

AVIATION WEEK

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OCT. 11, 1948



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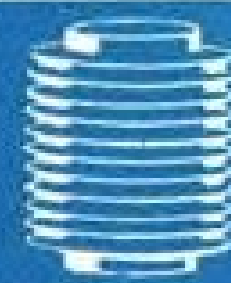
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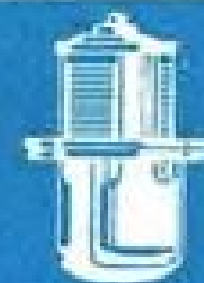


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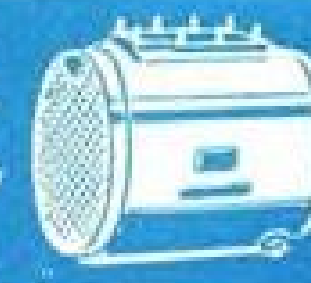
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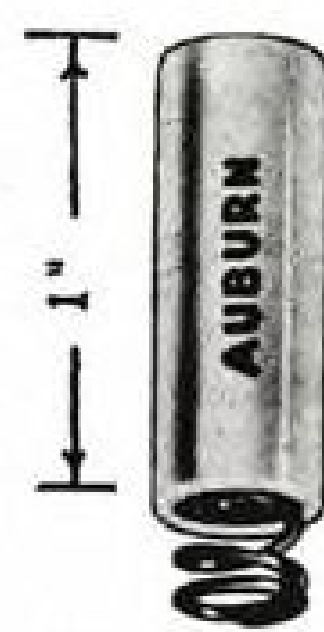
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AVIATION WEEK

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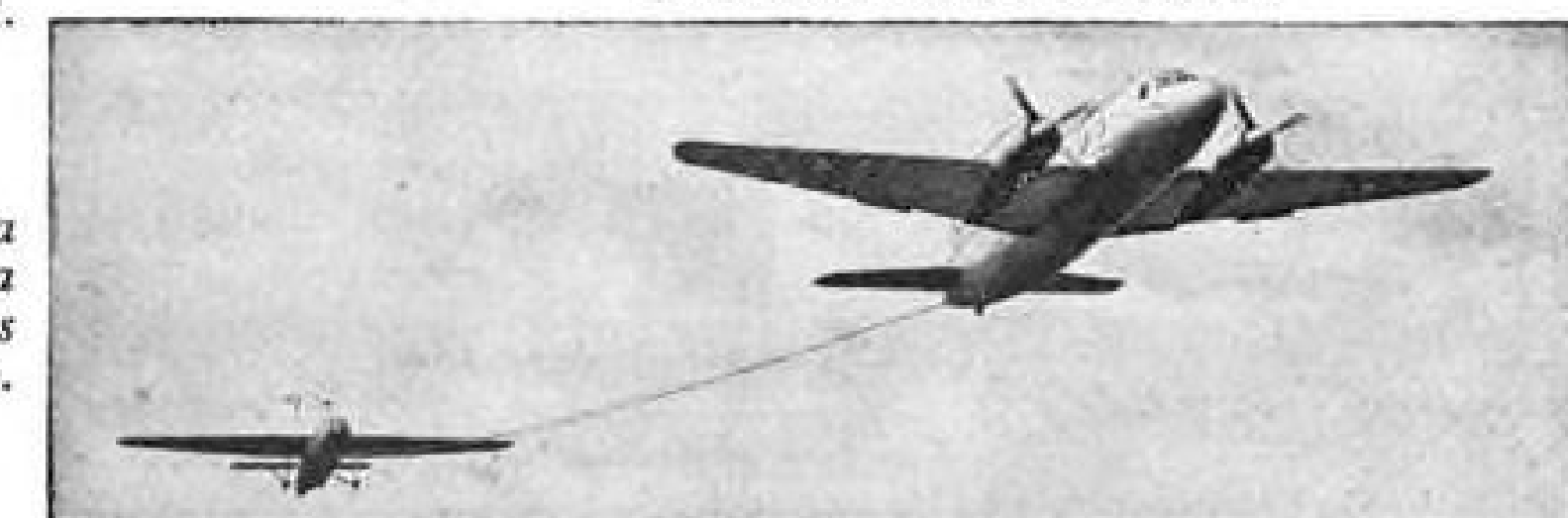
Troop carrier, freighter, ambulance, glider tug or paratrooper—the Vickers Valetta lends itself readily to a conversion to any one of these roles.



