

AVIATION WEEK

SEP. 27, 1948

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Illustration above shows *L-M—Bartow* controllable beam high intensity lighting on main NE-SW runway at Lambert Field, St. Louis, seen from about 200 feet. The runway is 5200 by 200 feet. Breaks at upper left and right are taxiways. Range lights across ends are *L-M—Bartow* units with standard green color screens.



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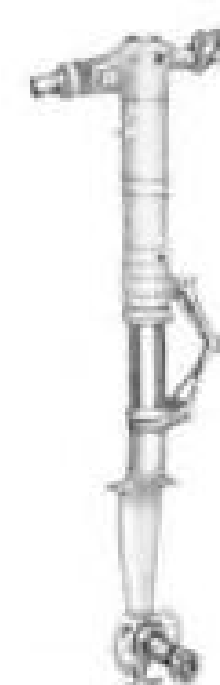
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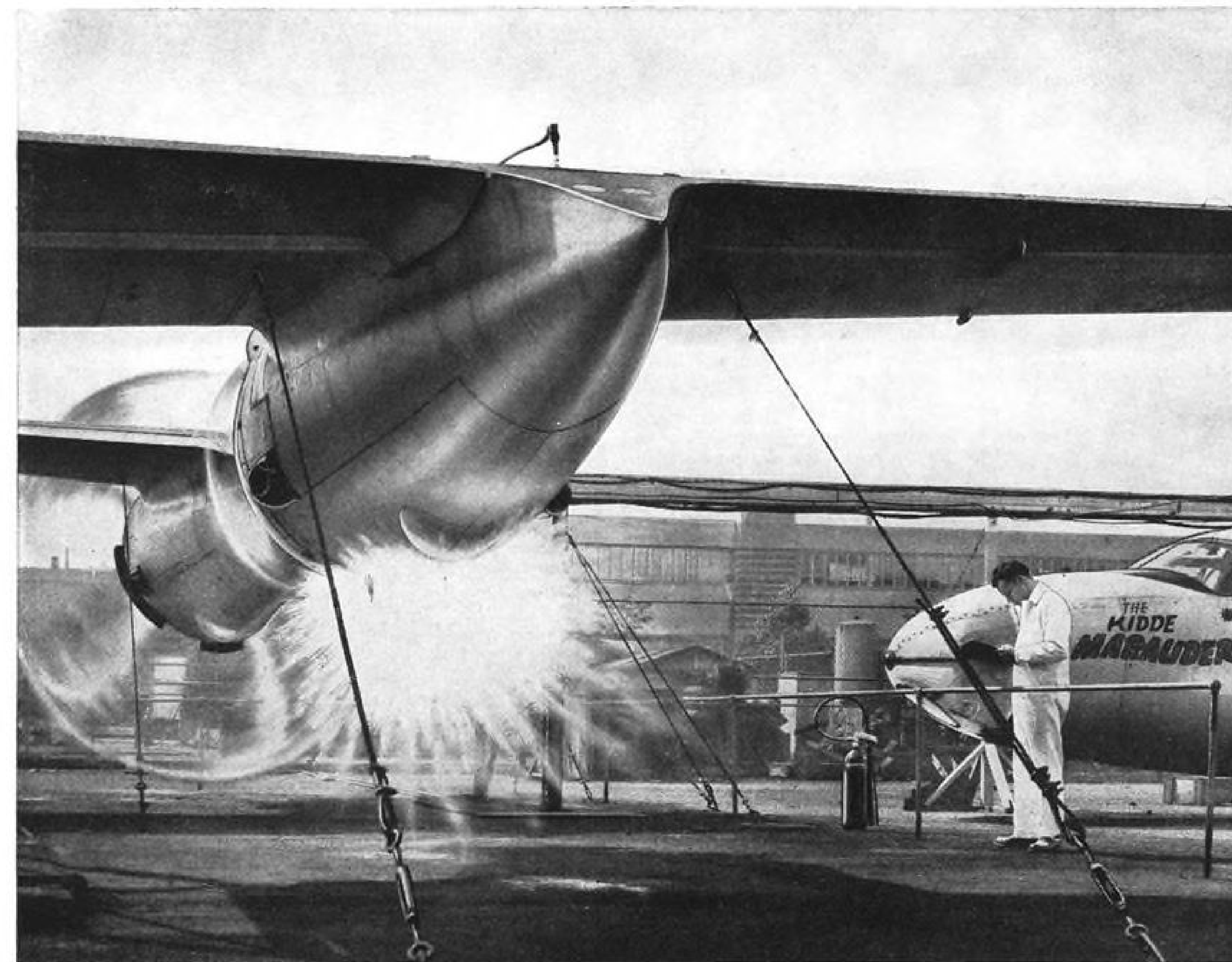
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AVIATION WEEK

Vol. 49, No. 13 September 27, 1948

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NEWS SIDELIGHTS

CAA Reorganization

CAA Administrator Del Rentzel is a busy man. Last week he was named defendant in the first suit of its kind, filed by the city of Dallas in New Orleans U. S. Circuit Court of Appeals, to prevent CAA from allocating federal funds to Midway Airport, subject of a long-continued feud between the cities of Dallas and Ft. Worth.

This came while the administrator was also deeply involved in details of the proposed CAA reorganization. He sent a substitute, Deputy George Burgess, to fill his speaking engagement at Vancouver, B. C., in order to give more attention to home reshuffling.

The task looks more difficult now than it did in early stages. Unofficial word at CAA is that the number of tentative reorganization charts that have already been drawn up and scrapped would probably paper one wall of the administrator's office. No final word on re-alignment at CAA is likely for at least another week.

House Labor Probe

House investigation of the pilot strike against National Airlines has nothing to do with settling the eight-month-old walkout. Rep. Fred A. Hartley, chairman of the House Labor Committee, admitted that fact after he sat as a one-man subcommittee last week and heard National's side of the story from President G. T. Baker and two NAL attorneys.

Hartley said he is simply gathering information on what happened for whatever use it might be in considering changes in the Taft-Hartley or Railway Labor Acts.

At Hartley's request, Thomas E. Shroyer and David MacDonald of the Taft-Hartley "watchdog" committee sat in on the hearing. The New Jersey congressman thinks perhaps the airlines should be taken from under the Railway Labor Act and put under the Taft-Hartley law. But he is retiring from office at the end of the year, and there is little sympathy for such a move.

Merger Still Cooking

Industry wisecracks who brushed off the Convair-Northrop merger as a "dead duck" may be wrong. Merger discussions are still under way between top brass of both companies. Final agreement on the merger is by no means certain but the prospects are far from dead.

ALPA Punching

The Air Line Pilots Association has been doing considerable punching in the clinches as the eight-month-old strike against National wears on. Sky writing during the recent Air Force Day celebration in Washington and during the inauguration of NAL's service at New York International (Idlewild) Airport publicized the walkout extensively.

In addition, ALPA scotched the hero's welcome at Miami for Capt. Anson L. (Johnny) Johnson, a non-union NAL pilot who won the Thompson trophy in his P-51 Mustang at the recent Cleveland Air Races.

ALPA has attempted to retard such company projects as opening of new ticket offices by inducing union construction labor to leave the job on the ground that NAL is "hot." In one instance the striking pilots threw a monkey-wrench at a theater chain's contest for a free trip to Havana via National.

Latest incident along this line is National's charge that ALPA had a woman reservations employee sabotage business by informing the potential customers that the regular pilots were out on strike.

Transport Problem

Lack of new transports in the fiscal 1949 USAF and Navy aircraft procurement programs has upset some manufacturers. Only transports included in the program are the tactical type Fairchild C-119 and Northrop C-125 plus 10 Douglas C-124A, a 50,000 lb. payload strategic transport.

Some planners in both USAF and Navy's BuAer feel that in scrapping of transports in favor of virtually all combat planes services are again falling victim to the "numbers racket" that neglects both logistical support and a high degree of adequate training for personnel.

Experience during the last war indicated that mere numbers of aircraft without the other two factors were meaningless in combat. Promises that the fiscal 1950 budget will do better by transports have been made unofficially to soothe the ruffled manufacturers.

Jones Takes His Stand

CAB member Harold A. Jones' scorching dissent from the majority board opinion which authorized freight forwarder operations and his pointed questioning during recent oral argument in the air freight route proceeding have the all-cargo lines worried. Some officials among the freight carriers now believe their chances for certification hinge on Vice Chairman Oswald Ryan.

They consider CAB Chairman O'Connell and member Josh Lee as the most likely to support their route applications. A CAB opinion denying all freight route applications would be a death blow to some cargolines.

LeMay for Kenney

Despite the roughness with which the Pentagon politicians elbowed him out of his Strategic Air Command post Gen. George Kenney is not expected to retire. News that Lieut. Gen. Curtis Emerson LeMay, now USAF commander in Europe, had been given Kenney's job came as a surprise and shock to Kenney and SAC personnel.

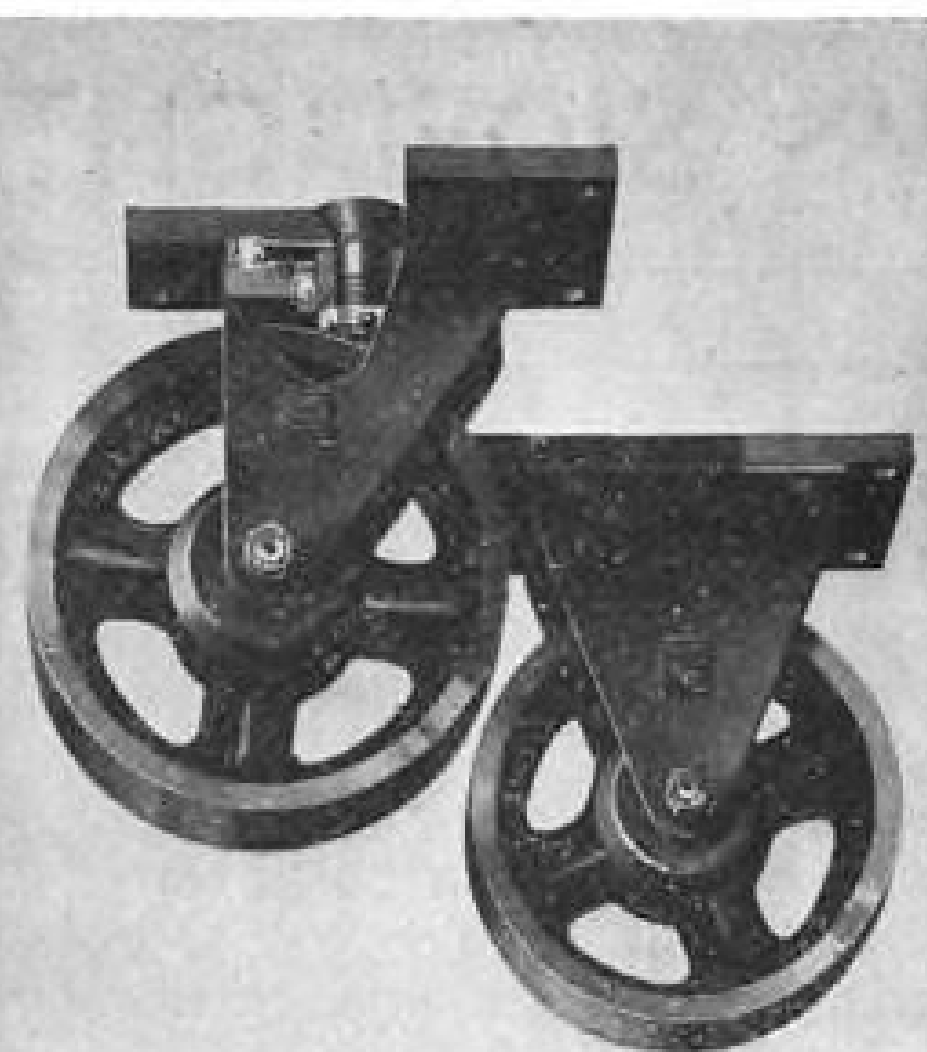
Kenney will now head the Air University at Maxwell Field and if he can teach only 10 percent of what he knows about air war to the USAF younger generation, the taxpayers will be getting more than their money's worth. Kenney's latest achievement in more than 30 years of distinguished service was building up SAC from practically nothing to the only part of the USAF now capable of combat on less than 24 hours notice.

Security Note

U. S. Air Force's successful try at a new world speed record was supposed to be a carefully guarded military secret so that Gen. Hoyt Vandenberg, USAF chief of staff, could make an exclusive release on the event in his Mitchell Field, N. Y., speech scheduled for 2:30 p.m. Saturday, Sept. 18. Maj. Johnson set the record on Wednesday morning Sept. 15 at Muroc.

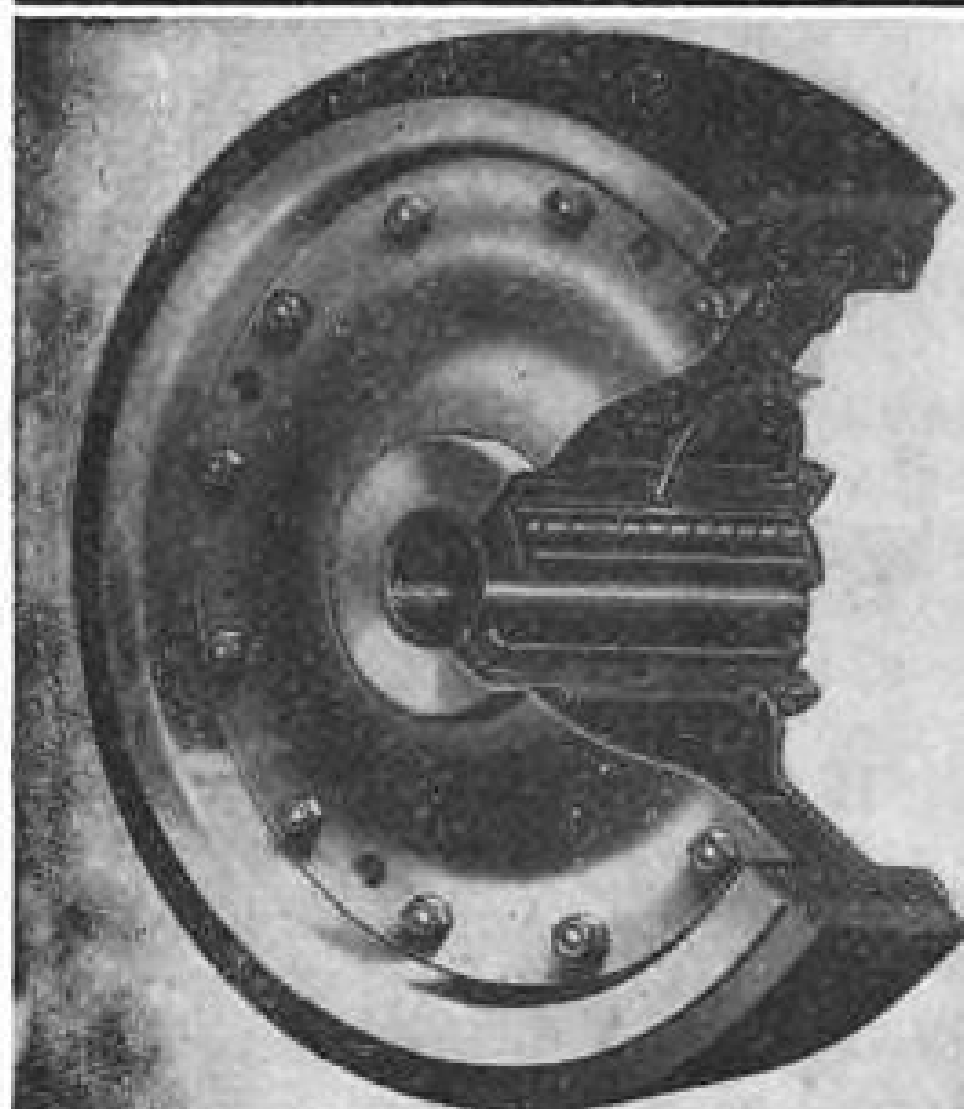
Only two high ranking USAF officers outside the confines of Muroc were supposed to know of the event. At the Air Force Day dinner in Washington Friday night, Sept. 17, news of the 670 mph. record was buzzing all over the Statler Hotel. Saturday morning Washington Post's John Norris, who attended the dinner, scooped Vandenberg with a front page box. Vandenberg's speech didn't hit print until Sunday morning 24 hours later.

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AVIATION CALENDAR

- Oct. 6-8—National Association of State Aviation Officials, Copley Plaza, Boston.
Oct. 6-9—Society of Automotive Engineers aeronautic meeting, Biltmore Hotel, Los Angeles.
Oct. 9-24—Texas State Fair Aviation Show, Dallas.
Oct. 14—Annual Air Line Dispatchers Association convention, Edgewater Beach Hotel, Chicago, Ill.
Oct. 15-24—International aircraft exhibit, Royal Danish Aeronautical Society, Copenhagen.
Oct. 17-21—National Aviation Clinic, Detroit.
Oct. 18—AIA personal aircraft council, Detroit.
Oct. 18-23—American Society of Travel Agents, Savannah, Ga.
Oct. 20-21—National Safety Council, Air Transport Section, Hotel Stevens, Chicago.
Oct. 21-22—Society of Automotive Engineers production meeting, Statler Hotel, Cleveland.
Oct. 22-23—4th Annual Arizona Aviation Conference, sponsored by Chamber of Commerce, Prescott.
Oct. 22-24—Idaho Flying Farmers convention, Lewiston, Idaho.
Oct. 25-26—Third Annual Indiana Aviation Conference, Purdue University, Lafayette, Ind.
Oct. 28—Society of Automotive Engineers, metropolitan section transportation and maintenance meeting, Engineering Societies Bldg., New York City.
Nov. 4-5—Society of Automotive Engineers, fuels and lubricants meeting, Mayo Hotel, Tulsa, Okla.
Nov. 13-16—American Society for Testing Materials, petroleum products and lubricants, Drake Hotel, Chicago.
Nov. 15-17—Aviation Distributors and Manufacturers Assn., sixth annual meeting, Hotel Statler, Cleveland.
Nov. 15-17—National Aviation Trades Assn., annual meeting, Allerton Hotel, Cleveland.
Nov. 16-17—American Society for Testing Materials, plastics, Atlantic City, N. J.
Nov. 16-18—National Association of Travel Officials, Miami Beach.
Nov. 17-19—American Society for Testing Materials, electrical insulating materials, New York.
Nov. 18-19—American Society for Testing Materials, structural sandwich materials, Philadelphia.
Nov. 23—ICAO southeast Asia regional air-navigational meeting, New Delhi.
Dec. 2-5—Fourth annual international aviation celebration, El Paso.
Dec. 17—Annual Wright Brothers Lecture, Institute of the Aeronautical Sciences, U. S. Chamber of Commerce Bldg., Washington, D. C.
Jan. 5—Florida Flying Alligator Club, 14th annual reunion, Melbourne, Fla.
Jan. 10-14, 1949—Society of Automotive Engineers, Annual Meeting and Engineering Display, Hotel Book-Cadillac, Detroit, Mich.
Jan. 27—Society of Automotive Engineers, metropolitan section, fuels and lubricants meeting, Engineering Societies Bldg., New York City.
Feb. 8—ICAO Operations Division, Montreal.
Feb. 22—ICAO airworthiness division, Place undetermined.
Mar. 3—Society of Automotive Engineers, Metropolitan section, airtransport meeting, Engineering Societies Bldg., New York City.
April 11-13—SAE Aeronautic and Air Transport Meeting, Hotel New Yorker, N. Y.
June 5-10—SAE Summer Meeting, French Lick Springs Hotel, French Lick, Ind.

PICTURE CREDITS

International News—14 (top), 15; British Combine—35.



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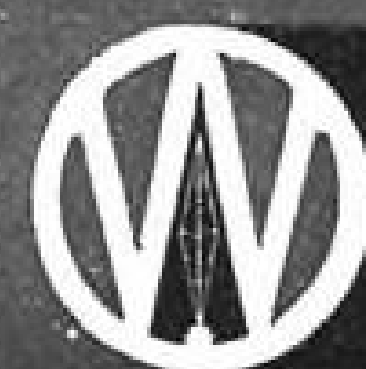
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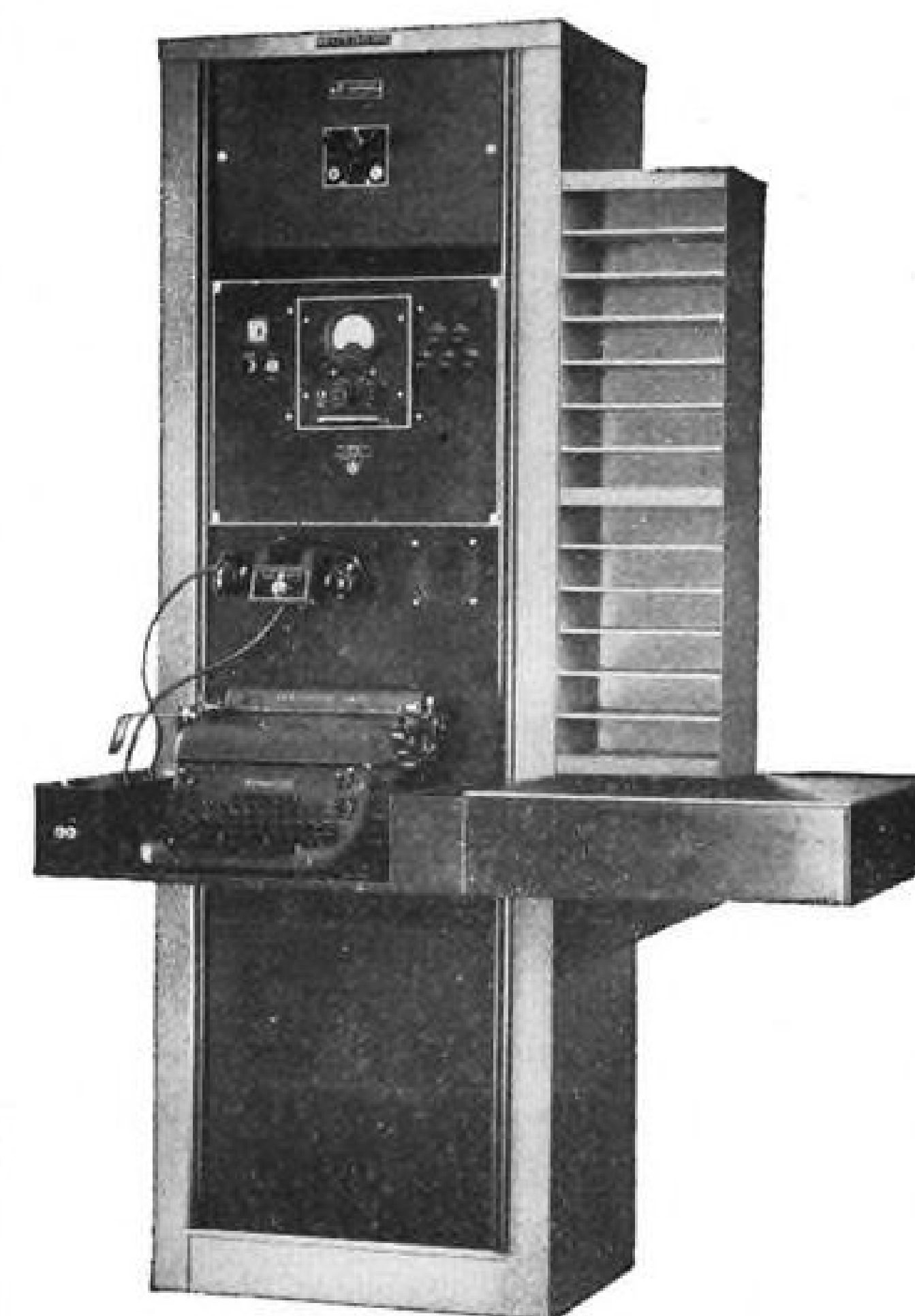
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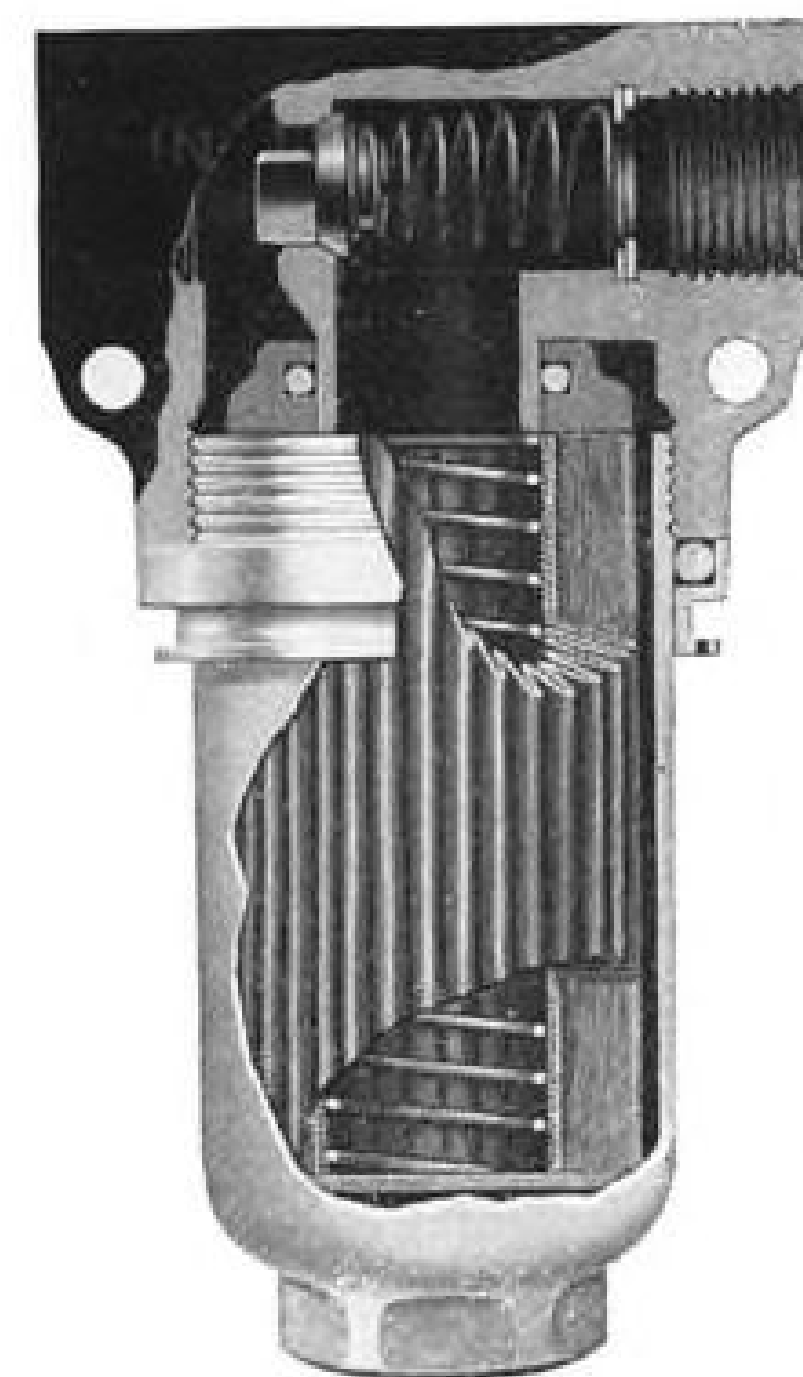
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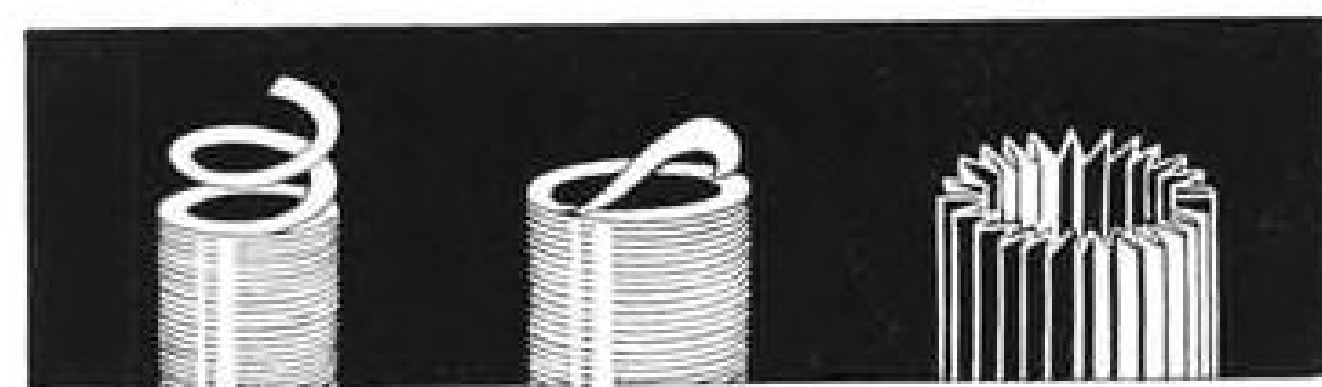
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NEWS DIGEST

DOMESTIC

A North American B-45 four-jet tactical bomber exploded and crashed near Alpaugh, Calif., killing test pilots George W. Krebs and Nicholas G. Pickard. The explosion was heard for miles and the wreckage scattered over four miles. This is first serious accident to the B-45, which has been in production since early this year. A total of 190 is on order.

