

Aviation News

McGRAW-HILL PUBLISHING COMPANY, INC.

DEC. 23, 1946



Prepping the Pioneer: Northrop Aircraft's tri-motor Pioneer, especially designed for cargo operations into and from short runways, is being groomed for its first flight at Hawthorne, Calif. With a five-ton useful load, the Pioneer is claimed to take off in 700 ft. It can use a 2,000-ft. runway and comply with CAA regulations regarding take-off with one engine dead.

Lightplane Dollar Volume Steady, AIA Figures Show

November delivery was 2,763 at \$8,055,000; Oct. was 3,745 at \$8,751,000.....Page 7

Type Competition Limited by Model 417 Withdrawal

Boeing's suspension of feederliner narrows field to Northrop and Beech.....Page 15

Claim Certificated Lines Unfit for Cargo Business

California Eastern challenges scheduled carriers' record in route bid.....Page 20

Airline 'Insiders' Sell Heavily, SEC Report Shows

Most selling took place before abrupt decline of markets in recent months.....Page 22

Big Sales Campaign Indicated at ADMA Convention

Members and speakers at Chicago meeting show aggressive attitude.....Page 24

Post Office Expands 'Copter Mail Tests at New York

Most ambitious trials to date will cover 12,500,000 population area; begin Jan. 6.....Page 29



**DOUGLAS DC-6 uses
VICKERS 3000 psi
HYDRAULIC EQUIPMENT**



Vickers 3000 psi Constant Displacement Piston Type Pump



Vickers 3000 psi Variable Volume Piston Type Pump



Vickers 3000 psi Accumulator



Vickers 3000 psi Motorpump



Vickers 3000 psi Constant Displacement Piston Type Motor

Douglas Aircraft Company specifications for the 3000 psi hydraulic systems of the DC-6 include the Vickers units shown here.

In the main hydraulic system, the Vickers engine-driven Constant Displacement Type Pumps have exceptionally long life, low weight per horsepower, and very high volumetric and over-all efficiencies. The Vickers 7½" Accumulators assure maximum safety because of their forged construction; other important features are large capacity and light weight. The Vickers Motorpump serves as an additional hydraulic power source in emergencies enabling the pilot to give undivided attention to flight maneuvers.

The cabin pressurization system uses Vickers Variable Volume Piston Type Pumps which automatically deliver the power and speed variations required to maintain the desired cabin pressure independent of varying altitude and engine speed. The Vickers Hydraulic Motors have high starting and running torque. The very low inertia of their moving parts permits instantaneous starting, stopping and changes in running speed. They also have exceptionally low weight per horsepower, and are free from radio interference.

Vickers Bulletin 46-41 gives additional data about the most complete line of 3000 psi hydraulic equipment for aircraft. Write for a copy.

VICKERS Incorporated
DETROIT 32, MICHIGAN

ENGINEERS AND BUILDERS
OF OIL HYDRAULIC EQUIPMENT
SINCE 1921

THE AVIATION NEWS

Washington Observer



WAR ASSETS SUPERPLANE—It's not generally known, but the principal owner of the monster flying boat now being readied for taxi tests by the Hughes Aircraft Co. is War Assets Administration. The old Defense Plants Corp. put up about \$18,000,000 to build it, Howard Hughes about \$2,000,000. WAA inherited DPC's interest and kicked in another \$1,500,000 to move and flight test the craft on the basis that after the Government had put so much money into the project it might just as well see it through "with the chance that the Government will benefit by the information accumulated in the flight tests." WAA expects to take possession of the flying boat some day and hopes a buyer can be found.

CITIES' LAST STAND?—Surprisingly and unexpectedly, President Truman asked to see the revised Airport Regulations, just as CAA was preparing to make them public. Although no explanation was given for the request, it is recalled that a delegation of big city mayors called on the President during hearings on the regulations to protest the CAA formula which limits the Government's 50 percent share in construction costs on a project to the first \$2,000,000. Even while CAA was revising the regulations, it stated that the controversial formula would not be changed materially. Observers surmise that the President wanted to examine the regulations with the mayors' complaint in mind.

ATOMIC DIFFICULTIES—Dr. Luis W. Alvarez's speech last week on atomic energy for aircraft propulsion (see page 10) almost wasn't delivered. The Army finally cleared it at three o'clock the afternoon of the day it was to be given after a ring-around-the-rosy routine that had sponsors of the dinner, at which Alvarez appeared, dizzy. At one point, the Army, reluctant to make any decision on the speech, referred the matter to Bernard Baruch, U. S. delegate on the UN Atomic Energy Commission. Baruch, after turning it down, changed his mind and gave an okay and then, a few days later, the Army again balked before finally acquiescing.

CONTROL CHANGES DIM—At this early date chances appear to be that the new Republican Congress will not give the Civil Aeronautics Board legislation it has requested for control over international airline rates similar to that now exercised over domestic rates. CAB considers the authority

essential to effective regulation of international air transport, and without it will have to limp along on the negative control it has in the international rate field through its power to approve or disapprove agreements among the airlines.

VFW FOR AIR FORCE—Advocacy by the Veterans of Foreign Wars of a strong air force as the first consideration of national security offers a new and significant indication of veterans' organization thinking. VFW commander-in-chief Louis E. Starr, in presenting the group's views to the White House, wrote: "Our veterans have learned that the outstanding lesson of World War II was the advent of air power as the greatest striking force known. Consequently, our organization is pledged to national security in the form of the most powerful air force in the world, capable of rapid expansion, and a number of professional modern divisions ready to be transported as an air army anywhere."

GOP TO CAB?—GOP National Committee Chairman B. Carroll Reece is advocating Republican control of the five-member Civil Aeronautics Board and other bi-partisan quasi-judicial agencies. Reece suggests that if these agencies are GOP-controlled, co-operation between them and the new Congress on legislation and appropriations will be made easier. Reece's proposal would mean that the CAB chairmanship would be transferred from James M. Landis, a Democrat, to a Republican, and that either Landis or one of the two other Democratic members of the Board—Josh Lee and Harllee Branch—would make an exit. Only time can tell whether the GOP will be able to exert enough pressure to force Administration to swallow the proposal.

FREDERICK REPORT—With no position on key controversial issues, Dr. John Frederick's transportation report to House Interstate and Foreign Commerce Committee is understood to be little more than a resume of the legislative recommendations to the Committee by various transportation interests. If approved by the Committee members, to whom it was submitted last week, the document will be filed as a Committee report. Rep. Charles Wolverton, New Jersey Republican who will take over the chairmanship of Interstate next year, has not committed himself yet to chairman Clarence Lea's plan to use the report as a basis for drawing up over-all transportation legislation in the new Congress.

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News Digest

DOMESTIC

Wright Aeronautical Corp. has acquired exclusive right in the U. S. to gas turbine system patents owned by the Swedish firm, Ljungstrom Steam Turbine Co. Ljungstrom for years has been a developer of gas and steam turbines, and Wright for three years has been working on a propeller turbine engine.

Dr. Vannevar Bush and Arthur Raymond (Douglas Aircraft v-p-engineering) have been reappointed by President Truman for five-year terms on the National Advisory Committee for Aeronautics.

TWA confirmed reports it is negotiating a substantial loan with RFC (AVIATION NEWS, Nov. 18) but had no comment on amount, said to be \$40,000,000. Similar discussions are being held with Equitable Life Assurance Society, for a sum reported unofficially to be \$5,000,000.

American Airlines after a successful jet-assisted takeoff on a Mexico City-Philadelphia non-stop flight, will install Jato equipment on all planes of its Contract Air Cargo Division.

FINANCIAL

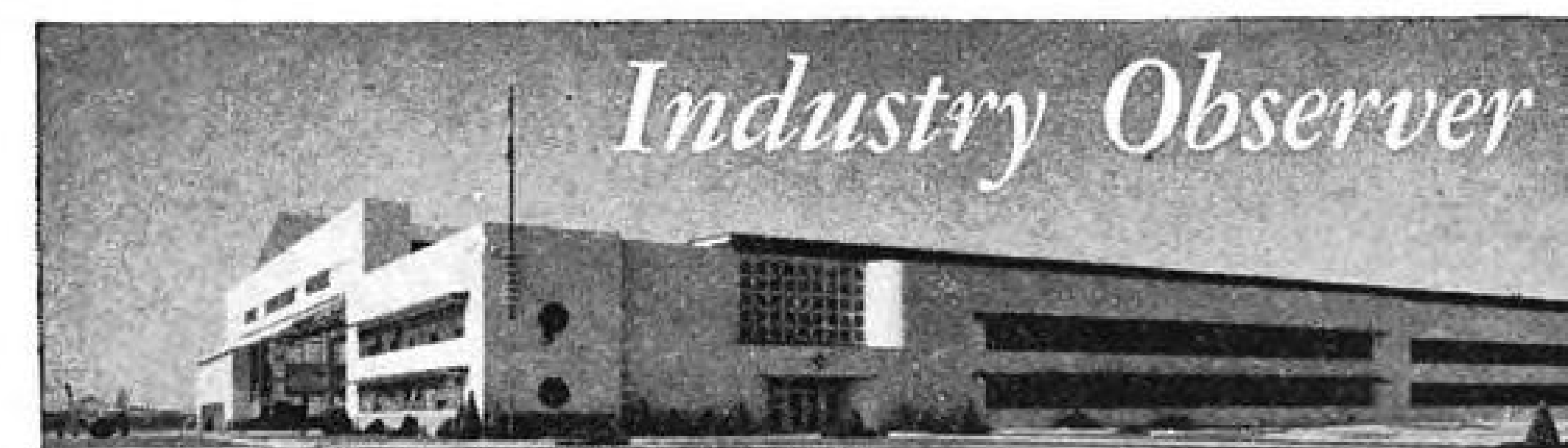
Eastern Air Lines completed arrangements for a \$20,000,000 revolving bank credit with a group of 27 banks headed by the Chase National Bank of New York.

Republic Aviation Corp. has obtained a line of credit in an undisclosed amount from Chase National Bank, New York, to provide interim financing. Company decided to forego temporarily issuance of \$10,000,000 in new stock due to present market conditions.

FOREIGN

Far East Air Transport DC-3 crashed southeast of Manila, P. I., with 12 fatalities, highest toll in Philippine aviation history. Apparent cause was an optical illusion due to cloud effects, combined with rugged terrain and poor landing field.

Payne Field, Cairo, Egypt, a main way station of Air Transport Command's wartime route to India and China, has been formally turned over to the Egyptian Government.



► Bell's latest entry in supersonic competition will embody several radical changes from the XS-1. Now under construction, the XS-2 will be made of stainless steel instead of aluminum and feature sweptback wings. Both the Douglas and Northrop supersonic planes will have more powerful rocket engines than the XS-1 and the radical delta-wing design of the Northrop XS-4 will make it look like a Flying Triangle.

► Two giant search radar sets will be installed by AAF at LaGuardia and Washington National Airports for tests to develop improvements in present CAA traffic control methods over congested airports. The radar will have a range of 125 miles and will be installed and operated by AAF personnel with CAA traffic controllers observing the operations.

► Curtiss-Wright has begun construction of the XP-87, new AAF twin jet, all-weather fighter, at its Columbus plant.

► Clearing its final hurdle—State Department approval—last week CNRRA Air Transport will begin flight operations in China early in January. Claire L. Chennault, former commander of the Flying Tigers and U. S. 14th Air Force in China, and Whiting Willauer, former Department of Commerce representative in China, are partners in the enterprise which will be organized as a foreign corporation with Chennault as president. Eight C-46s have been purchased from war surplus in Honolulu and air crews are now en route from San Francisco to fly them to China. Capital in addition to the \$2,000,000 UNRRA-CNRRA loan has been provided from private Chinese sources. CAT's main base will be in Canton with routes radiating into the interior wherever relief supplies are needed.

► Pacific Airmotive Corp. has obtained an unsecured 10-year revolving credit loan of \$6,000,000 from the Bank of America National Trust & Savings Association of Los Angeles. Half of the loan will be used to finance the firm's proposed new maintenance base in the New York area. A million and a half will be spent expanding PAC's facilities at Anchorage, Alaska, and the remainder will be used on its new base at Burbank, Calif., which is expected to begin operations early in 1947.

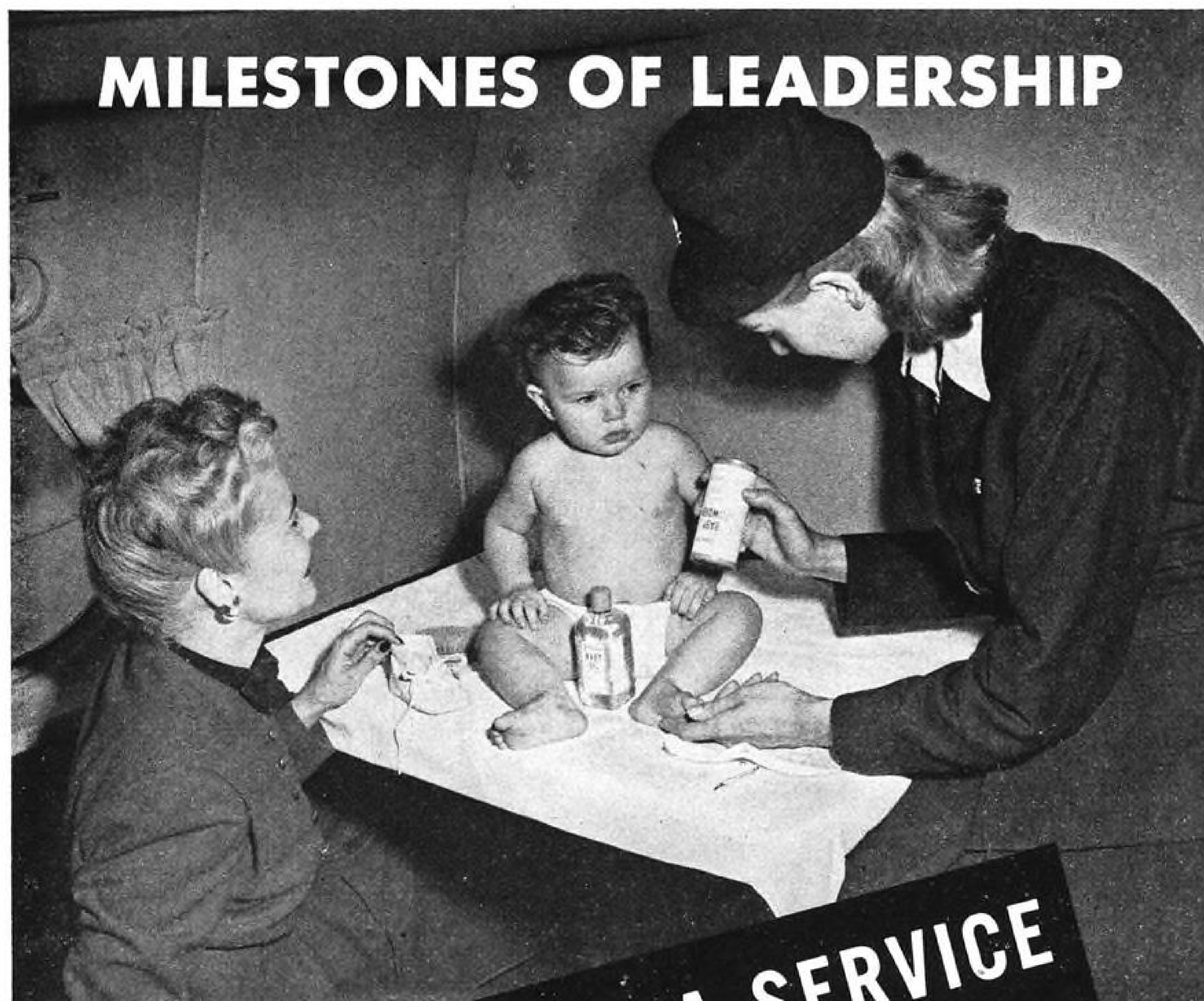
► AAF and Navy aircraft acceptances dropped from 190 in October to 127 in November. Airframe weight in November was 840,000 lb. compared with 1,256,300 lb. in October. AAF accepted the following planes: Lockheed P-80A, 42, FP-80A, 15; Northrop F-15A, 3; Fairchild C-82A, 8. Navy accepted: Martin PBM-5E, 2; Douglas AD-1, 3; Grumman F7F-4N, 2, F8F-1, 31; Chance Vought F4U-4, 19; Sikorsky RO-3S, 1.

► Due to a typographical error, October acceptance figure for the Fairchild C-82A was given as 81 instead of the correct figure 11. A total of 87 C-82s have been made by Fairchild since it began production for the AAF.

► Svenska Aeroplan A.B., Swedish aircraft manufacturers, are working on a new jet fighter type designed to outfly the British Gloster Meteor. Prototype is expected to fly by the end of next year. This new model known as the SAAB R1001 will have sweptback wings and a planned top speed in excess of 650 mph.

► Certificated airliner interveners in the air freight case are laying for Slick Airways, largest operating carrier, among the 13 operators seeking certificates in the proceedings. Air Transport Association has advised its members that Slick exhibits have the best planned technical program including route patterns, flight schedules and operational details.

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**SCANDINAVIAN
AIRLINES SYSTEM**

VOLUME 6 • NUMBER 26

Aviation News
McGraw-Hill Publishing Co., Inc.

December 23, 1946

Lightplane Dollar Volume Steady Despite November Delivery Slump

Eleven manufacturers delivered 2,763 planes valued at \$8,055,000; trend toward multi-place planes seen.

By WILLIAM KROGER

The lightplane industry, conscious that a falling-off in sales had taken place in November, but for weeks wondering its extent, last week had figures to study as the Aircraft Industries Association released the November delivery report. Deliveries were down more than 900 planes, but the picture has a bright side.

In November 11 companies delivered 2,763 planes valued at \$8,055,000. In October those same 11 companies delivered 3,745 planes, but the value was \$8,751,000. While the industry was selling fewer planes in November, the figures indicate that they were selling a greater ratio of three- and four-place aircraft, which carry a higher price tag.

Three Missing—Three companies are not listed in AIA's November tabulation, although they were included in the October statistics. They are: Engineering & Research Corp. (Ercoupe), Globe, and Texas Engineering, which has been manufacturing both Fairchilds and Globe Swifts. Including those companies, 14 manufacturers in October delivered 4,582 planes valued at \$11,184,000.

Inasmuch as the statistics of the 14 companies was the gage of the industry's total activity in October, the figure for the 11 companies reporting in November give a fair index to the overall state of the lightplane industry last month. Largest producer among the three companies missing in the November listing was ERCO which delivered 565 planes in October, but which discontinued production temporarily early in November. Globe and Texas Engineering between them produced 272 planes in October.

Analyzed, the November figures do not justify the gloomy outlook

expressed by numerous observers during the National Aircraft Show at Cleveland. For one thing, is the encouraging upswing in sales of larger personal type planes that seems to be evidenced by the AIA report. This is taken to indicate two important factors:

1) The industry is reaching the family market, which many authorities have long claimed it has to do to attain volume; 2) The industry's immediate future is not necessarily limited to sales of two-place planes to schools, which up to now have constituted the greatest market because of the veterans' training program.