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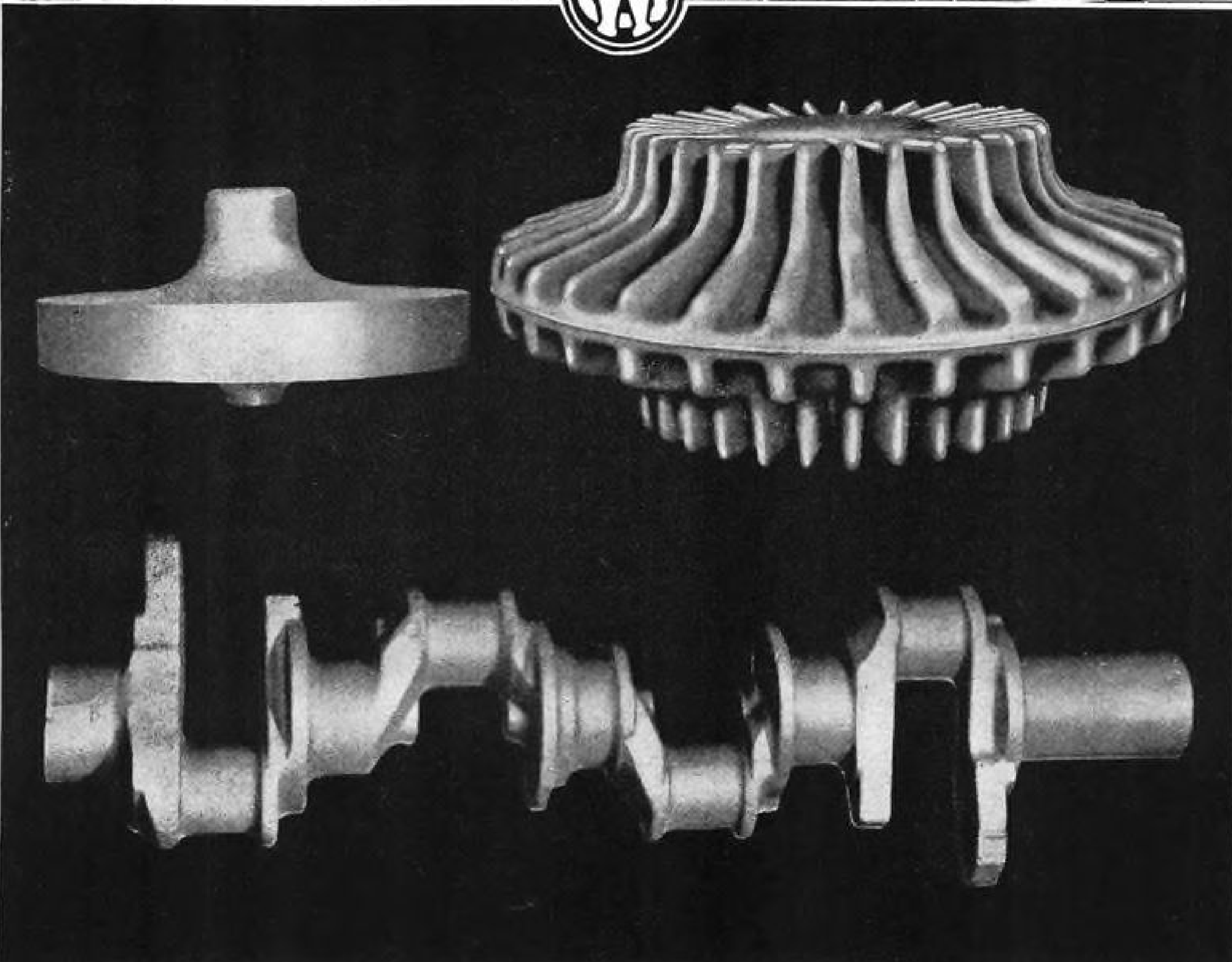
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AS GLIDER TUG. The Vickers Valetta taking off with an Airspeed Horsa glider in tow. The Bristol Hercules 230 engines each provide 2,000 h.p. at take-off.