President Truman has appointed Donald F. Carpenter, vice president of Remington Arms Co., to be chairman of the Munitions Board. Carpenter previously served as chairman of the military liaison committee of the Atomic Energy Commission. He replaces Thomas J. Hargrave, who resigned.

Forty-nine of fifty Boeing B-29 bombers completed their assigned long-distance flights from foreign bases to major U. S. cities in celebration of Air Force Day. Nine of the planes landed at their destination on the exact minute scheduled and none were more than one hour late. The disabled B-29 landed safely in Alaska on a projected Japan-Minneapolis flight.

All American Aviation's stockholders voted last week to change the company's name to All American Airways, Inc., to identify carrier's activities "more appropriately" with air transport operation.

FINANCIAL

Beech Aircraft Corp. declared a dividend of \$1 per share payable Oct. 15 to holders of record Oct. 1. President Walter Beech expects earnings in year ending Sept. 30 to equal \$2.50 per share on the 400,000 outstanding shares of common stock.

Continental Motors Corp. reports for nine months ending July 31 profit of \$2,536,129 on sales of \$85,592,860.

FOREIGN

Skytrain Airways, Inc. has received a temporary permit from El Salvador to operate cargo flights between that country and Houston, Tex. and New Orleans, La. The nonscheduled cargo carrier uses two Douglas C-54 transports and has already completed four flights over the routes carrying such diversified cargo as livestock and small automobiles.

Panama has cancelled the registration of ten aircraft of Panamanian Airlines for alleged illegal operations in Palestine. The planes were said to have been based in Czechoslovakia.

INDUSTRY OBSERVER

► Chance Vought Division of United Aircraft Corp. is readying its new Navy fighter, the F7U, for initial flight tests at the Naval Air Test Center, Patuxent, Md. The new Vought fighter is designed for transonic speeds and features a tailless configuration with vertical fins at the wing tips. Its performance is expected to be in a class with the USAF's North American F-86 series.

► North American will skip the B model in its F-86 series and put out virtually a new airplane of vastly superior performance as the F-86C. Among other things, the F-86C will have more power than the 5000-lb. static thrust (dry) delivered in the F-86A by General Electric's J-47 jet engine. USAF has already ordered 118 F-86Cs from North American.

► Navy has canceled its experimental contract with Chance Vought on the F5U "Flying Pancake" designed by Charles Zimmerman to combine high cruising speed with the ability to hover for use as a Navy shipboard liaison plane. The V-173, prototype of the F5U, was flown successfully but lacked sufficient power actually to hover. F5U went through taxi tests but was never flown. Zimmerman left Vought recently to open his own consulting business in New York.

► Northrop's X-4 tailless sweptwing type high-speed research plane, is now at USAF's Muroc test center for initial flight tests. Although included in the USAF classification for supersonic research planes, the X-4 will actually be used to investigate flying wing type configurations at high subsonic speeds.

► Douglas is working on the third type in its Skyraider attack plane series for the Navy. The AD-3 will be powered by a Wright 2600 compound engine.

► Convair's radically designed flying test model now at Muroc, erroneously called the prototype of the XF-92 by an airline trade daily, is actually a research plane for a series of supersonic fighters planned by Convair. It has neither the size, power nor configuration eventually planned for the XF-92. Most interesting feature now planned for the XF-92 is an Oswatitsch diffuser on the nose.

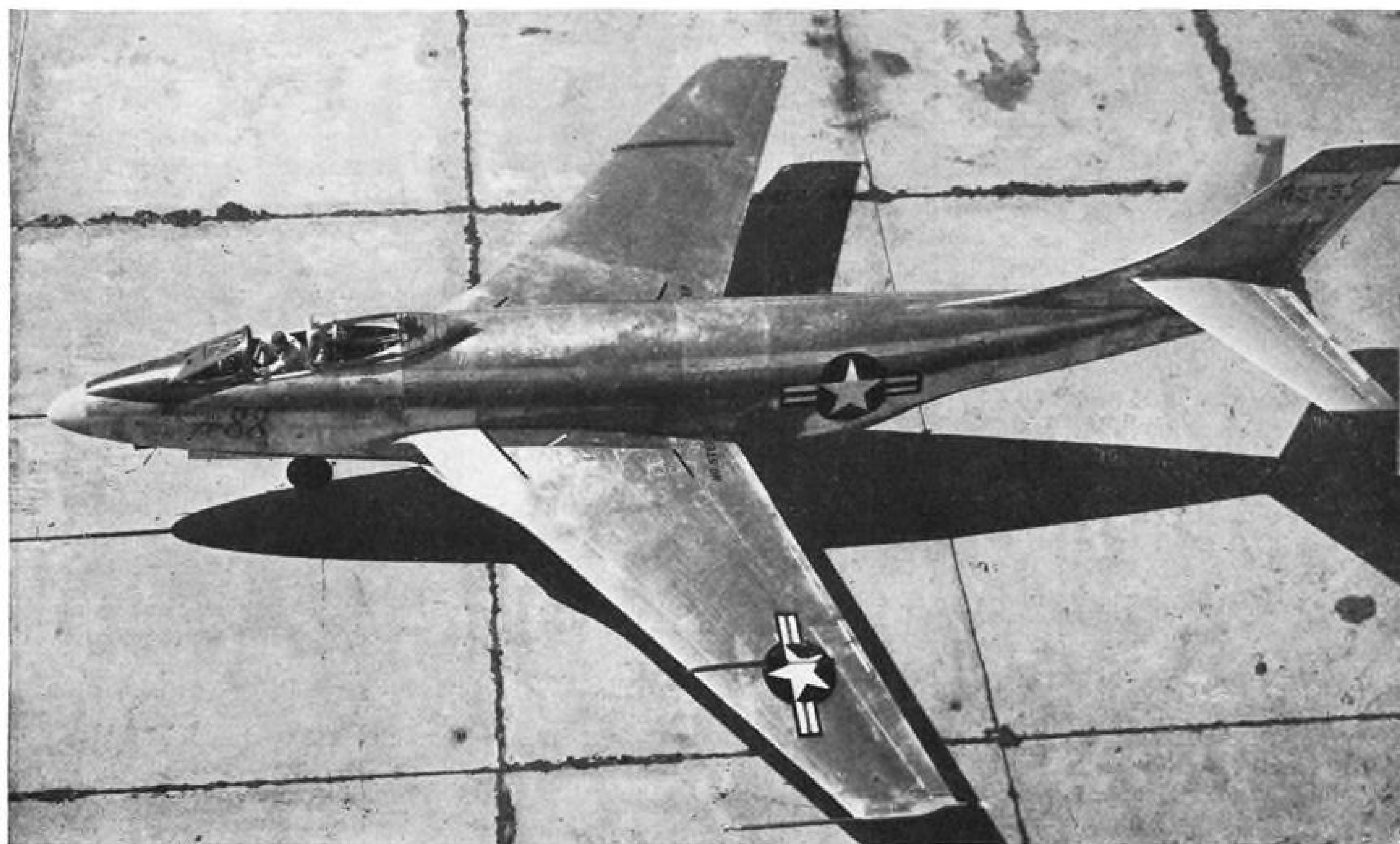
► Bell Aircraft Corp. is quietly flight testing its new experimental helicopter the XH-15. USAF has ordered three models. Powered by a Continental XO-470 engine developing 275-mph. takeoff power, the XH-15 weighs 2700 lb., has a top speed of over 100 mph., service ceiling of 20,000 ft., and a combat radius of 100 miles.

► Low-speed stall in a tight landing approach turn evidently caused the crash of the third Lockheed TF-80C just short of the runway of Metropolitan Airport, Van Nuys, Calif., Sept. 9. Capt. James Fitz-Gerald, Air Force supersonic pilot (AVIATION WEEK June 21, 1948), was fatally injured. Although the aircraft sheared off one wing and cartwheeled, the cockpit was undamaged and Fitz-Gerald's head injuries were laid to the fact that he apparently had failed to tighten his shoulder straps before attempting the landing.

► War surplus trainers continue to provide North American with a portion of its military income. At the company's Downey, Calif., plant, 30 AT-6 trainers are being reconditioned for the Argentine Navy. As room is made on the assembly line, an additional 42 will be reconditioned for the Siamese Royal Air Force and Siamese Navy.

► Douglas Aircraft's final five DC-6s now are on the production line at Santa Monica, nearing completion and earmarked for delivery to Delta Airlines with fanfare early in October. Prototype of the DC-6A, Douglas' longer-fuselage cargo model will follow.

► Consolidated Vultee is optimistic over the sales effect that the first foreign delivery of a Convair-Liner will have. From Melbourne last week came an enthusiastic Trans Australia Airways cable reciting a delivery flight and route test of 17,920 mi. completed in 80 flight hours. The C-1, according to TAA, "exceeded all expectations and arrived two days ahead of schedule."



MCDONNELL'S XF-88. Note stall vanes (dark lines) near wing tips, one on left wing passing through insignia.

New High Speed Planes For USAF

By Robert Hotz

Two new fighters and a sonic research plane have been revealed officially by the U. S. Air Force.

They were:

- **McDonnell's XF-88**, a sweptwing, twin-jet penetration fighter capable of supersonic speeds.
- **Northrop's XF-89**, a heavy (30,000 lb.) straight wing, twin jet night fighter.
- **Northrop's X-4**, a sweptwing, twin jet research plane designed to explore stability and control problems of tailless aircraft at high subsonic speeds.

Existence of these planes was no news to AVIATION WEEK readers. The XF-88 and XF-89 were described initially in AVIATION WEEK of July 21, 1947. First mention of the X-4 was in the first issue of AVIATION WEEK July 7, 1947.

► **Supersonic Fighter**—The McDonnell XF-88 is one of the fastest—if not the

fastest—fighter to appear in the slowly expanding USAF stable of supersonic fighters. Powered by a pair of late version Westinghouse 24C (J-34) jet engines slung internally in the fuselage belly below the wing, the XF-88 has a top speed ranging from better than 720 mph. to more than 740 mph. depending on various engine modifications.

Other XF-88 features include a phenomenal rate of climb (more than twice that of an F-80), considerably more range than U. S. jet fighters now flying, and heavier armament than any previous USAF fighter. The XF-88 will also carry external rocket and bomb load for use as an attack plane.

► **35-Degree Sweepback**—XF-88 has a wingspan of approximately 40 ft. Wings and tail surfaces are swept back at an angle of 35 deg. Stall vanes are located near the wing tips to prevent spanwise flow of air. Fuselage is 55 ft. long with a plastic nose for communications equip-

ment. Flush antennae are located in the cockpit canopy and the tip of the swept-back vertical fin.

Pressurized cockpit is also equipped with a pilot ejection seat. Fuselage dive brakes are located aft of the wing. Air intakes for the jet engines are in the leading edge of the wing roots. Under-side of the fuselage curves upward behind the wing to expose the twin tail-pipes of the jet engines and provide a clear field for their blast. Gross weight is 15,000 lb.

► **Lockheed F-90 Next**—Next USAF entry on the supersonic stage will be the Lockheed F-90, which is nearing completion after several basic design changes.

The Northrop XF-89 is a straight wing all-weather fighter built in competition with the Curtiss-Wright F-87. The XF-89, while only slightly larger than the XF-88, is nearly twice as heavy—30,000 lb. This is reflected in the



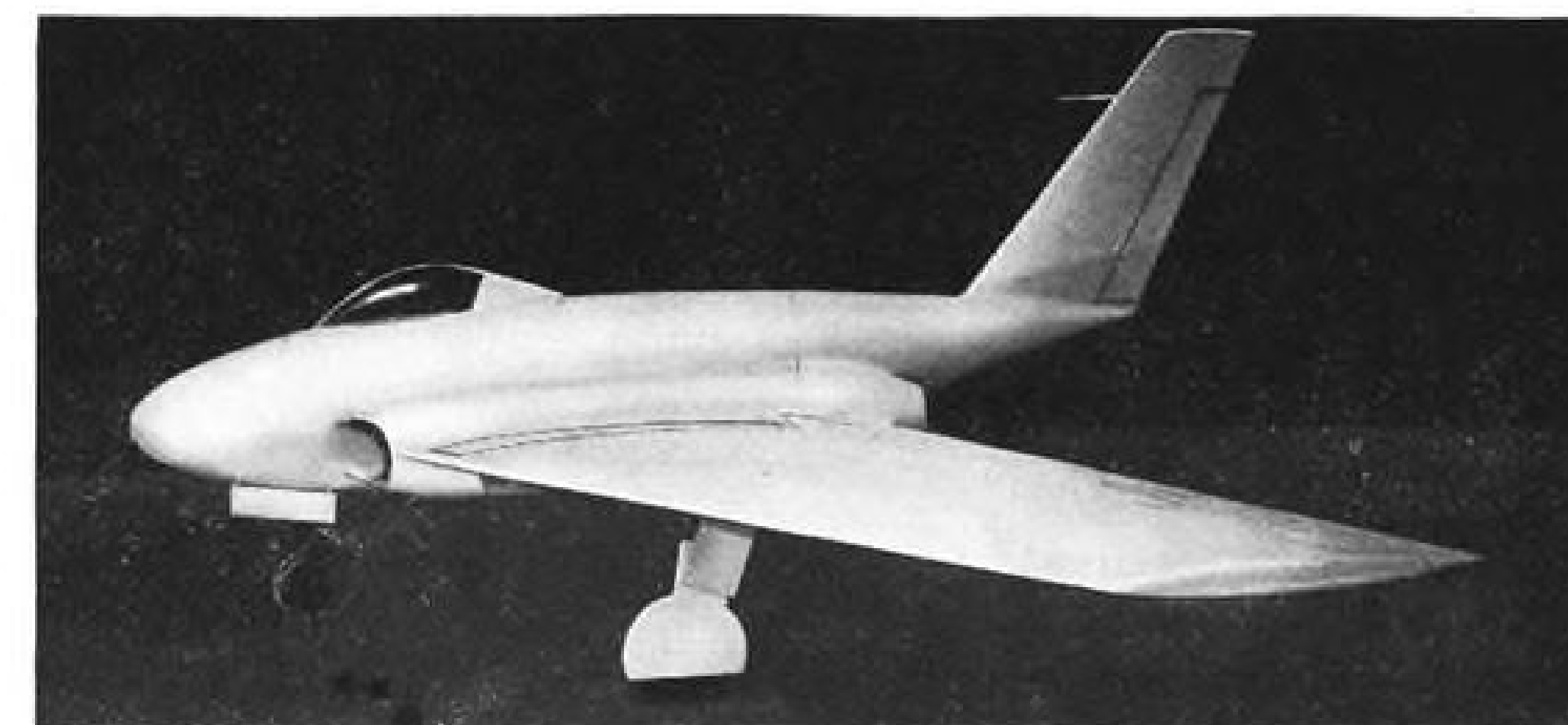
NORTHROP'S XF-89. Great weight (30,000 lb.) calls for large main wheels and double nose wheels.



large main wheels and double nose-wheel of its tricycle gear. Most of the extra weight comes from radar, extra crewman and other night fighting gear. ► **Twin Jets**—The XF-89 is powered by two General Electric-Allison J-35 jet engines slung semi-externally from the lower fuselage. Wingspan is about 50 ft. Fuselage is approximately 50 ft.

Top speed of the XF-89 is well over 550 mph. First test flight was made at Muroc on Aug. 16. Northrop test pilots Max Stanley and Fred Bretcher made the initial flight tests on the XF-89 with USAF pilots taking over recently. Two man crew including pilot and radar operator sit tandem in the pressurized cockpit. Both have ejection seats.

► **Research Plane**—The Northrop X-4 research plane is part of the joint NACA-USAF-Navy high speed flight research program that includes the Bell X-1 and X-2 and the Douglas D-558 series. It is powered by two Westinghouse 19XB (J-30) jet engines located on each side of the fuselage. The X-4 uses the elevons developed by Northrop on its flying wing type aircraft for aileron and elevator control. It has no hori-



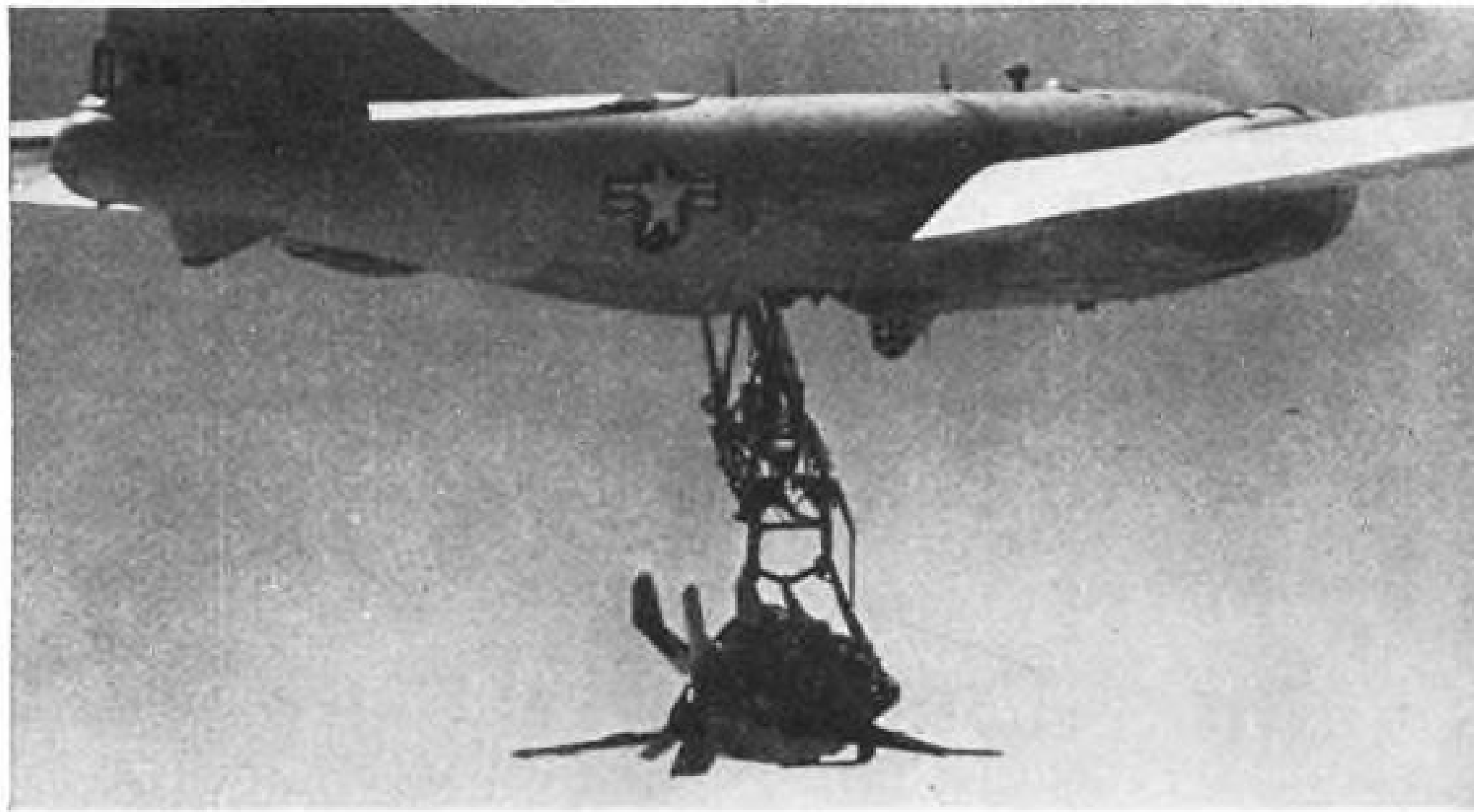
NORTHROP'S X-4. This is photo of mock-up. Actual plane is built and at Muroc.

zontal tail surfaces but does have a prominent vertical fin.

This research plane was designed to test stability and control characteristics of a tailless type aircraft at close to sonic speed. Navy already has a tactical jet fighter type (the Vought F7U) of roughly similar configuration ready for flight tests (AVIATION WEEK, Sept. 20). The F7U has vertical fins at the wing tips instead of at the rear of the fuselage as on the X-4.

The X-4 is about 20 ft. long; has a 25 ft. wingspan and a gross weight of 7000 lb.

► **Parasite Ready**—Meanwhile, McDonnell's XF-85 jet parasite fighter was ready to resume flight tests at Muroc after its nearly-disastrous initial attempt to regain the Boeing B-29 mother plane in flight. First flight of 20 minutes was made on Aug. 23 at Muroc. It ended, after an abortive attempt to engage the mother plane's trapeze, in a belly land-



XF-85 PARASITE is lowered on trapeze from belly of B-29 mother ship . . .



. . . and cuts loose for first flight. Failing to re-engage trapeze, it made belly landing.

ing at 175 mph. (AVIATION WEEK, Sept. 20).

Among the contributing causes to the initial failure to engage the B-29 trapeze were turbulent air at 25,000 ft. and a tendency of the stubby 15 ft. fighter to tumble. It was while the XF-85 pilot was fighting the heavy stick forces encountered in trying to maintain lateral stability that the B-29 trapeze bashed in the parasite's canopy and hit McDonnell test pilot Ed Shoch.

A B-29 is being used for initial test flights of the XF-85 because there are no Convair B-36Bs available with bomb bays equipped to handle the parasite. The parasite is carried internally in the modified B-29 bomb bay and lowered on a retractable trapeze for mid-air launch-

ing. Recovery is supposed to be made on the extended trapeze, after which the parasite is withdrawn back into the bomb bay.

The XF-85 has a top speed of about 660 mph. and has an extremely tight turning radius.

New Parcel Post Points

The Post Office Department has inaugurated air parcel post service to Australia, China, Fiji Islands, Hong Kong, New Zealand, the Philippines, Siam, Belgium and Luxembourg. Service to 20 countries in South and Central American and the Caribbean area was started by the Post Office Department a few days earlier.

More Orders

Remaining 1949 USAF funds being cleared to buy another 313 planes.

Final allocations of its fiscal 1949 aircraft procurement funds was made by the U. S. Air Force last week.

Last chunk of the \$1,937,000,000 voted by Congress for new Air Force planes was the \$96,000,000 (AVIATION WEEK, Sept. 20) approved last week by Defense Secretary James V. Forrestal and sent on to President Truman for final certification. Last week Mr. Truman certified another fund of \$103,000,000 previously approved by Forrestal for the purchase of 313 USAF planes.

The final \$96,000,000 will be spent for:

- Boeing B-47, six jet, swept-wing bombers. Initial contract of \$40,000,000 will be for 10 bombers to begin production at Boeing's No. 2 Wichita plant. Boeing expects to boost its Wichita employment to 15,000 early in 1950 to handle B-47 production.
- Northrop will get a sizeable increase in its present order for 10 trimotor raider (C-125) assault transports.
- Cessna will come into the USAF procurement postwar procurement program for the first time with the purchase of a number of Cessna model 195, four to five place executive plane powered by a 300 hp. Jacobs engine. This is an off the shelf purchase of stock models. List price to private purchasers for the 195 is \$14,000, the most expensive single engine small plane now in production.
- Sikorsky division of United Aircraft Corp. will get an order for more H5G four place rescue helicopters.
- Kellett's XH-10 twin engine transport helicopter will go into production under the final USAF allocation. Due to reorganization of the Kellett Corp. under the Federal Bankruptcy Act it has not yet been determined who will make the H-10. Kellett built the experimental model which successfully completed its flight test program. Hughes Aircraft Co., Fairchild Airplane & Engine Co. and the Kellett Corp. have been contenders for the X-10 production contract.

About \$30,000 of the \$96,000 allocation will be used to buy a new USAF twin-engine trainer to be designated the T-29. Convair and Martin have been the leading contenders for this contract with modified versions of their twin engine commercial transports. USAF has not yet made a decision of whether the Martin 202 or the Convair Liner will be purchased as the T-29. However both navigator and bombardier

training versions of the T-29 will be ordered.

► **More Missiles**—Additional guided missile production will account for another \$16,000,000 in the final allocation.

Forrestal's approval of the \$96,000,000 gives the USAF funds for all of the 2727 planes originally authorized by Congress. Initial approval was given in June for allocating funds for 2201 planes; followed by approval for 213 more early in September with the final 313 approved last week.

Navy still plans to submit its requests for use of approximately \$100,000 of its fiscal 1949 procurement funds not yet allocated to Forrestal's office late this month.

Materiel Command Completes Study

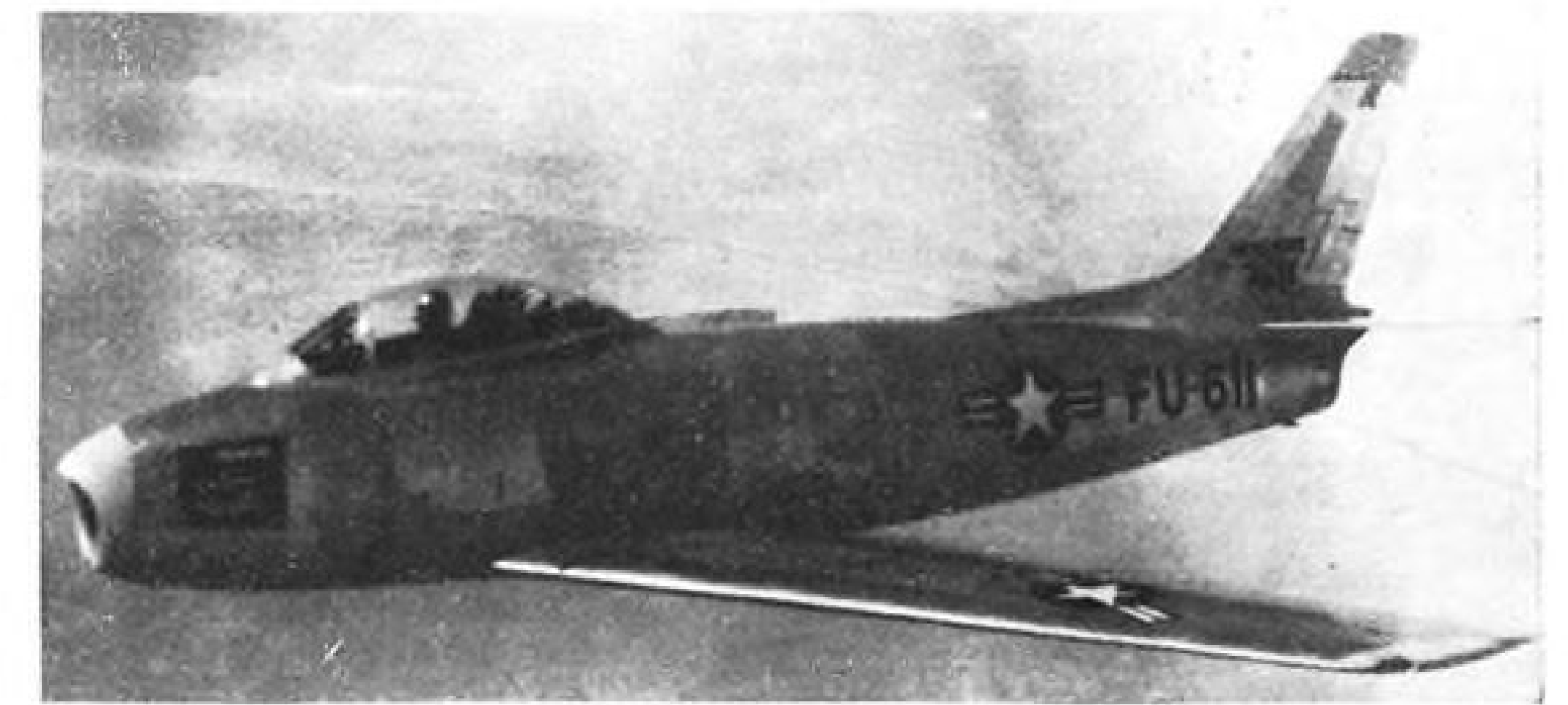
Air Materiel Command has completed a 10-year expansion program study designed to modernize research and development facilities and to create new laboratories required for special projects.

