinson Aircraft; R—W. L. Maxon Corp. and Ryan Aeronautical; S—Vought-Sikorsky and Stearman Aircraft; T—El Segundo Division, Douglas Aircraft; U—Vought-Sikorsky Division, United Aircraft; W—Waco Aircraft; Y—Consolidated Aircraft.

AEROQUIZ
Air Corps Uses Dozen Models
Q—What are some of the principal models of airplanes in use or to be used by the United States Army Air Corps?
A—Bombers: Boeing Flying Fortress B-17 types, Consolidated four-engine B-24, Martin B-26, North American B-25, Douglas A-20A. Combat ships: Bell P-39, Curtiss P-40, Republic P-47 and Lockheed P-38 interceptor pursuit.

Q—What is "drag"?
A—In its simplest aeronautical definition, "drag" means air resistance.

Lycoming Engine Output Increased Sets Record, Shipping 200 Power Units

To meet the demand for thousands of training airplanes now so important in the aerial defense program, Lycoming Division of Aviation Manufacturing Corp. has completed a major expansion program at its Williamsport, Pa., plant, increasing manufacturing floor space from 100,000 to 300,000 square feet, a growth of 200 per cent.

Bigger and newer models are demanded to train young men for the aircraft arms of military defense—types that more closely resemble the fighting ships which trainees will handle later on. To accomplish this, producers of lighter airplanes and engines are working together closely.

As part of this cooperative effort, Lycoming recently set up a mass-delivery record by shipping Taylorcraft Aviation Corp. 200 engine units. These are being installed in airplanes rolling from Taylorcraft production lines.
With present expansion being completed, Lycoming is devoting part of its production to hollow-steel propellers, parts and outside jobbing work.

Rapid Increase Geared to Large Expansion Plans
Eastern Factories Add 2,340 Men a Week

799 Year Ago P.M. RELEASE, MARCH 1

WASHINGTON, March 1.—(ANF)—Eastern aircraft manufacturers, rushing completion of warplanes for the United States and England, are hiring three times as many employees each week as they were a year ago, it was revealed in a survey released by the Aviation News Committee of the Aeronautical Chamber of Commerce today.

A similar study made and released two weeks ago, covering West Coast aircraft factories, showed a fourfold hiring rate over a year ago. The combined figures for East and West Coast plants show an increase of 250 per cent.

ACCELERATED HIRING
Current weekly hiring rate in 21 major eastern plants reporting is 2,430. A year ago the combined rate in the same plants was 799, an increase of 200 per cent. Eight major western plants reporting two weeks ago are hiring each week 2,765. A year ago the combined rate in these same plants was 692.

East and West Coast plants together are hiring 5,195 each week. A year ago these plants were hiring 1,491 weekly.

Thirteen airplane, six engine and two propeller companies comprise those reporting from the East. These plants now employ in excess of 90,000. Eastern plants reporting are Aeronca, Beech, Bell, Bellanca, Brewster, Culver, Fairchild, Grumman, Kellett, Martin, Monocoque, Republic and Vought-Sikorsky airplane companies; Allison, Continental, Lycoming, Wright, Pratt & Whitney, and Ranger engine units, and Hamilton-Standard and Curtiss-Wright propeller companies.

75 PER CENT UNSKILLED
Of the hundreds of employees being hired weekly by eastern aircraft builders, only about 25 per cent are experienced, with the remaining 75 per cent having little or no experience in aircraft construction.

The accelerated hiring rate complements the tremendous plant expansion program which will quadruple productive floor space by the end of the year from that of January, 1940.

Aviation's Who's Who
PHIL JOHNSON

Just as Boeing is synonymous with the Flying Fortress, so Phil Johnson stands for aircraft pioneering and development. Added to this as head of Boeing Air Transport for many years and later as chief operating executive for Trans-Canada Air Lines, he made an enviable record in the field of air transportation.