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AVIATION WEEK, October 11, 1948



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THE AVIATION WEEK

New Pattern for CAA

Vigorous Delos W. Rentzel, last week was finally ready to move at CAA.

For three months, since he took office in June as administrator of civil aeronautics, he has been studying and checking his organization. He has made coast-to-coast tours of the CAA regions. He has talked to industry people and qualified observers, about the patent weaknesses of the huge 17,300-man federal agency charged with administering federal aviation regulations and with promoting aviation. He has checked the work of the key executives and he has talked to hundreds of CAA people in the lower echelons.

Finally, after scrapping countless trial organization charts, and after long consultations with a few trusted assistants, he announced last week a reorganization plan which both CAA personnel and the aviation industry had anxiously, and perhaps fearfully, awaited.

Responsibility Is Placed

Proof of the Rentzel reorganization will be in the functioning of CAA after a shakedown period which may continue through the remainder of 1948. But on paper, it looks as if the 40-year-old six-footer from Texas has set a more efficient pattern for the ponderous, unwieldy agency than it has seen perhaps since it came into being 10 years ago.

Key to the Rentzel plan is a redefinition of authorities and responsibilities, combined with a new grouping of related functions in the same divisions. Result promises to be a reduction of the most serious problem of any federal agency—coordination on an equal level.

Behind the big reshuffle was an apparent awareness of changing conditions in U. S. aviation, which necessitated a changed federal agency to cope with them.

New emphasis on necessity for close coordination of civil and military aviation, decline of personal aviation as a factor in the overall picture, difficulties of the air transport industry which could be augmented or lessened by the intelligence with which necessary regulations are administered, and above all—the growth of the aviation industry to a point where responsibilities must be delegated to it which formerly were jealously guarded by the federal agency—all these were factors behind the new CAA pattern.

Regional Revamping

Probably most important in its immediate effect on aviation is the thorough realignment of the CAA regional offices. No longer is aviation safety a divided responsibility. It is centralized, for airmen, aircraft, aviation schools, fixed base operators, and air carriers, both scheduled and nonscheduled, in a single division. The CAA medical division which has long been a deterring influence on

aviation progress is placed in proper perspective as an adjunct of the airman standards branch.

Similarly, a facilities division for air navigation re-groups the engineering work of design, construction, and maintenance of such facilities functionally, rather than guild-like in two groups of civil engineers and electronic engineers, as did the old setup.

Rentzel thinks CAA will have a bigger budget, but less for administration. He looks forward to big expenditures for the giant RTCA program and enlarged expenditures for airports, which he considers CAA will be better equipped to handle as a result of its first years of experience, and the frank and often loud criticism of unnecessary CAA airport red tape which accompanied those years.

Old Guard Losing Ground

Wiser heads in CAA saw a plain warning in Del Rentzel's statement that the regional administrators were to do the operating and the Washington staff was to do the planning, that both the regional top men and the Washington planners were finally responsible to him, and that "they must insure that their orders are consonant with orders which I personally issue." It spelled trouble for CAA old guard tactics. In times past, one of the big troubles with CAA had been the often radical difference between the views expressed by a CAA administrator and the way they were later interpreted by his subordinates.

Key subordinates in the reorganized CAA appear to be Fred Lee, deputy administrator; Ed Sturhahn, director of business administration, and Rentzel's assistant, Donald Nyrop. Transfer of H. A. Hook from the hot spot of deputy administrator for airports, and expected transfer of Al Koch from another hot spot of criticism, deputy administrator for aviation safety, makes room for progressive replacements in these spots.