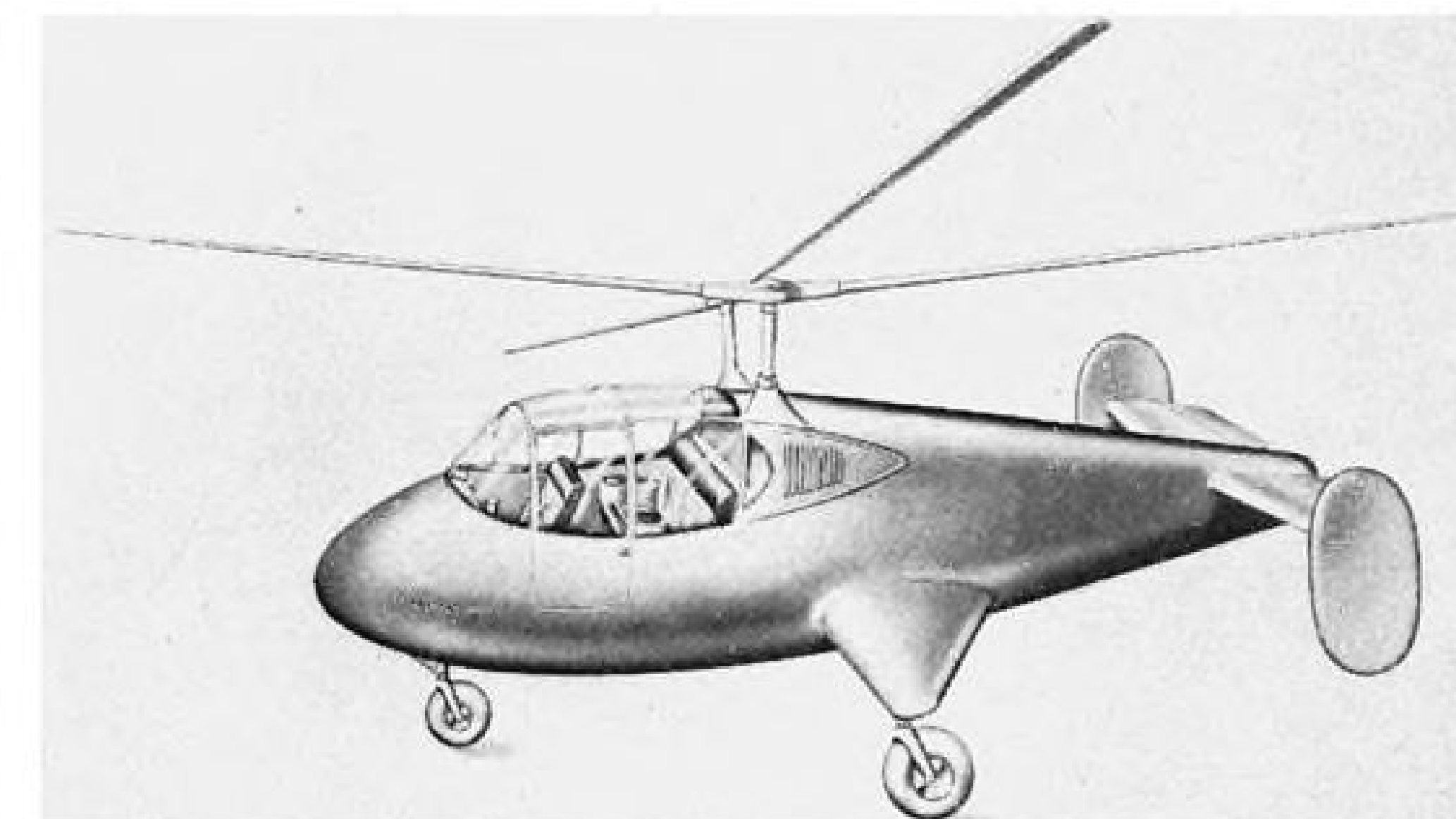
Leaders Lose—The largest losses in sales were experienced, by the October leaders, Piper, Aeronca

and Cessna, with Taylorcraft, another volume producer, completely out in the month after delivering only 68 planes. Those four manufacturers together sold 1,154 planes less in November, of a total drop of 1,819 planes suffered by all 14 companies reporting in October. Piper and Aeronca, the two leaders, both have planes larger than two-place now in production.

Some of the other companies showed gains, some small, some substantial in November, over October, again pointing to the fact that the ballyhooed slump in the lightplane market has been to some extent, at least, over-rated.

The company-by-company break-down of the October and November figures follows, with November deliveries and values listed first, followed by those for October:

Aeronca: 717, \$1,375,000; 1,006, \$1,849,000; Beech: 20, \$1,297,000; 21, \$1,303,000; Bellanca: 65, \$325,000; 76, \$380,000; Cessna: 545, \$1,271,000; 638, \$1,485,000; Funk: 18, \$67,000; 30, \$111,000; Luscombe: 312, \$727,000; 183,



FOR LOW COST TRANSPORTATION:

Kaman Aircraft Corp., Hartford, Conn., have announced what is claimed to be the first low cost helicopter with adequate payload now being developed. A 3-place machine, the K-125A is expected to fill numerous executive, commercial and governmental uses. Model shown is equipped with intermeshing rotors. Unusual in helicopters is tail assembly with elevators. According to C. H. Kaman, president of company, test flights will be made soon following conclusion of exhaustive tests of Kaman simplified rotor system.

\$460,000; North American: 39, \$260,000; 25, \$139,000; Piper: 670, \$1,355,000; 1,105, \$2,012,000; Republic: 54, \$257,000; 50, \$187,000; Stinson: 255, \$945,000; 206, \$824,000; Taylorcraft: 68, \$176,000; 405, October value not available.

U.S.-Uruguay Sign Air Pact

Completion of a bilateral air transport agreement with Uruguay was announced last week by the State Department. The pact succeeds the arrangement between Pan American and Uruguay under which the carrier has been serving Montevideo, where the new agreement was signed.

Two airlines are certificated by CAB to serve the Uruguay capital, Pan American from the East and Panagra from the West. The new air bilateral pact, first between the two countries, contemplates five-freedom traffic over two routes, one from the U. S. via the East Coast of South America to Montevideo and beyond, the other from the U. S. and/or the Panama Canal Zone and the West Coast of South America to Montevideo.

Uruguayan airlines will have similar rights in the U. S. along routes to be designated when the Government of Uruguay decides to begin operations. Announcement of the agreement came as preliminary work was completed on a new U. S.-Canadian civil air agreement expected to be ready for signature next month, two years after consummation of the one it will replace. Routes to be covered in the new pact have not been designated, pending studies by CAB's Economic Bureau and the parallel Canadian agency.

Preliminary talks by Canadian officials with U. S. civil air agencies covered nonscheduled flying and facilitation of travel between the two countries.

NL Label Approved

CAB has adopted a new part 09 of Civil Air Regulations establishing a new NL airworthiness classification (AVIATION NEWS, Sept. 9). The new part covers surplus military aircraft which have no civilian certificable counterparts and are ineligible for civilian certification. NL licenses will be given aircraft which military experience has proven to be safe for operations not involving paying passengers or cargo.

U. S. Rocket Engine Flight Test Points Way to New Developments

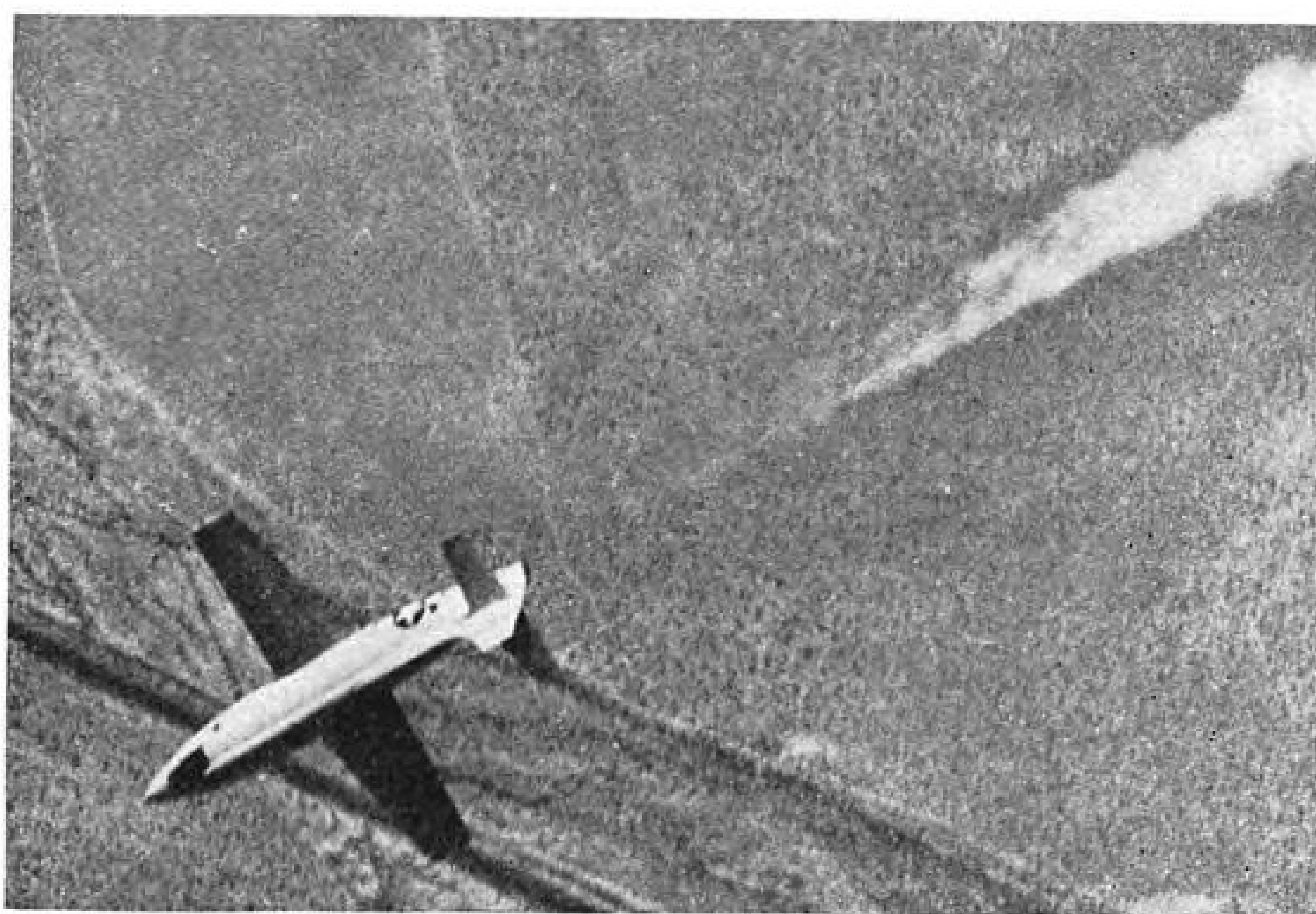
Reaction Motors four-barreled engine performance in initial flight of XS-1 opens new vista of speed at high altitude; rocket engines promise greater efficiency than jets.

The first flight of the Bell-built XS-1, important and significant from an aerodynamic aspect, is being studied even more closely by some engineers from a power plant standpoint. Its rocket engine—the first to be flown in a piloted aircraft in this country—opens up an entire new propulsion field for very high-speed, high-altitude aircraft that may skip a stage in the evolution of propulsive devices from the reciprocating engine.

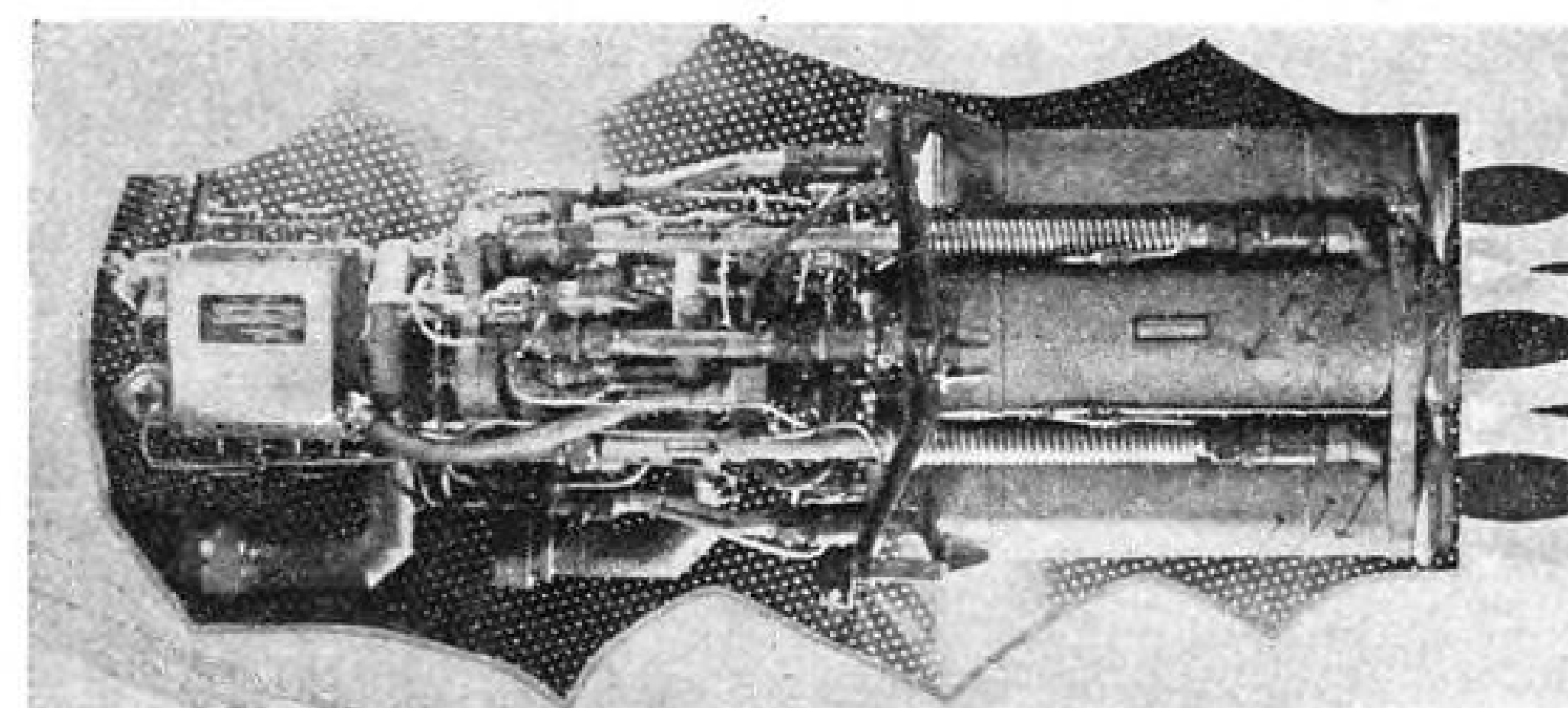
The rocket engine gives promise of greater efficiency and high

power at high speeds at great altitude than the jet engine, which still has not been fully developed.

Axial-flow jet engines as now used develop within the combustion chamber approximately four times as much thrust as is pushed out the nozzle for propulsion. In a rocket engine there is little power loss between what is developed in the combustion chamber and what comes out as usable thrust. The 75-percent loss in jet engines undoubtedly will be cut down, but rocket experts at least now see



Before and After: The Bell-built, rocket-powered XS-1 nestled under its B-29 mother ship before its first powered flight, and photographed in flight, scudding across the sky with the exhaust of its rocket engines trailing behind.



XS-1 Power Plant: Developed by Reaction Motors, Inc. for the Navy this 6000C4 rocket engine is the forerunner of more efficient, perhaps more powerful aircraft powerplants. The engine consists of three prime parts, the control box on the left, the fuel feed system in the center and the combustion chambers, each of which develops 1,500 lb. of thrust and can be fired separately.

little chance of any important loss in rocket engines no matter what form future development may take. In addition, for high altitude flight, the jet engine still needs air, while a rocket carries its own oxygen.

► **Four Chambers**—The XS-1 engine contains four combustion chambers, or "motors", in the parlance of long-time rocket experimenters. Each gives 1,500 lb. thrust, or a total of 6,000 lb. With the addition of more combustion chambers and an improved system of forcing in the fuel under greater pressure, an engine of this type conceivably could develop as high as 50,000 lb. thrust.

The XS-1 engine, designated as the 6000C4, was developed by Reaction Motors, Inc., Dover, N. J., under contract with the Bureau of Aeronautics of the Navy. The company is headed by veteran rocket engineers who were kingpins in the onetime American Interplanetary Society, now the American Rocket Society: Lovell Lawrence, Jr., president, H. Franklin Pierce, vice-president, John Shesta, director of Research and engineering, James H. Wyld, chief research engineer.

Reaction Motors has been working on rockets for the Navy's BuAer since 1941, and began development of the 6000C4 in early 1945. When the Navy was advised of the XS-1 project it was also asked to make the engine available for the Bell plane. The engine was statically tested in Aug., 1945, and the first one was delivered to Bell in March, 1946. Bell has received a total of six 6000C4 engines.

► **No Navy Plans**—The Navy itself has no plans for this particular engine as Reaction Motors has gone several steps farther and produced

a more powerful, more efficient engine. This is believed to surmount several problems inherent in the 6000C4, and which highlight difficulties of rocket propulsion.

The 6000C4 consists mainly of three basic parts—the combustion chambers, the propellant control valves, and the control box which is the "brain" of the engine. The thrust in each chamber, or cylinder cannot be graduated. The pilot "throttles" by turning the cylinder on or off. In the 6000C4, he has only four selections, increasing or decreasing power in units of 1500 lb. thrust by turning on or off separate cylinders.

Key to this system at the moment is the pressure under which the fuel—alcohol and liquid oxygen—is forced into the cylinders. Cylinders of compressed gas—nitrogen or helium—feed into the fuel tanks to force out the fuel. The pressure is unvariable. If the pressure could be varied it would enable the pilot to vary the thrust and in addition would accomplish another great objective; reduce weight. Both the gas cylinders and the fuel tanks must be of strong and solid metal to resist the pressure.

► **Two Proposals**—There are two proposals now being worked on to change the thrust, one of which has real possibilities: the installation of a turbine pump, which would eliminate the compressed gas entirely. The other method at the moment seems to have slight potentiality. It is to install a needle-type valve at the nozzle of each cylinder by which the thrust could be regulated, or to install a valve between the fuel tanks and the cylinders which would control the pressure. This is the system which

the Germans used in their rocket-powered fighter, the Me 163.

One important contribution to the success of the 6000C4 engine is the cooling system which enables the cylinders and practically all other parts to be made of non-special stainless steel, thus eliminating at the outset any alloy troubles which currently plague jet researchers in making the turbine buckets. Known as regenerative cooling, the 6000C4 system uses the fuel as a coolant. It enters the hollow walls of the cylinders just in front of the nozzles, then passes back within the walls to the injection valves. Although the temperature within the combustion chambers attains 5,000 degrees, the cooling system is effective enough to prevent the metal from undergoing any physical changes.

Another advance in rocket science is the ignition system. Each cylinder has one sparkplug which touches off what is in effect a small rocket. This fires the main combustion chamber. Firing after that is spontaneous. Because of this ignition system, any cylinder may be started and stopped at will.

Luscombe Shows Profit Of \$30,000 in October

Luscombe Airplane Corp. reports a net profit for the three months ending Sept. 30 of \$149,064, after provisions for taxes and employees' bonuses, on sales of \$1,964,474. Profit for the following month, October, was \$30,000, after taxes and bonuses, on sales of \$458,371. The company states November sales exceeded those in October.

As of Sept. 30, Luscombe's working capital was \$296,952, although in common with most manufacturers, inventories were an unusually high percentage of current assets, comprising \$1,677,470, as against \$185,891 in cash and \$146,623 in receivables.

AVIATION CALENDAR

- Jan. 6-10—Society of Automotive Engineers Annual meeting, Book Cadillac Hotel, Detroit.
- Jan. 6-16—Aviation of Tomorrow Exhibit, Miami, Fla.
- Jan. 10-11-12—All American Air Maneuvers, Miami, Fla.
- Jan. 14—IATA Australian Traffic conference.
- Jan. 22-24—American Society of Photogrammetry—Winter Meeting, Wardman Park Hotel, Washington, D. C.
- Jan. 27-30—IAS Annual Meeting, New York.
- Feb. 1-3—New York Aviation Show, Grand Central Palace, New York.
- Feb. 4-7—Magnesium Industry Exhibit—Wright Field, Dayton, Ohio.
- Feb. 8-9—Women's Aviation Convention, San Antonio, Tex.

Supersonic Theory Developed in Speech

Dr. Theodore von Karman fills serious gap in aerodynamic theory in 10th Annual Wright Brothers Lecture.

A serious gap in aerodynamic theory for transonic and supersonic flow was filled by Dr. Theodore von Karman, last week in his Tenth Annual Wright Brothers Lecture



Dr. von Karman

before the Institute of the Aeronautical Sciences. Bringing existing, but heretofore fragmentary approaches to the problem, into a definite pattern and augmenting them by his own recent studies, von Karman paved the way for intensified supersonic research and the application of research findings to missile design.

He pointed out sharply the basic differences between subsonic and supersonic flow theories and emphasized the still undeveloped theory regarding what occurs in the transonic speed range. He admitted experimental research still produced the most reliable data. He stressed the growing importance of the boundary layer as a controlling element in supersonic flow and presented new theoretical approaches to the interre-

action of the boundary layer and shock waves.