Although the extent of the program will hinge on the availability of funds, Air Force has already included funds for the following in its fiscal 1950 budget requests:

- **New Laboratories**—Climatic projects laboratory for high wind and cold weather testing of aircraft equipment to be located in the northeastern mountain regions; a solar research laboratory to be located in the southwest desert regions; a new electronics field laboratory, an upper air sounding station and a cold-weather torque stand for turbo-prop test cells, all in Alaska; and a new ramjet test facility to be located in California.

► **Wright-Patterson Air Force Base**—Earlier plans to abandon this installation appear cancelled with additional construction slated for 1949-50 completion. New buildings slated for early completion include a photo research and processing laboratory; new quarters for the Air Force Institute of Technology; a rotary-wing testing facility; a firing-test facility for the armament laboratory; a scavenging building for the 10-ft. wind tunnel; a high-powered electric motor whirl rig; a rocket-test facility; a weight-and-balance hangar; two VVHB (very, very heavy bomber) hangars; and a VVHB apron alongside the new 10,000-ft., 300-ft.-wide runway.

• **General modernization** and additional housing would be provided at Clinton County Air Force Base, Wilmington, Ohio, and Kelly Air Force Base, San Antonio, Texas.



Action photo "stops" F-86A during record-breaking flight at Muroc.

F-86A Sets World Speed Record

Same plane, same pilot that scored near miss at Cleveland exceed 670 m.p.h. with speed to spare.

On its second attempt within the month, the U. S. Air Force regained the world air speed record from the marines with a 670.981 mph. performance in the North American F-86A at Muroc, Calif. Former record of 650.796 mph. was held by marine Major Marion E. Carl flying a Douglas D-558-1 research plane.

USAF used the same plane (10th F-86A off the Inglewood, Calif. production line) and the same pilot (Major Richard L. Johnson of the Wright Field Flight Test Section) involved in the earlier attempt at Cleveland. On Sept. 5 Johnson set an unofficial mark of 669.48 mph. before packed grandstands at the National Air Races.

National Aeronautic Association officials denied published reports of a 674 mph. mark at Cleveland pointing out that that figure was arrived at by averaging the best four runs rather than by using the officially calibrated film records.

► **Confirms Prediction**—Maj. Johnson's record flight at Muroc on Sept. 15 confirmed AVIATION WEEK's prediction published Sept. 13 that the USAF would soon make another record attempt with the F-86 at Muroc. The four record runs at Muroc were made over a three kilometer (1.86 mile) course with a crosswind of 3 mph.; temperature at 70 degrees Fahrenheit and at altitudes ranging from 75 ft. to 125 ft. Average Mach number was .87. Due to the crosswind there was remarkably little spread on Johnson's four runs. Fastest pass was 672.762 mph. with a low of 669.873 mph. Other two runs were clocked at 671.281 mph. and 670.008 mph.

The F-86A again carried standard armament of six .50 caliber machine

guns and full ammunition load. This was in contrast to the D-558-1 which is a research aircraft and carried no military load.

The record flights were timed under the supervision of Charles S. Logsdon, chief of the contest division of NAA, with John Truran, of the Royal Aero Club, as Federation Aeronautique Internationale observer. The records will be sent to FAI headquarters in Paris for homologation.

Maj. Johnson said his Muroc runs were much easier than his Cleveland performance due to a better marked course, better visibility (15 to 20 miles) and no other air traffic. At Cleveland Johnson narrowly missed an Aeronca lightplane and flew over the recording cameras on one run making it impossible to photograph his plane and record the four successive passes needed for an official record.

► **Better Speed Possible**—"At no time during the Muroc runs was I forced to extend the F-86," Maj. Johnson said. "At no time did I approach the maximum capabilities of the plane."

Muroc test pilots have reported indicating 700 mph. in level flight with the F-86A and performances of 690 mph. are classed as routine.

USAF last set a world speed record on June 19, 1946 when Col. Albert Boyd flew a Lockheed P-80R jet fighter at Muroc averaging 623.8 mph. This returned the speed record to the United States for the first time in 24 years.

On Aug. 23 of the same year Lieut. Cdr. Turner Caldwell of the Navy broke Boyd's record with a 640.7 mph. performance at Muroc in the Douglas D-558-1 only to be topped two days later by Maj. Carl's 650.706 mph. flights in the same plane.

U. K. Defenses

Jet fighter output to be doubled, work pushed on new bomber types.

McGraw-Hill World News

LONDON—Britain is taking several big steps to strengthen her defenses.

Precautionary measures to be undertaken immediately are:

- Accelerating production of all forms of military equipment, especially fighter aircraft.

- Increasing the strength of the three forces.

- Speeding up civil defense preparations.

The whole emphasis is on greater preparedness to hold the British Isles as a key defense bastion—rather than diversion of resources to rearmament needed for an offensive. This is clear from the stress placed on air defense units. In this light, the full-scale exercises testing out those defenses, held on the week-end of Sept. 3-6, assume even greater significance.

At present all of the forces are relying too heavily on wartime surplus stocks. Supplementary votes (appropriations) will be forthcoming, but there is as yet no estimate of the amount of civilian manpower that will have to be diverted to the increased production.

► **New Planes**—Faster fighters and bombers are being readied. Gloster and Hawker each are known to have at least one new jet fighter for the RAF well along; Fairey is understood to be readying a new Navy fighter; and Blackburn is nearly ready to fly a Naiad turboprop-powered torpedo bomber.

English Electric Co. has been working for three and one-half years on a twin-jet medium-range bomber expected to fly early in 1949. Its speed is expected to be more than 500 mph., or twice the speed of the Lincoln, the present RAF standard bomber. Also in the bomber field, Vickers-Armstrong and Bristol each have been working on long-range four-jet bombers capable of more than 600 mph.

► **More Fighters**—Under the rebuilding program, output of "certain types of fighter planes" is to be doubled. This clearly means the jet-propelled Vampires and Meteors, which are the only types of fighters now in quantity production, although the Vickers Supermarine Attacker has just recently been ordered in a small quantity.

Doubling fighter production, however, doesn't mean doubling the size of the fighter command. The home-based squadrons now are fully equipped with Vampires or Meteors. Increased production of these types will outfit

fighter squadrons overseas as well as Royal Auxiliary Air Force squadrons at home.

► **For Friends**—Balance of the increased output will go partly to build up reserve strength, and partly to supply friendly foreign countries. Some will go to France and The Netherlands, which are now using British aircraft.

This may mean that Holland will get some more Fairey Fireflies (they are still in limited production), which her navy already is using. France, whose air force was rebuilt almost entirely around surplus British Spitfires, Mosquitoes and Lancasters, may get some Attackers for operation from the single carrier that has been loaned to her by the Royal Navy. Another example of Britain's foreign program is a third order from Sweden for Vampires.

Britain's reserve strength is being increased pending delivery of new fighters and bombers by factory reconditioning and modification of the latest models of Spitfires, Mosquitoes, Hornets and Lancasters from storage. The pace of dusting off and reconditioning these planes will be stepped up.

► **Personnel Strength**—Demobilization of all National Service men (draftees) who ordinarily would be due for discharge in the next few months is to be delayed an additional three months. This will add 80,000 men to the forces at the end of this year, making a total of about 825,000.

Recruiting of men and women for both the Regular and the Auxiliary Forces is to be further stimulated. The RAF has extended the scope of its drive for voluntary enlistments for aircrew direct from civil life. Now, for the first time since the end of the war, its rolls are open for candidates for aircrew radiomen, engineers and gunners (pilots and navigators have been accepted for several months past). Simultaneously the Admiralty inaugurated a recruiting scheme broadly similar to the RAF's, for naval aviation pilots and observers. Term of enlistment has been lengthened to eight years, with another four years in the reserve, and an increased scale of discharge-gratuities and generally more favorable conditions are added inducements.

► **Reserve Needs**—The most important need is for 22,000 men and women (roughly one-half each) for RAuxAF to man air defense network. Ten new units will be added to the existing 16. Next, RAuxAF wants 1000 more ground crew for the present 20 squadrons but no additional pilots. It also wants 2000 to man light anti-aircraft defenses. There will be one unit at each flying squadron.

Also needed are 20,000 more flying personnel in the voluntary parttime training service and 17,000 ground

crew; men in 20 different trades and women for the first time in ten trades.

An intensive drive for both the Regular Army and the Territorial Army (who man Britain's main anti-aircraft defenses) is to be started the first week in October, as already announced in a broadcast last month by War Secretary Emanuel Shinwell.

Cessna Leads for August

Cessna Aircraft Company's 145 hp. model 170 led four-place airplane sales for the second straight month in August, according to reports from 11 companies received by the Personal Aircraft Council.

Of a total of 428 four-place August sales reported, the model 170 accounted for 123 while Cessna also sold six of its larger 190s and 14 model 195s.

August drop in two and three-place plane sales to 252 reflected the Veterans Administrations' sharp chop of flight training for GIs at regional levels.

Stinson remained leader in four-place sales for the first eight months with a total of 686 planes sold in this period, but Cessna had a total of 548 four and five-placers sold in the same eight months and was moving up to challenge the leadership.

Total August shipments of 680 planes with total dollar value of \$2,764,000 at the manufacturer's net billing price, shows a drop from July shipments of 869 planes valued at \$3,329,000. Total shipments reported for the first eight months of this year are 5415 valued at \$20,941,000.

TWA Traffic Outlook Good

TWA's late summer business held up well on both domestic and international runs, and the carrier foresees a satisfactory traffic level through the fall season on its trans-Atlantic link.

The company reports that flights westbound from the British Isles and Europe have been filled to capacity during the past two months. Although returning American tourists account for some of this peak traffic, TWA says a large proportion consists of Europeans coming to the U. S. TWA's bookings indicate a heavy westbound trans-Atlantic traffic volume through October.

Domestically, TWA's passenger traffic during the second weekend of September was even better than the record Labor Day business. Back to school travel and the new 5 percent roundtrip discount probably accounted for much of the traffic upsurge. TWA also announced that during the first seven months of this year, airfreight volume was up 132 percent, air mail 24 percent and air express nearly 5 percent over the same 1947 period.

PRODUCTION



Lockheed Aircraft Service installation at MacArthur Field, L. I.

Airlift Contract Goes to LAS

New USAF business not only boosts backlog, but may mark start of more high echelon maintenance work.

By Stanley L. Colbert

To Berliners, the noise of C-54s going in on the airlift sounds like a million dollars. To Lockheed Aircraft Service at MacArthur Field, L. I., the noise of C-54s coming back from the airlift sounds like a million and a half dollars—and that may be only a starter.

The \$1,500,000 contract recently awarded by the Air Force to LAS for high echelon maintenance on ten C-54s per month is worth even more than that in its significance. The Air Force utilization of independent operators may mean a step towards achievement of a basic maintenance concept: The services should have a trained reserve of private maintenance facilities to expand in emergencies, in line with military requirements.

Up to now, the Lockheed Aircraft Co. subsidiary and other independent facilities have received only sporadic benefits from this idea. At its Burbank, Calif., installation, which boasts 400,000 sq. ft. of hangar space and 600,000 sq. ft. of paved ramp, LAS has been quietly working long overhauls and tank sealing on Navy versions of the C-54 and the Lodestar.

The MacArthur Field (Sayville) L. I., base, with a hangar large enough to accommodate five four-engine transports and 50,000 sq. ft. of shop space, has been doing work for the Coast Guard. It also has garnered commercial con-

tracts for airplane or component overhaul with Air France, LAV (Venezuela), Seaboard and Western, Pan Am's Atlantic division, Panair do Bransil, KLM (Royal Dutch Airlines), and American Overseas Airlines.

In addition, a drive towards performing maintenance on executive type aircraft has been paying off. An increasing number of these planes have been coming in for periodic checks, overhauls and tank sealing.

► **Growth**—Lockheed Aircraft Service's growth has been condensed and successful.

In 1939, Lockheed Aircraft Corp. established a parts and service depot in Amsterdam, Holland. Its main purpose was to afford an accessible point to service Lockheed commercial aircraft used in Europe. When war broke out, the depot was moved to England, and switched to military work.

By VE-Day, there were seven Lockheed major overhaul bases employing 10,000 men overseas alone. More than 85 percent of the work was performed on other than Lockheed-made planes.

On Jan. 1, 1947, the Lockheed Aircraft Service division became Lockheed Aircraft Service, Inc., and from then on LAS has operated separately and independently of the parent company.

► **First Year Figure**—First year figures—Jan. 1, 1947 to Jan. 1, 1948—were impressive: Personnel increased from 1000 to approximately 2250; more than 1,-

765,000 work hours were performed on more than 300 transport aircraft. In June, 1947, the backlog was \$7,700,000.

This year, overhaul and tank sealing business have been looking up. In addition to contracted work with commercial airlines, LAS has dealt with British Overseas Aircraft Corp., TWA, Eastern Airlines, Trans Caribbean Airlines and the Flying Tiger Line.

► **Component Work**—LAS component shops hold appeal to many of its customers. Extensive facilities exist at MacArthur Field for overhaul of instruments, superchargers, hydraulic units, driveshafts, pressurization systems, and others. Burbank has these facilities too, and both bases report an upsurge in component work.

While LAS' backlog is absorbed in the parent company report, it is known that the subsidiary is in the black. Employment is near 2200.

Meanwhile, LAS, as well as other maintenance organizations, has been trying to impress upon the government and private enterprise the value of skilled, experienced and well-equipped establishments for heavy overhaul and maintenance behind a war theater. As far as the Berlin airlift is a true war operation and as far as the \$1,500,000 contract supports that operation, the door for additional high echelon maintenance may be open.

New Helicopter Firm

A new rotary wing firm, the Gyrodyne Co. of America, Inc., is seeking plant facilities in the New York City area to continue development and construction of a utility helicopter and a two-place "Gyrodyne." Offices are at 2 West 43rd Street, New York City.

BRIEFING PRODUCTION NEWS

► **Steel Improvement and Forge Co.**, Cleveland, will triple its production of forged gas turbine blades by Oct. 1 through completion of factory expansion and addition of tools and equipment. Six new forging hammers, trimming presses and electric furnaces are being installed. Steel Improvement is one of only four forge shops in the nation producing gas turbine blades.

► **Lebanon Steel Foundry**, Lebanon, Pa., has signed a licensing agreement with Firth-Vickers, Sheffield, England, permitting the use of the "centri-die" casting technique used by the British firm for the manufacture of British gas turbine parts, including the Rolls-Royce Nene, now in production by Pratt & Whitney Aircraft Division, United Aircraft Corp. The new process is a centrifugal permanent mold casting method in which the mold is rotated at high speed to create a cylindrical ring of high density.

► **Consolidated Vultee Aircraft Corp.**, San Diego, delivered its 50th Convair-Liner, the airplane being the tenth delivered to Pan American Airways. First Convair-Liner delivered to a foreign airline is en route to Trans-Australia Airlines.

► **Douglas Aircraft Co., Inc.**, employment at its Long Beach plant is moving rapidly toward the target figure of 4000 planned Oct. 1. Employment has already passed the 3000 mark. Long Beach division is reconditioning B-26 Invader light bombers (formerly A-26) under Air Force contract. The planes are being readied for delivery to National Guard units.

► **Horace Pentecost** of Seattle, Wash., was to leave in mid-month for England to demonstrate his Hoppi-Copter for the British Ministry of Supply. He planned to take two models and leave one with the British for test purposes. While abroad, Pentecost will try to find a producer of a 35-hp. engine weighing not more than 42 lb. Engines he assembled for the three machines he has made are not suitable for production purposes.

► **Brooks & Perkins, Inc.**, sheet magnesium designer, and fabricator, is more than doubling plant capacity at Detroit through acquisition of adjoining manufacturing space formerly occupied by Greyhound Lines.

► **Charles H. Babb Co.** has purchased from Consolidated Vultee Aircraft Corp., exclusive rights to manufacture parts and assemblies for the Catalina flying boat and amphibian. Babb intends to start production immediately on parts in short supply. A Babb official explained the move was necessitated by large sale of the Catalinas by the Babb company. Owners began complaining when they could no longer get parts for repair. Convair has not produced spares for some time.

► **Kaman Aircraft Corp.**, Bradley Field, Windsor Locks, Conn., has held the first of a series of public helicopter demonstrations. A K-190 was used to illustrate helicopter flight test methods. Other demonstrations will also show actual uses.



MORE L-13S FOR AIR FORCE

Consolidated Vultee Aircraft Corp. has announced a \$3,060,388 supplemental order for 154 L-13 liaison planes, one of which is shown with wings folded in tow of an Air Rescue Service vehicle. Of the new

order, 97 have been built by Convair and accepted by the Air Force. Newly-completed planes have been grounded temporarily by engine difficulty and will stay in San Diego, Calif., until final delivery.

New Factory Manager For Curtiss-Wright

H. Fletcher Brown, former vice president of Boeing Airplane Co., has been appointed factory manager of the airplane division of the Curtiss-Wright Corp., Columbus, Ohio. Brown takes the position vacated by T. B. Focke, now general manager.

A veteran of 19 years in the aircraft manufacturing industry, Brown was works manager of Boeing's Wichita, Kan., plant from 1931-1946. He directed Boeing's subcontracting program from its Los Angeles office as vice president-manufacturing.

In other personnel actions:

Jack & Heintz, Cleveland, Ohio, has freed Ralph M. Heintz from administrative duties so that he may devote his entire time to research and development activities, preparing products for manufacture. His employment contract has been amended and extended to run until 1956.

Consolidated Vultee Aircraft Corp., San Diego, has appointed Lloyd L. Turner resident director of public relations for the Forth Worth division. He was assigned from Convair's San Diego public relations staff.

Westinghouse Electric Corp., Pittsburgh, has named William C. Norvell manager of aviation sales for the Cleveland lighting division. He will head sales of aviation lighting equipment at the company's Cleveland plant.

Western Electric Co., Inc., New York, named George L. Best vice president-finance to succeed T. Kennedy Stevenson who retires under the company's age retirement rule. Best was formerly vice president in charge of patent licensing activities.

Stewart Warner Corp., Chicago, appointed James I. Minter secretary of the corporation. He had been assistant secretary and assistant treasurer since 1943. He fills the vacancy created by the death of A. R. Benson.

Koppers Co., Inc., Pittsburgh, appointed Edward R. Hall and Lenvik Ylvisaker assistant general managers of the newly formed metal products division. General manager is Walter F. Perkins.

Permanente Leases Mill

Permanente Metals Corp. has completed preliminary negotiations with War Assets Administration to lease the Newark, Ohio, aluminum rod and bar mill. Contract provides a ten-year lease with option to renew for an additional 15 years.

Work of putting the \$23,000,000 plant covering about 1 million sq. ft. in operating condition will begin at once.

Maintenance Training

University of Illinois' Institute of Aeronautics has announced a two-year course in aircraft maintenance engineering. Beginning Sept. 16, the course will prepare students for the CAA aircraft and aircraft engine mechanic rating, in addition to affording them a rounded background in related subjects.



Lebanon and Firth-Vickers join forces . . . to bring you the best in centri-die (centrifugal) permanent mold alloy castings. For heat and corrosion resistant service.

THE centri-die process of producing centrifugal castings in permanent molds is the most important improvement of a generation of alloy steel foundry progress. Developed by Firth-Vickers of Sheffield, England, before the "Battle of Britain", the unusual design characteristics and integrity of these castings made possible the famous Rolls Royce, De Havilland and other British jet engines.

Now Firth-Vickers has chosen the Lebanon Steel Foundry as its American licensee and correspondent, with full access to all their metallurgical, design and other engineering data. This makes available to American industry the newest techniques of permanent-mold centrifugal casting. By this process tubular and cylindrical structures can be made out of alloys which are difficult or impossible to forge or cast by any other method. For us and our customers it virtually wipes out years of costly experimentation. An addition to our foundry at Lebanon has just been completed and we are now producing centri-die alloy castings of known characteristics and assured integrity.

LEBANON STEEL FOUNDRY • LEBANON, PA.
"In The Lebanon Valley"

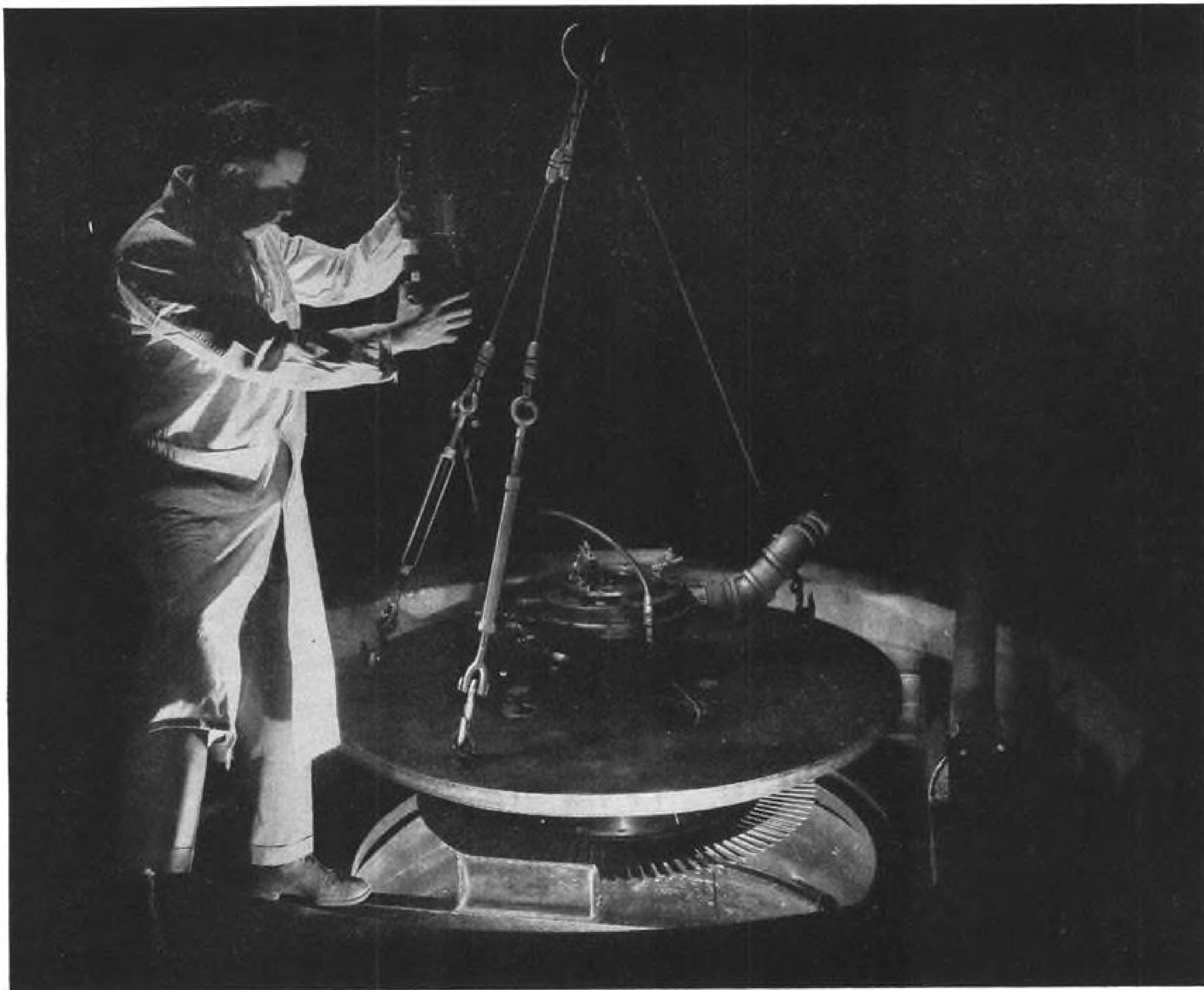
LEBANON Alloy and Steel **Castings**
CIRCLE L

HIGHLIGHTS OF LEBANON PROGRESS

- 1911
Company organized.
- 1915
Herault furnace installed, one of the first electric furnaces in the U.S.
- 1926
Production of alloy steel castings began.
- 1930
Ajax high frequency induction furnaces installed. The first used in this country for producing alloy castings.
- 1933
Lebanon becomes exclusive American licensee of George Fischer, Ltd., Schaffhausen, Switzerland. Swiss Chamotte method first used in America in producing alloy and carbon steel castings.
- 1948
Lebanon and Firth-Vickers Stainless Steel Ltd. sign agreement, making available to American buyers of heat and corrosion alloy castings all the experience and methods developed by the largest producer of such castings in Europe.

Get This Book "Centri-die Centrifugal Castings"

Prepared by Lebanon and Firth-Vickers engineers to explain fully the practical advantages of the centri-die process of making alloy castings centrifugally in permanent molds. While it has been written primarily for the design and metallurgical engineer, it also will be of interest to executives who like to keep abreast of new manufacturing and production methods. Write for a copy of Bulletin R.



GOING UNDERGROUND FOR A "WHIRL"

► This aircraft turbine wheel is about to undergo a "whirl test"—a test to prove its ability to survive the tremendous centrifugal forces present while it spins at supersonic blade tip speeds.

► The test is conducted in an underground chamber from which the air is evacuated. This permits the wheel to whirl at higher speeds than required in service... for if the blades had to push air around at such speeds, enormous power would be required to drive the wheel. To detect any slight irregularity that might occur during the run, the test rig has an electronic indicator.

► Because some experimental parts are whirled to destruction to determine how much overspeed they can endure, the chamber is lined with laminated boiler plate—12 inches thick.

► Each newly designed turbine wheel, compressor, and supercharger impeller must prove its ruggedness in similar tests in the Wright Aeronautical research laboratories before being released for production.

► Another example of the painstaking research behind the development of Wright aircraft turbine and reciprocating engines.



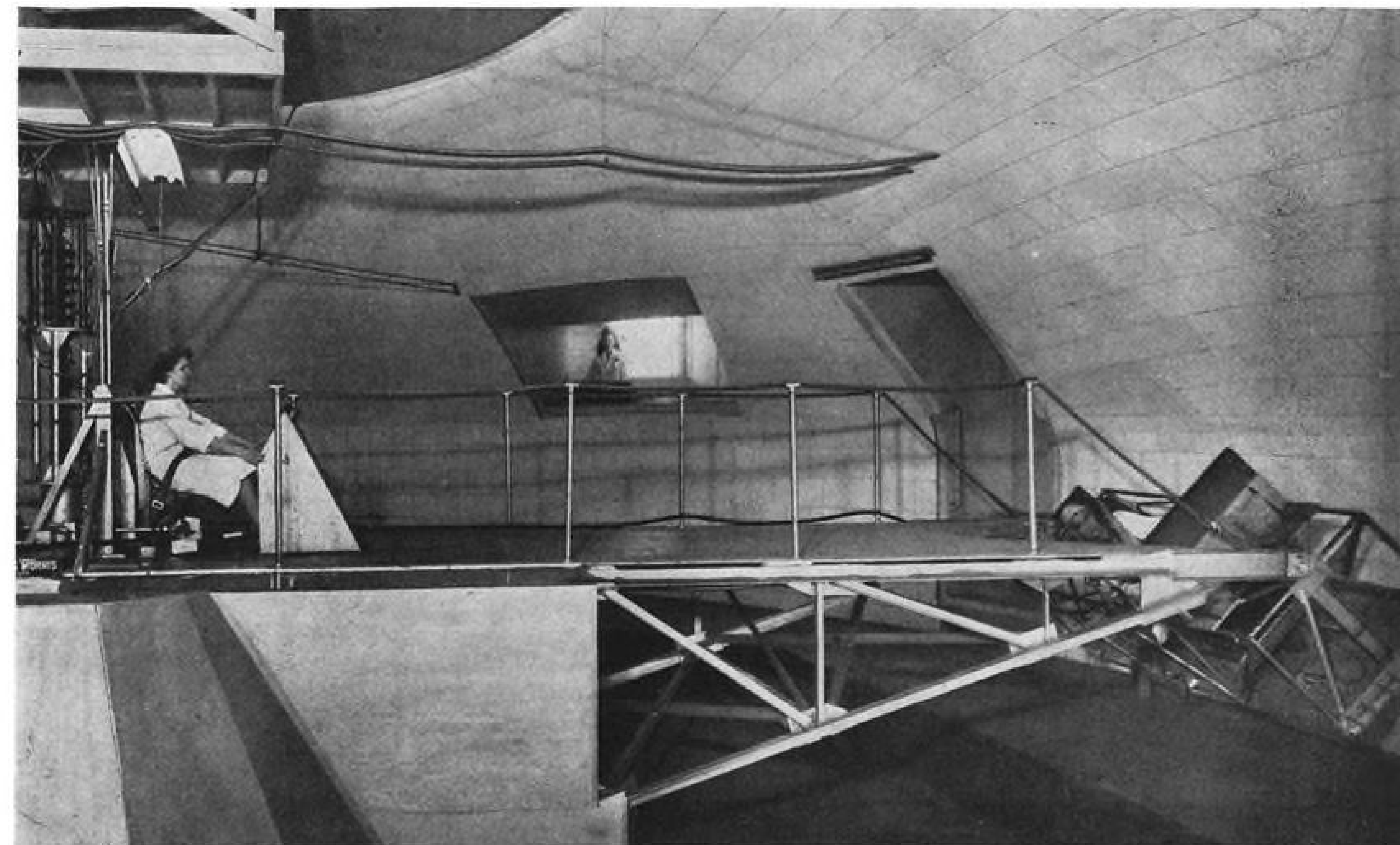
POWER FOR AIR PROGRESS

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ENGINEERING



Huge centrifuge at University of Southern California is research tool to determine re-

action to G-forces. As subject is whirled in cab, instruments record physical data lead-

ing to understanding of how pilots may be prepared for rigors of high speed flight.