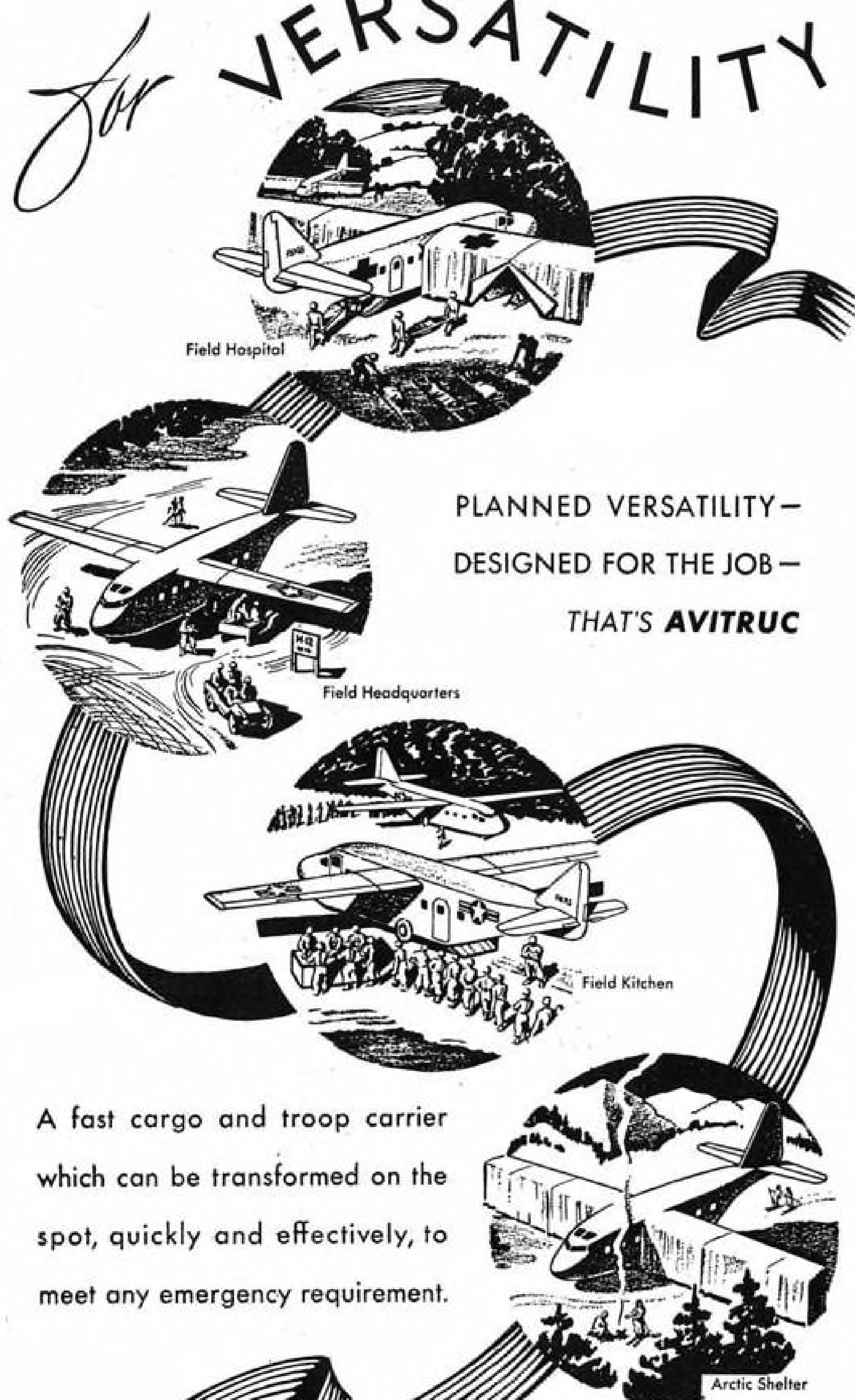
After Election, What?