Completing a two-year job of organizing a transcontinental air route for Canada, Philip G. Johnson in September, 1939,

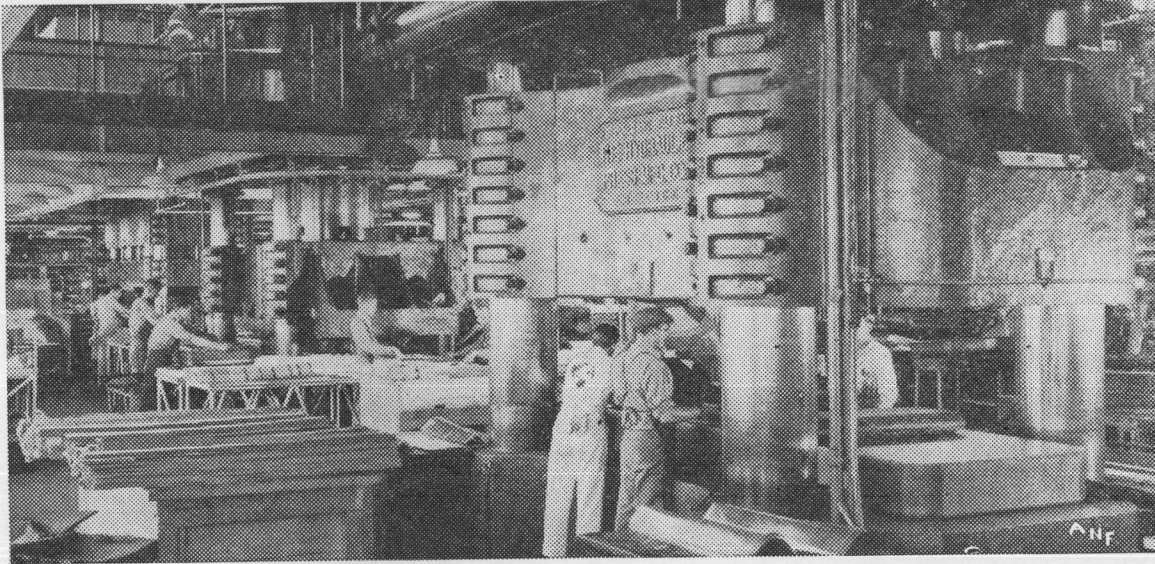
returned to Boeing Aircraft Co., a position he had previously held for many years.

Mr. Johnson studied mechanical engineering at the University of Washington in 1917. After this he started work as a draftsman in William E. Boeing's year-old aircraft factory.

PHIL JOHNSON Promotion came rapidly for young Johnson. In 1919 as production manager he was given the task of making sure that a substantial order for Navy airplanes would be turned out on schedule. Followed then advancement to vice-president in 1921. In 1926 he became president of the Boeing organization.

Emminently successful in design and production of military airplanes, Boeing in 1921 versed in pioneering airmail and passenger transportation. Boeing Air Transport was formed, Mr. Johnson heading both the manufacturing and transport units. Under his guidance a transcontinental route was organized and operated until 1934. Changes in the air mail law then made disposal of the transport units advisable. A year later Mr. Johnson turned to private business in Seattle. In 1937 he started organization of Trans-Canada Air Lines.

Recognition of his executive ability in airplane manufacture came again in 1939 when Mr. Johnson resumed his position as president of Boeing Aircraft. Here he is working on the job of turning out a huge backlog calling for delivery of four-engine Flying Fortresses and primary training airplanes for United States and British defense needs.



To speed up the making of the hundreds of thousands of airplane parts needed for America's fighting aircraft, rubber, compressed to the hardness of steel, is forced to cut aluminum parts (wing ribs, struts, pieces for fuselage frames, etc.) in gigantic hydraulic presses. By means of the Guerin process used in most aircraft plants, hard rubber is substituted for one of the dies within the press. Pictured above is the battery of giant units at the Douglas Aircraft plant at Santa Monica, Calif., where the process was developed by Henry Guerin, engineering executive. At this plant these presses are nearing capacity output of more than 44,000 pieces every 24 hours.

Aviation News Features

Editors have suggested that the Aviation News Committee make up a standing head suitable for use with various columns appearing regularly in AVIATION NEWS FEATURES, such as "Quote and End Quote," "Plane Facts" and "Aeroquiz." Therefore, the Aviation News Committee has created this standing head, available in one- and two-column widths in mat form, which will be sent to editors upon request. Please write to Aviation News Committee, 7046 Hollywood Blvd., Los Angeles, Calif.