Man Girds For Supersonic Role

Extensive research aims to insure pilot efficiency and survival in the hazardous realm of high speeds.

Engineers and scientists already have discovered enough about materials and structures to build planes able to withstand the forces encountered in supersonic flight, but their next step may be just as hard. They have to find out more about how well man can stand high speed, high altitude flight.

This is a new problem, one as complex as the human machine itself, and efforts to solve it have produced a new type of aviation medical team. Pooling their knowledge and techniques are doctors, engineers, designers, psychologists, physicists, and pilots.

They have determined that flight at high speeds is not itself injurious. But the excessive accelerations and decelerations that go with it, and the energies created by heat vibrations and noise, tax the physical capacities of pilots. In addition to this, man's mental processes

are not capable of employing conventional methods fast enough to navigate a plane traveling at 1000 mph. or more.

► **What's Needed**—The researchers also know what direction their efforts must take.

• New protective gear must be created so pilots can withstand high G-forces, and a basically new cockpit design may be required.

• Refrigeration units must be used to cool the cockpit against the extremely high outside temperature, and heating must be available for other conditions.

• The job of flying must be simplified, and pilots must be picked and trained more carefully.

• New methods of escape in emergency will have to include an auxiliary propulsion method to prevent excessive deceleration, and pressurization features.

• Effects of ultrasonic vibrations arising in flight must be investigated further. Belief once held that these can make the pilot sick, disintegrate parts of his body, and destroy his mental powers is now discounted, but there may be other effects.

► **Test Equipment**—To approximate the conditions that will be encountered in supersonic flight, complicated experimental equipment has been built, and more is coming up.

At the University of California, men are withstanding extreme temperatures as a "hot-box" raises their surrounding air to as much as 38 deg. F. above the boiling point of water.

Huge "human centrifuges" whirl men around at tremendous speeds at various laboratories throughout the country, and high altitude chambers subject them to rarefied atmosphere.



This anti-blackout suit has inflated bladder over abdomen to keep blood from leaving head.



This pressurized, zipper-fastened strato-suit developed by B. F. Goodrich under military guidance has oxygen and communication provisions piped-in by means of a single conduit which can be disconnected quickly by the pilot in the event of emergency.

At Sands Point, Long Island, N. Y., the Navy is studying a "human angular acceleration device," to be used at Pensacola, in which men will be rotated on three axes at the same time to test the reaction of the delicate balancing mechanisms in the inner ear.

At Wright Field, Ohio, the Air Force has built a free field chamber, in which the effect of high frequency vibrations will be tested.

Study with such equipment and accidental exposures to the elements of supersonic environment have enabled researchers to gain the information that is used in the design of experimental high speed planes.

Information gathered by Science Illustrated Magazine, a McGraw-Hill publication, shows what has been done so far in the study that will enable man to fly a supersonic plane. The research breaks down into several categories.

G-Forces

As a plane is catapulted to high speed the pilot may be rammed against his seat.

If the engine would fail while he were flying at Mach 2.0 at low altitude he might be subjected to deceleration forces of 10 to 20 times the force of gravity.

Pulling out of a dive, he may be subjected to 8Gs or more of downward force, and in an outside loop, similar forces may be pushing against his head from below.

In a crash, G-forces rise to as much as 40 and 50 times the pull of gravity.

How much of this can a pilot survive? It is known that the tremendous forces of a crash, applied for only a very small fraction of a second, can be survived although they may cause brain concussions and internal lesions. A force of 25Gs for 1/10 sec. is not enough to make a pilot lose consciousness, and even brief periods of blackout are known to produce no permanent harm.

But in the case of sustained forces the picture is different. Leonard C. Mead of the Navy Special Devices Center recently gave a very good description of the way in which these are felt by the pilot.

"Even when the pilot is experiencing only a 2G-force," he says, "there is a marked feeling of pressure as he is forced into his seat, and the extremities become difficult to lift. Response time is increased accordingly.

"At 3 to 4Gs these sensations of heaviness are exaggerated, and great effort is required in order to move the hands and feet; erect posture is difficult to maintain.

"Between 5 and 8Gs there develops unconsciousness and coma; this state is preceded by blacking out of the field of vision, probably due to loss of blood from the head and face."

In supersonic flight, vibrations of unknown frequency may be encountered. According to Commander Lynn S. Beals, Jr., medical director at the Spe-

cial Devices Center, forces of 4 to 5Gs may be expected from vibrations and buffeting in the transonic range from Mach 0.8 to 1.3.

► **Purpose of Centrifuge**—To understand these forces completely, and to counteract them, researchers have to study the exact reactions of the human body. The principal research tool for this study is the human centrifuge. Here animals and men are subjected to various forces under all possible conditions, while instruments record their blood pressures, X-ray internal organs, test reaction time, and keep a careful check on their general condition.

What they have found gives research men an indication of what happens to the body under pressure. With positive Gs, results show that the blood is drained from the head by gravity. Vision fails as a result, and eventually unconsciousness—blackout—results. At the same time internal organs are distorted by the tremendous forces.

Negative Gs do exactly the opposite. Instead of driving the blood down, they push great volumes of it into the head. At minus 5Gs the eyes are bloodshot, the face is swollen, and hemorrhages occur in the sinuses. The extreme of this is also unconsciousness—a redout.

It was thought earlier that negative Gs would cause cerebral hemorrhages, but experiments so far show that the skull exerts enough pressure on the dura mater to prevent the vessels from bursting. Retinal hemorrhages, however,

may occur. In a series of experiments at Wright Field only one case of cerebral hemorrhage occurred, and that in a monkey.

► **Counter Measures**—Beyond the basic reactions, centrifuge tests have given some clues for ways of combating the effects. Above all, G tolerance depends greatly on the position of the pilot in the plane. He can take more pressure across his body than up and down.

Lying on his back or stomach will help him withstand high radial stresses (such as in a pullout or a loop). For example, a seated pilot at 1500 mph. would have to turn in a circle 13 mi. in diameter, and it would take him 51 sec. to do it. Lying prone he could turn in a 6-mi. circle and in 22 sec.

Protective gear, such as G-suits and anti-redout helmets, will give the pilot increased tolerance by mechanically preventing the blood from rushing to one end of the body. The inflated bladders of the G-suit put pressure on the vessels of the abdomen and legs, and making it more difficult for the blood to rush down, they keep more of it in the head.

► **Diet Effects**—While protective gear is the main solution to the problem, tests have shown that it is influenced by many other factors. A carbohydrate-rich meal or two quarts of liquid before takeoff increase tolerance, while high humidities and high temperatures lower it. If the pilot could sit in a tub full of water he would also find increased tolerance.

One of the most important forms of protection is the pilot's mental attitude. As in other activities, confidence will make the job easier and fear will only make the effects worse.

Temperatures

An unventilated plane flying at supersonic speeds would be an inferno. A V-2 rocket, for example, is red hot at the speed of 3000 mph. The National Advisory Committee for Aeronautics expects 360 F. in a plane flying at 1500 mph.

With such temperatures the first thing researchers have had to do is find out just how much a human being can stand. Older work, done in relation to tropical climates, indicates that human tolerance at 50 percent humidity is about 100 F., but recent experiments at the University of California show that people can withstand much higher temperatures than was previously believed.

► **"Hot Box" Test**—Under the direction of Dr. Craig E. Taylor, it was shown that much of man's fear of heat may be mental, for psychologically assured subjects at his laboratory spent up to 18 min. in a chamber, or "hot box," that was heated to 250 F.—38 deg. above the boiling point of water.



In "hot-box" test, subject's reaction is observed and recorded as 200 F. is exceeded.

The hot box is a metal-sheathed cylinder with heavy airtight doors. It is so rigged that hot air can be passed through it under careful control. It is equipped with an intercom system for use by the subjects, and with all sorts of instruments that record temperatures at various parts of the body and keep a careful check on physiological functions.

With the help of instruments, direct observation, and the reaction of the subjects, Dr. Taylor and his assistants are beginning to understand the ways in which the body reacts to high temperatures. They found that at 200 F. and above, the body temperatures did not rise much above 100 F. and skin temperatures did not go over 105 F.

As the temperature of the chamber goes up, the human body makes a frantic effort to cool itself. The subjects perspire copiously, and as the perspiration evaporates the body is enveloped in a layer of cool air. Exhaled air, cooled by a similar process, was found to be 40 deg. below the temperature of that which was inhaled.

The subjects' faces reddened soon after they entered the box, and they began to sweat right away. One subject, who spent 1 hr. and 19 min. at an average temperature of 170 F. lost 2½ lb. by dehydration, and his pulse went from normal (70) to 130. The pulse went back to normal soon after he left the hot box, and he gained back his weight by drinking water.

► **How They Felt**—The subjects say that their noses, ears and fingertips felt hot first. Then their throats and palates became irritated, and a feeling of suffocation and dizziness followed. They couldn't see or hear very well, and some of them became nauseous. One seemed to be able to "smell" heat for several hours after the test. In the long run, however, all the subjects were none the worse for the experience.

A concentrated effort is now being made to measure the temperature of the blood as it enters the brain. This should lead to the determination of the exact blood temperatures which can be tolerated without unconsciousness. Whatever they may be, refrigeration will still be one of the most important factors of high speed flight.

Temperatures around the pilot will have to be kept well below the upper tolerance level, if he is to operate efficiently. Most refrigeration systems so far have relied on cooling the whole cockpit. However, researchers at the aero-medical laboratory at Wright Field recently reported successful trials of ventilated clothing. Air, piped through tubing to all parts of the body, and kept close to the skin by Nylon coveralls, gave pilots comfort at temperatures ranging from 30 below zero to 180 F. above.

Vibrations

Vertical buffeting, set up by shockwaves in the transonic range, has been calculated to be as high as plus or

minus 4 to 5Gs at Mach 0.8. Mildly turbulent air has caused so much bumping that some pilots have returned with swollen ears and bruised heads. A pilot can easily be protected against these gross vibrations by protective helmets and carefully designed cockpits. But the necessity for, and method of protection against the vibrations of noise and ultrasonic waves is still somewhat uncertain.

Pilots have complained of feeling ill after traveling repeatedly near the speed of sound. Ultrasonic waves can kill small animals by literally cooking them to death. They can kill bacteria by chemical and colloidal effects, and homogenize milk in a similar way.

► **Unknown Danger**—But the danger to the human being is still much in the realm of speculation. Some wild stories will have it that vibrations may reach the resonance of various parts of the body and disintegrate them, and others fear that the blood vessels in the brain might burst. But there is no proof of such danger.

As a matter of fact, indications to date are good. Only temporary deafness has been reported in isolated cases where people were accidentally exposed to high frequencies, and even those cases are now questioned.

Whether there may be a selective effect on specific tissues at some frequencies is yet to be learned. Captain J. R. Poppen, director of the Aero Medical Experimental Laboratory at the Naval Air Material Center in Philadelphia thinks that pilots run slight risk. There are strong indications, he says, that the size of the animal is related to the effect ultrasounds have on it. They have been known to kill only small animals, and men are pretty big. Studies at his laboratory, as well as at the Air Force's free field chamber at Wright Field should soon reveal more about this problem.

► **Vision**—Little is known about the pilot's ability to see out of the supersonic plane. Vibrations that affect the eye, if such arise, may hinder it physiologically, while oblique shock waves and heat boundaries may prevent the light from reaching the pilot. Or they may distort the view beyond recognition. This vision phase of the research is probably the one about which least is known.

Reaction

Even if the pilot's well-being is assured to the highest degree, if comfort allows him to be level-headed, and to think efficiently, he will still have to do so under conditions where the passage of a minute may mean covering a distance of 12 mi. or more.

Lt. Cmdr. George Hoover of the Navy Special Devices Center had this problem in mind when he redesigned

instrument boards. (AVIATION WEEK, Mar. 29). He cut the flashing, wiggling, and buzzing of 195 instruments in a particular plane to that of three, and let machines do a lot of the calculating that was previously assigned to the pilot.

► **Mental Assurance**—Once flying is simplified, and pilots are protected from most hazards, they will be able to regain one of the most vital protections—psychological assurance. Lack of fear not only makes split second thinking easier, but actually increases tolerance to physiological dangers. This applies to temperatures as well as to the effects of G-forces.

Careful selection of the men best suited both physiologically and psychologically will make easier the job of fitting the pilot to the plane. Human engineers say, also, that personnel training is almost as important as the design of the planes and protective gear.

Altitude

Altitude is not a problem of high speed flight as such, but all indications are that supersonic planes will fly as high as 70,000 ft. or even more. The need for equipping the pilot for altitude flight is therefore a part of the problem.

For the unprotected flyer the picture is not pretty. Northwestern University guinea pigs, subjected to low pressures such as those at 30,000 ft., showed some softening of the brain due to anemia.

► **Danger of "Bends"**—At 39,000 ft., internal gases expand to seven times their original volume. At 40,000 ft. the general pressure is so low that it is no longer possible for the lungs to absorb pure oxygen from a tank. Aero-embolism—the release of nitrogen bubbles into the joints, muscles, and lungs ("bends") becomes a real danger.

At 63,000 ft., the blood literally begins to boil. In addition to this, low pressure will slow down digestive functions, increase the demand of minerals by the blood, reopen old tuberculosis scars, and burst ear drums if the Eustachian tubes are not perfectly clear.

But hazards of high altitudes are not new problems; quite a bit is known about them and about their remedies. Tolerance may be increased somewhat by such methods as pressure breathing of pure oxygen before flight, high carbohydrate diets, and the use of some drugs, such as thiourea and thiouracil. (The Germans did the same thing by removing part of the pilot's thyroid gland, but inflicted permanent harm.)

However, none of these things will increase altitude tolerance to the level of 70,000 ft. The use of pneumatic suits has been discussed, and some research has been done with them, but to date the only practical solution seems

to be the pressurized cockpit.

Escape

As the environment inside the plane becomes more and more different from that outside, the problem of emergency escape becomes more and more complex. Explosive decompression of the cockpit and a sudden change from a temperature of 170 F. (or, at best, a comfortable warmth, with ventilation) to -67 F. only begin to show the dangers.

► **Force of Air**—If a pilot were to be thrown suddenly out of a plane flying at supersonic speed, tremendous deceleration forces would tend to push him back into the cockpit or flatten him against the tail of the plane. If he had his mouth open, pressure would rupture his lungs, it would tear the flesh from his face, and break his arms.

(Subjects exposed to head-on wind-blows of only 350 mph. found that their faces were pushed around considerably, with a continuous ripple passing towards the back of their heads. When the Germans made pilots stick their heads out of planes flying up to 500 mph., their ears were ripped off, and the corners of the mouth and eyes torn. This shows why the Navy's ejection seat, incorporating a windscreen that is pulled down over the face, is satisfactory for high-speed escape. A similar seat has been used at 500 mph.)

If the supersonic pilot survived the air-blast, the jerk of the parachute opening would be sure to kill him. Part of the answer has been given by the ejection seat, which will throw the pilot clear of the plane, but will not save him from other hazards above the speed of 500 mph.

The final solution for escape from military aircraft will probably be in closed, detachable noses, or jettisonable cockpits, which will be equipped with an auxiliary engine, internal pressurization, and stabilizers.

Tests for Extinguishers

Atmospheric conditions more extreme than those encountered in actual service are produced by a new mechanical weather-maker used for testing fire extinguisher equipment in Walter Kidde & Co.'s research laboratories.

This device, a Bowser refrigeration unit, has a 27-cu. ft. test chamber faced with a 7-layer Thermopane glass door for observation of extinguisher action.

Temperature in the chamber can be varied from -100 to +180 F., humidity from 20 to 95 percent, and pressure from sea level value to 80,000 ft.

Tests permit study of the behavior of extinguishing agents, discharge patterns, and action of mechanical parts of automatic and manual systems.

Some Short jottings for airline operators and their crews

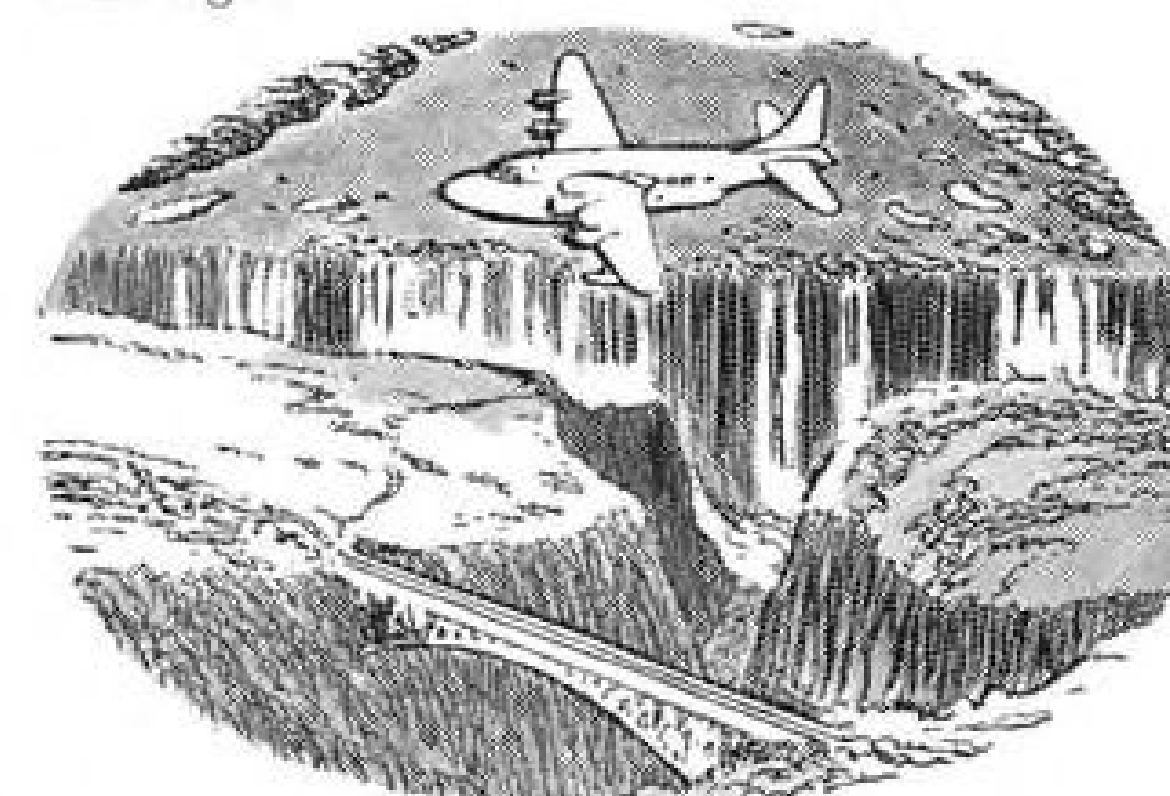
The trend to the flying boat...



New Springbok Route

Four and a half days of travel in comfort and luxury, over scenes of incredible beauty, are promised by the new B.O.A.C. Springbok service.

After taking over from landplanes at present used on the route, Short Solents will fly from the new flying boat terminal, Berth 50, Southampton; they will call at Augusta, Cairo, Luxor, Khartoum, Port Bell, Victoria Falls, and Vaaldam (Johannesburg). Making an overnight stop at Victoria Falls, passengers will have an opportunity of seeing the panorama of which Dr. Livingstone said, "scenes so lovely must have been gazed upon by angels in their flight."



Livingstone's amazing "Shangwe," renamed Victoria Falls

Passenger Comfort at Berth 50...

Passenger comfort has been catered for with all the ingenuity of modern design at B.O.A.C.'s new flying boat terminal. In addition to the well-appointed bar-lounge and restaurant, features of the new terminal are the two flying-boat



The bar-lounge, Berth 50, Southampton

floating docks approached along covered ways by outward and inward bound passengers.

... at Night-Stops on flying-boat Routes

For long-distance travellers the new B.O.A.C. night-stop accommodation will be a masterpiece of design for maximum comfort. Each air-conditioned bedroom will be self-contained, connected by sliding doors to its own shower and toilet. There are extra-large divan beds, dressing tables, bedside tables, recessed lighting, and radio in every room.

FLYING BOAT PERSONALITIES



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No. 4 Line, B.O.A.C.

In 1930 Captain Glover "worked his passage" from New Zealand and entered the R.A.F.

He was with No. 18 Squadron, Upper Heyford, when they escorted the Prince of Wales to the funeral of King Albert of Belgium. In 1937 he joined Imperial Airways, and by July 1938 he was First Officer on Short's Empire Flying Boats on the Durban and Singapore routes. In 1940 he was back with the R.A.F. at Kalafrana, operating in Short Sunderlands.

In 1942 Captain Glover was with B.O.A.C., and he has now logged over 10,000 hours, mostly in flying boats. He now regularly flies "down the routes" on B.O.A.C.'s Hythes and Plymouths.

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Tasman Empire Airways, who use only Short flying boats on their services, have announced that their enterprise has regularly paid a dividend of three per cent. T.E.A.'s fares have been among the lowest for international airlines, and the airline has been maintained without Government subsidies.



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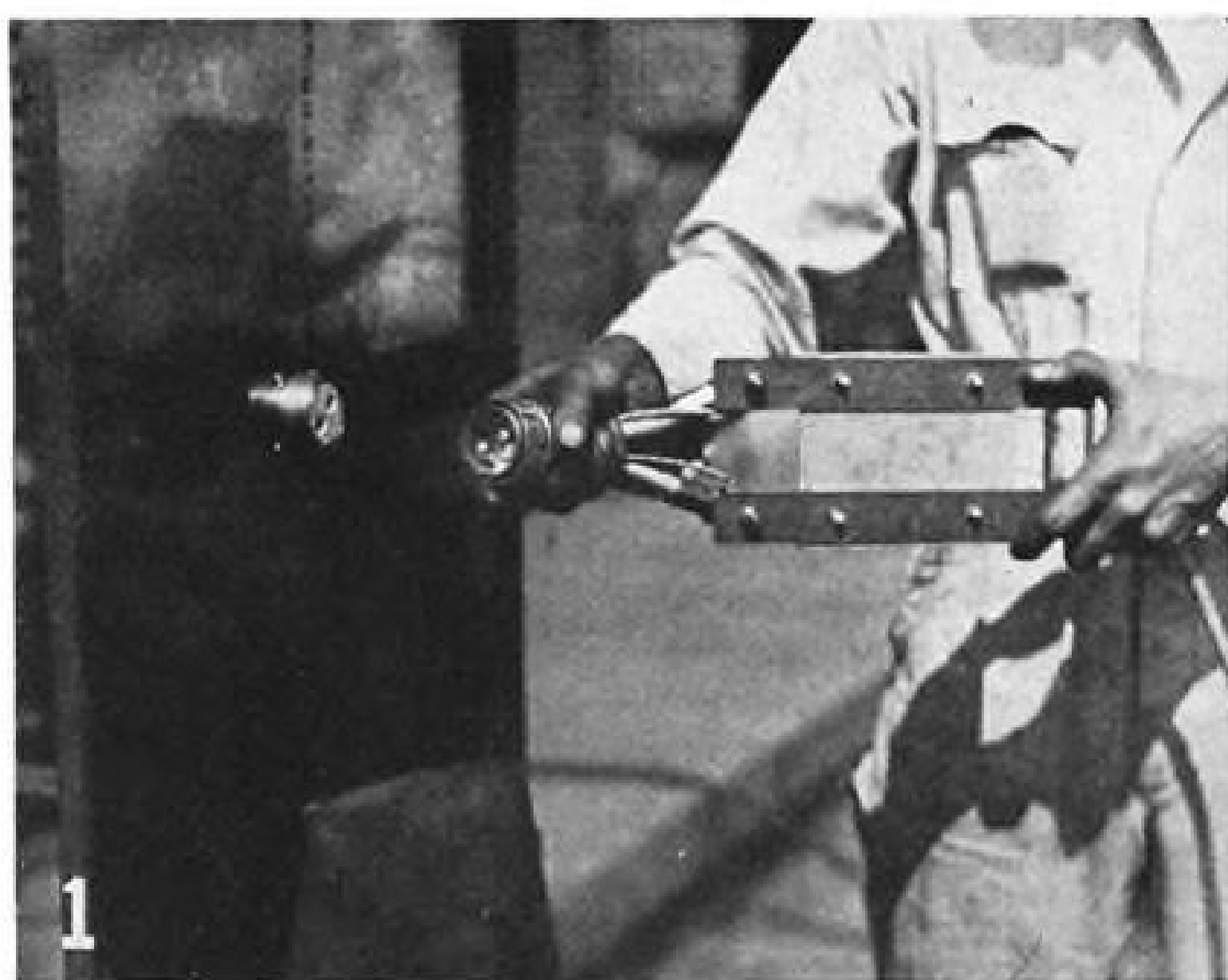
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**Ground Controlled Approach.*

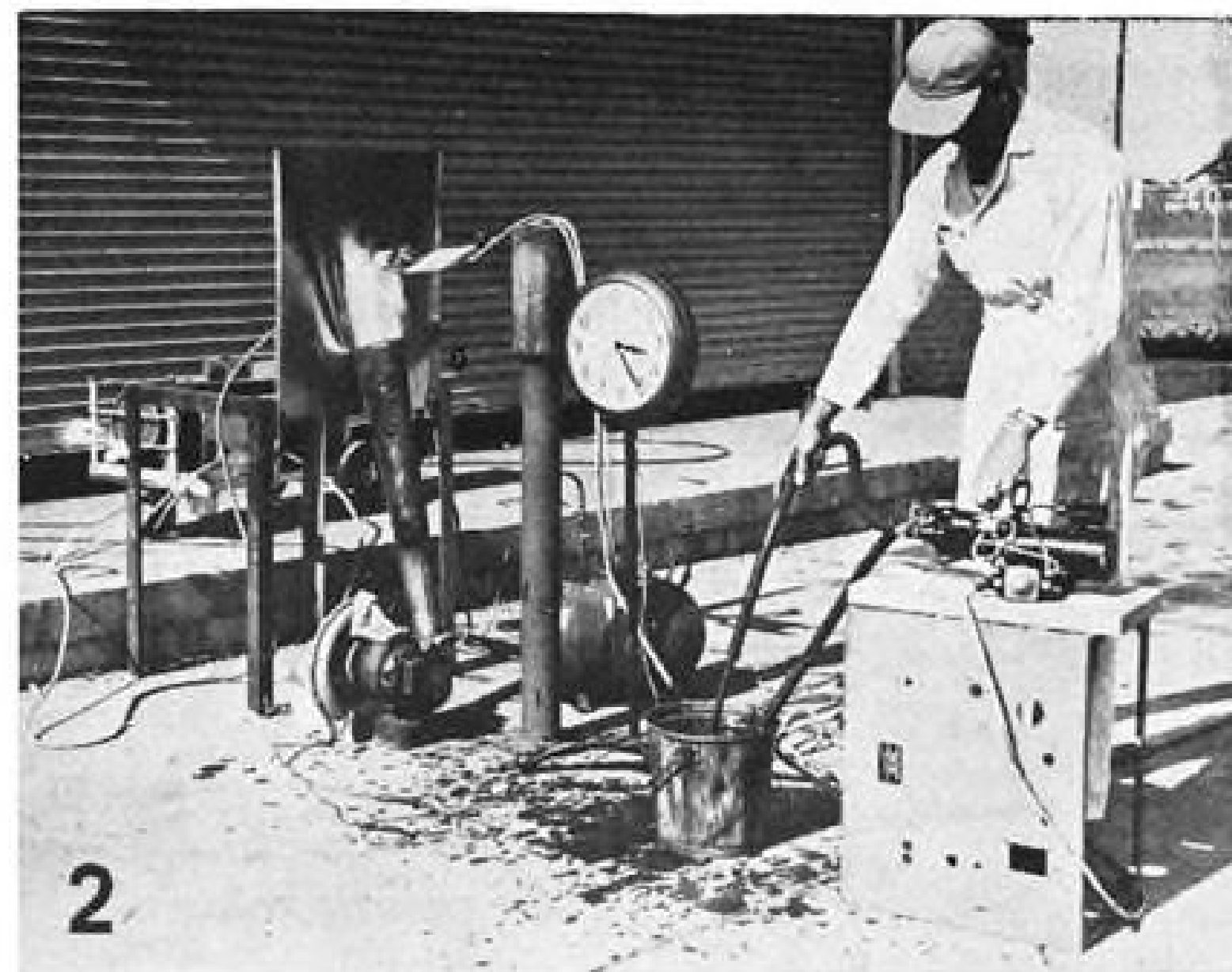


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Closeup of electrical connector installation subjected to . . .