Observers will be interested to see whether the new Rentzel reorganization has a real chance to take effect. Rentzel is reported to be a voting Republican in Long Island, and Republicans in Congress pushed through confirmation of his appointment last spring. In the likely event of a changing administration, Rentzel could survive the change.

Whether the current CAA reorganization is enough to satisfy Congress, however, may be something else. Rentzel says it is the beginning and that he will push for additional efficiency recommendations in the field and in Washington. But whether his best efforts will satisfy Congress, and the Hoover Commission for Reorganization remains to be seen. Perhaps Rentzel may stay on, and on the other hand, perhaps he may choose to accept a handsome offer from the radio industry, and go back to private life.

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AVIATION CALENDAR

Oct. 9-24—Texas State Fair Aviation Show, Dallas.
Oct. 14—Annual Air Line Dispatchers Association convention, Edgewater Beach Hotel, Chicago, Ill.
Oct. 14-16—Air Reserve Association, annual meeting, Orlando, Fla.
Oct. 15—Annual Fall Regatta, Philadelphia Aviation Country Club, Wings Field, Ambler, Pa.
Oct. 15-24—International aircraft exhibit, Royal Danish Aeronautical Society, Copenhagen.
Oct. 17—Air Age Exhibition, Lambert-St. Louis Municipal Airport, sponsored by Metropolitan St. Louis Aviation Council and the City of St. Louis.
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. 7-13—Flight Safety Foundation aircraft accident investigation course, Woods Hole, Mass.
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, Fla.
Nov. 17-19—American Society for Testing Materials, electrical insulating materials, New York City.
Nov. 18-19—American Society for Testing Materials, structural sandwich materials, Philadelphia.
Nov. 23—ICAO southeast Asia regional air navigation meeting, New Delhi.
Dec. 2-5—Annual meeting of the Society for Experimental Stress Analysis, Hotel Commodore, New York City.
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, 1949—Florida Flying Alligator Club, 14th annual reunion, Melbourne, Fla.
Jan. 10-14—Society of Automotive Engineers, Annual Meeting and Engineering Display, Hotel Book-Cadillac, Detroit, Mich.
Jan. 24-27—I.A.S. Seventeenth annual meeting, Hotel Astor, New York City.
Jan. 27—Society of Automotive Engineers, metropolitan section, fuels and lubricants meeting, Engineering Societies Bldg., New York City.
Feb. 8—ICAO Operations Division. Place undetermined.

PICTURE CREDITS

McGraw-Hill World News, 16 (bottom), 44; NACA, 14.

NEWS DIGEST

DOMESTIC

Malcolm P. Ferguson, Bendix Aviation Corp. president, has been elected chairman of the East Coast Manufacturers' Council of Aircraft Industries Association. New vice chairman is J. S. McDonnell, president of McDonnell Aircraft Corp. Ferguson, former vice chairman, succeeds J. Carlton Ward, Fairchild board chairman.

David L. Behncke, president of Air Line Pilots Association, has been elected first president of International Federation of Air Line Pilots Association, composed of pilots representing organization in 13 nations.

"Truculent Turtle," Navy's famed Lockheed P2V patrol plane which holds world's long-distance record, landed at Antofagasta, Chile, for emergency radio repairs on an attempted 6192-mile Patuxent, Md.-Santiago, Chile, nonstop flight. It missed by 701 miles.

Eastern Airlines pilot John David Hisson was awarded the Air Mail Flyer's Medal of Honor by Postmaster Jesse Donaldson for saving lives of eleven passengers in a forced landing near Montgomery, Ala., Oct. 18, 1938.

FINANCIAL

Douglas Aircraft Co. report to Securities Exchange Commission lists new sales of \$38,640,283 for quarter ending Aug. 31, 1948. Douglas reports to SEC for first nine months show sales totaling \$81,437,050.