Of particular significance was his new analogy of supersonic drag as an acoustical problem solvable by calling upon the knowledge of acoustical physicists. Generally, he compares supersonic drag to the output of a series of oscillators—pulsating in unison for straight wings and in sequence for wings swept either backward or forward. The sound emitted by these oscillators is similar to the nature and energy of shock waves.

He laid great stress on the growing importance of the heat-energy created by shock waves and introduced new evidence that a Mach number of about 4 is the maximum theoretically attainable before the flow is entirely destroyed by the heating action. Cooling methods, he said, deserve immediate extensive study.

An entirely new drag theory was introduced by von Karman involving a concept of the airfoil and the surrounding air as a single quantity, rather than as separate quantities as heretofore. By analysis of the momentum changes of this quantity, rather than simple force-vs.-reaction as now used, he emphasized the importance of a large area surrounding a supersonic airplane.

Turning to practical considerations of guided supersonic missiles, von Karman revealed that the immediate future offered missiles with ranges of about 8,000 miles capable of lifting about the same

weight as wing sections now in use on subsonic airfoils. He believes the only promise of extensive range lies in the use of very large bodies with very small wings and pointed out the importance in fuel development of emphasizing low specific volume rather than light weight.

Atomic Aircraft Deemed Unnecessary

Alvarez predicts no noticeable advantage over conventional planes; lists difficulties of rocket application.

While it is technically feasible now to use atomic power for aircraft propulsion, the airplane would have to be so big—three or four times heavier than the 278,000-lb. B-36—that such a development will not occur within ten years, Dr. Luis Alvarez, Robert J. Collier Trophy winner last week told the Aero Club of Washington.

He added that it is highly improbable that anyone will bother to build an atomic powered plane for it would seem at the moment to have no noticeable advantage over a conventional type. He promptly hedged by declaring that "I will probably be ashamed to read this prediction 30 years from now, but that is the estimate of the situation I can make at this time."

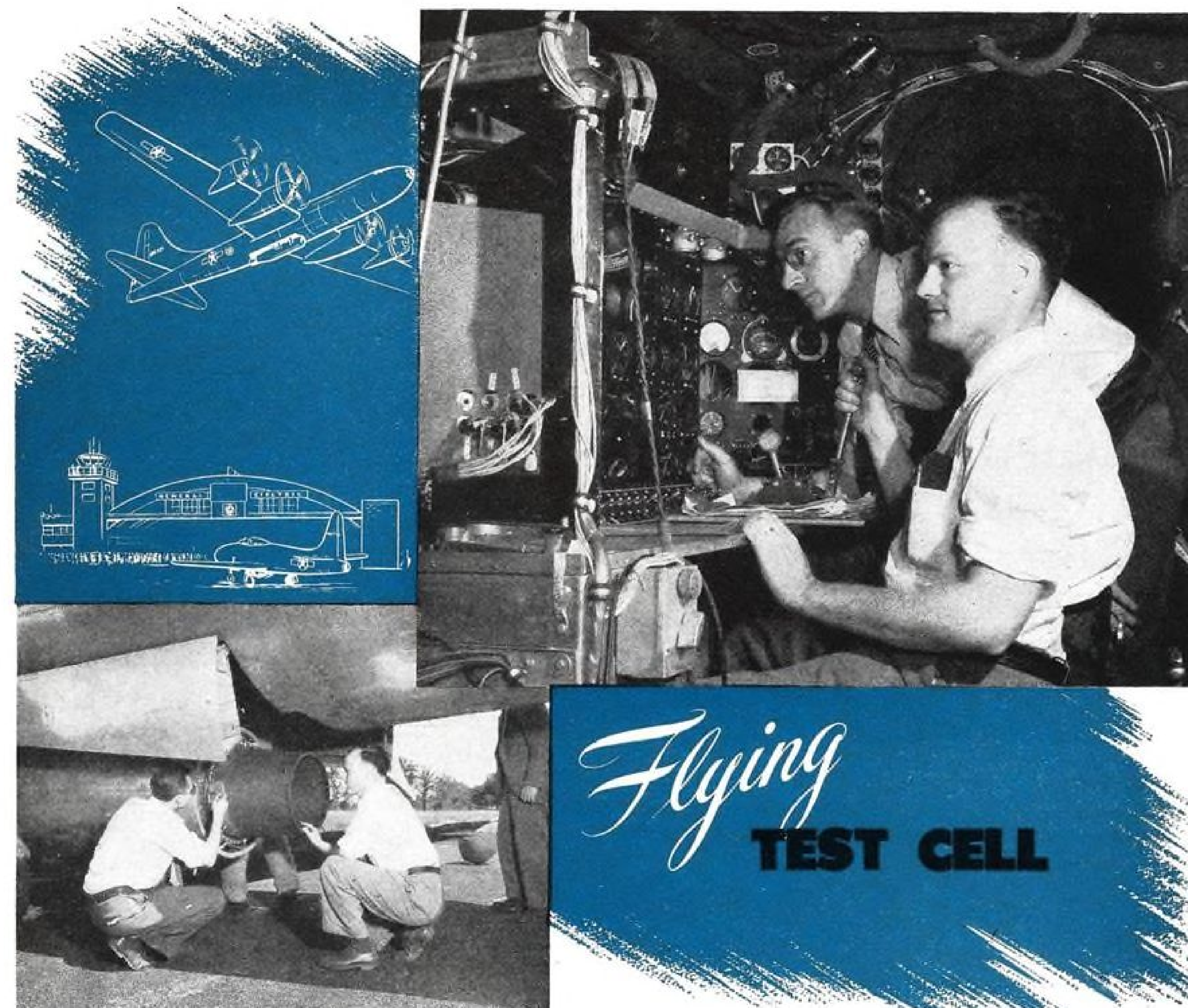
► **Discusses Rockets** — Alvarez, a consultant on the Manhattan atomic bomb project and still engaged in atomic investigation, devoted the bulk of a highly-revealing speech to the possible use of atomic power for rockets. The momentum of atomic fission is so great—"fission fragments" travel 3,000 times faster than the best chemical jets—that the friction of the rocket passing at that speed through the atmosphere would vaporize the rocket.

The only method of using atomic energy in rockets that appears promising to Alvarez is to use atomic heated hydrogen as the propellant of the rocket. This would give jet velocity about twice as great as an alcohol-oxygen fuel such as used in the engine of the XS-1. One major problem in this method is obtaining enough hydrogen to fill a tank about 10 ft. in diameter and 60 ft. long, or about enough to fill an Akron-size dirigible. And it would all be expended in 100 seconds.



FRENCH ARROW JET:

Aeronautics Arsenal's VG-70 (AVIATION NEWS, Dec. 9), arrow-shaped jet-propelled plane which was shown at the Paris air exhibition. The wings are swept back at an angle of 38 degrees. Powered by a Jumo 004 German-type engine, the VG-70 has a span of 27 ft., length of 31 ft., and weight of 6,600 lb. The plane, which has not yet flown, is shown under construction. (McGraw-Hill World News photo)



Flying
TEST CELL



PRECISION PRODUCTS
AND
ENGINEERED SYSTEMS
FOR AIRCRAFT

● Keeping tabs on a red-hot hurricane best describes the activities of these G-E engineers. They're checking an instrument panel in the pressurized chamber of a B-29, G.E.'s Flying Laboratory. The instruments are connected to various parts of a gas turbine, the TG-180, which has been installed in a bomb bay of the giant plane. In this manner, accurate records can be kept of actual flight performance of this G-E development, and adjustments made without danger to personnel.

Center of this development work is the G-E Flight-test Division which was recently dedicated at Schenectady. Besides the huge hangar, there are offices

for engineers, a workshop where parts are made, and space for development work on all types of air borne equipment. Here, work begun under the impetus of war years has not slackened on equipment useful in commercial aviation. Here, too, problems connected with new planes of all types can be studied and equipment flight tested. Remember, General Electric is working on electric power systems (a-c and d-c), aircraft instruments, gas turbines, and many other devices. Perhaps we have the answers to your electrical problems. Our engineers will be glad to discuss them with you. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

GENERAL ELECTRIC

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► **Porous Uranium** — Another problem would be in the field of metallurgy to develop a porous uranium material through which the hydrogen could be forced in order to be heated.

Alvarez successively built up and then knocked down various methods of utilizing atomic power and, although putting forth his heated hydrogen theory as the best bet, added that "there is no obvious or simple way in which to use atomic energy for space ships. If you read in the papers some years hence that an atomic-powered rocket has been sent to the moon, you can at least be sure that its designers chose atomic power only after many misgivings, and that the decision was based not on the attractiveness of this new energy source, but only after the realization that it was fantastically difficult or expensive to do the job with chemical propellants."

Senator Bailey Dead; Was Senate Air Leader

Sen. Josiah Bailey (D., N. C.), 73, who, as chairman of the Senate Commerce Committee, figured as one of the top aviation figures on Capitol Hill, died unexpectedly last week of cerebral hemorrhage.

During the past two years, Bailey had backed the Administration's regulation competition system for international aviation and blocked the move in his Committee to establish a "chosen instrument" type operation. He was critical, however, of the "five freedoms" policy being carried forward by the Administration in bilateral executive agreements, and voted in favor of a Commerce Committee protest resolution declaring the agreements "illegal" and "unconstitutional." Bailey supported the 1946 Airport Development Act.

United Asks Release From Arcata Contract

United Air Lines, operator of the landing aids experimental station at Arcata, Calif. (AVIATION NEWS, Oct. 7), has requested to be released from its Arcata contract by the Navy's Bureau of Aeronautics. The contract was to run until July 1, 1947.

Reason given for the move was AFL Building Trades Union's ultimatum that if negotiations were

not entered into immediately for a closed shop agreement at Arcata, every construction project in United's system would be struck.

With Arcata's fog season at an end and United supposedly operating the station on a non-profit basis, it appeared logical that continuation of the Navy contract was not worth the price. Although New York, Los Angeles and Cleveland have reportedly shown active interest in establishment of the integrated landing system as tested at Arcata, United's part in the development could easily be transferred to a less vulnerable contractor.

All-Metal Streak Developed by Group

Described as "the most advanced type of two-place personal airplane in the world," The Streak, all-metal tandem plane developed by Aero-Flight Aircraft Corp., Buffalo, N. Y., has many interesting design features.

Although powered with only an 85-hp. Continental engine, the experimental prototype has estimated top speed of over 170 mph., and estimated cruising speed of more than 150 mph., with a maximum range of 700 miles with fuel consumption of about 30 air miles to the gallon of 73 octane automobile-type gasoline.

► **All-Metal**—Of all-metal construction, including control surfaces, The Streak uses a wing designed for good stall characteristics achieved by coordinated selection of airfoil sections, taper and thickness without use of drag-producing devices such as wingtip slots

and highly cambered tip sections. Ailerons maintain control into the stall. Wing is designed to eliminate any rolling tendencies, and to give ample stall indication by stalling first at the wing-root.

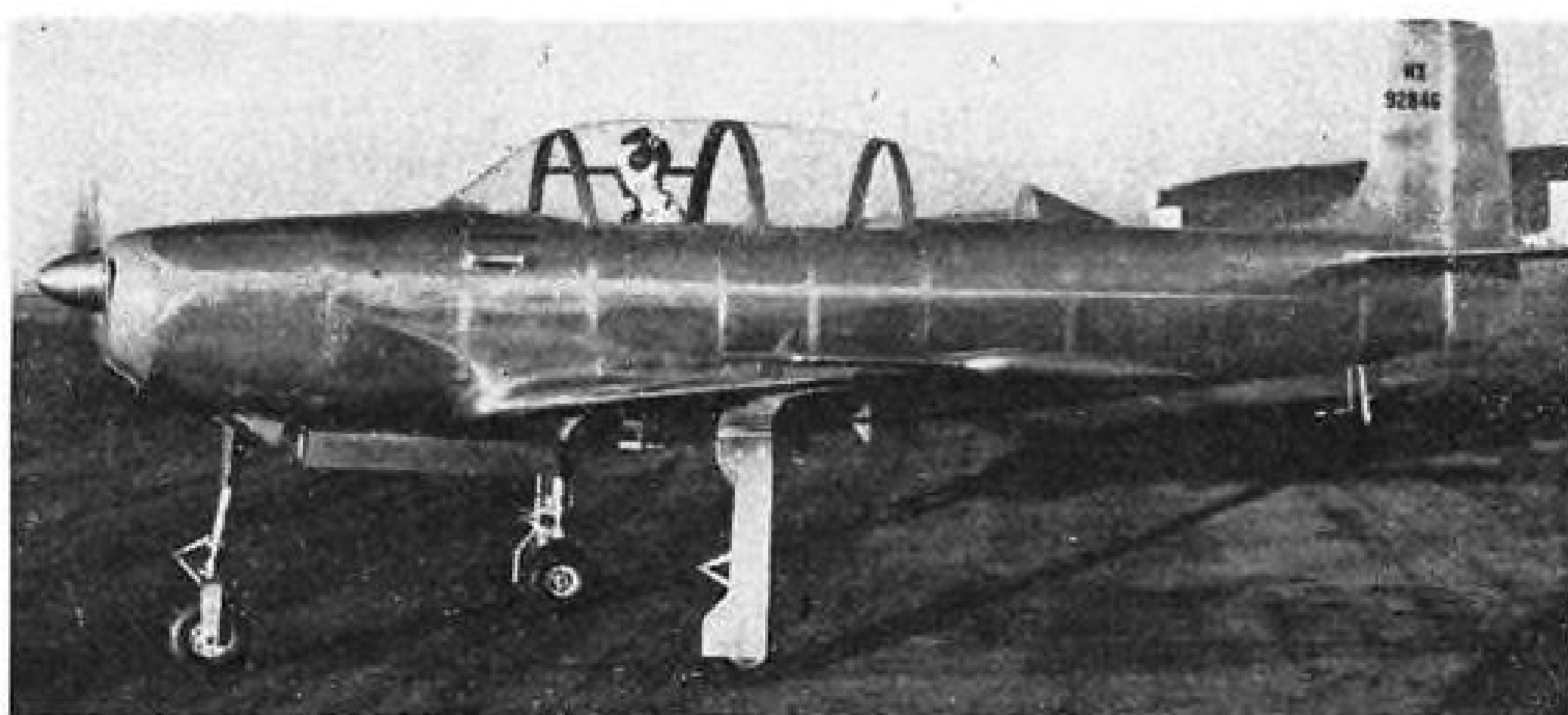
Bubble-type canopy is designed from wing airfoil sections, for substantial elimination of drag. Stability of the plane is described as high, so that variation in center of gravity is unimportant, and the plane may be flown from front to rear seat by one pilot.

All exposed surfaces are flush-riveted, for further elimination of drag. Wing and tail surfaces are full cantilever construction. Fuselage is semi-monocoque with minimum number of bulkheads and longerons, for simplification of construction and weight-saving.

► **Dual Controls**—Dual conventional controls are supplied. Standard equipment will include starter, contact flight instruments, and fixed pitch propeller. Tricycle landing gear is flush retractable.

As the product of a group of engineers and shop personnel who worked on high speed military aircraft during the war, The Streak will be watched with interest by the industry. Its designers claim that they have achieved this performance at no sacrifice in landing speed by efficient aerodynamics and structural detail.

The first personal-type plane, except minimum trainers, to be designed in tandem arrangement in recent years, The Streak will be an interesting test of the now generally accepted theory that public demand much prefers side-by-side two-place seating arrangement.



Tandem Streak: Prototype of The Streak, two-place tandem all-metal high performance lightplane, pictured, is now test flying at Buffalo (N. Y.) Municipal airport. Built by Aero-Flight Corp., association of former military plane designers and shop personnel, the 85 hp. plane is credited with top speed of over 170 mph. and cruising speed over 150 mph., with estimated range of 700 miles.

• **larger profits**

• **lower sales costs**

• **better customers**



Practically every new Globe "Swift" will be equipped with an Aeromatic Propeller. Aeromatics are also used on most North American "Navions," Johnson "Rockets" and Bellanca "Cruisers." The Aeromaster, an adjustable pitch propeller, is standard equipment on Republic "Seabees."

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If you wrote your own ticket . . . you couldn't ask for more profitable features than those of Aeromatic Automatic Variable Pitch Propellers. Aeromatics bring a sizable profit on the initial sale. Aeromatics are easier to demonstrate, easier to sell, with lower sales costs. Aeromatic owners get more fun out of flying . . . become better prospects for your other goods and services. Aeromatics benefit from "word-of-mouth" publicity by enthusiastic owners. And they're an exclusive item, too!

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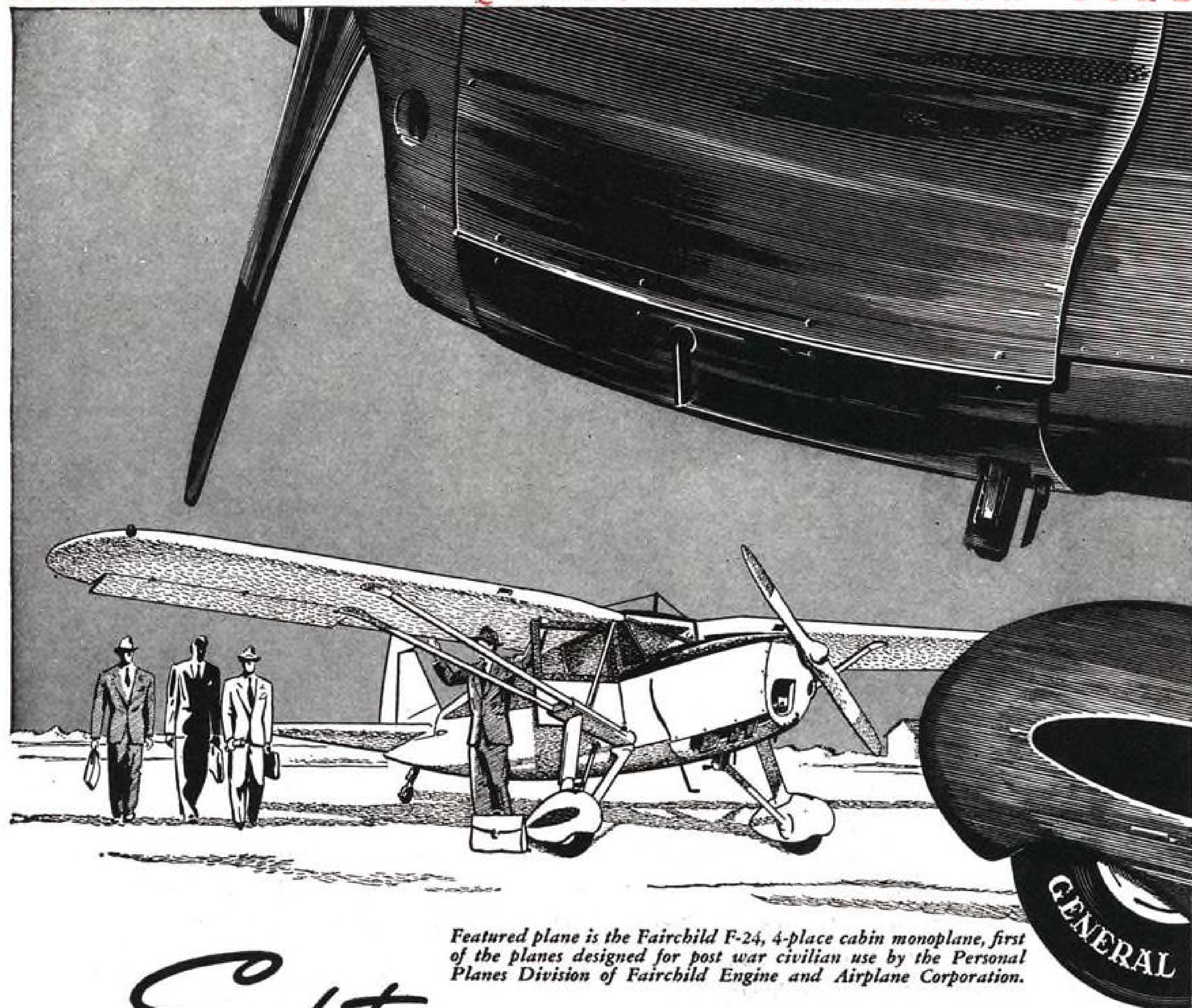
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Featured plane is the Fairchild F-24, 4-place cabin monoplane, first of the planes designed for post war civilian use by the Personal Planes Division of Fairchild Engine and Airplane Corporation.