. . . Gasoline flame applied by projector in this test arrangement.

Connector Provides High Safety

Electrical circuit functions after 30-min. exposure to 2100-F. flame. Cupro-nickel-tellurium contacts used.

By Charles J. Adams*

Novel selection of materials has enabled an electrical firewall connector to withstand attack by fire and keep circuits operating for an extended period.

This device—developed by American Phenolic Corp., Chicago—is an important addition to the growing list of aircraft safety equipment.

Effects of fire during flight has always presented an extremely difficult problem to the airplane designer and manufacturer.

The stainless steel firewall provided a flame-check, but starter, generator, propeller feathering, and other electrical circuits required connectors for passing through the plate. If the fire persisted long enough, the electrical connector disappeared completely, leaving a hole with all the performance features of a blowtorch.

► **CAA Requirements**—To eliminate this hazard, the Civil Aeronautics Authority issued a directive on firewall connectors and established performance standards. Requirements were about as follows:

- The connector must not permit fire to pass through the firewall for a minimum of 20 min. when the engine side of the firewall is subjected to a flame of 2000 F.

- For the first 5 min. of this 20-min. period, the connector shall maintain electrical continuity and be free from

any short circuit condition.

- All contacts must meet the preceding requirements and be capable of conducting the high currents involved.

The general outline of the connector possibly could have been varied considerably from existing types. However, a replacement of connectors now in use restricted the general design to one which permitted interchangeability.

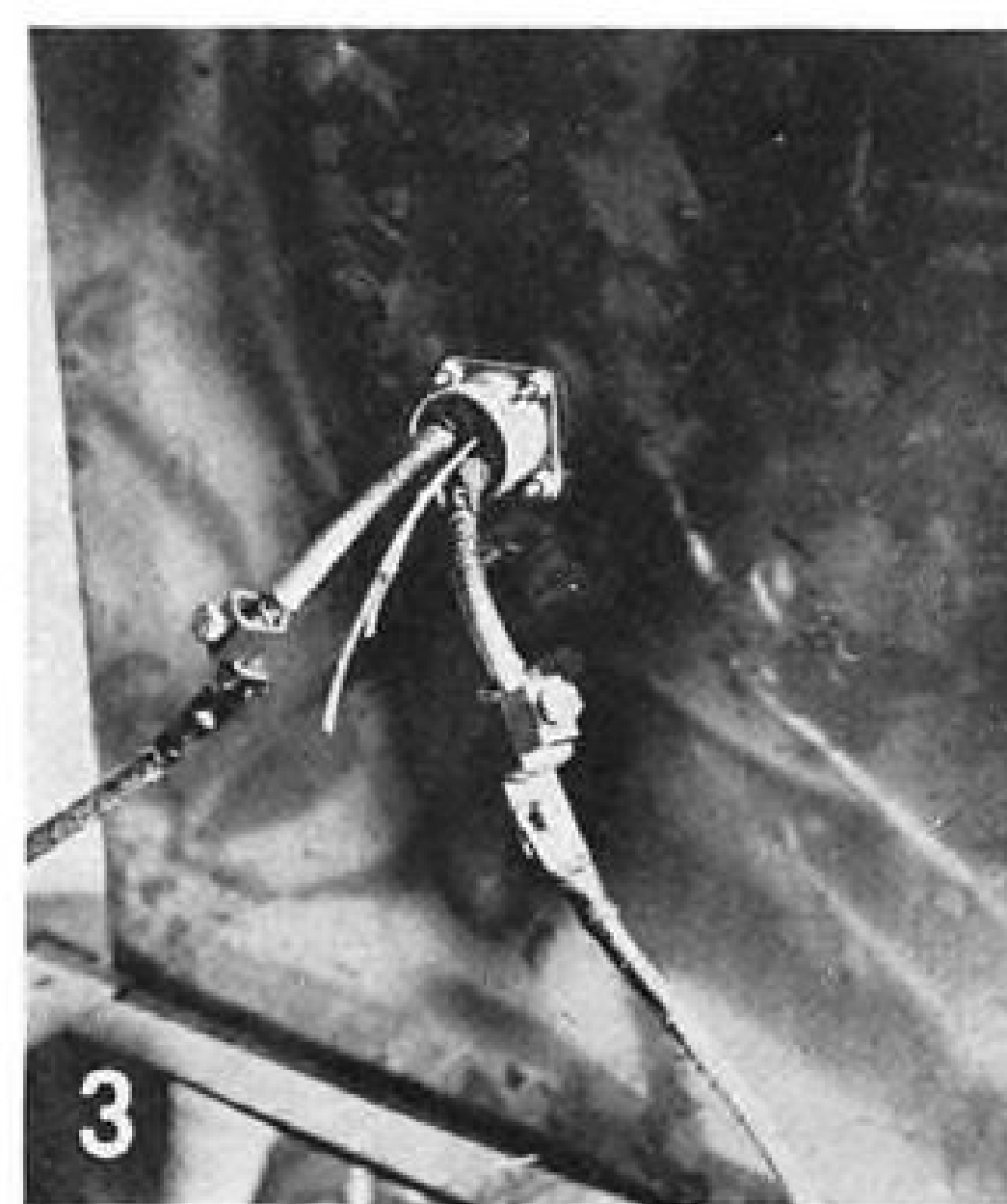
Connector shells and fittings were not too difficult a problem. Type 1010 SAE steel, cadmium plated, met the heat requirements and was readily machinable.

Mounting hole dimensions and thread sizes were the same as equivalent standard AN connectors, with added provision for safety wiring of coupling rings and fittings.

► **Insulation Material**—The insulating insert posed a problem, since most materials were unable to withstand the severe heat requirements.

Asbestos, in addition to its high moisture absorption, disintegrates rapidly when vibrated and its strength is so low that adequate contact retention could result in destruction of an insert of this material on separation of the connector.

All but a few of the ceramic materials were susceptible to thermal shock. Zircon and cordierite were suitable, and the latter was chosen because of its higher thermal shock resistance and lighter weight. Zircon's slightly greater strength was not needed, and the small amount of porosity found in cordierite was nullified by vacuum impregnating with a silicone sealant.



View at rear of firewall showing connector after test had proceeded for 15 min.

A desirable feature incorporated in the inserts was the added protection given to the electrical contacts and wiring by extending the insulating material back and around the wiring. This prevented stray strands of wire from shorting to adjacent conductors and gave more than adequate surface creepage distances between contacts and from contacts to shell.

Inserts were keyed in position in the connector shell to prevent accidental rotation.

► **Contact Design**—The contact problem was most difficult to solve. Copper has high electrical conductivity, melts at about 1950 F. and has very poor machinability and mechanical properties.

Copper alloys have lower electrical conductivity and lower melting points but possess the desired mechanical properties to meet contact retention requirements.

On the theory that wiring on the cold side of the firewall would conduct heat

away from the contacts, protected by the cordierite, and because of the time limitations given in the requirements, a cupro-nickel-tellurium alloy was chosen.

And subsequent tests have proven the theory far more sound than expected. Inclusion of nickel in the alloy provides good mechanical properties in the contacts, and tellurium facilitates machining.

The staking method of fastening contacts to wiring was chosen in preference to soldering because of the high temperatures which might be encountered in the event of a fire. For that same reason, the contacts were silver plated so that, if the contacts become oxidized, circuit continuity would not be impaired.

After general design details were established, the Aircraft Development Division of CAA's experimental station at Indianapolis was consulted. The proposed firewall connector was described and suggested refinements were incorporated.

► **Rigid Test**—Three sample connectors were built, and one was tested by CAA's power plant section located at Indianapolis.

Fig. 1 shows the connector mounted on the stainless steel firewall before the test. Fig. 2 depicts the test setup. Fig. 3 shows the connector at the rear of the firewall after about 15 min. of the test time.

In the left background of Fig. 2 is seen a 28v., 300-amp. generator supplying power through the connector to a 3½-hp., 250-amp., propeller feathering motor and oil pump. Generator frame and firewall were connected to detect any short circuits which might develop between connector shell and contacts or wiring.

Directly below the connector was a gasoline flame projector with a fire outlet about 3 × 8 in. Measured temperatures were 2100 F. at the center of the flame and 1900 F. near the edges with readings taken about nine inches above the outlet.

A self-starting electric timing piece was connected into the primary power circuit and set at three o'clock. The clock started automatically with the beginning of the test.

Testing procedure was proposed as follows: The connector was to be subjected to the flame for 20 min., and at the completion of each of the first 5 min. the prop feathering motor was to be operated for 20 sec.

After the first 5 min. it was hurriedly decided to continue the 20-sec. checks until electrical failure. After 20 min. of this, the feathering motor was so hot from excessive operation that it was decided to discontinue the electrical checks and continue with the flame test only.

However, the prop feathering motor was operated for 10 sec. at the end of the 25th and 30th min.

After 30 min. of operation, it was believed that fire would not pass through the connector and, as the circuit had remained operative over six times as long as required, the test was discontinued.

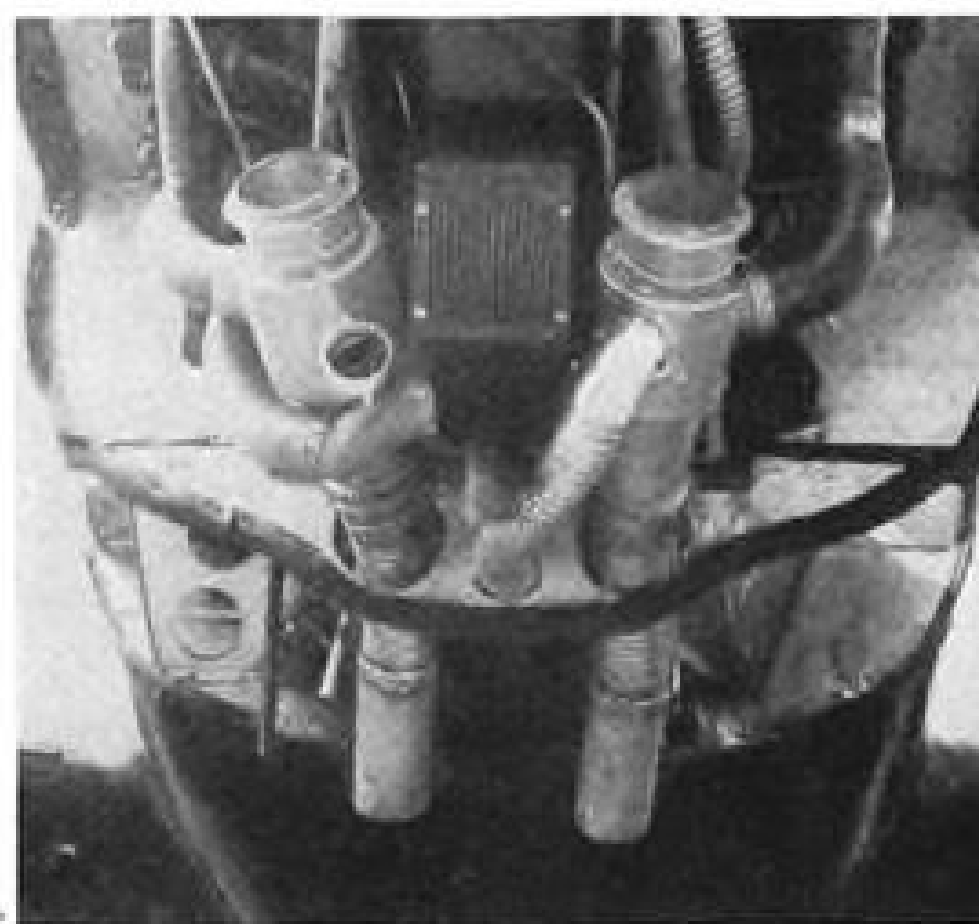
► **Inspection**—After the connector had sufficiently cooled, it was disassembled for inspection. The shell was devoid of plating, which apparently had been vaporized. Slight fusing of the cadmium plate in the connector threads was noted and made disassembly a little difficult. However, any fire so intense would require replacement of the entire firewall, and this was not considered objectionable.

The cordierite inserts were undamaged except for slight discoloration of the outer surface, apparently from the vaporized cadmium.

The contacts were in surprisingly good condition and appeared still serviceable. Reuse of contacts, however, is not recommended. The silver plating was tarnished to about the color of straw.

Apparently the heat conductivity of the wiring performed as calculated in cooling the contacts.

Although there have been other connectors developed that will resist high temperature and prevent the passage of flame, this is believed to be the only connector, which, in addition will also permit continued operation of the electrical circuit.



Engine Silencer

Reduction of noise and back-pressure sought with venturi and baffle.

Demonstrations of an engine silencer on the Swift lightplane, during CAA testing to gain an approved type certificate, seem to support claims of the inventor, Curtis L. Davis.

The device—first proposed as early as

1932—is the product of Davis Aircraft Silencer Co., Compton Airport, Compton, Calif.

Concern over the aircraft noise problem, especially in residential areas, probably accounts for new interest in the Davis invention. His units have appeared on a number of light aircraft, but demand failed to warrant mass production.

Reports to AVIATION WEEK indicate a 60 percent reduction of overall sound for a silencer-equipped Swift flown level at full power at 150-200 ft., in comparison with an unsilenced Swift.

In CAA tests, climbing to 8000 ft. at full power with two passengers and 5/8 fuel capacity, the silencer-equipped Swift showed an engine head temperature of 461 F. In a duplicate climb without silencer, head temperature was 505 F.

In the maximum climb test a CAA inspector recorded a 12-14-deg. increase in oil temperature, as compared with records of a climb minus the silencer. Davis, however, maintains that this was because of climbing attitude interference with airflow over the oil cooler, with the test silencer installation. He claims that the silencer-equipped craft shows a definite lowering of oil heat in normal cruising flight.

Reduction of exhaust manifold heat is evident by the lack of metal coloring of exhaust stacks and the final exhaust ducting. No exhaust flame is visible at night, and a temperature of only 215 F. has been recorded at the junction of the exhaust collector with the silencer intake.

It's claimed that one's hand can be rested without discomfort on the silencer casing during full power ground run-up of the Swift's 125-hp. Continental engine.

The silencer employs, basically, a venturi tube accepting ram air from a small duct mounted in the nose cowl. Engine exhaust is admitted to a chamber fitted with a series of baffles contained by an outer shell, and the gases are then drawn by the venturi stream suction into a final exhaust duct.

Relative coolness of the exhaust would seem to give validity to the inventor's claim that his silencer reduces exhaust back pressure.

Considering the weight of exhaust ducting removed from the Swift to make room for the silencer, the 3-lb. device presents no serious weight compromise. In the Swift installation, two silencers are used, each carrying special jackets to supply hot air to cabin and carburetor heating systems.

A step toward application of Davis' principle to transport aircraft is seen in construction of a larger unit, which is slated to be tested on a 450-hp. Pratt and Whitney engine by Northrop Aeronautical Institute.

NEW AVIATION PRODUCTS

Pressure Switch

Designed to stand high surge pressures and up to 20 G's of vibration, Hy-G pressure switch is adaptable for aircraft use in sensing pitot tube pressures, rammed air circuits, duct pressures, fuel and oil warning devices, aneroid or altitudinal pressures, cabin heating systems and similar pressure applications where critical operating and differential adjustments are required. Developed by Diaphlex Div., Cook Electric Co., Chicago, Ill., unit weighs less than 11 oz. and measures $4\frac{1}{2} \times 2\frac{3}{4} \times 1\frac{1}{2}$ in. Stable through temperature range from minus 65 to plus 160 F., device's operating pressure range can be varied from 0.1 in. of water to 30 psi. to suit specifications.



Removes Paint

By inhibiting evaporation, paint lift made by Kelite Products, Inc., Box 2917 Terminal Annex, Los Angeles 54, Calif., is intended to effect efficient penetration and removal of coating. Material is claimed safe on all metals, including aluminum and magnesium, and is stated to be non-toxic, non-corrosive, and non-flammable, and contain no phenolic compounds.

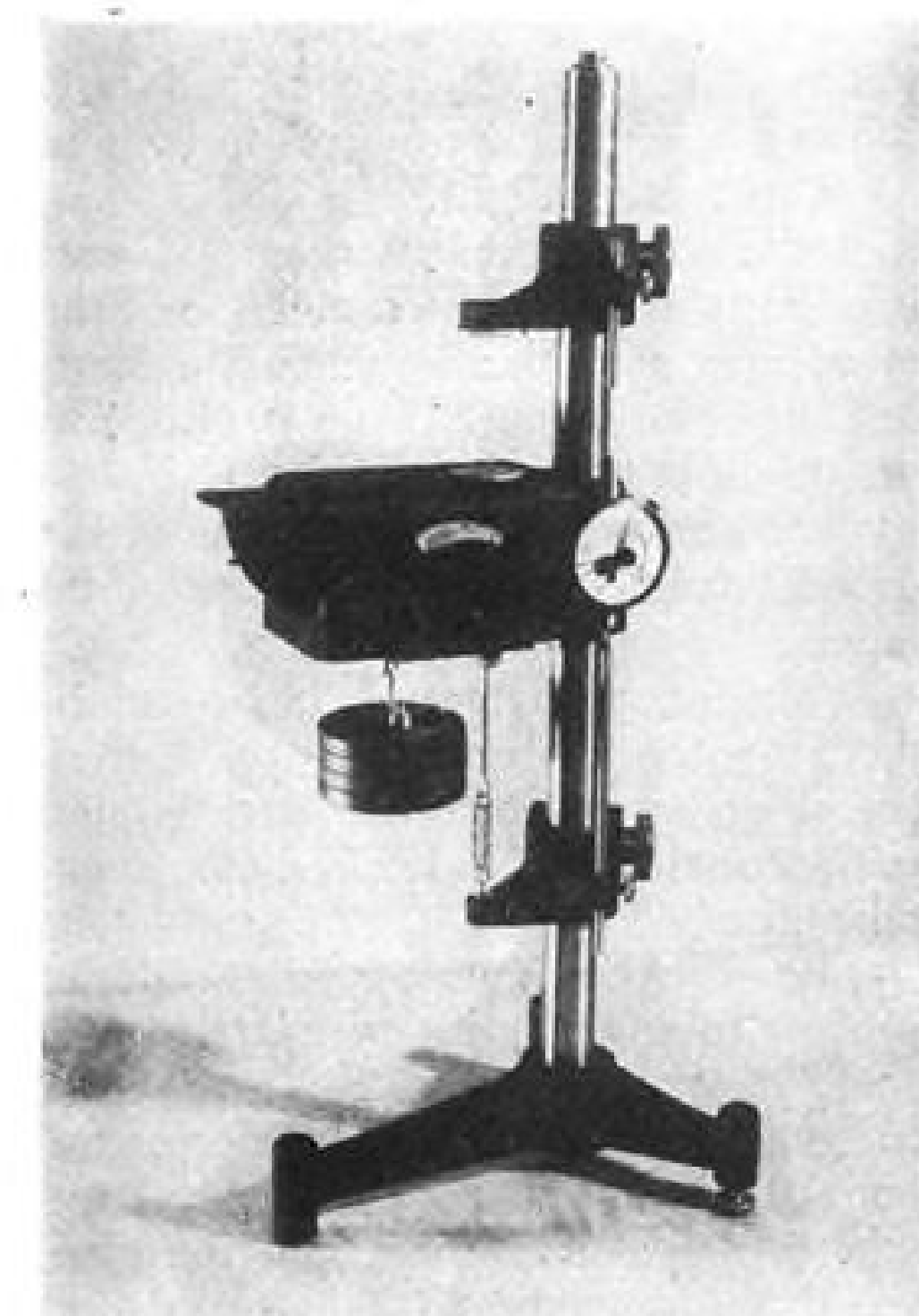
Proportions Current Input

For laboratory and plant heating installations, proportional current-input electronic pyrometer controller is announced by Bristol Co., Waterbury 91, Conn. Practically straight-line temperature control is provided by time modulation of input energy. Average energy supplied is proportional to deviation of temperature from control point throughout band width, adjustable from 0 to 24% of full scale reading.



Portable Rectifier

Intended primarily as power supply for starting, testing, and operating jet-propelled and commercial aircraft, is type E24-500T rectifier made by McCoplin-Christie Corp., 4922 Figueroa St., Los Angeles 37, Calif. With 12-phase rectifier circuit (6-phase full wave), unit converts standard 3-phase a.c. into d.c. with less than 2% r.m.s. ripple voltage, even when no filter is used. Continuous rating is 500 amp. at 28v. d.c. and momentary load rating is over 3000 amp. Voltage stabilizer holds drop from no load to full load within 10%. Rectifier can be furnished with up to 50 ft. of a.c. cable permanently attached, and operation is up to 500 ft. with cable reel. Brake prevents rolling, and provisions are made for two 60-lb. fire extinguishers.



Speeds Spring Testing

Improved load-tester, Model 217P, is intended for higher speed and more accurate checking of coil springs. Designed by Hunter Pressed Steel Co., Lansdale, Pa., tester is equally adaptable to go, no-go or frequency distribution techniques of statistical inspection. Handling loads up to 5 lb. and spring lengths up to 12 in., machine is stated to test 50 to 200 springs with accuracy of one part in 2500 at maximum load, in 15 to 60 min. All compression-head surfaces are replaceable, overload spring prevents shock damage, and pointer amplifies beam motion 10 times. Dial indicator has 1-in. range with .001 graduations.

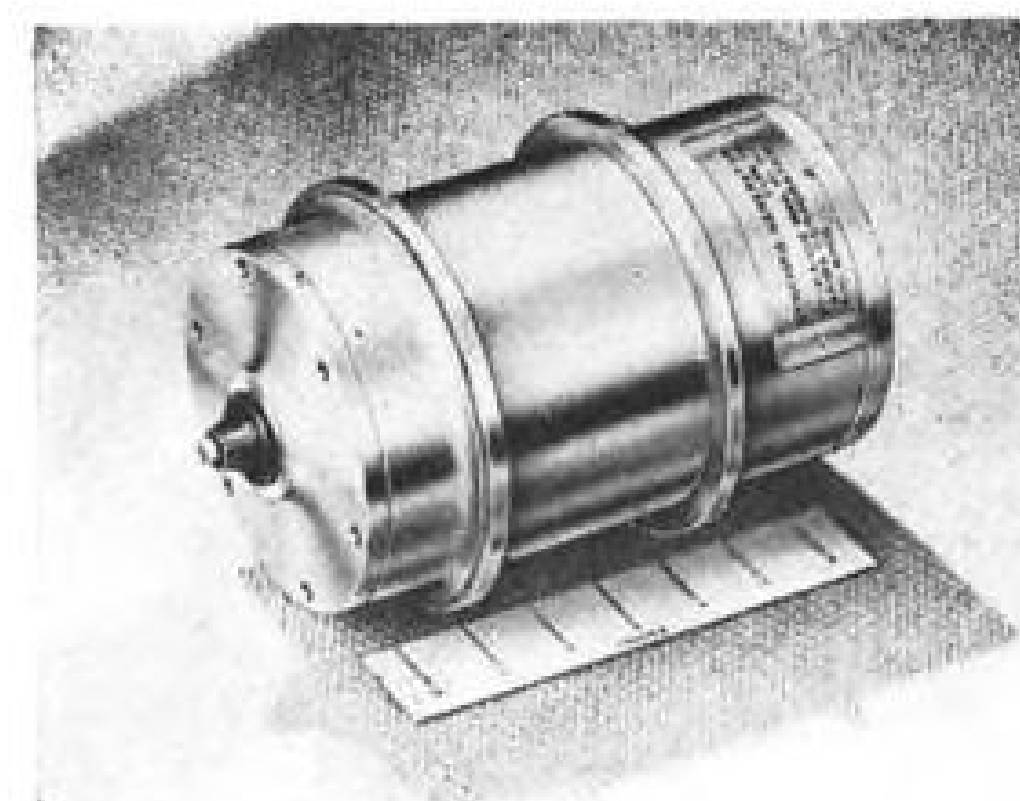
Three-way Air Meter

Turn of knob gives air velocity, air temperature and static pressure readings with Anemotherm, air meter marketed by Anemostat Corp. of America, 10 East 39th St., New York City 16. Small probe is attached to long flexible cable for easy access to areas. Air velocity is measured from 10 to 5000 fpm., temperature determined within 30 to 155 F. range. Static pressures are read directly in inches of water, from .05 to 10 positive and .05 to 4 negative. The unit weighs approximately 11 lb.



Personal Radio Speaker

Designed for private radio listening through a pillow or head cushion, miniature speaker provides clear reproduction without disturbing others. Attachable to any radio or public amplifying system, device is made by Telex.

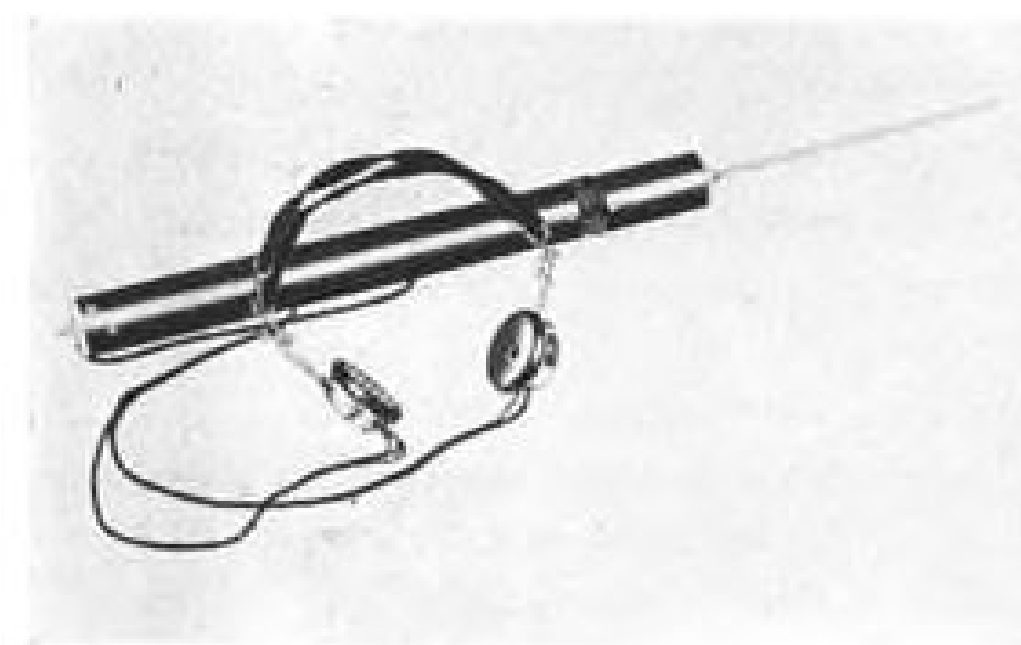


Synchro Units

Aircraft manufacturers are offered a new line of synchro units intended for electronic, electrochemical, and electrohydraulic control systems, as well as for remote control and indicating purposes. Available from Arma Corp., 254-36 St., Brooklyn 32, N. Y., line includes control transformers, motors, generators, and differential motors and generators. Systems are designed for operation from standard single phase 115v. 60c. supply line. Secondaries are 90v. maximum three-wire systems. Output windings of control transformers are scaled to gradient of 1v. per deg.