Safety MAKES TRAVEL BY AIR ROUTINE



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TRAVEL speed and safety are today's requisites in highly competitive fields of American enterprise. The General Aviation Tire provides an important contribution to the overall protection demanded by men who make their business contacts by air.

The General Aviation Tire is built to one exacting standard . . . Top-Quality. Under any condition, General's extra-quality gives the private plane owner . . . extra-safety . . . extra-dependability . . . extra service . . . and lower operating costs.

Aviation Division

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PRODUCTION

Boeing Withdrawal of Model 417 Narrows Feeder Plane Competition

Company influenced by lowered mileage authorized lines by CAB; Beech and Northrop continue work on new planes for market.

Boeing Aircraft's suspension of plans to produce its Model 417 20-passenger feederliner leaves two companies still pressing work on planes for this type of service; Beech, with its four-engine Model 34, and Northrop with its trimotor, high-wing Pioneer.

Feeder operators nevertheless are disappointed over Boeing's withdrawal, not because of any expressed preference for the Model 417, but because the action limits the competition, and because they believe the views motivating Boeing's decision are unduly pessimistic and may affect the thinking of others in the manufacturing industry.

Both Northrop and Beech probably will remain in the feeder picture. Northrop's Pioneer is practically guaranteed by TWA and as long as that carrier's interest remains high, production of the plane can be expected. Beech expects to have the first Model 34 flying by February or March.

► **Special Design**—John P. Gaty, vice-president and general manager of Beech, told AVIATION NEWS, "We designed a plane especially for the feederline operators." He said the company expected that neither they nor anyone else could enter the field with "just another transport airplane." To the comment that Beech was one of the two firms remaining in the feeder production field, Gaty replied, "We were the first to get in."

The Model 34 is being built especially to get in and out of small fields, also a feature of the Pioneer that is attractive to feeder operators. But the passenger capacity of the Pioneer—30-33—is deemed to be too large for most feeders. The ideal capacity, most operators feel, is about 20, the number of seats planned for the Beech.

Engineering and preliminary

tooling of Boeing's Model 417 had begun at the Wichita plant when the decision was reached to forego production at least for the time being. This is the same step taken by Lockheed last summer in regard to its Saturn. Both companies state the projects are not dead, but will not be continued until various conditions improve.

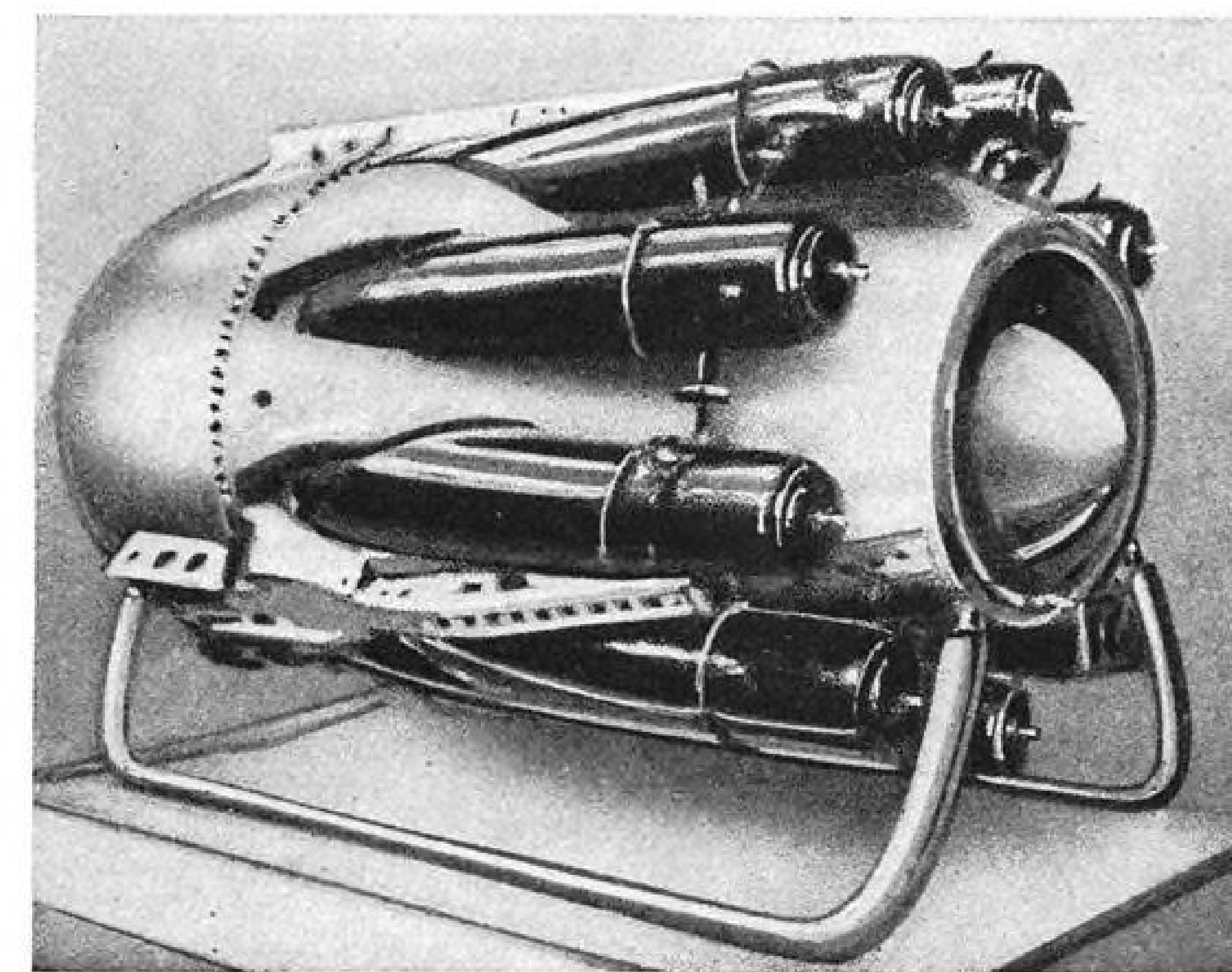
► **Feeder Mileage**—Perhaps the most important condition that resulted in Boeing's action is the current total feeder mileage and expectations of what it will be when CAB completes action on the

area cases. Before the Board began issuing decisions on the area proceedings, some manufacturers envisioned regional mileage totaling as high as 60,000. However, with five of eleven feeder cases announced, mileage is 11,728, and anticipated total routes about 30,000.

In re-examining the feeder market, Boeing decided that it would require 60 417s to serve the entire expected feeder system. It calculated it could sell another 200 planes in the export market. But with a planned schedule of 22 Model 417s per month, the company would wipe out its market in about one year. For that small a sale, the unit price would be greater than it was considered the feeder lines could pay in consideration of their three-year operating certificates.

Despite more than a year of work, and an investment of approximately \$1,000,000, Boeing therefore laid the 417 on the shelf.

► **Tax Influence**—There is some speculation that the company's action was influenced by tax laws. This is the last year in which industry will be able to claim excess profit tax refunds on its wartime



FRENCH TURBO JET:

From a design begun in 1939, and continued during 1942-43 "under cover," French firm of Rateau has produced the prototype of its A-65 gas turbine. Nine combustion chambers grouped around the axial compressor casing are of reverse flow type feeding rearward into a two-stage turbine. Compressor has four low and 12 high pressure stages. Part of the air from the low pressure stages is by-passed to tail pipe at a point level with cone behind the turbine where extra fuel can be injected for after-burning. Static thrust at sea level and 7,500 rpm. is 1,760 lb.; with after-burning, 1,985 lb. Weight, 2,645 lb. "Flight" photo.

gains. By suspending the 417 project now, Boeing will be able to charge the investment against its tax refunds this year.

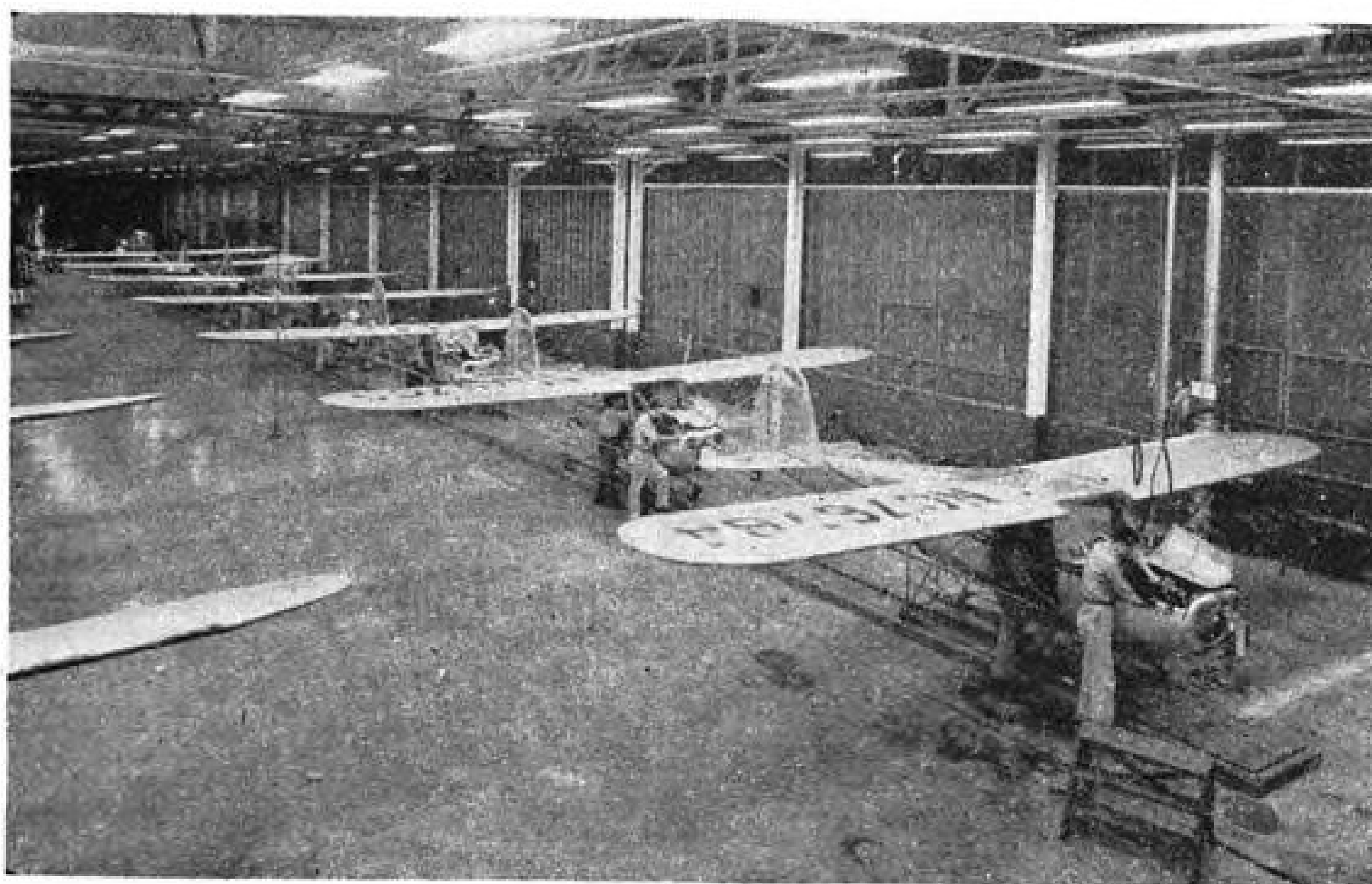
The company's over-all picture is not greatly affected by its decision regarding the 417. It has a backlog of nearly \$200,000,000 consisting of AAF orders for the B-50 bomber, C-97 transport and L-15, a new liaison craft.

Commercially, it is proceeding with the Stratocruiser and Strato-freighter, civilian versions of the C-97. Although the immediate effect of the 417 suspension at Wichita was the layoff of about 600 employees, subassembly work on the B-50, and construction of the L-15 there will later call for the re-employment of these, plus the hiring of others.

Representatives of feeder lines feel that Boeing has underestimated the potential market and that the 60 planes on which the company figured is the bare minimum necessary even if there is no expansion of already-certificated feeder routes. These spokesmen, however, are confident that there will be such extensions granted by the Board. They also point to the possibility that once the feeder systems begin operation traffic will grow beyond original estimates.

Cessna Using Moving Assembly

Cessna Aircraft Co. which has reached a production rate of one plane every 15 minutes of its work day, or 30 planes a day, has installed a conveyor built system of



Two an Hour: Eight two-place Cessnas are shown in various stages of completion along one of the two conveyor-belt assembly lines which have been installed in the Wichita plant.

assembly which officials report has cut production costs by approximately 10 percent.

There are 20 stations along each conveyor belt. To begin the operation, a skeleton fuselage is lifted out of the master jig by an electric hoist, transported by overhead trolley to one of the lines and lowered onto a conveyor cart. Moving from station to station every 30 minutes by means of the power-driven belt the skeleton comes off the line complete with the exception of propeller and some instruments. The prop is left off as a safety measure and the shock-mounted instrument panel is not attached until the plane is in the hangar in order to eliminate possible damage to the delicate instruments.

All planes coming off the conveyor lines are standard models, with special equipment being installed in the hangar. Two men work at most stations and the work is so scheduled that each man can complete his job in 30 minutes. Work benches and holding racks designed to contain various parts that go into the airplane at one particular station are at each man's side.

Another advantage is that the arrangement reduces the number of scratches and scuffs on the planes and results in better appearing products.

When it is time to move planes forward, a whistle is sounded and a button pushed which causes the planes to glide from one position to the next. The company has ordered an automatic time clock for the conveyors which will make the belt movement automatic.

Cessna expects to be in production immediately on its Model 190, a four-place, high-wing metal plane which will be competitive in the executive transport field.

The company closed its assembly lines from December 9 through 13 for rearrangement and retooling. The plant reopened December 16 at its 30-plane-a-day production rate on the 120 and 140 models, in addition getting ready for the 190. Cessna now employs 1,800 persons, more than were employed on V-J Day.

Fairchild Affiliate Gets \$2,000,000 Martin Job

Fairchild Engine & Airplane Corp.'s affiliated Stratos Corp. has been awarded a \$2,000,000 contract to install pressurization and air conditioning equipment in 175 Martin 303 transports. It is asserted to be the largest contract ever written for air conditioning of commercial planes.

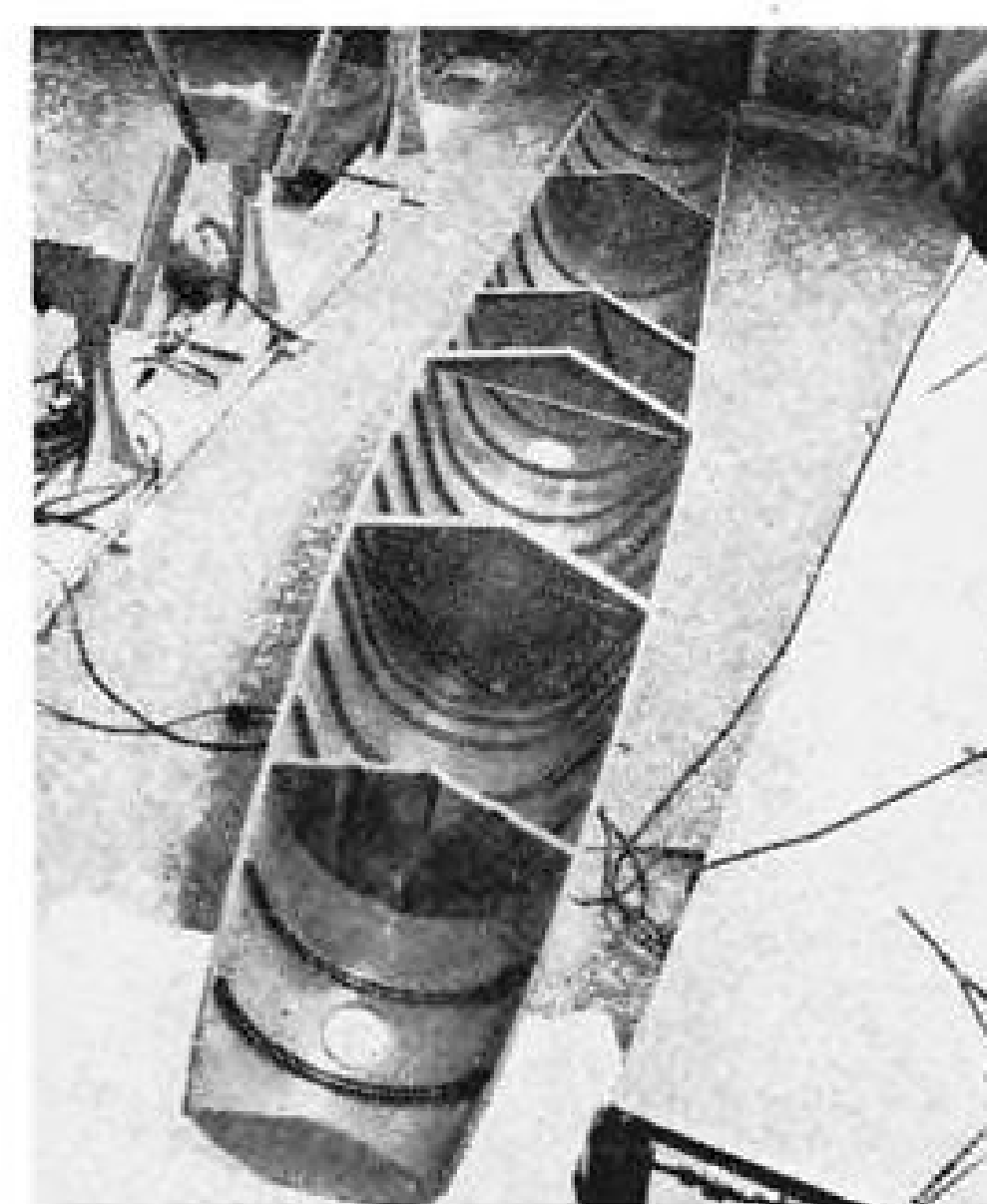
The Stratos system utilizes magnesium alloys and has a total weight of 175 lb. It operates automatically and provides sea level atmosphere in the cabin up to 10,000 ft. altitude. At higher levels up to 24,000 ft., it maintains pressure equivalent to an altitude of 8,000 ft.

Edo Building Two New Floats

By use of special tooling and by simplification of manufacture, Edo Aircraft Corp. is achieving mass production on two new lightplane floats with a substantial reduction in the selling price.

Man-hours on the new types—Model 2000 for the Piper Super-Cruiser, and Model 1650 for Cessna 120 and 140—have been nearly cut in half by building the floats in four interchangeable parts. Engineering improvements have trimmed about 30 lb. off these models as compared to previous floats. The Model 2000 now sells for \$1,350 as against \$1,950 for its predecessor Model 1965, and the Model 1650 costs \$1,250. The former price was \$1,765.

With an eye both on maintenance and ease of manufacture, Edo builds each component in a precision jig to provide interchangeability and the wide-angle V-bottom is formed of flat sheets. Formerly, the bottom of the floats were specially-drawn aluminum



Internal Design: Lending strength and safety are the watertight bulkheads in Edo floats, construction of which is shown here.

sheets with compound curves. The new float uses stock aluminum. Bottoms may be replaced by repair stations without any shaping or forming problems.

Another improvement making for easier maintenance is in the keel which is attached completely from the outside. It can be removed without disassembling the float. Bow bumpers are bolted on and can be readily replaced as the bolts are accessible through the forward hand hole. The hand hole covers are an innovation, locking with a half turn of the locking key.

Enabling faster installation or replacement is the redesigned strut. Semi-cantilever struts eliminate the need for a spreader bar and bracing wires, giving a cleaner arrangement and reducing the number of parts.

Lear on Missiles

Lear, Incorporated, Grand Rapids, Mich., announces it is engaged in development and production work on "several phases" of remotely controlled missiles for the armed services. This project ties in closely with Lear's normal activities on aircraft communication and navigational controls.