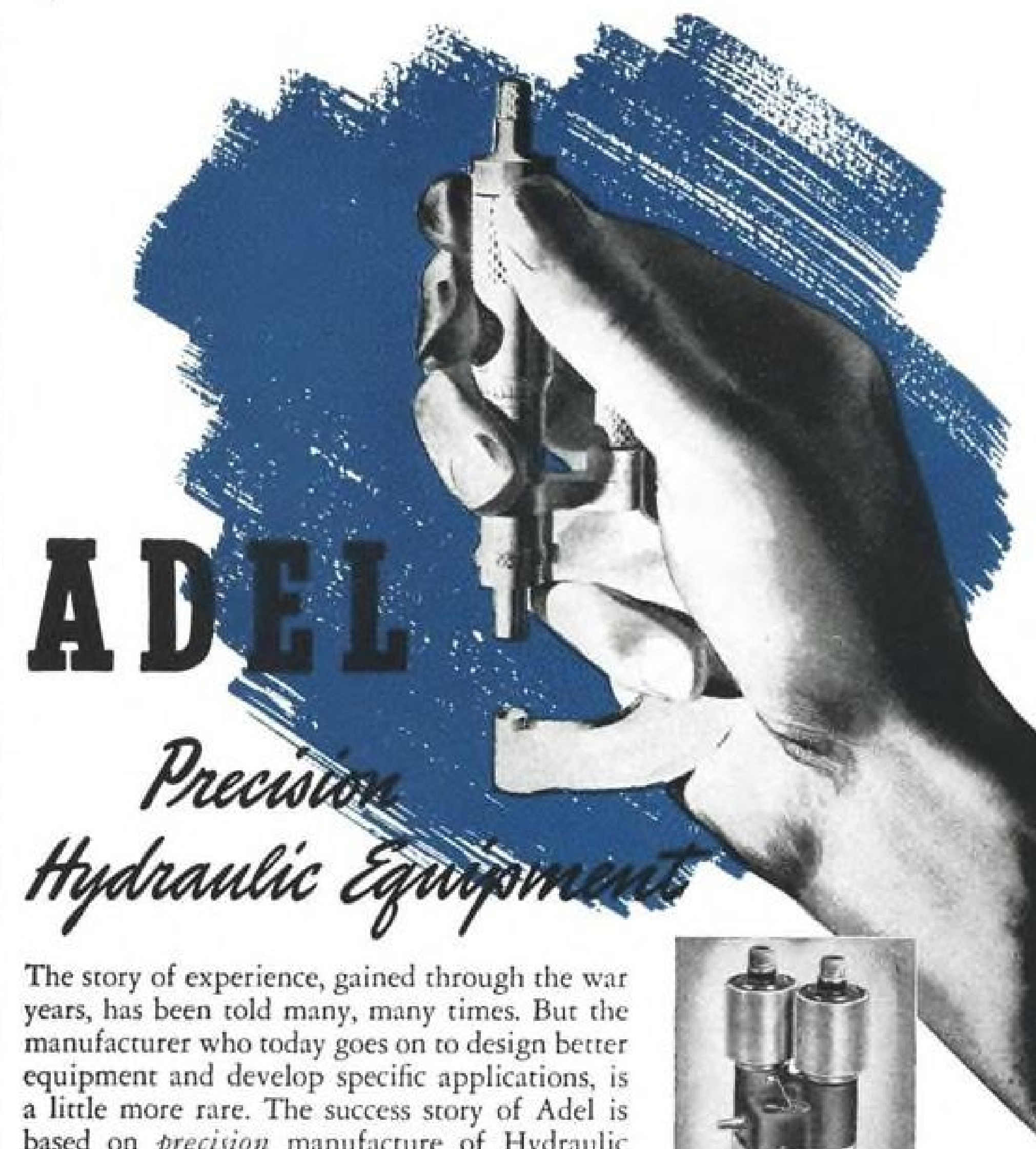
New Face for Ring

Chrome-faced piston rings available from Wilkening Mfg. Co., Phila., Pa., feature anti-friction and lubricant-retaining characteristics and reduction of cylinder wear. Ring, constructed of special alloy, centrifugally cast, and heat-treated to produce dense, uniform structure with high tensile strength for top-groove service, is said to be safe from breakage under heavy loads, because material is not subject to hydrogen-embrittlement.



Probes Troubles

Cee-Tee sound scope, amplifying 400 times, for detecting mechanical defects in structures and parts, is comprised of earphones, transformer, aluminum probe, and five dry cells. Reported to have application in tracing broken ribs in aircraft wing without cover removal, device is made by Como-Tex Co., Inc., Board of Trade Bldg., Chicago, Ill.



The story of experience, gained through the war years, has been told many, many times. But the manufacturer who today goes on to design better equipment and develop specific applications, is a little more rare. The success story of Adel is based on precision manufacture of Hydraulic Equipment. This policy of producing only the best in material and design is of tangible value to the Aircraft Industry today. For Adel provides a complete line of Precision Hydraulic Equipment for the planes now in production, and those being planned for tomorrow.

The ADEL Line of "3000 PSI" Precision Hydraulic Equipment

Shown here are a few "3000 PSI" items in Adel's broad line of Hydraulic Equipment. This equipment offers greater power with substantial savings in weight. Its simple design provides ready servicing and quick assembly. Constructed of the highest quality materials, all parts are precisely made and carefully inspected. Built for long life and dependable operation.

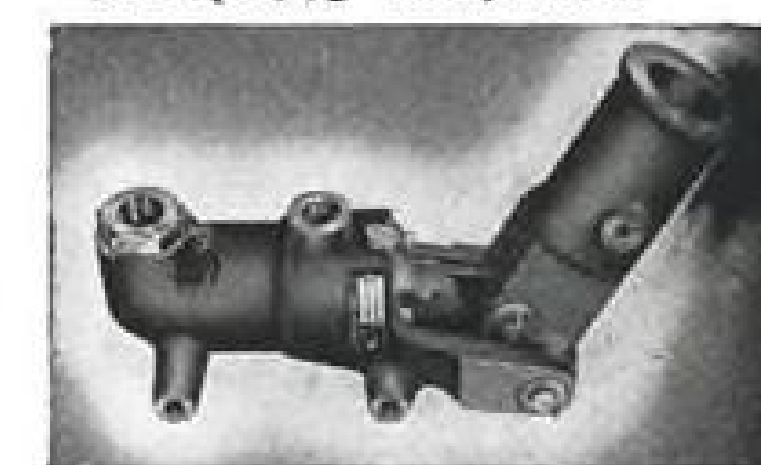
Adel Engineers are prepared to solve your specific application problems. Write today, for complete information on the Adel line of Precision Hydraulic Equipment for Aircraft.



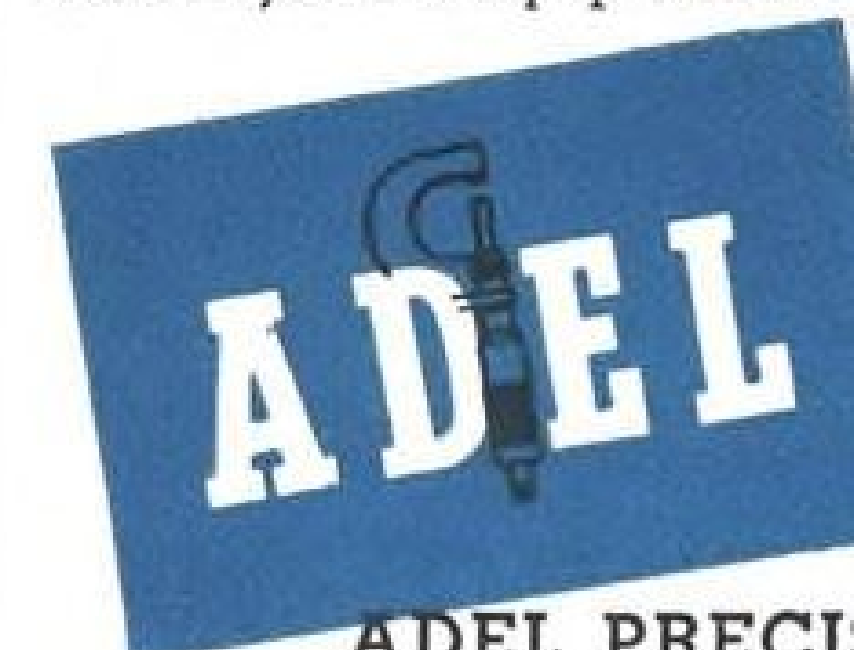
Selector Valve, No. 16476—3000 psi, Solenoid-Operated with manual over-ride.



Relief Valve, No. 12108—3000 psi, 1/2" relief valve.



Hand Pump, No. 12044—3000 psi, double acting hand pump.



General catalog is available upon letter-head request. Please address inquiries to 10727 Van Owen Street, Burbank, California.

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**Eclipse-
Pioneer** DIVISION OF
TETERBORO, NEW JERSEY



SALES & SERVICE

AOPA Drops in On Rehoboth

Weekend party turns out as clam bake for merchants, too; 412 planes take part in successful fly-in.

Clam-baking members of the Aircraft Owners & Pilots Association who flew to Rehoboth Beach, Del., for a recent beach party weekend spent an estimated \$15,000 with local merchants at the resort in one and one-half days.

This is an indication, perhaps, that the private flyer tourist is not such small stuff anymore. The alert community which encourages him to stop in with such tangible welcoming signs as good airport service and overnight accommodations is likely to bring attractive quantities of new money to its businessmen.

► **412 Planes**—A total of 412 airplanes landed at Rehoboth airport and flew out again, under guidance of a temporary control tower using light gun signals. Net damage to aircraft: not even a scratched wing tip.

Biggest attendance was recorded at a shore dinner which drew more than 1000 persons.

Excellent weather for both the flight and the beach party added to the occasion. AOPA headquarters in Washington obtained cooperation of 21 radio stations along the eastern seaboard and they repeatedly broadcast a last minute announcement to private flyers that the weather was favorable and that the flight would take place as scheduled.

► **50,000th Member**—David Stevenson, CAA engineer, of Washington, became the 50,000th AOPA member at the dinner, receiving his certificate from J. B. Hartman, Jr., AOPA general manager. (AOPA now has approximately 30,000 currently active members.)

Largest state delegation was Pennsylvania's 84 plane loads, while New Jersey was second with 61 planes. Among week-enders were several small airport operators who decided to take a holiday, closed their operations and brought along mechanics, students, owners and families in formation flights of several planes.

Walter H. Settle, Madison, Wisc., won a prize for flying the farthest. William D. Mason, Philadelphia, a Sun Oil executive, won an award for having the lowest AOPA card number, and Comdr. A. M. Ferguson, Cape May, N. J., won two prizes—for bringing the largest family (6) in a Howard plane, and for having the lowest CAA pilot license number (2870).

► **Manufacturers Demonstrate**—Viewed by AOPA officials as one of the most successful fly-ins in recent history of the organization, the Rehoboth gathering brought a group of lightplane manufacturers' representatives and their new planes to show at the Beach airport, as well as the pleasure flyers.

William T. Piper, Sr., brought a new Piper Family Cruiser. A new Ercoupe, and a new Aeronca Sedan, were among other models shown.

The demonstrations at Rehoboth are part of a recent positive aircraft sales trend to show personal airplanes to large groups of aircraft users at airports where they can have sample flights. There seems to be an increasing preference for such demonstrations, rather than paying large sums of money to show models in a downtown show.

Glider Revisions, Asks CAB?

CAB Safety Regulation Bureau has asked industry comment on a proposed revision of Civil Air Regulation Part 20 governing glider pilot certification. Revisions proposed would include:

- Issuance of a glider flight instructor rating to those who are capable of meeting necessary requirements.
- A provision under which 10 short-patterned released glider flights would be counted as equivalent of one hour of flight time, in credit toward a powered airplane rating.
- Requirement that an applicant for glider pilot rating must perform at least 10 glider flights under supervision of a rated flight instructor. (This revision has been proposed as result of a recent increase in number of stall accidents in gliders.)

Revisions have been suggested as a result of increased growth of gliding and soaring which now is believed to require more safety regulation than has been necessary heretofore.

Incorporates Facilities

Great Lakes Airmotive Inc., formerly Commercial Aircraft Inc., aircraft servicing and overhaul organization at Willow Run Airport, Detroit, has announced purchase of Ford Motor Company's propeller overhaul and maintenance division which will be incorporated into the Great Lakes facilities.

W. A. Wilson, for the past 20 years head of Ford propeller overhaul, will continue to head the division for Great Lakes. The organization occupies the two north bays of the main terminal hangar at Willow Run, with 50,000 sq. ft. of shop hangar and office space. It specializes in repair and maintenance of executive type aircraft, locally based and transient.



SATELLITE GETS THE ONCE-OVER

Spectator at the recent Society of British Aircraft Constructors' show examines details of the prototype five-place all-metal Satellite, displayed to the public for the first time. Through the novel entrance door

with self-contained step, the Satellite's deluxe interior is visible. One of the most interesting of British designs, the Satellite features the popular growing pusher design (Aviation Week, Sept. 20).

Stinsons Stored at Detroit Pending Facility Move

Consolidated Vultee has completed arrangements for delivery facilities for Stinson Voyagers and Flying Station Wagons at Willow Run Airport, Detroit, pending removal of Stinson manufacturing facilities to San Diego.

A sufficient inventory of the high-wing four-placers to satisfy dealer demands for several months is stored at Willow Run, in the form of major assemblies which are being withdrawn for final assembly, flight test and delivery in accordance with dealer requirements.

An inventory of Stinson parts sufficient to last 12 to 18 months has been built up and is stored at the closed Stinson plant at Wayne. A small staff will remain on the job there to handle delivery requirements on parts and to facilitate the airplane deliveries from nearby Willow Run.

Meanwhile, moving of personnel and equipment to San Diego from Wayne has started. Some engineering personnel, some equipment and prototypes of the 1949 Stinsons have already been transferred.

Demand for the Stinson four-placers which lead the field in volume sales for the entire postwar period, is continuing steady with the principal customers being farmers, ranchers, operators and business users, Convair reports.

Type Approvals Speeded

Authorizations to issue type certificates for aircraft and aircraft parts from the regional CAA offices, to eliminate delays previously found when final decisions were referred to Washington, have been announced by CAA Administrator Delos Rentzel. Heretofore regional type certification boards have issued airworthiness certifications, permitting planes to operate under tentative type approvals, pending Washington confirmation. In two and a half years no significant discrepancies between field and Washington decisions have been noted, Rentzel said.

Federal Airport History

A two-volume legislative history of the Federal Airport Act has been issued by the Civil Aeronautics Administration and is available from the Government Printing Office, Wash., D. C., for \$4 per set.

Entitled "Legislative History of the Federal Airport Act," the publication makes available all the printed Congressional documents which evidence the intent of Congress in passing the act. Volume One has 659 pages and Volume Two 799 pages.

BRIEFING FOR DEALERS & DISTRIBUTORS

INTERNATIONAL TOURIST LANDING STRIPS—Proposal to construct special landing strips on level places at or near highways which cross the U.S.-Canada border for convenience of lightplane tourist traffic which is expected to increase steadily within the next few years, was cited by George Burgess, Deputy CAA Administrator, in a talk at the Northwest Aviation Planning Council meeting at Vancouver, B. C.

These additional aerial gateways between the two countries would be able to use the same customs inspection personnel already stationed at the border on the highways for international motor traffic, and the convenience would help develop additional international travel by personal planes, he said.

CROSLEY INTEREST IN MOONEY PLANE—Despite a special press release issued recently by the Crosley Corp., Cincinnati, on the fact that the Mooney M-18 one-place airplane was going into production using the Crosley Cobra engine, inquiry by AVIATION WEEK has resulted in reply by a Crosley spokesman that the midget auto company has no interest in the one-placer other than to supply the engines.

COMPARISONS BY BEECH—Beech Aircraft Corp. has put out a letter to Bonanza owners backing up its aggressive campaign to show the sturdiness of the four-place all-metal plane and to scotch some "unwarranted defamation" of the airplane. The letter lists comparisons of the three four-place airplanes with largest volume of sales.

Limit flight load factors at full gross weight for the Stinson Voyager, Ryan Navion and the original Model 35 Bonanza are listed as the same, 3.8, while the Model A-35 Bonanza (which includes all Bonanzas after serial No. 15000), is credited with a 4.4 limit flight load factor at full gross. Likewise, the first three planes mentioned are all listed as having an ultimate flight load factor at gross weight at which failure may occur of 5.7, while the heavier-skinned A-35 Bonanza is credited with a factor of 6.6. The comparison points out that placarded never-exceed dive speeds for the original Model 35 Bonanza and the new A-35 Bonanza are 202 mph. as against 190 mph. for the Navion and 158 mph. for the Stinson.

A performance comparison which shows the Bonanza as well ahead of the other two planes in fuel consumption, cruising speed, service ceiling, range, rate of climb, and short takeoff and landing distances over 50 ft. obstacle is included.

Figures for the competitors are taken from CAA approved flight manual or the operating manual published by each manufacturer for its own airplane. Heretofore, there has been little comparison of competing planes by the manufacturers, on paper at least. Most of the comparisons have been confined to oral statements or "allegations" by competing dealers and distributors. Jack Gaty, Beech vice president and general manager, in issuing this letter may be starting a new trend in sharper competition between the manufacturers.

FIRESTONE BARGAIN SALES—Introduction of a series of bargain sales in the Firestone airport stores last summer has paid off in getting a number of the airport dealers in better financial condition through bringing in new customers and balancing out inventories, the Firestone Tire & Rubber Co., Akron, reports.

The company now has more than 1000 store franchises scattered at airports throughout the continental U.S. and in Alaska and Hawaii. The sales were instituted after a survey showed that many of the store operators had suffered in the 1947-1948 winter season and that their capital was at low ebb and drastically needed bolstering.

The sales, which cut prices as much as 50 percent on regular merchandise such as propellers, radios, aircraft finishes and other items, more than doubled sales volumes of participating dealers and distributors, the home office states. Examples of individual volume sales include 100 pairs of sun glasses sold by one distributor, 600 sets of seat cushions sold by another; 30 propellers sold by one dealer, 25 aircraft radios sold by another.

—ALEXANDER MCSURELY

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100th Conversion

Immediately after the war, our Aeronautical Engineers completed a design for passenger conversion of wartime C-47 "Dakotas". Our designs were accepted by the great airline operators throughout India. We have just delivered the 100th converted plane—a VIP job for the Maharajadhiraja of Darbhanga.

This factory is fully equipped, not only for Dakota conversions but also for overhaul of airframe, engines, propellers and accessories.

Write today for quotations, giving full particulars of your requirements.

AUTHORIZED "DOUGLAS" DC-3 SERVICE

THE SUPERMARINE 'ATTACKER'

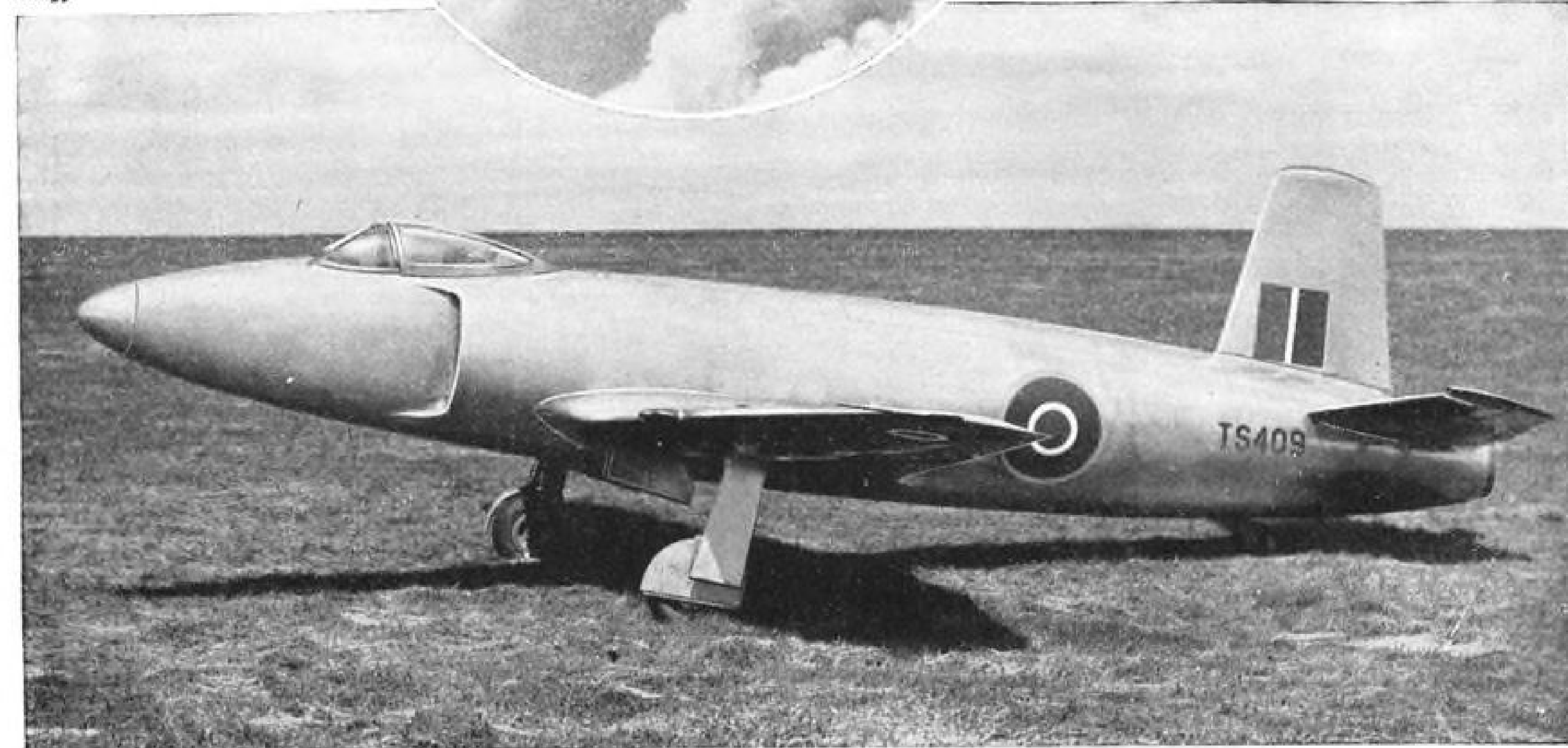
Outstanding British Fighter

Recent performances of the Vickers Supermarine 'Attacker' have confirmed it to be the World's most outstanding jet fighter. The speed and general manoeuvrability of the 'Attacker' were amply demonstrated on February 27th of this year when, carrying full military equipment, it covered the International 100 Km Closed Circuit at an average speed of 564.8 m.p.h. Previously, the 'Attacker' had carried out a series of successful deck landing trials on the Aircraft Carrier H.M.S. 'Illustrious'. These trials confirmed its adequate control characteristics under the low speed conditions necessary for deck approach. A feature of particular interest to Pilots called upon to manoeuvre at great speeds is the excellent visibility from the cockpit.

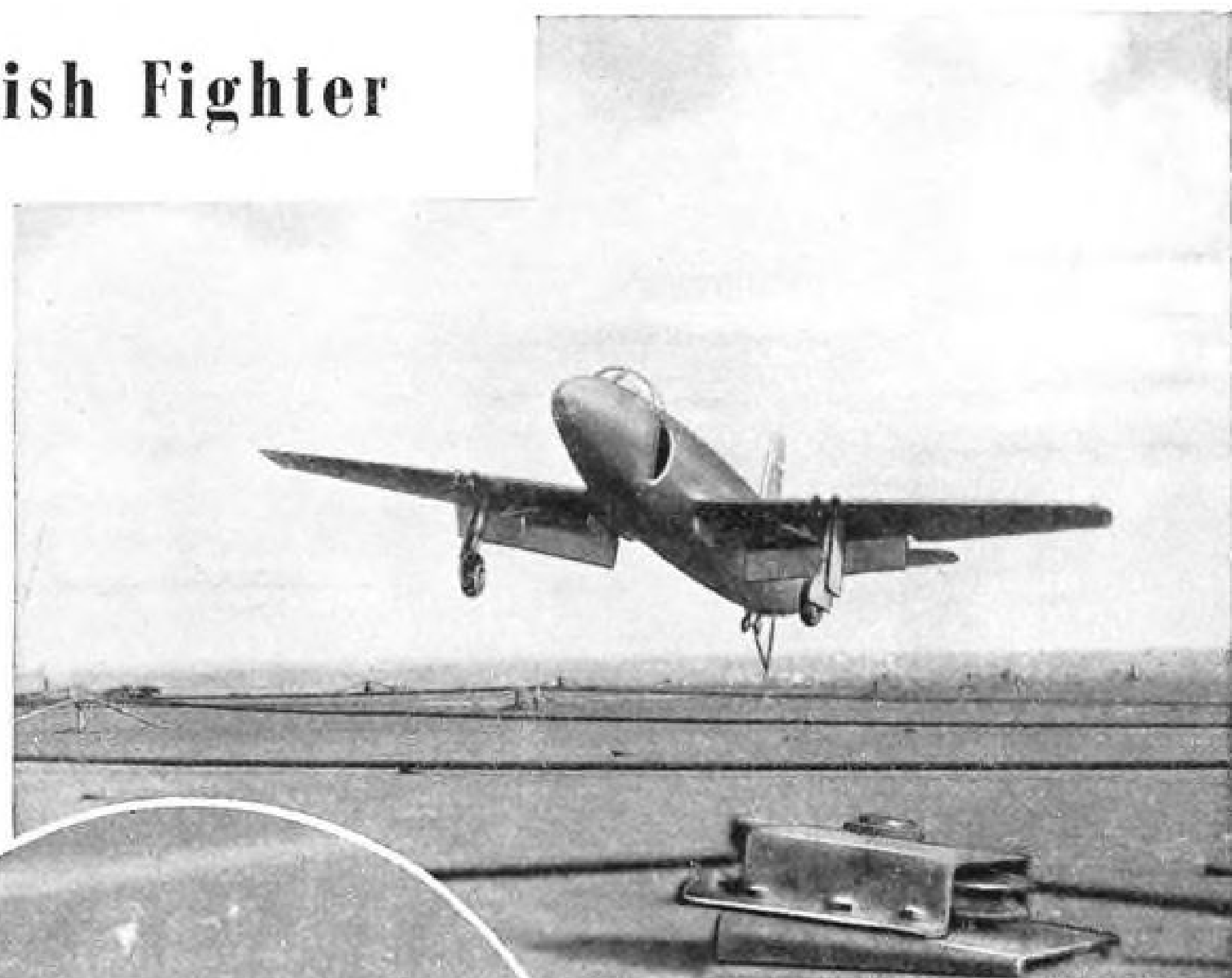
IN THE AIR

Superb manoeuvrability, rapid acceleration and rate of climb are features which make the Vickers-Armstrongs 'Attacker' unparalleled as a service fighter. With four 20 mm. Hispano cannons as standard armament the 'Attacker' lives up to her name.

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The proved flying characteristics of the Vickers Supermarine 'Attacker' jet fighter enable this famous 'plane to take-off from a carrier and 'land-on' in perfect safety. With good control at a speed near stalling-point and with excellent visibility from the cockpit, the 'Attacker' is ideally suited to naval requirements.

RECORD-BREAKER

On 27th February an 'Attacker' jet fighter set up a new record for the closed circuit at 564.8 m.p.h.—fully loaded. This was one more convincing argument to support the Vickers-Armstrongs claims for this outstanding jet fighter.

AVIATION WORLD NEWS



Rio Letter

Money Troubles Hit Brazil Lines

Two companies suspend operations, others threatened as price cutting complicates financial situation.

RIO DE JANEIRO—Financial crisis has struck Brazilian airlines, knocking two companies to the mat and putting others on the ropes.

Navegação Aerea Brasileira grounded its three usable planes in mid-August. Although NAB had received plenty of help from the old Vargas dictatorship and even wangled a subsidy four years in advance, aviation men say the company owes about \$2 million to the federal government, about \$1½ million to other creditors and about \$150,000 to employees. NAB had been flying routes in northern and central Brazil.

Linhas Aereas Brasileiras suspended operations in June without issuing a financial statement for 1947, owing salaries for several months. Its shareholders had long been rowing among themselves. There are mortgages on the three planes which had been flying LAB's routes in northern and central Brazil.

►Others May Fold—Although both companies announced their suspensions as "temporary," executives of other lines did not expect NAB and LAB to come back. And it was a fair guess that others would fold.

Basic reasons for the crisis are:

1. Rates are the same as in 1935, while expenses—especially salaries and wages—have practically tripled, and traffic has not increased in proportion.

2. The many lines are cutting each others' throats to get business.

A third reason in some cases is bad administration: intentional for personal profit in some instances, and merely inefficient or lax in others.

►Dividend—Panair do Brasil paid a 10 percent dividend for 1947 in the form of stock, increasing its capital from 80 million cruzeiros (\$4 million) to 88 million cruzeiros. A good chunk of its income is from services rendered to the parent company, Pan American Airways, and to several European lines using its radio and weather facilities.

Panair do Brasil makes money on its European lines but probably not on its internal services. Now the U. S. Civil Aeronautics Board has ordered some changes in the Pan American-Panair do Brasil agreement which may make a

difference in the income of Panair, in which Brazilians now have a 52 percent interest.

Cruzeiro do Sul, which vies with Panair do Brasil as the country's biggest airline, has the status of a limited company and does not have to publish its balance sheet. But it is not having easy going.

►Case Pressed—The company is pressing its case before CAB in Washington for final authorization to begin flights to the U. S., long authorized in principle by a U. S.-Brazilian agreement. For the service, Cruzeiro do Sul acquired four DC-4s, but rumor here is that it is looking for a buyer for three of them and that a fourth is being held in the U. S. by the Glenn L. Martin Co., which reconditioned the planes but still is waiting for payment.

Aerovias Brasil reported a tiny profit—about \$4000—in 1947 and issued no dividend.

Varig, which operates only in the fairly lucrative south, showed about \$25,000 profit in its mid-year statement in 1947. Its mid-1948 statement had not appeared late in August, but it was expected to be about the same.

►Reports Profit—Vasp, a pioneer on the Rio-São Paulo run, reported about \$500,000 profit in 1947. Virtually owned by the São Paulo state government, Vasp gets considerable business from Paulistas and does not need to maintain much in the way of special facilities.

Now partly as a result of clamor from interior towns which want air service, Vasp is spreading out somewhat and probably will be operating some money-losing lines. But it has real estate income to help keep it in the black.

In addition to those five airlines, considered the "big" ones, and the now-grounded NAB and LAB, there are more than 20 other aviation companies in Brazil. A few have regularly scheduled flights on some runs; all make unscheduled, irregular trips. Several show big deficits.

►"Fly-by-Nights"—In the last few years, several fly-by-night outfits have raised capital for supposed aviation companies. For a while, the organizers, who in-

vested nothing, would draw good salaries, put their relatives on the payroll and drive company automobiles.

Usually, the firm would acquire a plane or two. When the wealthy "angel" or a bunch of stockholders began to ask questions, they could be stalled for a time; eventually the company would fold, with the investors losing their shirts. Only rarely had the expert promoter strayed outside the law.

►Prices Cut—Quiet price-cutting is every-day practice, although the companies agreed on prices among themselves and the government approved them. Now the lines have submitted their individual rate proposals, and the government is to fix ceiling prices. Anybody who wants to charge less is supposed to show he can do so on a sound basis. But aviation men doubt this will cure the under-counter rate-shaving.

The prosperous Vasp company was one that wanted to reduce official prices on the Rio-São Paulo run. Others dissuaded it. Panair do Brasil, which cut its Rio-São Paulo flights from five to three daily, currently leads in passengers-per-plane on that run; but other lines which make more trips (like Cruzeiro do Sul, which has nine flights daily in both directions) naturally carry a bigger total.

The little fellows generally believe they can compete with the big ones only by underselling them. Especially in hauling freight, they often outbargain the big companies.

►Solution Sought—Most large companies operating over a big area say passenger and freight rates are low enough now to get practically all potential business; in other words, a reduction, unless it went to a ridiculous figure, would bring hardly any increase in use of the airlines. They argue that the little fellows, by cutting rates, are dragging the big ones down with them. The little fellows also accuse the big ones of price-slashing.

There seems little disposition on the part of the government to force a combination of the many lines or to run a government monopoly airline. Nor do the bigger companies want to combine. Eventually, it looks as though most of the lines will be forced to quit, and that even then the government will have to subsidize the few remaining on all but the most lucrative runs.

One private, cynical suggestion from an airline official—which probably will never get a public hearing—is that Brazilian companies get out of the business altogether and let the foreign lines do the flying here. The thesis is that competition would be so keen among American, British, Dutch, French, Italian, Spanish and other companies that Brazilians would be sure to get good service, even though the competitors might lose their own or their governments' money.—Henry W. Bagley

AIR TRANSPORT

Outlook Bright for Delta, Braniff

CAB retroactive mail pay adjustment plus new sliding scale rate improves profits prospects of two lines.

Braniff Airways and Delta Air Lines are again back on an even keel financially as a result of multi-million dollar mail pay adjustments offered this month by the Civil Aeronautics Board.

In general, the new rates will yield the two carriers from three to four times as much domestic mail revenue during past and future periods as the formula previously in effect. CAB's decision gives Braniff and Delta the same improved profit outlook now enjoyed by Chicago & Southern Air Lines, which cut 1946-47 losses sharply and has been in the black this year as a result of rate revisions announced two months ago (AVIATION WEEK, July 19).

► **Increase Offered**—CAB has offered Braniff \$1,563,154 in additional revenues for the period from Nov. 27, 1946, to Mar. 31, 1948. New rates which started Apr. 1 of this year are expected to yield about \$1,545,000 annually in excess of the sum provided in the previous formula.

Delta was awarded an additional \$907,428 for the period between Sept. 9, 1947, and Mar. 31, 1948. For the period which started last Apr. 1, the carrier is to have its mail pay increased by about \$1,911,000 annually.

CAB had little criticism of either

carrier for losses incurred during 1946 and 1947. On the contrary, it commended them for having the lowest unit operating costs among the group of companies heretofore receiving the 60 cents a ton mile mail rate.

► **Costs Compared**—During the year ended Mar. 31, 1948, Delta's expenses per available seat mile were 3.56 cents, Braniff 3.73 cents, Capital 3.91, National 3.95, Chicago & Southern 4.01 and Western 4.13. The Board said Delta's management did not file for a mail pay increase until after it had made intensive efforts to improve the carrier's earnings position without government support.

Under its former 60 cents a ton mile rate, Braniff received \$648,852 in mail pay between Nov. 27, 1946, and Mar. 31, 1948. The new formula increases the payment to \$2,212,006, equal to 14.99 cents a plane mile. The \$1,563,154 in additional mail pay will enable Braniff to show a 7 percent profit on its recognized investment during the 16-month period.

► **Incentive Formula**—Retroactive to Apr. 1, 1948, Braniff and Delta will be receiving a sliding scale incentive mail rate formula similar to those already established by CAB for Chicago and Southern, Continental and several

feederlines. Under this arrangement, the carriers' mail pay is geared to their passenger load factor, with the mail rate declining as the passenger load increases.

The former 60 cents a ton mile mail pay would have yielded Braniff about \$540,000 for the year starting Apr. 1, 1948. The new rate is designed to give the carrier around \$2,085,000 annually, or about 17.57 cents a plane mile.

This puts at slightly under 51 percent the standard passenger load factor at which Braniff can be expected to break even with the new formula.

► **Higher Profits Possible**—If the company could achieve a 70 percent passenger load factor, it would be able to earn almost 19 percent profit on its investment despite the decreased mail rate provided in the formula. Conversely, as the passenger load factor drops below 51 percent, the overall loss will increase even though mail pay rises automatically.

Braniff's passenger traffic reached a peak around the middle of 1946 and has declined substantially since then. Load factors also fell off. CAB decided that since Braniff had curtailed its schedule frequencies reasonably as traffic declined it should be given additional mail pay to help offset the unavoidable losses. In setting mail rates for the future, CAB said that Braniff's revenue passenger mileage should increase nearly 13 percent over the level of the year ended last Mar. 31.

CAB noted, however, that Braniff's equipment utilization for the year ended last Mar. 31 was too low (6.7 hours daily against 7.31 for other carriers in its class). Consequently, the Board found Braniff had been operating two DC-3s in excess of requirements and reduced mail pay accordingly. It also refused to consider Braniff's executive DC-3 as being necessary.

► **DC-6 Grounding**—Braniff's DC-6s were in regular service only a little over a week before the craft were grounded by the industry last November. CAB found that because sufficient DC-4s assignable to the carrier's Latin American services were available at the time, Braniff was able to maintain to a substantial degree its volume of domestic operations and minimize the financial impact of the DC-6 grounding.

The Board conceded that costs attributable to aircraft groundings must be taken into account when establishing mail rates. While these expenses are not predictable or measurable, they must be recognized as one of the risks of doing business, CAB said.

"These risks have been recognized by providing the airlines with a rate of return higher than that normally earned by older and more stabilized

utilities. To provide in addition direct reimbursement through mail pay for losses as they occur would result in double provision for such risks as aircraft groundings."

► **Delta Awards**—Meanwhile, in the Delta mail pay decision, CAB offered the carrier \$1,216,486, or 17.21 cents a plane mile, for the period between Sept. 9, 1947, and Mar. 31, 1948, giving it a 7 percent profit on recognized investment. Under the former 60 cents a ton mile rate, the carrier received \$309,058 for the period. The Board found that Delta's management had curtailed frequencies properly as traffic fell off last fall and decided that although load factors were low all of the scheduled passenger service provided was reasonably required.

Delta's incentive mail pay formula to be effective Apr. 1, 1948, should give the carrier about \$2,465,000, or 19.3 cents a plane mile, during a "future year." Under the previous scale, Delta would have received about \$554,000 annually.

► **Load Factor**—A standard passenger load factor of slightly under 48 percent, under the new formula, will enable Delta to break even.

If Delta should be able to boost its average load factor to 70 percent, it could earn more than 26 percent profit after taxes despite the decreased mail rate under the formula. But as the carrier's passenger load factor falls under 48 percent, losses will increase even though mail rates will rise.

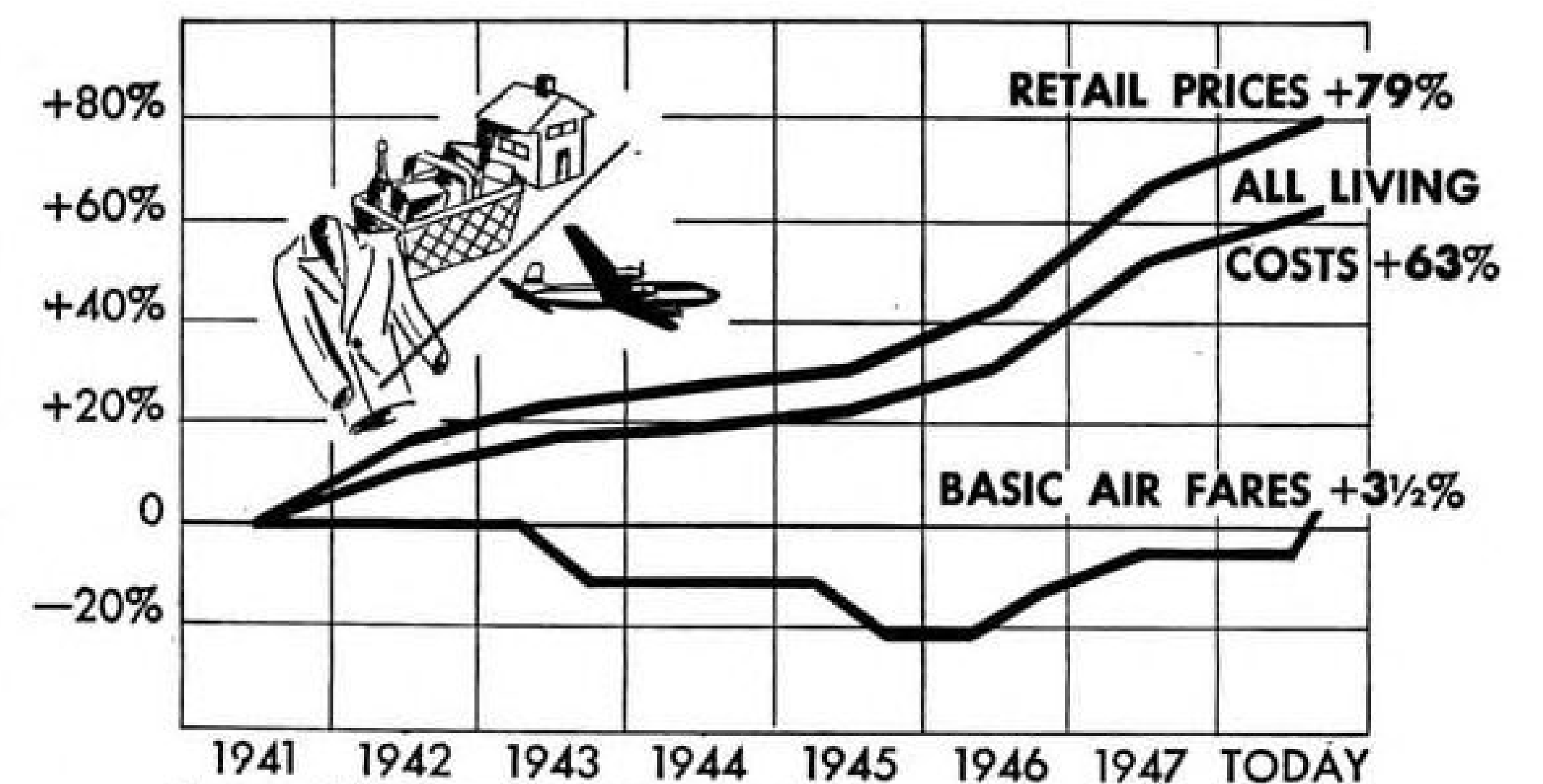
In setting the "standard" passenger load factor, CAB figured 50 seats on a DC-4. Delta's DC-4s carry only 44 passengers, a number which the Board hinted may be too low.

From Red to Black

Newly issued financial reports reflect the sudden change from red to black ink which took place after CAB's recent mail pay decisions.

Delta Air Lines President C. E. Woolman announced his company would show an operating profit of about \$375,000 and a net profit after taxes of \$220,000 for the fiscal year ended June 30 as a result of mail rate adjustments. Further profits are indicated for July and August.

Chicago & Southern Air Lines reported a net profit of \$391,980 after taxes for the eight months ended Aug. 31. Sidney A. Stewart, president, said international as well as domestic operations were in the black during August.



AIR FARES VS. LIVING COSTS

The domestic airline passenger is still getting a good run for his money despite the recently instituted third tariff hike of the postwar period, according to a late study made by United Air Lines. The above chart,

prepared by UAL, shows that one-way basic fares are now only 3 1/2 percent above the 1941 level as contrasted with a 79 percent increase in retail prices and a 63 percent rise in all living costs.

Fare Boost Offset By Discount

The CAB-backed 10 percent passenger fare increase on domestic airlines was considerably the worse for wear last week.

So confused had the picture become that Eastern Air Lines postponed indefinitely any tariff hikes. Earlier this month, EAL had planned to boost fares 10 percent across the board and establish the 5 percent roundtrip discount recently made effective by other carriers which had lifted rates.

► **New Discounts**—Concurrently with Eastern's decision, carriers that had raised fares on some of their services offered new traffic-generating concessions to passengers. TWA announced that between Nov. 1 and May 1, it would grant a 20 percent rate reduction for groups of ten or more persons. All members of a group would not have to travel on the same TWA flight, but all transportation booked by any one group under the special tariff must originate within a 24-hr. period.

Mid-Continent Airlines said it would grant additional savings to "commuters" to stimulate fall and winter business. Books of four to eight flight coupons, good for 30 days, will be available at a 7 to 10 percent discount for travel between eleven pairs of MCA cities effective Oct. 15.

► **Overall Picture**—In aggregate, the 5 percent roundtrip discounts, group fares, commuter rates, American Airlines' first-of-the-week family half fares, and the abandonment of surcharges on American and United DC-6s took much of the steam out of the 10 percent increase. The industry's revenue per pas-

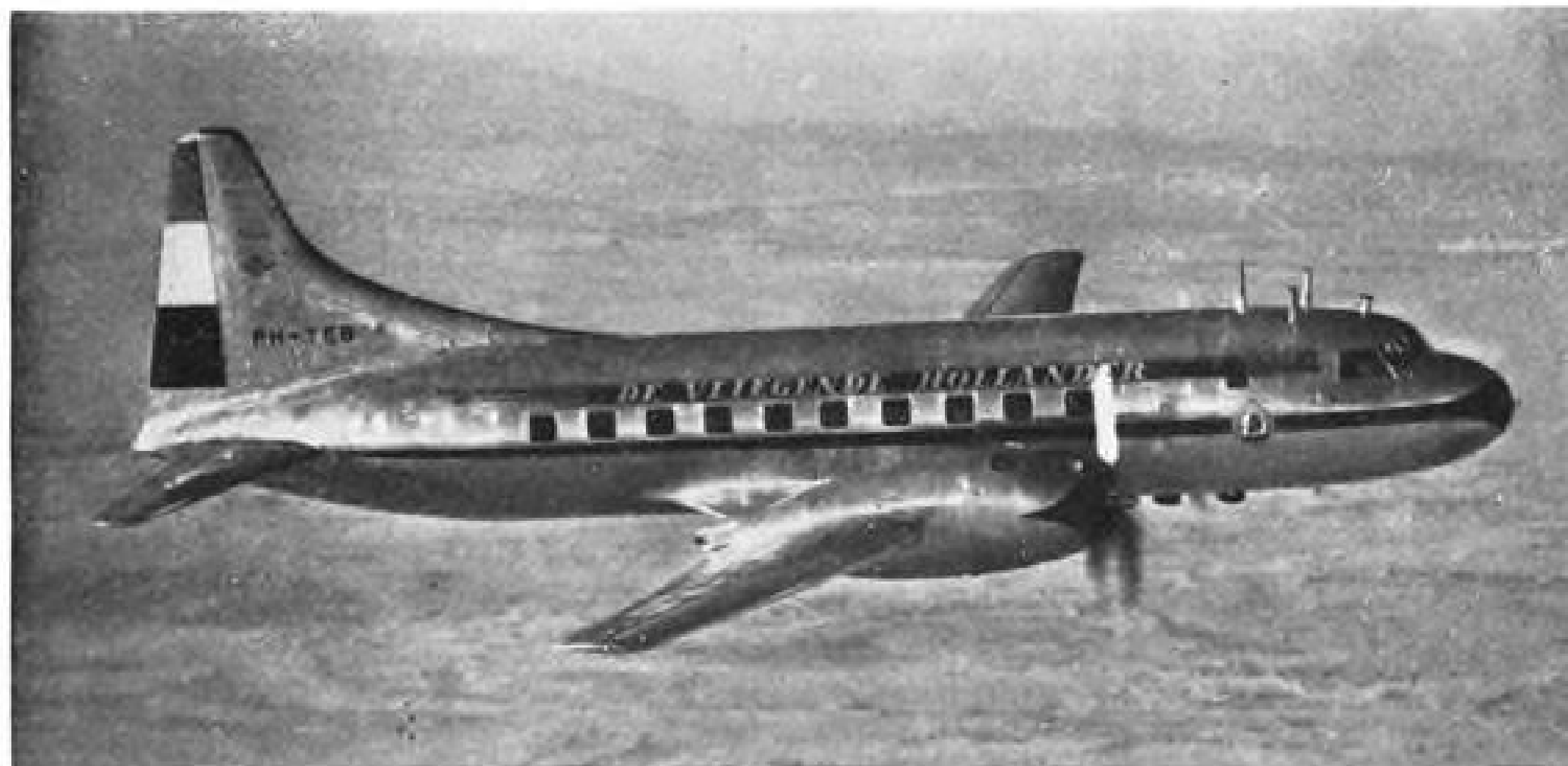
senger mile flown will go up only a fraction of 10 percent under the present setup. There were indications that the discounts offered by American might just about balance the 10 percent one-way fare increases made effective on its DC-3s, DC-4s and Convair-Liners.

Meanwhile, more bargain fares cropped up in overseas operations. Pan American Airways said it would cut winter fares on its Alaskan routes 25 percent effective Oct. 15. Previously, PAA had led the way in establishing 30-day excursion rates over the North Atlantic and in introducing tourist class services to supplement its regular first-class transportation.

► **Nonskeds Worried**—Pan American's coach-type service to Puerto Rico has its nonscheduled competitors worried. But World Airways, which operates 80-passenger Boeing 314 flying boats on the route, has informed travel agents that it will not only meet PAA's competition but beat it.

The irregular carrier told the agents that PAA's new service was "strictly second class . . . no luxuries . . . no meals . . . primitive type seats." It called the travel agents into a meeting to discuss means of countering the Pan American threat.

The nonscheduled operator, which has been using two Boeing 314s, said it would have four flying boats in service shortly and seven by the end of the year. World Airways Executive Vice President J. Stuart Robertson indicated his company might offer a new \$69.50 one-way rate to Puerto Rico and make its berth available at \$10 extra.



NEWEST FLYING DUTCHMAN

First of twelve Convair-Liners ordered by KLM Royal Dutch Airlines left for Amsterdam this month where it will be used for crew training and demonstrations before going in service on the carrier's Euro-

pean routes. Now using about 120 aircraft and employing 12,000 persons, KLM says it will have the largest and most active fleet operated by a foreign airline when all its Convairs are on hand.

IATA Analyzes Industry Problems

Brussels meeting warned against increasing government demands, hears expert discuss turboprop advantages.

Sober discussion of the industry's increasingly complex financial problems, a call for low-cost tourist-class service to bolster revenues, and a forecast of what may be expected in the application of the gas turbine to commercial aircraft featured the recent fourth annual general meeting of the International Air Transport Association at Brussels, Belgium.

IATA Director General Sir William P. Hildred warned that the world's transport system will be threatened with bankruptcy if governments continue to insist that international airlines pay larger shares of airport and other ground costs without helping the carriers to boost revenues. He asserted that the past year has been marked by a government tendency to reduce payments for carriage of mail in the face of soaring costs borne by the operators.

► **Airport Costs**—Estimating that 1000 airports are used by scheduled airlines throughout the world, excluding Russia, Sir William pointed out that the annual cost of operating, maintaining and depreciating the fields is about \$250,000,000, or one quarter of the annual revenues of all scheduled carriers. "If governments proceed on the basis of these figures and charge accordingly, you can just stop flying."

Threats to the carriers' financial position broached in various government quarters recently have been legion, the IATA executive declared. These threats include moves to increase flight crews by attempting further limitations on flight time; possible barring from the airways of older aircraft still operating satisfactorily and economically; charging airlines for unnecessary search and rescue operations; granting permission to non-scheduled operators to engage in international commerce with greater freedom than scheduled airlines; and reduction of payload by increasingly strict airworthiness requirements.

► **Second-Class Service**—Sir William urged the carriers to take vigorous action in developing second-class international service at lower rates as one means of increasing revenues. Pan American Airways already has proposed such operations on its Puerto Rican run (AVIATION WEEK, Sept. 13 and 20).

He predicted that IATA members would fly five billion passenger miles in 1948 and increase their gross revenues 50 percent over 1947. IATA members' route network of 500,000 miles and their fleet of 2000 planes are about the same as in 1947.

► **Whittle Speaks**—Meanwhile, Sir Frank Whittle, inventor of the Whittle gas turbine, told the 200 IATA delegates of the advantages they can expect when planes powered by turbine-driven propellers (turboprops) are ready for civil airline use in the next five years. Even faster planes powered by jet alone (turbojets) could be ready for the airlines even sooner, but they may not be economical to operate until radical improvements have been made in airport traffic handling methods, he declared.

Planes using turboprops could operate on schedules of 300 to 400 mph., while jet-driven airliners could cruise at upwards of 500 mph., the inventor continued. He added that gas turbine power plants will give transports greater safety and comfort at reduced capital and operating costs in addition to the speed advantages.

► **Landing Problem**—"If an airplane with gas turbine propellers has to cruise around at low speed waiting its turn to land at a crowded airport, fuel can be saved by shutting down some engines and running the others at a higher pro-



FATHER-SON TEAM

What ordinarily would have been a strictly routine flight from the Twin Cities to Chicago recently became a real thrill for Northwest Airlines Capt. Mal Freeburg, who has piled up more than 17,000 flying hours since 1926. Copilot with Freeburg, a 42-year-old veteran of 20 years with NWA, was his 18-year-old son Jim, making his first scheduled run for the carrier. The younger Freeburg (right) won his commercial license earlier this year and then took Northwest's training courses to obtain the copilot's spot.

portion of full power. But with a jet aircraft there is not much to be gained by this technique.

"Therefore my advice to the airlines is to prepare to operate planes with propeller gas turbines almost at once (or be left far behind) and to prepare to operate jet aircraft when technical improvements and international action in the field of airport traffic control have removed the necessity of stacking."

Manufacturing costs of gas turbine engines are considerably higher than they need be, mainly because of the small number of units now in production and partly because manufacturing techniques are in the process of evolution, Sir Frank declared. He said he had no doubt that ultimately the cost per horsepower of gas turbine engines in quantity production will be very much less than half that of a reciprocating engine.

► **Development Progress**—Discussing development timetables for gas turbines, the inventor stated that in general turboprops will take longer to develop than turbojets. Engines with axial flow compressors will take longer to develop than engines with centrifugal flow compressors. Yet despite the fact that the piston engine now in general use has had over 40 years of development—while the gas turbine is only in its infancy—in no case should a gas turbine take anything like as long as a piston engine to develop.

"It is possible to derive a whole family of gas turbines of varying powers merely by scaling up or down from one already in existence," Sir Frank explained. "All gas turbine engines have the advantage of lower specific weight, small bulk and frontal area, which result in smaller and 'cleaner' aircraft; complete absence of vibration; ability to run on low-grade fuel and hence reduced fire risk; mechanical simplicity, which increases reliability and reduces first cost and maintenance; negligible consumption of lubricating oil; negligible cooling requirements; and easy starting, with very little or no warming up."

► **Engines Described**—Sir Frank outlined the characteristics of four turbojet engines and seven turboprop engines presently in use or under development in Great Britain; as well as those of three turbojet and five turboprop civil aircraft in various stages of construction or test flight. U. S. airline officials at the IATA session expressed concern over the degree to which America is lagging behind in turboprop development.

Representatives of about 50 airlines from all parts of the world attended the Brussels meeting. At the opening session, Gilbert Perier, president of Sabena, took office as IATA president, succeeding Dr. J. Bento Ribeiro Dantas, president of the Brazilian Airlines Servicos Aereos Cruzeiro do Sul.

New Local Service Asked for West Coast

Authorization of extensive new local service in the California-Nevada area has been urged on CAB despite recent indications that most Board members are reluctant to expand the domestic route pattern.

Examiner F. Merritt Ruhlen has recommended that CAB certificate Southwest Airways for numerous new intermediate points on its Medford, Ore.-Los Angeles route and favored extension of the link from Los Angeles to Phoenix, Ariz., via Long Beach, Ontario-Pomona, Riverside-San Bernardino, Palm Springs and other points. He also urged extension of Southwest's temporary certificate so that the carrier will have five years of active operation to demonstrate its potentialities.

► **Other Recommendations**—Bonanza Air Lines, Las Vegas, Nev., was recommended for a five-year feeder certificate between Las Vegas and Medford, Ore., via Death Valley, Tonopah, Hawthorne, Carson City-Minden, Reno, Portola, Susanville, Alturas, Lakeview and Klamath Falls. Amphibian Air Transport, Inc., was favored for a link between Avalon, Catalina Island, and the co-terminals Los Angeles, Burbank and Long Beach. United Air Lines was recommended for a stop at Reno as an intermediate point between Red Bluff and Sacramento on the West Coast segment of Route 1.

Airlines Reply to RFC

The Reconstruction Finance Corp.'s study of the air transport industry's money problems (AVIATION WEEK, Aug. 23) moved ahead last week as most of the 16 domestic trunklines replied to questionnaires asking estimates of their financial needs during the next 18 months.

Carriers were requested to state whether they believed all their financial requirements through Apr. 1, 1950, could be met from their own resources or from private sources. If, on the basis of projected traffic, revenues and costs, the operators anticipated difficulties in obtaining private financing, they were asked to submit detailed information in five categories: acquisition of aircraft and spare parts; acquisition of other capital assets, short term obligations, other problems such as refinancing outstanding obligations or increasing working capital, and restrictions on the use of assets or other income.

Replies to the questionnaires went both to Morris Levinson, chief of the transportation branch of RFC's office of loans, and to CAB Chairman Joseph J. O'Connell, Jr. RFC hopes to complete its study of the airlines' financial

problems and to submit to President Truman its recommendations for their alleviation by the end of October.

Air Travel Plan Spreads

A new universal air travel plan which will enable passengers to buy transportation on credit almost anywhere in the world will be put in operation Oct. 1 by agreement between international and domestic airlines.

Under the setup, the air traveler generally will be able to secure a credit card by making a deposit with one airline and can have the card honored for transportation by all other subscribing

carriers. Details of the plan follow those of the air travel card system now being used in North America.

Travelers can obtain credit cards from any participating airline by making a \$425 deposit. To conform with various national exchange controls, cards will be issued in three categories: territorial—good in North America, the West Indies, the Bahamas, Bermuda, Newfoundland and the Hawaiian Islands; international—good for unrestricted universal travel; and controlled—good within the limitations prescribed by certain countries on the amount of money their residents can spend on foreign travel.

CAB Rules on Service Restriction

Board's Caribbean decision upholds right to curtail as well as expand authorizations; PAA flights involved.

A finding that the Civil Aeronautics Act gives CAB ample authority to curtail as well as expand previous certificate authorizations highlighted a recent Board decision establishing new services in the Caribbean area.

CAB's important policy pronouncement stemmed from a relatively unimportant issue—Caribbean Atlantic Airlines' request that the Board modify Pan American Airways' certificate to prevent PAA from continuing to serve St. Thomas, Virgin Islands, on local flights from Puerto Rico.