Stratos Corp. Branch

Stratos Corp., Babylon, L. I., N. Y., manufacturer of aircraft pressurization and air conditioning equipment, has opened a branch office at 7904 Santa Monica Blvd., Los Angeles 46, Calif. Manager is Kingsland Hobein.

Electronic Analyzer

A high speed electronic analyzer called the Hydrauliscopes has been developed by Aeroquip Corp., Jackson, Mich., for checking pressure surges and other phenomena occurring in hydraulic systems.

Designed as a simple and efficient device for use by other than specialists in the electronic field, the Hydrauliscopes is said to give consistent results even when used by persons unfamiliar with electronic devices. It translates output of the pressure pick-up to vertical deflections on a cathode-ray oscilloscope, and can be furnished with attachments to permit photographic record of the curves traced on the screen of the cathode-ray tube. Interchangeable guide plates



may be inserted in front of the screen to provide direct calibration at standard scale factors such as 2,000 psi. per in. or 500 psi. per in. Only two external connections are required—one to the pressure pick-up and one to any standard 105 to 125 volt, 50 to 1,800 cycle power service.

The Hydrauliscopes includes a direct coupled amplifier which is susceptible to low transient frequencies down to zero to permit indication and record of the absolute values of any transient. Output characteristics are flat up to frequencies of 20,000 cps.

Price of equipment is \$1,500.

'Chore Boy' Refueler

New airport servicing equipment is Buda Chore Boy refueler, being built by Buda Co., Harvey, Ill., for airports and airlines. Refueler, which is powered by 7.7

New Products



hp. aircooled, 4-cycled engine, is less than 5 ft. high and has capacity of 250 gal.

Weighing 2,200 lb. without fuel, refueler is set up to serve airlines with oil, de-icing fluid or gasoline. There is a hose reel compartment, control pumps, double doors and all safety features are said to be incorporated. Company claims new unit is very maneuverable, inexpensive to operate, and quite fast—it can be brought from plane to plane on all parts of an airport in a few minutes.

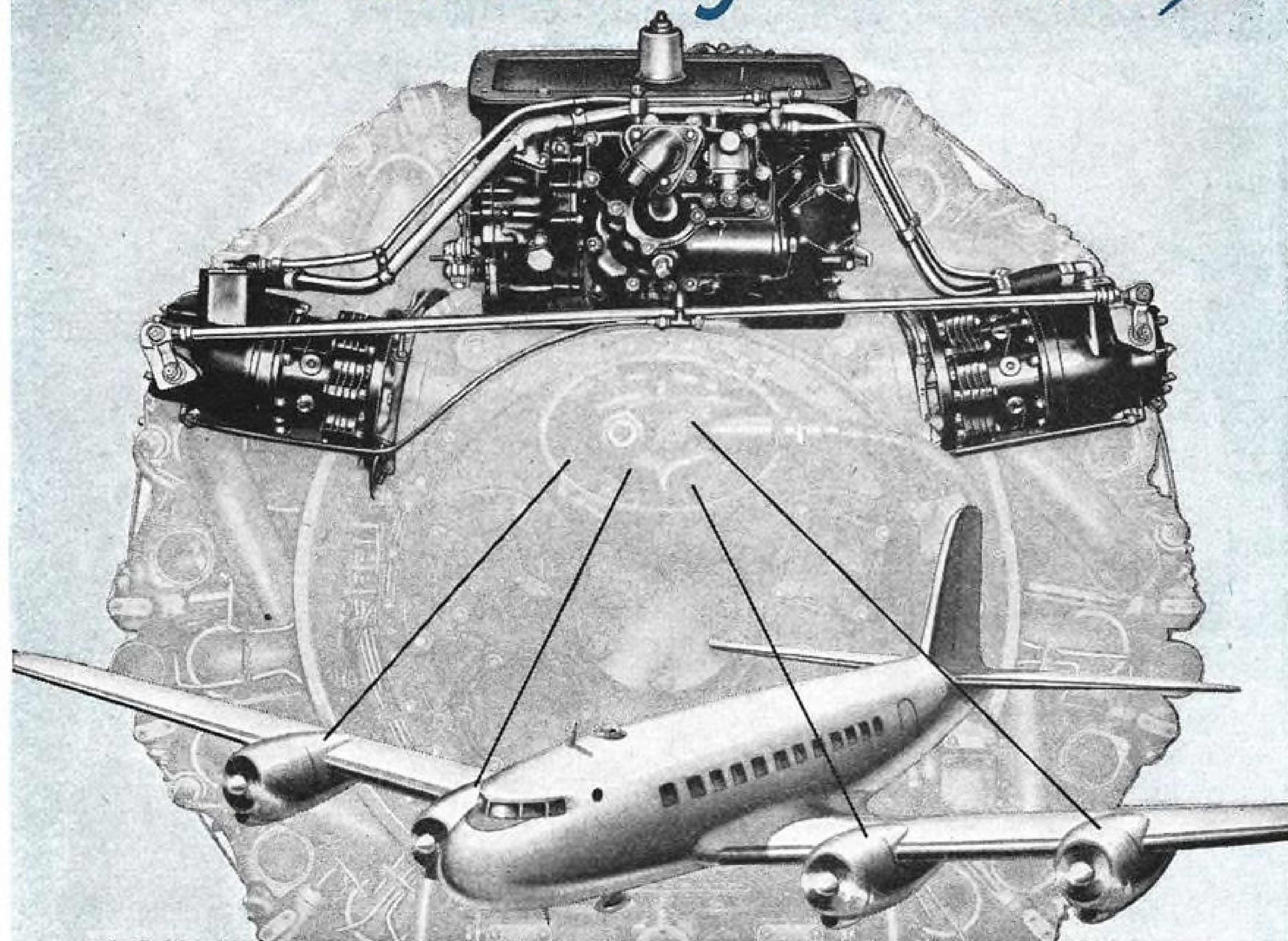
New Radio Receiver

Ready for delivery, the Ranger Model 120 receiver, made by Electronic Specialty Co., Los Angeles, features long range reception of the broadcast band, as well as radio range stations and airport control towers. Set is designed for both speaker and headphone operation. Frequency coverage is 195 to 410 kilocycles and 540 to 1550 kilocycles.

Matching the Ranger 209 transmitter recently announced by the company, the two units provide two-way radio communication, using same antenna through convenient switch-over relay. Weight of receiver is 3 lb. 11 oz. Dimensions: 5 x 4½ x 6¼ in.



Announcing The Bendix



A New Bendix-Developed fuel feed system which injects gasoline directly into each engine cylinder

Reduces fire hazard

... the intake passages carry air only—not an explosive mixture.

Easier starting; less back-firing; shorter warm-up period

... each cylinder instantly receives correct fuel charge; no manifold condensation.

No icing from fuel vaporization

... the fuel is vaporized within the engine cylinder; no "refrigeration" of intake manifold or carburetor.

More pay load, or more ton-miles per gallon

... leaner mixtures can be used; fuel distribution is exactly equal.

Less maintenance cost; longer engine life

... equal fuel distribution means less vibration—smoother operation.

Greater passenger comfort

... a smoother operating engine means less noise and vibration.

Better altitude performance

... comparatively unobstructed intake passage means higher volumetric efficiency.

More engine power ... Better engine acceleration ...

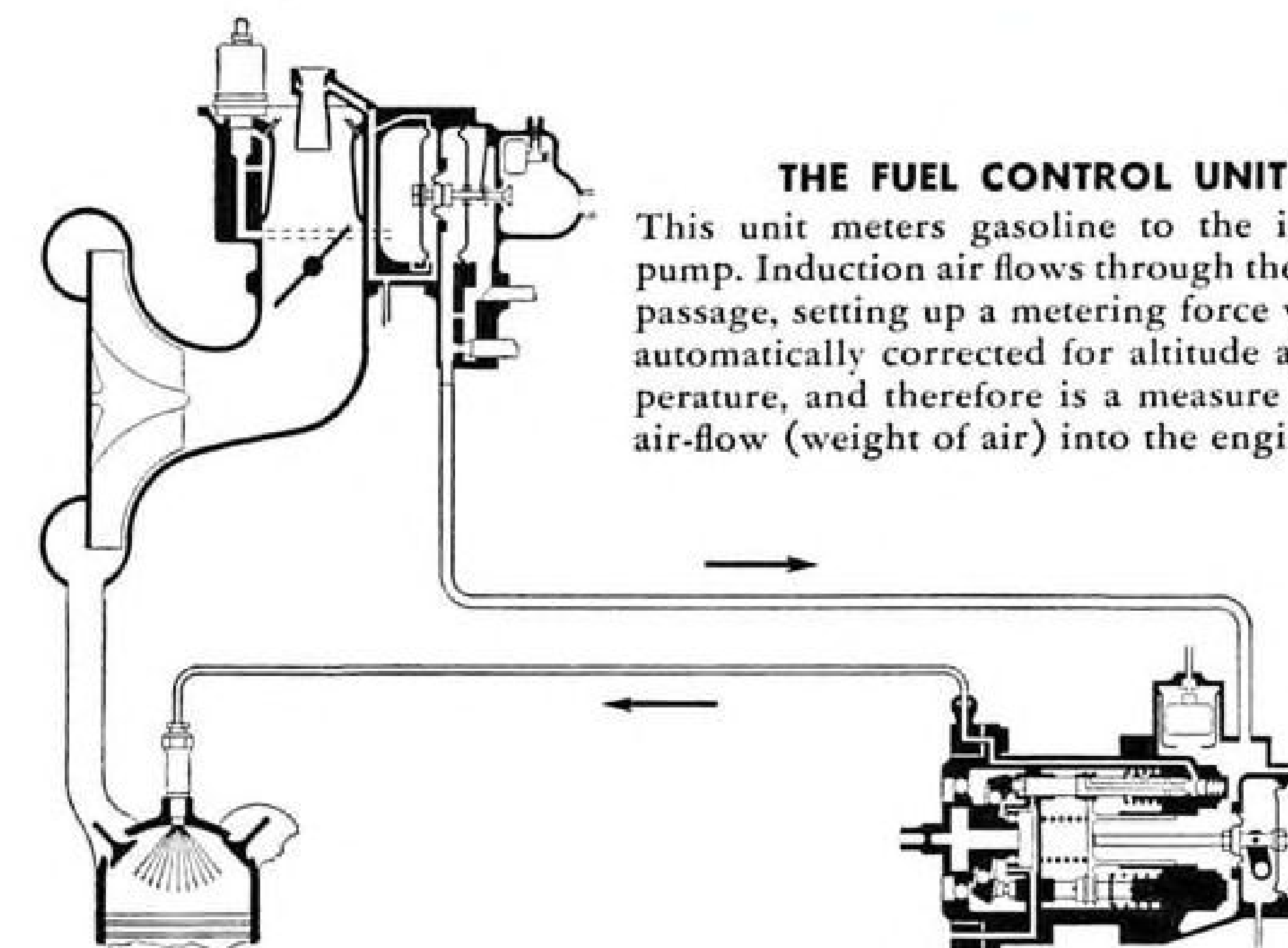
... even cooling of all cylinders, requiring less cowl flap opening, thus reducing drag.

No engine stalls or faltering

... fuel feed not affected by gravity or inertia effects in climbs, banks or dives.



Direct Fuel Injection System!



THE FUEL CONTROL UNIT

This unit meters gasoline to the injection pump. Induction air flows through the venturi passage, setting up a metering force which is automatically corrected for altitude and temperature, and therefore is a measure of mass air-flow (weight of air) into the engine.

THE DISCHARGE NOZZLE

The measured charge of fuel is sprayed into each engine cylinder through a discharge nozzle. The discharge nozzle has a spring loaded valve and spiral fuel passage to insure uniform diffusion of thoroughly atomized fuel, with a sharp, clean cut-off after each injection period.

THE INJECTION PUMP

The injection pump divides the metered quantity of fuel into exactly equal charges, one for each engine cylinder; then the pump forces one charge to each engine cylinder, timed for injection during the intake stroke.

One airline estimates that with Bendix Direct Fuel Injection their ships are saving up to six per cent on fuel. This means an increased pay load of about 900 pounds—or room for four additional passengers. Another airline expects to increase cruising speed 20 mph at high altitudes by using Bendix Direct Fuel Injection.

In addition to these remarkable advantages, it has been demonstrated that smoother engine operation and less vibration reduce maintenance costs. And of course less vibration and noise contribute importantly to passenger comfort.

An illustrated folder on the Bendix Direct Fuel Injection System will be sent upon request. Bendix Products Division, Bendix Aviation Corporation, South Bend, Ind.

Bendix* creative engineering helps American aviation lead the world



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SPECIAL AIR SERVICES

Charge Certificated Airlines Are Unfit for Cargo Operations

California Eastern Airways sparks route bid by challenging record of presently-certificated carriers in freight field; cites high rates, lack of interest.

By CHARLES L. ADAMS

Displaying an aggressiveness that contrasted sharply with the conservative tactics of other applicants, California Eastern Airways sparked its route bid in CAB's airfreight case with a blunt challenge of the presently-certificated airlines' fitness to carry cargo.

California Eastern presented statistical studies compiled by Alvin P. Adams & Associates, aviation consultants, purporting to show that the certificated airlines have been flying cargo at a loss although charging much higher rates than the independent airfreighters. Other data illustrated an apparent lack of interest by the airlines in airfreight until competition from contract and non-scheduled carriers recently forced a change of policy.

► **Cite United Loss**—W. C. Rockefeller, general manager of the Adams firm, stated that United Air Lines in August had freight revenues of 25.4 cents a ton mile, freight expense of 32.9 cents a ton mile, and a loss on its cargo operations of \$25,114 or 7.5 cents a ton mile. This 7.5 cents a ton mile, Rockefeller claimed, represented a deficit which could only be made up from UAL's other types of traffic, namely, passenger or mail.

Asserting that United's experience with cargo was typical among certificated carriers, Rockefeller indicated that studies made on American, TWA and Eastern showed similar results. By contrast, he said, California Eastern, a new company with only a few months' operating experience, was carrying cargo last summer for

less than 12 cents a ton mile and at a smaller ton mile deficit.

California Eastern exhibits showed that in 1945 less than 5 percent of all revenue reported by the certificated domestic airlines came from carriage of property and that the bulk of this 5 percent represented air express moving at 70 cents a ton mile. As late as last August, it was pointed out, Eastern Air Lines, one of the "Big Four," flew only 11,899 freight ton miles, one-fortieth of the volume recorded by California Eastern in the same period.

► **Eastern Business**—Eastern's airfreight business in August was set at less than one-fifth of 1 percent of the carrier's overall traffic. Airfreight potential by 1950 may reach 5.6 billion ton miles annually, yielding \$675,000,000, according to the Adams estimates. How much of this total is actually translated into business depends on an aggressiveness and initiative not shown heretofore by the certificated airlines, the study emphasizes.

Testimony of Harry F. Suiter, traffic manager of Merck & Co., Rahway, N. J., manufacturer and distributor of chemicals and drugs, was introduced to support CEA's contention that the airlines have been ineffective in the airfreight field. Suiter said his company ships 1,000 lb. of cargo weekly via California Eastern and finds the service superior to air express.

The certificated airlines, Suiter declared, have solicited Merck's air cargo business very infrequently. California Eastern officials later testified they had experienced very keen competition from National Skyway Freight Corp. (The Flying Tigers), Slick Airways and other contract carriers but little from scheduled airlines.

► **Use C-54s**—Now operating coast-to-coast with three C-54s and in the Pacific Northwest with a C-47, CEA expects to place its fourth C-54 in service Feb. 1. The Oakland-based contract carrier, in the red to date, hopes to begin showing profits about the same time.

From May 15, when operations started, to Oct. 31, California Eastern flew 2,056,478 ton miles, including about 600,000 ton miles in October. The carrier's present base rate of 12.2 cents a ton mile probably will be lifted slightly early next year, reflecting a continuance of the industry-wide trend toward stiffening tariffs which began early this fall.

If certificated, CEA hopes to fly 33,395,310 revenue ton miles at 65 percent load factor and a 12-cent base rate in 1948 using six C-54s (AVIATION NEWS, Nov. 18). Revenue ton miles in 1949 would rise to around 47,952,240 with an average of eight C-54s in operation at a 70 percent load factor.

Other industry developments:

► **Air Freight Handling, Inc.**, has been activated at Teterboro, N. J., Air Terminal to service cargo for independent contract carriers and is moving between 75,000 and 100,000 lb. of freight daily, according to Ray Gambon, general manager. Carriers serviced by the cooperative organization include: Airborne Freight and Passenger Service, Consolidated Air Transport, Flamingo Air Service, National Skyway Freight Corp., R. C. R. Air Transport and Willis Air Service. Other companies are expected to join the group shortly.

► **Earl Penn Flying Service**, Pawhuska, Okla., is flying the community's daily newspaper to more than a dozen towns and oil field camps within a 50-mile radius. Lack of rural routes and slow mail service in the area inspired the decision to start the operation. Approximately 3,000 bundled papers are dropped daily along the plane's route, with more copies to be sent out in the future.

► **S. F., Inc.**, Lafayette, La., has applied for a CAB certificate to operate between New Orleans and Lafayette via Baton Rouge. Company operates three Noorduyn Norseman aircraft along the route and on charter flights, according to Henry C. Wallach, vice-president.

► **Waterman Airlines**, Mobile, expects to make a second DC-4 charter run to Johannesburg, South Africa, for Seas Shipping Co. beginning Dec. 27. Another Waterman DC-4 will make a special "Rose Bowl cruise" from New Orleans and Mobile to Los Angeles on Dec. 26. On Dec. 27, the first of two Oakland-Honolulu roundtrips will begin, and on Jan. 2 the plane will return the Rose Bowl visitors to New Orleans and Mobile.

► **Inland Airways, Inc.**, Walla Walla, Wash., plans to start Walla Walla-Kennewick-Seattle flights with Beech D18Cs next month, according to Perry Cole, president. Company has been incorporated at \$125,000.

► **Air Charter Co.**, Denver, is starting air taxi service within a 450-mile radius of Denver using Stinson Voyagers, according to James T. Pyle, president.

► **Noel, Inc.**, has begun service between Everett, Wash., and Anchorage, Alaska, with a Lockheed Lodestar.

► **Aero Transport Corp.**, Tampa, Fla., owner of four flying boats based at Peter O. Knight airport, may be reactivated for participation in freight service in the Caribbean. The company, headed by E. W. Hightower, Jr., of Atlanta, and W. C. Siple, of Montreal, has operated between Tampa and Havana.

► **Dartmouth Airways**, Hanover, N. H., suffered an accident near Claremont, N. H., Dec. 14 in which four passengers and the pilot were injured. A twin-engine company plane struck a hill while en route from New York City to Lebanon, N. H., on a charter flight.

► **Institute of Air Transportation**, New York, charter airline trade association, has formed a maintenance advisory board to establish maintenance regulations and standards for aircraft operated by member companies. The board will be headed by Saunie Gravely, former president of Veterans Air Express Co., Newark.

► **Consumers Air Freight Corp.**, Cham-

paign, Ill., has applied for a CAB certificate to carry persons and property from Illinois points to St. Louis, New Orleans, Brownsville, New York and Duluth. Company owns one passenger-cargo DC-3 which has been operated in the middle west and to New York, according to William K. McConnell, vice-president.

► **Hot Springs Airways**, Hot Springs, Ark., has asked CAB authorization to carry property and mail between Hot Springs and Little Rock. Company now operates four roundtrips daily between the two points using three four-passenger Cessnas. Earl T. Ricks is president.

► **Toronto Globe and Mail** has purchased a Grumman Mallard amphibian for its news department. The plane was chosen as suitable to reach isolated Canadian points where only water landings can be made. Main cabin is equipped with desks for reporters.

► **Transocean Air Lines**, Oakland, Cal., has completed a survey flight for Philippine Air Lines preliminary to scheduled PAL operations into Saigon, Indo-China, and Bangkok, Thailand.

► **Colorado Public Utilities Commission** is holding hearings on applications to operate intrastate charter air services.

► **Comet Airlines, Inc.**, Port Columbus, O., has asked CAB authorization to operate from Columbus, O., to Norfolk, Va., New York, New Orleans, Kansas City and International Falls, Minn. Company during July and August flew 7,210 revenue plane miles carrying 14,688 lb. of revenue cargo with one Noorduyn Norseman, according to R. E. Reedy, president. Delivery of a C-47 is expected around Jan. 1.