Pan American declared CAB lacked the power to impose such a restriction. It argued that Board action which impairs the authority granted by a certificate is a total or partial revocation of that certificate which can be accomplished only for an intentional failure of the certificate holder to comply with the provisions of the Civil Aeronautics Act or of the certificate itself.

► **Powers Cited**—CAB Chairman Joseph J. O'Connell, Jr., and Member Josh Lee replied that the Board had found in previous decisions that it can compel a carrier, on grounds of public convenience and necessity, to extend its route—to territory and points not previously served, provided the extension does not bring about a basic transformation of the carrier's character. They said the same provisions of the Civil Aeronautics Act which give the Board power to expand a certificate authorization also permit it to eliminate a point from a certificate or to impose a condition which results in restricting a service previously permitted.

Exclusion from the Board's powers of all authority to make certificate changes diminishing in any way the rights originally set forth in the certi-

cate would be wholly inconsistent with the basic objectives of the Civil Aeronautics Act and would make the airlines' private interests paramount to the public welfare, CAB's majority emphasized. Member Harold Jones declared in a concurring opinion that a route certificate is a privilege granted by the Board and confers no vested property rights.

► **PAA Argument Hit**—"The Board's power to attach such reasonable conditions or limitations to the privileges granted by a certificate as may be required in the public interest, either originally or by amendment, is implicit in the Civil Aeronautics Act," Jones stated. "Absence of this power would reduce much of the Act and many of the Board's functions to futility. A carrier's conduct might jeopardize the national security and be detrimental to the needs of our commerce and postal service, but to follow Pan American's argument to its logical conclusion the Board would have no power to regulate such conduct."

Besides restricting PAA's local service to St. Thomas in order to rid Caribbean Atlantic of destructive competition, CAB extended both carriers' routes. Caribbean Atlantic's 216-mile system in Puerto Rico and the Virgin Islands was expanded to include a 182-mile link between Mayaguez, P. R., and Ciudad Trujillo, Dominican Republic.

Pan American's certificate was amended to include St. Maarten and Barbados as additional intermediate points between San Juan, P. R., and Port of Spain, Trinidad; to provide an extension from San Juan to Caracas, Venezuela, via Curacao, Netherlands West Indies; and to provide new service to Aruba, N. W. I., and St. Croix, Virgin Islands.

NAL Strike

Pilots try new strategy in effort to push dispute to victorious close.

The Air Line Pilots Association has redoubled its efforts to bring the eight-months-old strike against National Airlines to a quick and victorious end. Current strategy is to help drive a wedge between the company's management and its stockholders.

National's refusal last July to accept a Presidential Emergency Board's recommendations for settling the pilot walkout was a hard blow to ALPA. When NAL made peace with the International Association of Machinists in accordance with the Emergency Board's findings, ALPA lost a partner in its fight against the carrier; and the company's continued operation was made easier by the return of its regular ground personnel.

► **Heavy Losses**—While ALPA has its own financial troubles in the continued assessment of its working members for the support of the NAL strikers, the union is making the most of the company's heavy losses. It has high hopes that there will be fireworks at National's next stockholders' meeting, scheduled for Miami, Sept. 30.

A stockholder's suit was filed against NAL President G. T. Baker in Federal District court in New York this month, the plaintiff charging that the carrier is in "immediate danger of insolvency" and that its certificate to operate is in jeopardy. The complaint seeks appointment of a temporary and permanent receiver for National, an order requiring the defendant (Baker) to restore more than \$1,000,000 to the company, and an order that the defendant be required to pay for all damages for alleged mismanagement.

Baker, who is National's principal stockholder, was accused of dominating and controlling all officers and directors of the company, "in carrying out a policy of deliberate provocation of strikes." NAL officials believe the suit was instigated by ALPA.

But National's financial losses have been severe. For the fiscal year ended June 30 it reported a \$1,946,040 net deficit. During the first half of 1948 alone, the company had a \$1,049,465 net loss, most of which was incurred after the pilot strike began Feb. 3.

► **More Mail Pay Sought**—NAL's working capital has been depleted badly since the first of this year, and the company has told CAB that a higher temporary mail rate is urgently required if it is to continue to perform necessary services. Over the vigorous protest of ALPA, National was awarded higher

temporary mail pay last March. The company has been seeking a higher permanent rate retroactive to July, 1947, but believes this permanent compensation cannot be fixed in time to prevent a financial crisis.

Realization that additional mail pay would bolster National's resistance against the strike is a major reason for ALPA's stepped-up drive for a decision. A CAB opinion on the union's request that NAL's certificate be suspended or revoked for violating the Railway Labor Act may take a year or more. The Board has not yet decided whether it has jurisdiction in the matter.

Meanwhile, William Green, president of the American Federation of Labor, has asked President Truman to assign a representative to find out why National has refused to accept the findings of the Emergency Board. And ALPA is continuing its ground picketing and sky-writing activities to keep National traffic at a minimum.

UAL Moves Maintenance

Centralized maintenance on United Air Lines' entire fleet of 147 planes at the company's new San Francisco base is under way with the transfer of DC-3 overhaul shops from Cheyenne, Wyo.

Cheyenne will transfer 500 employees to augment 1500 at San Francisco.

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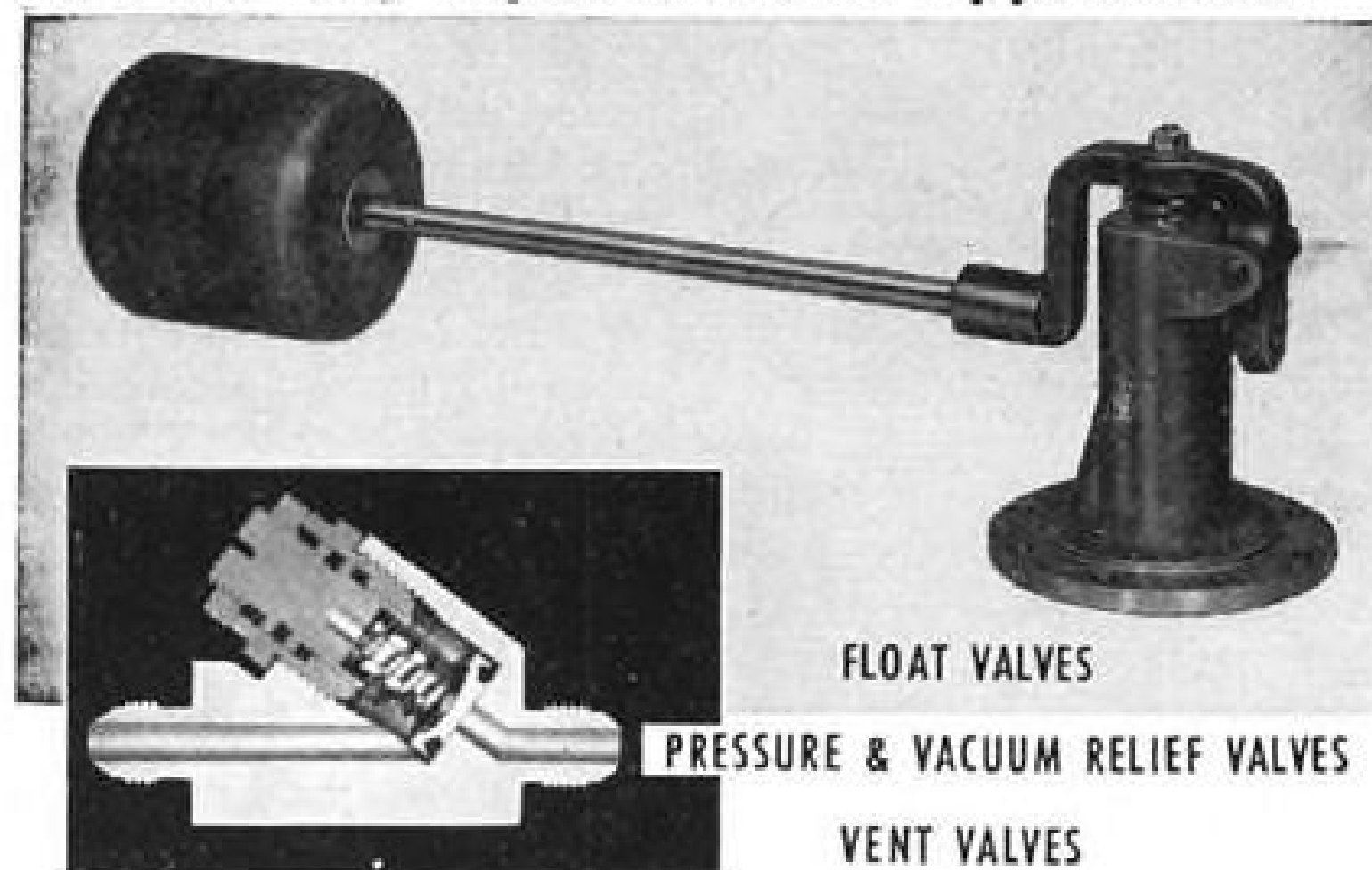
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Changes at Northwest

Northwest Airlines' retrenchment program (AVIATION WEEK, Sept. 13) has brought a reduction in the number of corporate officers and realignment of responsibilities.

NWA President Croil Hunter announced the company's board of directors has approved the following changes: W. Fiske Marshall, vice president-operations, has resigned. K. R. Ferguson, vice president-engineering and planning, was named vice president-operations and engineering, taking over many of Marshall's duties.

Position of executive vice president, held by E. I. Whyatt, and the vacant post of Eastern region vice president were abolished. Whyatt's new title will be vice president and comptroller. Donald J. King, who has been vice president in charge of Orient operations, will end his duties in that capacity by Jan. 1, resign the post and return to flying status.

SHORTLINES

► **Air America**—Has asked CAB for a certificate to carry passengers only between Los Angeles and New York and San Francisco and New York via numerous intermediate points. The Los Angeles, Calif., nonsked, which began operations last July, says it would continue to provide second-class transportation, using DC-3s and DC-4s charging \$99 for a transcontinental ticket.

► **American**—Walter Sternberg, general sales manager, and C. R. Speers, eastern regional vice president, have been elected assistant vice presidents-sales. Walter H. Johnson, Jr., was appointed regional vice president to succeed Speers.

► **Capital**—Increased cargo shipments during August by 221 percent in dollar volume and 154 percent in poundage over August last year and reached an all-time peak.

► **Flying Tiger Line**—Has signed an interline cargo agreement with KLM.

► **Northwest**—Has announced pacts with Air France and KLM establishing new round-the-world services with connections at New York and Shanghai. Global fare via either the NWA-KLM or NWA-Air France hookup is \$1700.

► **Norwegian Air Lines (DNL)**—Maj. Gen. Hjalmar Riiser-Larsen has taken office as president. DNL is one of the partners in Scandinavian Airlines System (SAS).

► **Panagra**—This month celebrated its 20th anniversary.

► **Pan American**—Has cut cargo rates on shipments of 500 lb. or more bound from New Orleans, Houston, Corpus

Christi and Brownsville to Mexico, Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica and Panama. If the venture with the new 500-lb. volume rate is successful, it will be made effective on a world-wide basis. . . . Passenger and cargo volume on Pacific routes increased 23 percent in July compared to the same month last year. . . . CAB has authorized PAA to serve Stuttgart, Germany, and has issued a one-year exemption for service to Lisbon, Portugal, as an intermediate point between the Azores and Dakar on the carrier's route to South Africa.

► **Philippine Air Lines**—Has asked CAB permission to serve Guam on its trans-Pacific route.

► **Pioneer**—Flew a record 9244 passengers in August. . . . Service to Las Cruces, N. M., is to begin around Oct. 1. . . . In-flight reservations are now possible on all planes.

► **Trans-Canada**—Will suspend service Sept. 30 on its Fort William-Port Arthur-Duluth link because of lack of traffic.

► **United**—Ninety-six percent of UAL's flights departed within 15 minutes of scheduled time and 70 percent arrived within 15 minutes of schedule during August. . . . Service to Bradford, Pa., has been inaugurated.

► **Wisconsin Central**—Has asked CAB for high mail pay, claiming its working capital is being depleted so rapidly under present rates that collapse is possible. Company had an operating loss of \$83,527 on a 26.62 percent load factor from Feb. 24, when it started service, to July 31 but expected a profit in August.

CAB SCHEDULE

Sept. 29—Hearing on Challenger Airlines' application to serve Vernal, Utah, and Casper, Wyo., postponed from Sept. 27. (Dockets 3183 and 3198.)

Sept. 29—Oral argument in TACA, S.A., foreign air carrier permit renewal and amendment case. (Docket 3016.)

Oct. 4—Hearing on CAB's investigation of free and reduced rate transportation, postponed from Sept. 27. (Docket 2737, et al.)

Oct. 4—Oral argument on additional intra-territorial service in Hawaii. (Docket 2390, et al.)

Oct. 4—Hearing in Capital Airlines mail rate case. (Docket 484.)

Oct. 5—Hearing on approval of control of Parks Air Lines. (Docket 1670.)

Oct. 11—Hearing on Board's investigation of Monarch Air Lines' certificate termination date, postponed from Oct. 8. (Docket 3368.)

Oct. 12—Hearing on need for service to Socorro, Hot Springs and Las Cruces, N. M. (Docket 3271, et al.)

Oct. 18—Hearing on Board's enforcement action against Standard Air Lines (Docket 3357.)

Oct. 25—Hearing in U.S.-Alaska service case. (Docket 3286, et al.)

Nov. 1—Hearing in reopened Mississippi Valley and Southeastern States cases. (Dockets 548 and 501.)

Dec. 1—Hearing on additional U.S.-Puerto Rico service. (Docket 2123, et al.)

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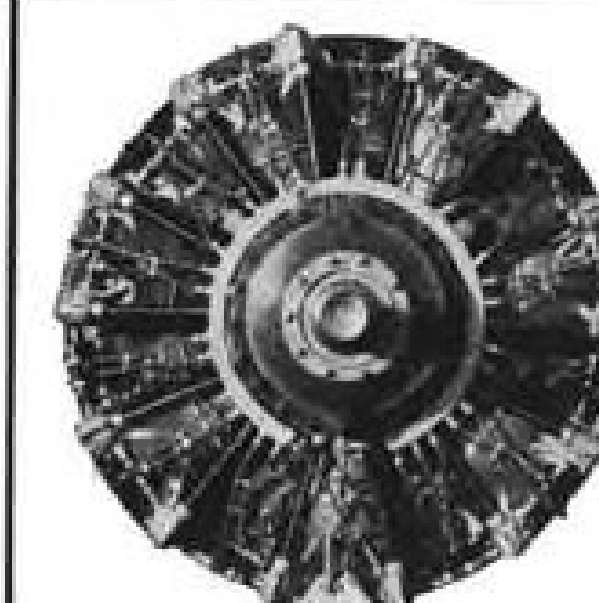
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STRICTLY PERSONAL

SUSPENSE IS TERRIFIC—Quiet, polished Robert Mountsier, N. Y. Sun aviation editor, usually works hard to give his readers all the news in his column. But last week he left us up in the air demanding more information, and wondering how Bob got his fact. He wound up a description of a typical San Francisco dinner, held in NYC, like this:

"A good time was had by all and among those who had it was a big American Airlines contingent, which included Ralph Damon, president; four of his vice presidents, R. E. S. Deichler, Rex Smith, Amos Culbert, L. G. Fritz; Harry Benedict, a director; Herbert J. Lyell, James Flynn, W. H. Miller; also Charles Speers, and Walter Sternberg, recently made assistant vp-sales, and stewardesses of the plane in which the San Franciscans traveled, the Wood twins, Elizabeth and Frances—one of them has a little mole."

* * *

PILOTS PUT ON THE DOG—Charles Cain, editor of the late and really lamented *Aeroplane Spotter*, of Britain, is visiting AVIATION WEEK's staff in New York and Washington. He shipped over by cargo plane accompanied by a box of high-priority stuff for Boeing-Wichita, two corpses and a motley batch of 14 unchaperoned dogs who traveled in varied wood & wire penthouses. There was a fearsome looking mastiff whose master had provided a small box labeled: "This is Bingo's food. Please feed and water regularly." A bored German police dog had his passport-type mug photo tacked on the side of the crate. A disgruntled, disconsolate setter—like Garbo—wanted to be alone. There was a boxer, two timid French bulls, what Editor Cain calls a low-aspect-ratio daschund, and others. "No two-legged passenger ever received more attention than these friends of man," Cain vows. "Soon after takeoff at London, the dogs were let out, singly or in twos, strictly according to breed and sex (we don't know what he means by this) and each crew member whiled away at least some time on the trip feeding and walking the smaller pooches. At both Shannon and Gander, the little fellows were paraded on the tarmac by the pilots, as proud as any get-together at the Westminster Kennel annual."

* * *

COMPLAINT DEPARTMENT—Any magazine that dares to open a complaint department protrudes its neck in a large way. First, because its readers may learn of more mistakes than they noticed themselves, and second, because its competitors will have something to point to and say "Lookit." But readers are pretty fair people—especially ours. So here goes:

(1) Ken Ellington, Republic's statesman of public relations, says our one-paragraph item written on our deadline night for the Aug. 30 issue, about the F-84's fall created an erroneous impression. As so often happens, the first reports to the dailies were garbled. Ken says it was not a routine instrument check flight but an experimental flight of an experimental airplane. He adds: "We were test-flying some new gadgets designed to go in a later model F-84 and, at very high speed; they were responsible for a 'flutter' condition which caused the plane to go out of control."

(2) Truman Koerner, a Chicago reader, praises our coverage of the National Air Races but deplors our failure to mention these two fine deHavilland Vampires flown in beautiful maneuvers by Air Force pilots of Canada. No insult intended. Unfortunately there wasn't room to mention all participants, but we tried. The five Av. Wk. staff members in Cleveland took over the Firestone newsroom in the Carter Hotel from 11 pm. to 3 am. on deadline night, and another staffer flew this copy and the latest photos to the printers and engravers in New York State so you could receive the 9 full pages of Air Race news in the next issue.

(3) Lynn Kauffold of 9217 Sixth Ave., Inglewood, Calif., feels our caption Sept. 13 under the picture of the racing ship "Sky Baby" will harm his business. The caption said "Paul Penrose's Art Chester racer." Kauffold reports these facts, new to us: When the Goodyear race was organized Art Chester and a small group—all members of the Professional Race Pilots Assn., of which Chester was president—formed Air Race Corp., to build Goodyear racers which were engineered for the most part by Chester. Mr. Kauffold says he held one-third interest in Air Race Corp., and later withdrew, taking with him for interest the No. 1 plane, which he reworked during the past year for the race, flown by Penrose. Mr. Kauffold says he is now manufacturing these planes commercially, and has the Sky Baby up for sale, and feels he has been damaged by the caption which he says implies Art Chester is its owner. We're sorry.

* * *

An in contrast to complaints, Hy Sheridan says "Thanks for the nice plug in your column Sept. 13, I'm glad you didn't allude to me as Sadie the Stewardess did when she said: 'Yes, Hy is a columnist for a pueriodical.'" —R.H.W.

WHAT'S NEW

Trade Literature

"Standard Specialties," a handbook of Monel, Nickel and Inconel parts and accessories, distributed by the International Nickel Co., Inc., 67 Wall St., New York. Paper covered, 24 pages, illustrated.

"All Hydraulic Presses for Metal Working and Process Industries," Bulletin 4804, published by The Hydraulic Press Mfg. Co., Mount Gilead, Ohio. 11 page handbook, illustrated, detailing the HPM line.

"Midwest Engineer," new magazine of the Western Society of Engineers, 84 E. Randolph St., Chicago. To be published monthly, except during June, July and August. Single copies 35¢, subscription, \$3.00.

"DI-ACRO System of Die-Less Duplicating," 40-page catalogue of DI-ACRO products. Available from O'Neil-Irwin Manufacturing Co., Lake City, Minn.

"Everything in Radio and Electronics," 180-page catalogue of Allied Radio Corp., 833 W. Jackson Blvd., Chicago. Detailed listings of equipment and prices.

"A Catalogue of Films Applicable to Training in Refining," by Department of Information, American Petroleum Institute. List covers 1300 films with title, description, a short review and source and terms of availability. 200 pages long, price \$3.00 from American Petroleum Institute, 50 West 50 St., N. Y.

New Books

"Public Finance of Air Transportation," by Richard W. Lindholm, Dept. of Economics, Ohio State University. A study of taxation and public expenditures in relation to a developing industry, with two-fold objective: (1) to assemble and interpret pertinent data bearing on the taxation of a segment of the transportation industry; (2) to analyze and summarize the problems of a new and growing industry under modern conditions of regulation, taxation and subsidy. 178 pages. \$2.75. Bureau of Business Research, College of Commerce & Administration, Ohio State University, Columbus, Ohio.

"Wings Around the World," described as "The Story of American International Air Transport." The book was suggested by William van Dusen Associates; all pictures were furnished by Pan American Airways. Most of the book describes PAA's development. 192 pages. \$3. E. P. Dutton & Co., Inc., New York.

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EDITORIAL

More Airlines Chop Fare Costs

Last week brought more winter excursion fares.

Not content with a previous slash in winter passenger rates on the Atlantic and a second class coach rate on its New York-Puerto Rico run, Pan American Airways said its seasonal fares would drop 25 percent on Alaskan services effective Oct. 15-Apr. 15.

Willis G. Lipscomb, PAA vice president—traffic & sales, said "In 1946 we reduced winter fares within Alaska on a round-trip or excursion basis. In 1947, winter excursion rates were expanded to include Seattle. Now we are able to offer a 25 percent reduction within the territory, and to and from Seattle, that is valid on both one-way and round-trip passage in both directions, and the period of winter reductions has been extended to 7 months."

Savings will be considerable. The new one-way ticket between Seattle and Fairbanks will be \$98, against the present cost of \$130, while round trips will be \$176.40 instead of \$234.

Meanwhile, Eastern cancelled all plans to increase fares 10 percent. TWA retained its premium fares for Constellations but announced that between Nov. 1 and May 1 it would grant a 20 percent reduction for groups

of 10 or more travelers. Mid-Continent said books of four to eight flight coupons, good for 30 days between certain cities, will be sold this winter at 7 to 10 percent discount. American said the reception given its new family-discount fares was better than expected. Other rate cuts have been fully reported in the two previous issues of AVIATION WEEK.

Few airlines expect satisfactory traffic this winter. Most of the reductions and inducements are intended primarily to fill airplane seats rather than to make the companies a profit.

So far, although the nonscheduled passenger carriers are still hauling traffic coast to coast at fares close to \$100, no scheduled transcontinental airline has announced plans for instituting second-class service at competing air-coach rates.

Air coach service is here, thanks to the pioneering nonscheduled carriers. It is AVIATION WEEK's opinion that the public deserves at least long haul coach service, and will demand and use it, regardless of who offers it. Air transportation on the other hand, must have the benefits of mass passenger traffic or it will forever be a subsidized, government-controlled industry.

How Not to Gain Sympathy

Two recent performances of the Air Line Pilots Association in their campaign against National Air Lines have fallen rather sourly on the public.

Last week Mrs. Pee Wee Reese, wife of the famous Brooklyn shortstop, christened a National DC-6 as it started a daily New York-Miami flight to be called "The Brooklyn Dodger." Upstairs in the clouds a skywriter tried to spell out "scab", and according to press reports, there were telephoned suggestions that the Dodger club shun the ceremonies. Meanwhile, pickets handed out the now famous match covers with their "advertising" phrase, "Don't fly National Airlines."

The other public relations bobble was the union's pressure in Miami Springs, Fla., which resulted in canceling a welcoming luncheon for Johnny Johnson, who won the Thompson trophy at the National Air Races—because Johnson is flying for National. W. T. Babbitt, ALPA's Miami spokesman, was quoted as saying ALPA "will do everything in its power to prevent any official of Greater Miami from greeting the so-called hero."

We agree with the Miami Daily News, which said editorially:

"Johnson has brought national publicity to the community and in addition has proved that he can do quite

a bit more than pilot a transport plane. What the ALPA thinks of Johnson as a National Air Lines employe is of little import. What does matter is the fact that Johnson has done something which merits acclaim. He has won an air race against the top contenders from all over the country. He has proved the ability of a Florida pilot and his plane to outrank the best. The tactics of the ALPA have not detracted from his accomplishment. But they have demonstrated the shallowness of the thinking of the leadership of the pilots association, and have properly brought down the wrath of a large segment of the community on the ill-tempered striking pilots."

This expression does not automatically label us pro-management or anti-union. We remind our ALPA friends that in the past we have been as quick to deplore industry tactics—such as what appeared to us to be a dog-in-the-manger attitude toward the nonscheduled cargo and passenger carriers. We deplore such a frame of mind held by any group.

Americans admire good sportsmanship and fair play. If ALPA's cause is just, ALPA will win out. It need not employ such petty tactics. Certainly, they will not win any new friends to its fold.

ROBERT H. WOOD

AVIATION WEEK, September 27, 1948

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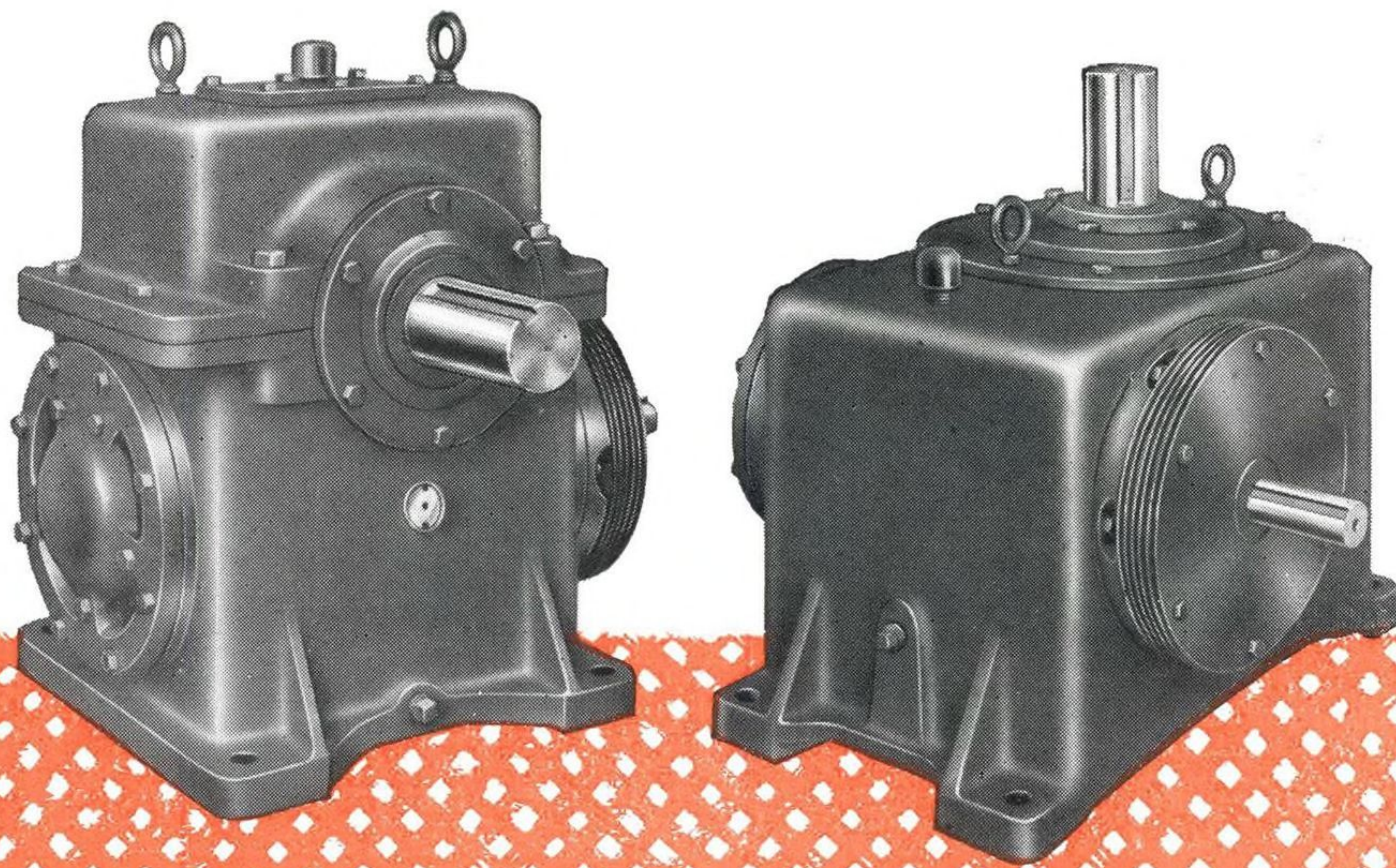
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