Asks Helicopter Routes

Hinck Flying Service, Inc., fixed base operator at Wold-Chamberlain Field, Minneapolis, has asked CAB for helicopter routes in the Minneapolis-St. Paul area. Company expects delivery on its first helicopter this month.

CAB Blames Pilot In TLA Accident

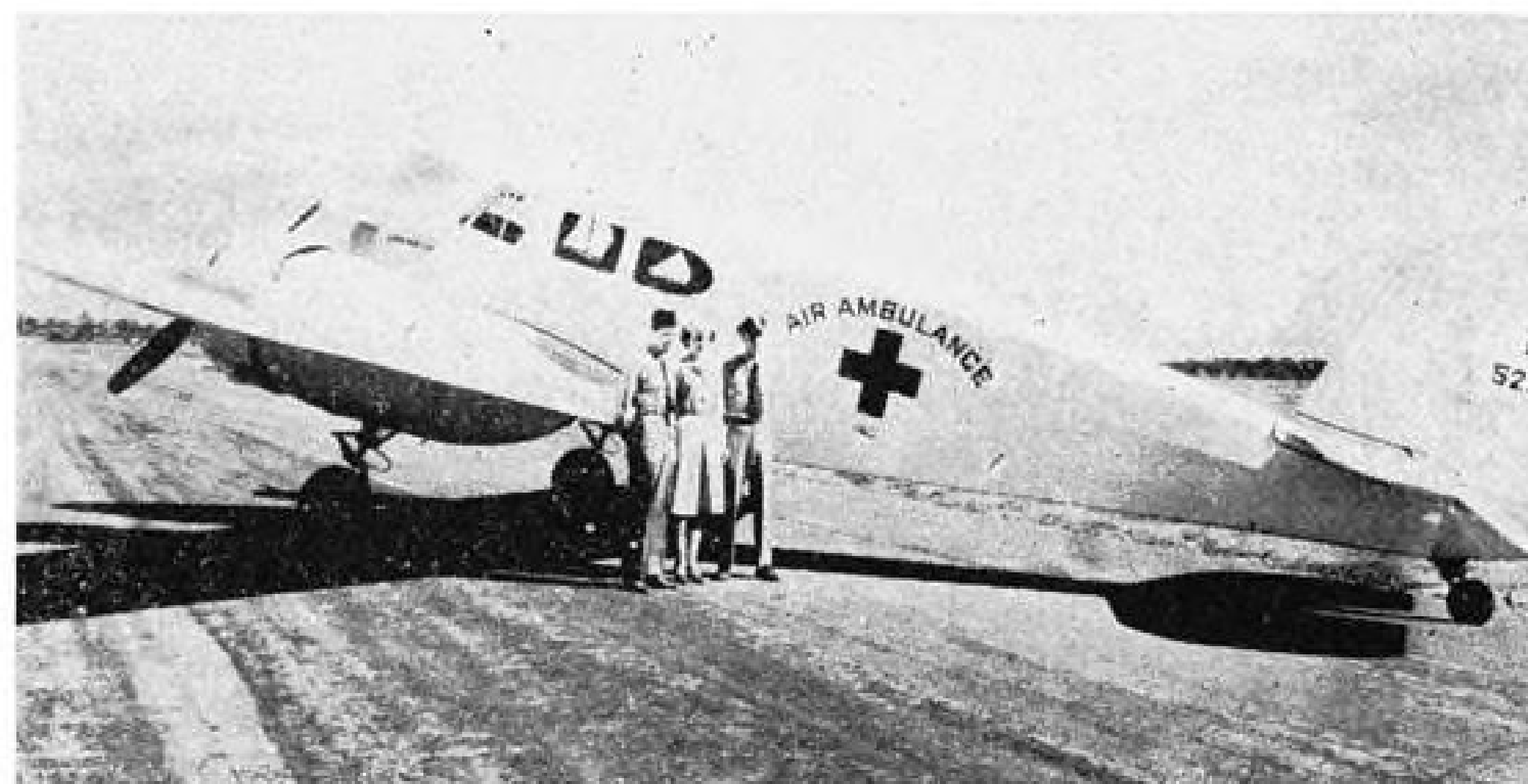
Probable cause of Trans-Luxury Airlines' DC-3 crash near Elko, Nev., Sept. 5 was the pilot's action in continuing a landing approach after losing visual contact with the airport under conditions of dense ground fog, a CAB accident report states.

A contributing factor was the pilot's unfamiliarity with the terrain in the immediate vicinity of the airport, the Board found. The investigation also disclosed that the original flight plan from Cheyenne to Reno (later changed for the Elko landing) was deficient in that the fuel carried did not provide sufficient margin of safety.

Twenty-one persons, including the crew, were killed and one child survived when the plane struck a ridge 2½ miles southwest of the Elko field. Ceiling at the time measured 200 ft.

Air Freight Record

Independent Airfreight Association's five members—Willis Air Service, U. S. Airlines, Slick Airways, National Skyway Freight Corp., and Flamingo Air Service—flew 3,686,000 cargo ton miles in November, up 300,000 ton miles over October. Slick operated 2,061,239 ton miles, against 2,034,035 in October.



CESSNA IN AMBULANCE ROLE:

Fully equipped for the patient's safety and comfort, this Cessna T-50 is in the recently-activated three-plane fleet of Air Ambulance, Inc., Durham, N. C., and New York City. Planes are fitted with ambulance cot, resuscitator and inhalator, drugs and medical kit. Registered flight nurse is carried as part of the service. Accommodations are provided for doctor, friend or relative. One of an increasing number of companies in the business, Air Ambulance has asked for a CAB certificate to operate in continental U. S. The application states that air hearse service also would be offered.



VAN COMPANY USES CARGOLINER:

Entrance of Knowles Vans, Inc., 20-yr.-old Omaha trucking firm, into the air freight field offers further proof that furniture and other household goods are legitimate long haul "air candidates." The firm has organized Knowles Air Lines to supplement its nationwide storage and moving service. Charles Knowles, president of both companies, predicts that Knowles Air Lines' service will increase rather than reduce his motor freight business. Omaha Municipal Airport is the scene of the coordinated air-surface moving operations shown above.

FINANCIAL

Airline 'Insiders' Sell Heavily, Current SEC Reports Reveal

Most selling took place before further abrupt decline of markets in recent months.

Airline shares were sold heavily by "insiders" during September and October. This is revealed by current reports filed with the Securities and Exchange Commission. For the most part, such selling took place before the further abrupt decline of the markets in recent months.

PCA Director Sells—Some significant selling took place in the securities of PCA. Armand G. Erpf, director of the airline, sold his entire holdings of \$28,000 of 3½ percent debentures. Erpf's banking firm, C. M. Loeb, Rhoades & Co., also sold their entire block of \$11,000 in debentures. This liquidation took place while the bonds were around par (100) or above. Shortly thereafter, the price of the debentures broke sharply and declined to a low of 54½. Erpf also sold a total of 1,900 shares of PCA common stock, mostly in September, retaining only 100.

C. M. Loeb, Rhoades & Co. and White, Weld & Co., have been the investment bankers for PCA and are prominent on the airline's board. The latter banking firm has also been a consistent seller of PCA securities and at better prices. In financial circles, it generally becomes known when bankers sell the securities of their sponsored firms, which hardly engenders investment support. With PCA now confronted with an acute financing problem, it will be interesting to observe the public reception accorded any new security flotation of the airline.

American Options—During September, 1946, C. R. Smith disposed of 20,000 of his 250,000 options on common stock of American Airlines. These options are exercisable at \$11.90 per share. With the price of the common below \$10 per share, these options are currently without value. However, with any appreciation in the market, these options will assume

Recent Stock Sales		
Significant sales by airline officials:		
	Shares sold	Shares retained
Alaska Airlines		
Robert H. Johnson	1,000	none
Braniff		
Charles E. Beard	1,000	1,900
C. G. Adams	700	3,700
C. G. Adams (Nov.)	1,200	2,500
Colonial		
Sigmund Janas	3,000	41,238
Northwest		
P. D. Armour	1,000	none
Significant sales by aircraft officials:		
Cessna		
D. L. Wallace	2,167	90,014
Fairchild E & A		
S. M. Fairchild	600	113,370
James Allis	500	500
Republic		
John J. Daly	900	57,614

tangible increment to the holder if and when exercised at favorable levels. It appears that Lawrence G. Fritz received 2,500 of these options from C. R. Smith.

Other significant sales among airline officials for October (unless otherwise indicated) are shown in the accompanying table.

Upon being elected a director of National Airlines, it was revealed that Joseph A. Thomas owned 3,000, and his banking firm, Lehman Brothers, owned 5,880 shares of the airline common stock. Similarly, Howard A. Piper was revealed as owning 16,800 shares of Piper Aircraft.

Survey Appraises Industry Outlook

The aircraft manufacturing industry has attracted considerable attention in surveys currently being released by investment firms. In an analysis, "Post War Prospects For Eighteen Companies," Hornblower & Weeks attempts to appraise the industry's outlook.

This report declares that most companies should break-even or show only small losses for 1946, after application of tax credits.

Earnings prospects for 1947 appear encouraging. Latest reported unfilled orders are for 51,205 airplanes with a value of almost \$1.2 billion. With reconversion expenses charged off and new models in production, results should score notable improvement over those to be reported for 1946.

Working Capital Increased—The strengthening of financial positions is highlighted by the increase in net working capital for eighteen companies from \$70.6 million at the end of 1939 to \$681.5 million in their latest published balance sheets. The investment firm believes that these stocks have over-discounted the unfavorable factors which are common knowledge. Almost every airplane stock is available at a substantial discount from its equity in net working capital. Hornblower & Weeks believes that such companies as Boeing, Convair, Douglas, Grumman, Lockheed, Martin, North American, and United Aircraft should maintain dominant positions.

Backlog of 51,205 Planes—Value of 1946 production is estimated at \$750-\$800 million. Unfilled orders on Oct. 1, 1946 were reported at 51,205 airplanes with a value of \$1.2 billion so that 1947 deliveries may approximate \$750 million, according to the survey which uses the CAA's "Civil Aviation and the National Economy" as its source.

Production of military aircraft for the armed services is expected to be the mainstay of the airplane manufacturing industry. The demand for commercial transports is expected to be well maintained. It is estimated that of the \$750 million value of total airplane deliveries for 1946, \$125 million will represent commercial sales. Unfilled airline orders are placed at approximately \$335 million.

Hornblower & Weeks, however, do not appear to fully discount the cancellations that have taken place. The survey expects that the increasing volume of foreign business being booked will help offset the loss of domestic sales.

Promising Developments—Among the interesting developments which add great promise to the industry are: (1) increasing emphasis on guided missiles and pilotless aircraft; (2) improvement in jet and gas turbines; (3) entrance of some military aircraft makers into the personal plane field; (4) refinements in helicopters; and (5) diversification of activities into non-aeronautical fields.

History DOES

Repeat Itself AND SANTA CLAUS IS THE FELLOW WHO REPEATS IT!



Old Santa works only one day a year, but it's a mighty big job he tackles every Christmas Eve! Things could be a lot easier for the jolly old fellow, though, if he'd put his reindeer out to pasture and trade that sleigh for a new transport plane. This Douglas C-74 Globemaster, for example, with its 30-ton payload and 300-mile-an-hour speed, could make old Nick's Christmas job a snap!



THE OHIO SEAMLESS TUBE COMPANY



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FIXED BASE OPERATIONS

AIRPORTS PRIVATE FLYING SCHOOLS

ADMA Convention Indicates Big Sales Campaign Underway

Members and speakers at Chicago meeting of Aviation Distributors & Manufacturers Association show aggressive attitude; CAA plan to let industry present parts standards.

By ALEXANDER MCSURELY

Aggressive attitude displayed by members and speakers at last week's Aviation Distributors and Manufacturers Association convention in Chicago, indicates that a vigorous sales campaign is now underway to offset the recent slump in personal aircraft sales.

Spiced with comments from several individual distributors and manufacturers that their sales, in southern areas, were not slackening but that business was increasing, discussions on and off the convention floor offered new substantiation for the contention that the slump is at least in great part seasonal, and that early 1947 will again see sizable national volume of aircraft sales.

► **1946 Production Record**—John W. Friedlander, president of Aerona Aircraft Corp., and chairman of the Personal Aircraft Corp., estimated that the 1946 production of personal aircraft will be approximately 40,000 planes, about

five times the production of the best pre-war year. He urged concentration of plane sales effort in the agricultural, industrial and commercial areas, on a basis of utilitarian transportation, not as a rich man's hobby or a sportsman's toy.

Realistic judgment in ultimate distribution of airplanes, to individuals and companies financially able to maintain them and to use them profitably, is called for.

"If we find there is no logical reason for a person to have an aircraft let us be bold enough to tell him so. This of course may result in the loss of an immediate sale but in the long run it will save a great many headaches," Friedlander advised.

He asked for re-evaluation of the term "mass market," pointing out that an annual sales volume of 100,000 planes in a few years would be a mass market in the aircraft industry, although far

ADMA Elections

A. J. Weatherhead, head of the Weatherhead Co., Cleveland, was elected president of the Aviation Distributors and Manufacturers Association last week, succeeding W. F. Scott, Jr., head of Supply Division Inc., Robertson, Mo., who becomes advisory board chairman. Vice-presidents elected were: Robert Kenty, Air Associates, Teterboro, N. J.; and A. E. R. Peterka, Lamson & Sessions Co., Cleveland.

Other board members named are: Robert Durham, Durham Aircraft, Flushing, N. Y.; Art Whitaker, Portland, Ore.; R. J. Montgomery, Packard Cable Division, General Motors Corp., Detroit; A. M. Recker, Good-year Tire & Rubber Co., Akron; Harold F. Wood, Aero Service & Supply, Birmingham; J. G. Bausher, of W. Harris Thurston, Inc., New York; T. G. Tynan, Electric Storage Battery Co., Philadelphia; and Duane Stranahan, Champion Spark Plug Co., Toledo. George A. Fernly and H. Donald Richards, both of Philadelphia, were continued in office as executive secretary and secretary, respectively.

smaller than the annual sales volume of refrigerators, radios, cars, etc.

► **Committee Formed**—Heated discussion growing out of CAA's plan to issue technical standard orders governing approval of aircraft component parts, resulted in unanimous vote for appointment of an ADMA committee, headed by Ray Snyder, of Snyder Aircraft Corp., Chicago, to confer with CAA and with the Aircraft Industry Association, on the proposed orders.

► **CAA Plan**—A. A. Vollmecke, CAA engineer, Washington, outlined the plan proposed to let industry technical committees present standards for the various components which would be adopted by CAA as technical orders governing their approval. The plan would include use of Army-Navy standards, SAE ratings, and other accepted standards and would only affect such components as have a direct bearing on safety. The components will be approved, without inspection, on guarantee or warranty by the manufacturer that he has complied with the standards, and it will be necessary for him to provide identification in

the form of nameplate, stencils, etc., to indicate compliance.

"I wonder where the automobile industry would be, today, if it had been beset from the start by CAA," asked ADMA President W. F. Scott, Jr., in the discussion. "Suppose CAA had to approve steering knuckles and everything else on cars, pertaining to safety."

► **Industry Questionnaire**—A questionnaire sent to aviation manufacturers, on whether their distributors should take on competing lines or handle exclusive lines, was presented by Richard N. Bomberger, Sensenich Brothers (propellers), Lancaster, Pa. On a basis of 30 replies, sentiment appeared well divided. Consensus appeared that while the ideal situation from the manufacturers' viewpoint would probably be for exclusive representation, volume of sales on components and accessories is not yet large enough in many cases to make this practicable.

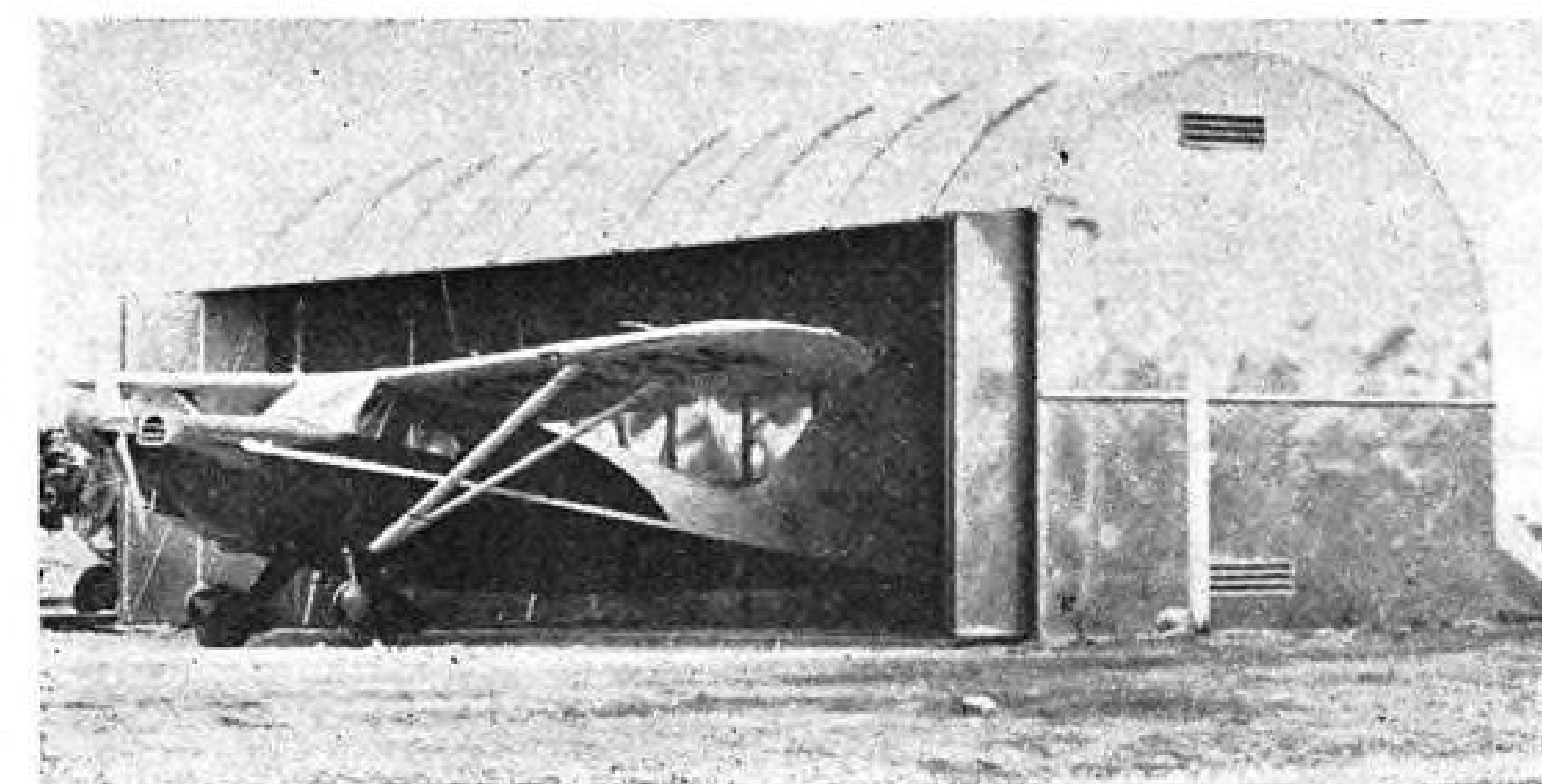
G. B. Van Dusen, of Van Dusen Aircraft Supplies, Inc., Minneapolis, touched another aspect of the sales volume question, with the statement: "We will need 20 times expansion of aircraft sales before the supply house can handle a profitable operation selling only to its dealers."

Warning to the distributors that failure to stock sufficiently large inventories to serve their territory adequately, would eventually result in factory service branches or additional distributors in their territories, was sounded by E. T. Syvertsen, of Thompson Products, who cited comparable case histories of distributors of automotive parts, bearing out this contention.

George W. Jalonick, II, of Southwest Airomotive, Dallas, urged the need for more cooperative consultation between manufacturers and distributors on policies affecting both. Discounts, dealer appointments, public relations and advertising in the distributors' territory, all should be matters in which the distributor's opinion should be considered.

Oregon Suit Will Test State Registration Fee

Suit to test constitutionality of the Oregon state registration of aircraft and \$10 annual registration fee, has been filed at Salem, Ore., by John Hughes, operator of Salem Air Service. Hughes asks injunction preventing the State



MONO-T HANGAR:

Semi-monocoque construction is used in the new all-aluminum Mono-T hangar for personal planes, designed by Unit Fabrication Co., Los Angeles. Accordion folding doors open to a 39-ft. span. Structure occupies 800 sq. ft., is 9 ft. 4 in. high, 29 ft. 6 in. deep, and 40 ft. and 10 in. wide at front. Price at factory is \$2,100. By January company expects to be making 25 a month. James B. Talman, North American Aviation, Inc., engineer, designed the hangar.

Board of Aeronautics and Leo G. Devaney, director, from enforcing the registration law. He has refused to pay the fee on the 12 planes used in his flying school, and the state board has ordered legal action against him, to enforce the registration law.

Hughes contends that registration of his airplanes with the Federal Civil Aeronautics Administration, and issuance of CAA certificates, operation records and bills of sale, places his airplanes outside the registration jurisdiction of the state.

Wisconsin Rejects Small Flight Schools

Efforts of the Wisconsin Aeronautic Commission to obtain approval for small flight schools to qualify for veterans' flight training under the GI Bill of Rights, were rejected by the governor's Advisory Educational Committee at a Madison meeting. The Committee directed that only schools complying with CAA approved standards be qualified.

Howard Morey, Aeronautics Commission chairman, had urged relaxing of the requirements, asserting that the physical plant requirements called for by CAA did not affect the pilot's training and are economically impossible of attainment by the smaller operators. Morey then asked that the Commission be excused from passing on qualifications if its own standards were not acceptable, adding: "We are just a rubber stamp for

CAA under the present situation and we catch all the abuse."

The Governor's Committee set for Jan. 7 an inquiry on whether flight instruction for veterans is a vocational project within the spirit and intent of the law. Harry A. Nelson, chief, Vocational Rehabilitation and Education Division, Veterans' Administration, Milwaukee, told the Committee employment is estimated for only 32,000 pilots as compared with 200,000 already discharged from the AAF, and said Gen. Omar Bradley, Veterans' Administrator, had expressed the view that Congress had not intended to give training in "hobby" subjects.

Montana Air Group Asks for More Fields

Major emphasis on a campaign for more airports in Montana marked the annual convention of Montana Aviation Association at Billings. Delegates were told the state has been missing many flying tourists because of inadequate landing facilities. Delegates were urged to impress on their local county governments the need for additional landing fields.

Complete air marking of the state and development of feeder airlines to towns not served by main airline routes was asked.

Gordon C. Sands, Havre, was elected president; other officers, Roy Milligan, Miles City, first vice-president; Curt Nadler, Billings, second vice-president; William Ferguson, Helena, secretary-treasurer.



NEW SNYDER AIRCRAFT HOME:

Snyder Aircraft Corp., aviation parts and supplies distributors, recently occupied this new sales and stock room bldg. at 5315 W. 63rd St., Chicago, at Municipal Airport. The building also contains the company's general offices. A new hangar housing Snyder's instrument, accessory and engine overhaul shops, is being completed across the street from the sales building. Layout is designed for fast and efficient handling of customers' orders. Other Snyder distribution centers are at Columbus, Ohio; Omaha, Neb. and Denver.

Airline Operators! Check These Important Facts About the MARTIN 2-0-2 CARGO PLANE

- Operation as low as 5 1/2¢ per ton mile by A. T. A. formula.
- Design gross weight (maximum at take-off) 40,745 lbs. Design landing weight (maximum) 39,045 lbs. Manufacturer's weight, empty, 21,535 lbs.
- Main 6' x 8' cargo door and forward 5 1/2' x 3' cargo door permit simultaneous loading of bulky and small cargo . . . permit pilots, maintenance men to enter cockpit while loading goes on aft.
- Pilot may regulate temperature of cockpit and cargo section separately. Cargo section is insulated, has automatic temperature control.
- Cruising speed, 280 m.p.h. at 15,000 ft. at 70% normal rated power. Block to block speeds are 25% to 50% faster than any comparable cargo plane.
- Take-off distance, over 50 ft. barrier, at sea level (2 engines with water injection) 2,550 ft. Can utilize any airport now used by existing comparable twin or four engined equipment.
- Designed and built in accordance with Civil Aeronautic Authority's new regulation C.A.R. .04 for scheduled transport aircraft, obsoleting designs based on C.A.R. .03.
- A wide variety of cargo fittings may be quickly installed to accommodate all types of cargo. Walls are protected by paneling to avoid damage when loading cargo.
- Waterproof floor, covered by quickly removable plywood flooring. Entire cargo area may be flushed down without risk of water damage to equipment below.
- Advanced features of larger 4-engined types, yet easily handled by 2-man crew.
- Simple garden hose attachment keeps outer skin of plane wet, interior cool, while loading in hot localities. Waterproof, rainproof fuselage.
- Elastic Mareng fuel tanks . . . bird-proof windshield . . . thermal anti-icing . . . under-wing pressure fueling . . . bomb-bay type maintenance hatches.
- Cargo compartment of 1909 cu. ft., with aisle, gives ample floor space in relation to cubic content. May be filled to maximum capacity of 15,100 lbs. without crushing low density cargo or stacking to inconvenient heights.
- Operational range, maximum (7300 lbs. of fuel) 1,790 mi.
- Rate of climb at sea level (take-off weight, normal power) 1,250 ft. per min. Operates with great efficiency at any altitude required to fly above mountainous terrain of west.
- With Martin 2-0-2 and 3-0-3 standard for airlines, cargo operators will obtain better service and maintenance . . . cheaper, more readily available, spare parts.

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AIRCRAFT

Builders of 'Dependable' Aircraft Since 1909

THE GLENN L. MARTIN COMPANY, BALTIMORE 3, MD.

Western States Object To Federal Airport Aid

A long-submerged objection to the Federal-Aid Airport Act has come to the surface at a meeting in San Francisco of officials of 11 Western states. They went on record opposing any plan that permits the Federal Government to bypass states and deal directly with cities in allocating funds.

This renews a dispute that raged prior to the passage of the act. One draft of the airport bill provided for a state airport commission through which would be channelled all applications from that state. This, however, was killed and the act carries merely a proviso that no subdivision of a state can deal with the Federal Government in contravention of a state law.

Acting to plug what they feel is a fault in the airport act, some states already are moving to enact such specific provisions. Wyoming, apparently, is the first. A development of this trend would lead to state airport commissions similar to state highway agencies.

Markham New President Of Connecticut Operators

Ernest L. Markham, Meriden, Conn., was elected president of the newly organized Connecticut Airport Operators Association, at a meeting at Bristol. Adoption of a constitution and affiliation with the National Aviation Trades Association will be considered at the next meeting, Jan. 9, also at Bristol. Other officers elected: Peter J. Rinaldi, Plainfield, vice-president; Robert H. Halpin, Bethany, secretary-treasurer.



NEW NORWEGIAN PLANE:

A three-place highwing monoplane, the Norge B, was built secretly in Norway, during the German occupation, by an Oslo designer, Aksel Kristiansen, and is now being used for charter and taxi flying. Powered with a 145 hp. Warner Super Scarab engine, the plane has 32.8 ft. wingspan, and is 20.8 ft. long. Cruising and top

speeds are 109 and 125 mph. and range with present fuel tank is 310 mph. with three persons and baggage. Steel tube fuselage structure is covered by aluminum sheet to a point behind cabin. Wood structure wing and remainder of fuselage are fabric covered. Plane, shown in wheel and ski versions, is adaptable for floats.

Shobe is New Chief of Southern Air Firm

Reorganization of Southern Air Services, Memphis, and election of N. S. "Cy" Shobe, World War II Navy pilot, as president and partner in the company, has been announced by William R. Kent, founder of the company in 1932. Control of the firm will continue in the Kent family, and Kent will again take an active part in the management.

Shobe will also continue his activity in the firm of Memphis Shobe Inc., distributors of radios and other household appliances.

Claude J. Wood, sales manager, has been advanced to vice-president, and continues in charge of sales. J. F. Lanier, with the company 10 years, is retiring, and Lloyd C. Christie, flight director, and Alton B. Maddox, service director, are leaving the company.

Shobe, who has held a commercial pilot's license since 1938, said the reorganized company was planning an aggressive sales program and considerable expansion of service facilities.

Southern Air Services is distributor in the mid-south for Piper, Beech and Republic planes, Bendix radios, Continental, Franklin and Lycoming engines and parts, Esso fuel and oil, Firestone aviation supplies and other accessories. Its operational base is Sanders Field near Walls, Miss., 16 miles south of Memphis.

Flying Farmers

Another indication that the farmers are probably the best prospects man-for-man for personal plane sales and will continue to occupy that position for some time to come, is the announcement of a meeting to form a Pennsylvania chapter of the Flying Farmers Association, at Harrisburg, Pa., Airport, Jan. 15. William L. Anderson, Pennsylvania Aeronautics director, himself a farm-owner and pilot, is assisting in the plans. Approximately 30 charter members have indicated they will attend.

Gliding Service Shifts Base for Winter Flights

Gliding & Soaring Service, Inc., has closed Ellenville (N. Y.), Glider Airport after a successful summer season, to open winter school quarters at Sanford (Fla.) Airport, after Christmas.

Sailplanes will continue available to experienced glider pilots during the winter, however at Mastic (Long Island) Airport, and gliding instruction will be resumed in April both at Mastic and Ellenville. The Sanford field, a former Navy base with 1,500-acre area, is operated by R. H. Brown and Harry Robinson, and was chosen because of excellent meteorological conditions in the area for soaring flights.

Stephen J. Bennis is president of Gliding & Soaring Service, and Mrs. Bennis, who holds the U. S. woman's distance record for sailplanes is secretary. Frank Suva-neck is assisting them as instructor at the Florida school.



New Operators Enter Business

Incorporation and establishment of seven new service operations has been announced.

►Aircraft Instrument & Radio Corp., El Paso, Tex. has been incorporated by Ewing R. Dryden Jr., Spencer Treharne and Guillermo Villarreal with \$9,000 authorized capital stock.

►A. E. Covert Corp., Penn Yan, N. Y., has been chartered by the Secretary of State, with \$60,000 capital, to deal in airplanes, automobiles and machineries. Directors and stock subscribers are A. E. Covert, Louise R. Covert, Leslie A. Covert.

►Baldwin-Gibson Aircraft Agency, Appleton, Wis., has been incorporated to deal in aircraft, parts, etc., by William H. Gibson, Karl P. Baldwin, and Margaret Debruin.

►Scott Aircraft Company has been incorporated at El Paso, Tex. with \$25,000 authorized capital stock, by W. H. Scott, J. C. Lear, and William J. B. Frazier.

►Aviation Properties, Inc., North Miami, Fla., has been chartered by the Secretary of State as an aircraft parts wholesaler with \$20,000 authorized capital stock. Incorporators are Arthur C. Hyde, Leona Horton and Earl M. Hyde.

►Smithville Flying Service, Texas, has been incorporated by Lawrence R. Wesson, Albert E. Crawford and Martin C. Goebel with \$1,000 authorized capital stock.

►Panama Airways, Inc., at Panama City, Fla., has been chartered with 50,000 authorized capital stock, to operate an airfield. Incorporators: P. V. William, A. Barrow, W. R. Sowell, C. D. Dean, Glen Nickerson.

International Air Mail Up 28 Percent in November

Reflecting the Nov. 1 rate slash, airmail dispatched abroad increased 28.4 percent, or about 2,782,650 pieces, in November over October. The gains by continents: South America, 22.5 percent; Europe, 28.8 percent; Africa, 65.1 percent; and Near East and Asia, 47.5 percent.

Meanwhile, domestic airmail volume in November remained practically the same as in October. Thus the gain of about 40 percent registered in October (first month of the 5-cent rate) was held.

Briefing *For Dealers and Distributors*

CULVER MODEL V-2—Culver Aircraft Corp. at Wichita is no longer producing new airplanes pending a meeting of creditors and stockholders early in January, but the company is getting set for a program of modifying the current model airplane by changing flaps and wingtips into the Model V-2 which reportedly has a much slower landing speed and higher rate of climb than the present plane. While retaining its other good characteristics. It is reported Culver also is completing a transaction to sell approximately 50 completed airplanes for distribution in Mexico. Revamping of the Culver dealer and distributor organization to get more widespread distribution is also in the offing. Indications are that the company will weather its present financial difficulties, and may re-emerge as an active competitor in the personal plane market within a few months time.

STRONG POSITION—As the first full postwar year draws to a close, Hallicrafters has advanced to a strong position among personal plane radio manufacturers, with two-way Skyphone radios as standard equipment in the Piper Super Cruiser, the Republic Seabee amphibian, Stinson Voyager 150 and the Bellanca Cruisair, Sr., all airplanes in the three- to four-place class which are expected to be the best selling personal planes in 1947. A major factor in the Hallicrafters' rapid rise has been a design feature which eliminates engine shielding requirements. While Hallicrafters are going into most of the Super Cruisers, if not all, now coming off the line, there remains a back-log of approximately 10,000 Super Cruisers already delivered without radios which will require them.

EQUIPMENT REPLACEMENTS—Accessory manufacturers, and their distributors and dealers, see in the current slackening of demand for new airplanes an opportunity to prepare for equipment replacements on aircraft now in service. Many owners of prewar airplanes have been anxious to modernize them with new controllable propellers, radios, instruments, etc., but have been stymied by the pressure of airframe manufacturers with larger orders for all the accessories that could be produced. Chances for aircraft owners looking for replacements seem much brighter during the remainder of the winter months, after which seasonal slack in new aircraft sales is expected to disappear. But by that time accessory makers may have enough volume production to be able to meet both new aircraft and replacement demands.

WISCONSIN AIRPORT MAP—An up-to-date map and list of airports and operators in Wisconsin is now available. Through the Wisconsin State Aeronautics Commission, Madison, the first edition map, just issued, will be followed by corrected maps published every 60 days as a service to the industry and the flying public. The first map shows 123 landing facilities, including seaplane bases, in the state, and indicates cities that are air-marked. An accompanying list of fields gives manager or operator, length of longest runway, facilities available, airport telephone number and other information of value to the transient flyer.

CHEVROLET SALES TOUR—A total of 48 hours, four minutes flying time to cover nearly 10,000 miles in a national sales tour has been reported by Chevrolet Motors Division, General Motors Corp. Using a converted Douglas B-23 executive transport, Nicholas Drystadt, Chevrolet general manager, and T. H. Keating, general sales manager, were able to conduct 22 meetings for nearly 5,200 dealers and wholesalers in 20 cities from Boston to Los Angeles, and from Atlanta to Portland, Ore., all within five weeks time. The trip is another indication of the growing importance of executive planes in the modern business world and another sales argument for any companies which require considerable travel from their executive personnel.

INDEPENDENTS VS. MANUFACTURERS—Some large independent parts and accessories distributors, which handle a variety of lines, including in many cases competing equipment, are looking forward into 1947 for a new test of their place in the aviation industry picture. The problem is created by efforts of several plane manufacturers to channel parts replacements through their own distributor dealers system, keeping the business within their own organization. One result is likely to be an intensification of sales effort by the big independent supply houses, and perhaps a greater diversification of equipment handled in order to meet better the needs of their customers, the fixed base operators. Entrance of Firestone and Standard Oil (Atlas) in the aircraft accessory supply field, is another keen competitive threat to the big independents, who, prewar, had the supply field almost to themselves. —Alexander McSurely

TRANSPORT

Post Office Expands 'Copter Mail Test Program at New York

Most ambitious trials to date will cover population area of 12,500,000 and include ship-to-shore service; set to begin Jan. 6.

Elated over earlier experiments at Los Angeles and Chicago, the Post Office Department will launch its most ambitious helicopter mail service test in the New York metropolitan area next month.

For two weeks to a month, ten or more helicopters provided by manufacturers and private interests—instead of the Army, as heretofore—will operate along three circular routes and two shuttle links laid out by the Department in New York, New Jersey and Connecticut. Ship-to-shore service is part of the plan, and will begin Jan. 6.

►**Cloverleaf Routes**—Equipment will be furnished, it is understood, by Bell Aircraft Corp., Sikorsky Aircraft Division of United Aircraft Corp., Greyhound Lines, and Helicopter Air Transport, Inc.

The "Cloverleaf" routes and shuttle links total about 330 miles

and serve points with 12,500,000 population. While airport-to-post office shuttles were a feature of the previous tests, the New York trials will involve more extensive shuttle operations between three major airports in the area—LaGuardia, Newark and Floyd Bennett.

Flights over all three main routes probably will be made the first day, but thereafter they will be flown successively in order that postal observers may obtain complete data on each.

►**Three Loops**—Three suburban loops, as presently set up, touch 39 Post Offices within a radius of 50 miles of the New York General Post Office. The northern route (103 miles) embraces Westchester County, N. Y., and part of Fairfield County, Conn.; the eastern route (85 miles) includes Nassau and part of Suffolk Counties on

Long Island, and the western route (108 miles) covers seven densely populated counties in northeastern New Jersey.

Shuttle Route No. 1 is between LaGuardia Field and Newark Airport via intermediate stops (20 miles); and shuttle Route No. 2 is between LaGuardia and Floyd Bennett Field, with stops in Brooklyn and Long Island City.

Announcement of the New York tests closely followed a highly-favorable report issued by Post Office inspectors on the Chicago tests, conducted Oct. 1-18 with Sikorsky S-51S. Inspector M. H. Ackerman declared the experiment had shown that helicopter operations transporting airmail to and from small towns which have a metropolitan center such as Chicago as their trading point are both practicable and desirable.

His report estimated that in the Chicago area helicopter service could be maintained for 96.8 percent of the year due to the ability of the craft to fly in almost all kinds of weather. It added that flights at night had been found possible and would be required.

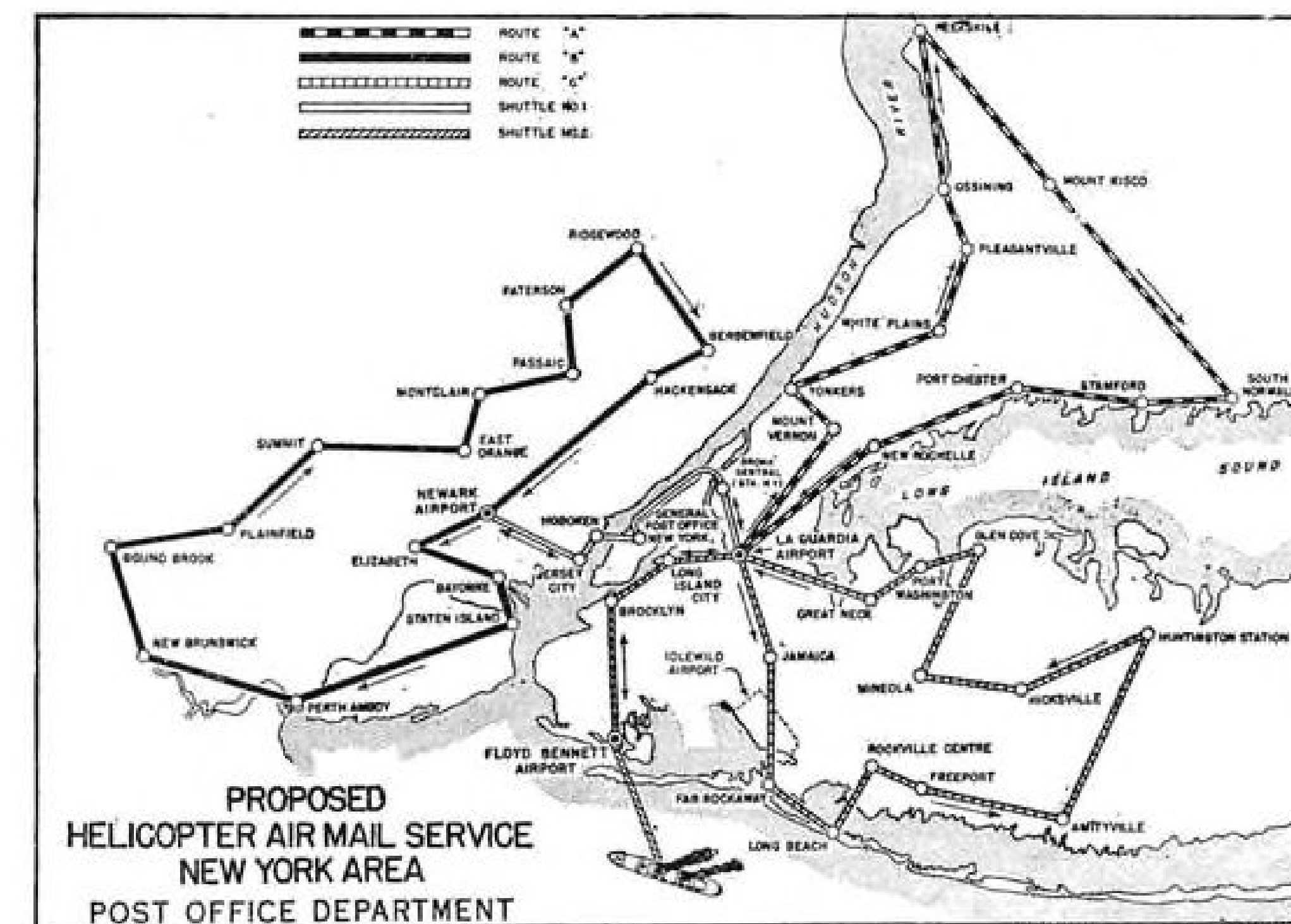
Since the Chicago tests, CAB has received four applications for helicopter service in the area. The New York experiment is expected to stir new route bids there.

Damon Attacks Pan American Case

Pan American Airways' bid for more than 12,000 miles of domestic routes came under intensive criticism from the first of the "Big Four" carriers when Ralph S. Damon, president of American Airlines, asserted that the proposal would deal his company a disastrous financial blow.

Testifying at the CAB hearing on PAA's application for nonstop, high-speed services within the U. S., Damon said certification of all the links requested by Pan American would "pull American down from a \$10,000,000 profit to a loss of \$9,000,000 annually." His estimate covered operations during the first year in which PAA and AA would be in competition domestically with their full fleets of Republic Rainbows.

If Pan American is permitted to skim the cream of domestic long-haul traffic it could offer a substantially lower fare than other airlines which also would be providing less lucrative service to intermediate points, Damon said.



Variety in Helicopter Mail Test: Post Office Department's New York experiment in helicopter mail service will include ship-to-shore and inter-airport shuttle services absent in previous tests at Los Angeles and Chicago. Map shows these in addition to three clover-leaf routes similar to those tried out in the other areas.

Thus, when PAA institutes a rate reasonable for its domestic operation, competing carriers would either be forced to the wall financially or would require tremendous increases in mail pay, the AA executive stated.

Echoing many of the sentiments expressed previously by top executives of Braniff, Western, Chicago & Southern and Delta, Damon also attacked PAA's advertised flight times for its proposed domestic routes. Pan American, he said, has claimed that its Rainbows will fly from Los Angeles to New York in 5 hr. 15 min. "That means a block-to-block speed of close to 500 miles an hour, and without the assistance of winds of hurricane velocity the Rainbow could never meet such a schedule."

Clearing House Seeks Simplification

The Airlines Clearing House has adopted new procedure to simplify clearance of domestic interline ticket sales and is laying plans for full participation in its international counterpart being set up by the International Air Transport Association.

Despite IATA's entry into the picture, the corporation formed by the airlines late in 1943 to handle domestic interline accounts will continue to function as it has in the past, it was decided at this month's annual meeting of the air-

line finance and accounting conference at Miami.

► **Faster Action** — In the future, however, instead of waiting for the airlines to bill each other before settlements are made on interline ticket sales, the Clearing House will act as soon as reports on such sales are in at the end of each month. Effective after Jan. 1, this will facilitate the settlement of accounts to clear the way for the next month's operation.

The Clearing House plans to settle the international balances of its members, regardless of what airline they are payable to, through a branch of the International Clearing House, probably in New York or Chicago. That agency, which will handle interline accounts on a world basis, was approved by IATA at its Cairo meeting nearly two months ago. It will begin operations in London by Jan. 1 and in the U. S. then or shortly thereafter. Monthly balances will be converted and settled in sterling or dollars, convertible in either case to national currencies regardless of exchange controls.

Delegates to the Miami conference sought without success to arrive at standards for breaking down cost computation of maintenance operations. Difficulty lay in the variety of methods of conducting such work among different airlines.

► **Revenue Up 40 Percent** — The airline financial specialists,

acknowledging that domestic airline revenues for the fourth quarter of 1946 will be approximately 40 percent above the same period last year, declined to speculate on indicated net income to be realized from the increased revenues, emphasizing that operating costs likewise have been rising. Estimates were that 95 percent of the volume of business represented passenger traffic, but most optimism centered on air freight's chances as a future source of heavy revenue. Airmail poundage has increased about 40 percent under the new 5-cent postage rate, the group reported.

Airline treasurers elected as conference officers for next year are L. B. Holstad, Northwest, president; L. B. Judd, Delta, first vice-pres., and J. A. Uhl, Continental, second vice-pres. E. F. Kelly of Air Transport Association is executive secretary.

Joint CAA-CAB Group Will Make Decisions

Joint monthly meetings between the Civil Aeronautics Administration and Civil Aeronautics Board to discuss matters of interest to both—mostly in the field of air regulation—take on new shape with the formation of a new CAA-CAB Committee which will make all decisions except those requiring formal CAB action.

Members are T. P. Wright, CAA Administrator, chairman; Clarence M. Young, CAB member, co-chairman; A. S. Koch, Assistant Administrator, Safety Regulation, CAA; Wallace S. Dawson, director of CAB's Safety Bureau; R. P. Boyle, Assistant General Counsel, CAA, and Merrill Armour, Assistant General Counsel, CAB. John Marshall, CAA, is executive secretary.

Koch and Dawson constitute a subcommittee to go into all items submitted for full committee consideration, screening them and avoiding delay. In some cases, the subcommittee will decide a question, then report later to the committee. The two men will meet approximately every two weeks, the committee once a month. Staff members of the two agencies will be called in as needed to discuss subjects in their departments. At their first meeting early this month, Koch and Dawson found 50 matters awaiting their attention.

Because of the close relations

between the work of the two agencies, there have been joint meetings since they were organized, but many of them have not led to action. Purpose of the new committee, a spokesman said, is to translate discussion into decision.

Monarch Will Begin New Mexico Service

Monarch Air Lines, Rocky Mountain feeder, has received formal permission from the New Mexico Corporation Commission to operate in the state, enabling MAL to begin north-south runs from Salt Lake City to Albuquerque, possible this week.

One flight daily each way is planned, with DC-3s leaving both Salt Lake City and Albuquerque in the morning. Plans call for connections at Durango, Colo., with the daily Denver-Durango flight already operating. Stops will be made on the north-south route at Provo and Price, Utah; Grand Junction and Durango, Colo.; and Farmington, N. M.

Other new services:

► **Orlando Airlines**—Soon after Jan. 1 expects to have passenger service available over its entire system (AM 75). The Florida feeder has begun mail and express service over part of its routes.

► **United**—Inaugurated passenger-cargo service to Visalia and Eureka, Calif., on Dec. 9. Opening of UAL service to the Twin Falls-Gooding section of Idaho, originally scheduled the same time, has been postponed temporarily.

► **Northwest**—Expects to start service on its inside route from the Twin Cities to Anchorage, Alaska, via Edmonton, Canada, on Jan. 2. Three trips weekly are planned.

CAB Affirms Pacific Route Case Decision

The Civil Aeronautics Board has affirmed, with one minor exception, its opinion in the Pacific route case decided last June. Petitions of PCA, Pacific Northern Airlines and Alaska Airlines for rehearing, reargument and reconsideration have been denied.

Northwest Airlines' certificate for the North Pacific route was amended to include Whitehorse, Canada, as an intermediate point between Edmonton, Canada, and Anchorage, Alaska. CAB's supplemental opinion emphasized that need for another carrier operating between the U. S. and Alaska to supplement the services of Pan American and Northwest has not yet been demonstrated.

PCA Will Fly ATC Route to Germany

Government and military personnel and cargo will be carried between this country and Germany by PCA under a contract with Air Transport Command announced last week. The operation between Washington and Frankfurt via Bermuda, the Azores and Paris is expected to start shortly after the first of the year.



C. J. Lowen

Seven round trips will be made each week. An alternate route will go through Newfoundland, but PCA, which inaugurated the first domestic scheduled military cargo service April 1, 1942, does not expect to use it.

ATC C-54s will be flown and maintained by PCA crews. Six of the ten planes to be assigned to the route, which ATC has been operating, already have been received by the airline, which will base the operation in Washington. The carrier estimates that 40 to 50 pilots and co-pilots will be required. Charles J. Lowen, Jr., former ATC major and assistant director of aeronautics for the State of Colorado before he joined PCA last September, will be general manager.

The contract, amount of which was not disclosed, was awarded on a bid basis. It will run at least until the end of the fiscal year June 30, and probably will be renewed, inasmuch as ATC is admittedly short of trained personnel. ATC will award another contract for a Pacific route to Japan. Bids are being taken by the Air Materiel Command at Wright Field, which handles the contracts.

Gift Tickets

At least five airlines and probably more are offering tickets as Christmas gift suggestions, through what they variously call gift certificates, giftrip certificates, or merely travel order forms. American, Braniff, Delta, TWA and Western are doing so. Pan American reportedly refrained because of passport, visa and other travel requirements, although American announced inclusion of tickets to Mexico, Canada or Europe.

Fare Raise Talk

A 10 percent rise in airline fares that would bring them back to the 5-cents a mile prevailing from 1938 to 1944 is being discussed by the airlines, pres. Jack Frye of TWA said at St. Louis. Frye also said a 50 percent extra charge for sleeper service probably would be made as it becomes available.

Extent of debate on the fare question, which has been widely publicized, is limited, according to a spokesman for the Air Transport Association, airline trade organization. The matter came up at the recent ATA meeting in Washington, but fare raises found only two or three champions and no industry action was taken, say those present. A delegate to the recent Airline Finance and Accounting Conference at Miami said it was not discussed.

Some airlines have requested mail pay increases, but doubt has been expressed that the move will become industry-wide pending action by the new Congress on air parcel post and in view of the recent reduction in airmail postage.

With cargo growing in volume and importance, the carriers more likely will stress the revenue potentialities of air freight before concerted action is taken towards raises in either fares or mail pay, according to some informed opinion.

Chicago & Southern Cuts 272 From Domestic Staff

Chicago & Southern Air Lines, joining the airline economy trend, has announced a personnel reduction of 272 in its domestic operations, saving about \$40,000 on its monthly payroll. Some service reduction also is planned.

Dismissal notices will go soon to 133 in clerical and administrative jobs, 34 in the traffic department, and 20 in operations, including pilots and mechanics, at Memphis headquarters. Dismissals elsewhere will include the same categories.

The company, now flying ten times the mileage logged in the last month before Pearl Harbor, expects to curtail flights north from Memphis after Jan. 1, withdrawing two DC-3s and a DC-4. A second roundtrip between New Orleans and Havana will be added simultaneously.

C & S now has 21 daily flights



NEW PLANE AND OLD:

Exterior differences between the familiar Douglas DC-3 and the new Martin 202, recently test flown for the first time (AVIATION NEWS, Dec. 2), stand out in this photograph of the two taken at the Glenn L. Martin Co. plant at Baltimore. Note 202's tricycle landing gear, double main wheels, high tail fin and folding loading ramp in rear of fuselage.

between Memphis and Chicago, Detroit, New Orleans or Houston, but passenger increases have not kept up with the growing number of seats available. A. J. Earling, vice president-traffic, said, however, that the retrenchment program will not affect the company's order for ten Martin 202s or the two DC-4s now being converted by Matson on the West Coast and scheduled for spring delivery.

SHORTLINES

► **American Overseas'** arrangement with American Express Co. permits travelers on its planes to send additional baggage to Europe and the Near East by surface transportation. . . . Half fares for children went into effect Dec. 15 on American and American Overseas. Overseas formerly charged the 2-12 yr. air passengers 10 percent adult fare for the U. S. portion of their trip.

► **Chicago & Southern** has started daily all-cargo flights, initially serving nine points on its system. . . . Line carried 325,600 passengers first 11 mo. this year, 82 percent over the same period a year ago. November was 34 percent above the same month last year.

► **Eastern** will start service to Atlantic City when arrangements and facilities permit.

► **KLM** will use Cape Breton (Sydney), Nova Scotia, as a base on its mid-Atlantic route via the Azores, although Gander will be retained as a regular base for either North or mid-Atlantic operation. Captains may take either route at their discretion. Majority are using mid-Atlantic for west-bound flights and North Atlantic for east-bound. . . . Carrier will suspend service Dec. 25 to observe Christmas Day, New York and Amsterdam schedules for Dec. 24 and 28 departing on December 23 and 29. Suspension applies to North Atlantic, inland and European service. European service will similarly observe New Year's Day.

► **Mid-Continent** will inaugurate a new air freight service Jan. 1, with rates based on 26½ cents per ton mile for a minimum shipment of 25 lb.

► **PCA** carried 561,216 lb. of air freight in October, 70 percent over September's 331,287. August figure was 105,798. . . . Line is installing new reservations system at all major points on its routes. . . . Company publication, "Capitaliner," was suspended with the December issue, but probably will be resumed in the Spring in new format.

► **Trans-Canada's** new subsidiary, Trans-Canada Atlantic Airlines, Ltd.,

formed to operate Canadian Atlantic service, is the forerunner of others planned for various routes to the West Indies and South America, and to Australia. . . . Ten-passenger Lancastrians on the trans-Atlantic service will be replaced with new 40-passenger Canadian-built DC-4M. . . . TCA recently was awarded the following routes: Transcontinental between Moncton, N. B., and Victoria, B. C.; Moncton-Halifax; Montreal-Sydney, N. S.; Toronto-Windsor, Ont.; Lethbridge-Edmonton; Edmonton - Winnipeg; Edmonton - Regina.

► **TWA** has assigned its transcontinental division stations passenger load factors averaging 75 percent for the Dec. 9-31 period, equivalent of 2,585 revenue passengers daily over the system.

► **United's** 1,331,840 cargo ton-miles for November were 260 percent above the same month last year. Air-mail ton-miles during the month held the 27 percent gain they had

CAB ACTION

The Civil Aeronautics Board:

- Revoked wartime orders permitting TWA to stop at Long Beach, Calif., and Palm Springs, Calif., on AM 2 and permitting PCA to stop at Huntsville, Ala., on AM 55.
- Approved interlocking relationships of Henry J. Friendly, George F. Fox, 3rd, and Erwin Balluder as officers of Pan American Airways, Inc., and Pan American Airways Corp.

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established in October under the new 5-cent rate. . . . UAL, which a decade ago established the first exclusive flight kitchens, now has twelve of them along its route. . . . Cheyenne, Wyo., has agreed to lease to the carrier for \$37,000 yearly the \$4,000,000 modification center recently turned over by the Federal Government. Lease includes six barracks buildings not covered in the transfer for which Cheyenne is dickering.

CAB SCHEDULE

Jan. 5. Exchange of exhibits on Cia. Mexicana de Avionacion's foreign air carrier permit application. (Docket 1992.)
Jan. 6. Prehearing conference on route applications of Western Washington Airways, Lummi Island Stage Lines and Island Airways. (Dockets 1503, 1703 and 2368.)
Jan. 13. Exchange of exhibits in TWA-Delta equipment interchange agreement. (Docket 2346.)
Jan. 13. Oral argument in Cincinnati-New York route case. Postponed from Dec. 9. (Docket 221 et al.)
Jan. 27. Hearing on Cia. Mexicana de Avionacion's foreign air carrier permit application. (Docket 1992.)
Feb. 3. Exchange of exhibits in case involving additional Florida area service. Postponed from Dec. 20. (Docket 1668 et al.)
Feb. 17. Hearing in freight forwarder case. Postponed from Jan. 10. (Docket 681 et al.)
Mar. 10. Hearing in case involving additional Florida area service. Postponed from Jan. 20. (Docket 1668 et al.)
Jan. 7. Hearing on BOAC's application to use MacArthur Field, Islip, L. I., N. Y., as co-terminal with LaGuardia Field on trans-Atlantic flights. Postponed from Dec. 19. (Docket 2674.)
Jan. 8. Prehearing conference on Mid-Continent's proposed service between Minot, N. D., and Regina, Saskatchewan. Postponed from Dec. 19. (Docket 628.)
Feb. 15. Exchange of exhibits in Caribbean-Atlantic Airlines' application for foreign routes. Postponed from Jan. 1. (Docket 2246.)
Feb. 18. Hearing on TWA-Delta equipment interchange agreement. (Docket 2346.)
Mar. 1. Hearing on Caribbean-Atlantic Airlines' application for foreign routes. Postponed from Jan. 15. (Docket 2346.)

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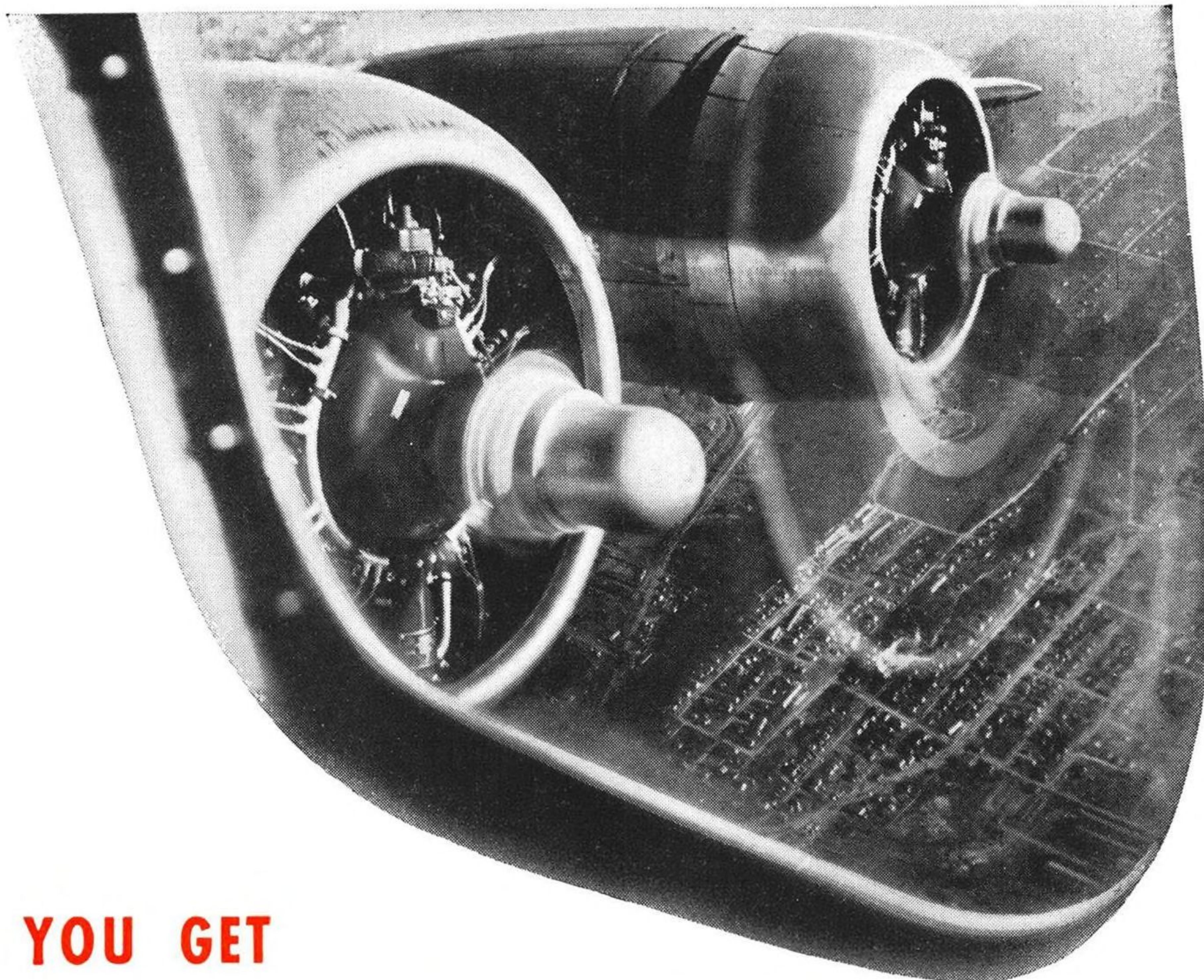
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