Lockheed Aircraft Corp. reports net income for first six months of \$5,310,151, including tax credit figured on first-quarter earnings.

FOREIGN

Soviet Civil Airways this week are slated to switch to winter schedules, and will operate at night for the first time on Moscow-Khabarovsk run.

Argentina's FAMA airline has taken delivery in Buenos Aires of the fifth of six DC-6s it has had on order. FAMA hopes to open Argentina-U. S. service with the new planes.

Australia needs an air force of at least 12,000 men, Minister for Air A. S. Drakeford told the Air Force Association.

Norway's summer air traffic carried on internal routes by the Scandinavian Airlines System from April 19 to the end of August totaled 29,545 passengers.

Bolivia has signed a bilateral air transport agreement with the U. S., granting traffic rights to U. S. airlines at La Paz, Cochabamba, Santa Cruz, Robore, Oruro, and Puerto Suarez.

INDUSTRY OBSERVER

► Navy will buy several different versions of the Douglas AD-3, carrier based plane to be powered by a Wright compound engine. In addition to the standard attack version, the AD-3 will be modified as a special search plane for anti-submarine work, a radar counter-measure plane and a night bomber.

► Underwing single point refueling, which is about three times as fast as current methods, will be engineered into Convair's B-36, North American's B-45, and Boeing's B-50, B-55, and B-47. In addition to its speed, this single point method is necessary for aerial refueling operations. USAF has developed a nose to tail technique for aerial refueling that appears to offer some advantage over conventional practice.

► As part of an overall investigation of fire hazards, Cornell Aeronautical Laboratory is studying possibility of moving all transport fuel tanks to the wing tips. Arrangement would be such that tip tanks could be jettisoned in case of crash. Cornell has based its studies of this arrangement on the Convair-Liner and reports that there would be no loss of speed or range in a wing-tip equipped liner.

► Experiments on the McDonnell "Little Henry" jet helicopter are continuing with the conversion from propane gas to ordinary aviation gasoline, and flight tests have proved satisfactory. Development is now under way on the use of pulsejet power units to replace the ramjet units presently employed. The pulsejet units will not be as sensitive to rotor speed as are the present units. Flight speeds have been held to 55 mph. while blade root stresses are being determined.

► Marquardt Aircraft's pulsejet helicopter, first of its type known to have been flown, will be of particular interest to engine designers in that the engines show uncommonly short exhaust tubes, a fraction of the length of the resonance-tuned tube of the original German buzz-bomb engine. How Marquardt accomplished the feat is wrapped in security. There is speculation that each engine employs either multiple tubes for a single combustion chamber or a new type of flutter valve system at the air-fuel intake. A long-tubed engine would have proved impractical for helicopter use due to centrifugal forces imparted to the tube structure.

► Helicopter manufacturers anticipate a "very important" Air Force design competition next spring, with prospective production contracts of such size as to assure the extended good financial health of the winning company or companies. It is expected to be for a medium-size machine, which will apply to the tooling and design experience of a majority of manufacturers now in business.

► Douglas Aircraft's Skylark (D-558-2) has been making experimental take-offs at Muroc with JATO. Two JATO bottles, one on each side of the fuselage aft of the wing, are used. Tests are part of the thorough research program for which the Skylark was designed.

► Airlines have been reporting numerous "mechanical interruptions" on the Convair-Liner. Western is reworking weak hydraulic lines. Other airlines report nose-wheel trouble, modifications required on the empennage and skin wrinkling on the wings. WAL has reduced by one its Convair-Liner flights to permit shop rework of the planes, one at a time. Convair also will make modifications in the factory on the rest of Western's order of ten transports.

► USAF is taking its security problem with extreme seriousness now and is going underground to build protective fences at the "root level." Presently, small manufacturers who have products to sell in military plane construction, or are known to be preparing to bid on contracts which will involve classified items, are being given intensive security briefings long before they actually are active in production. The objective seems to be to plug gossip leaks which might expose new aircraft designs and manufacturing techniques.



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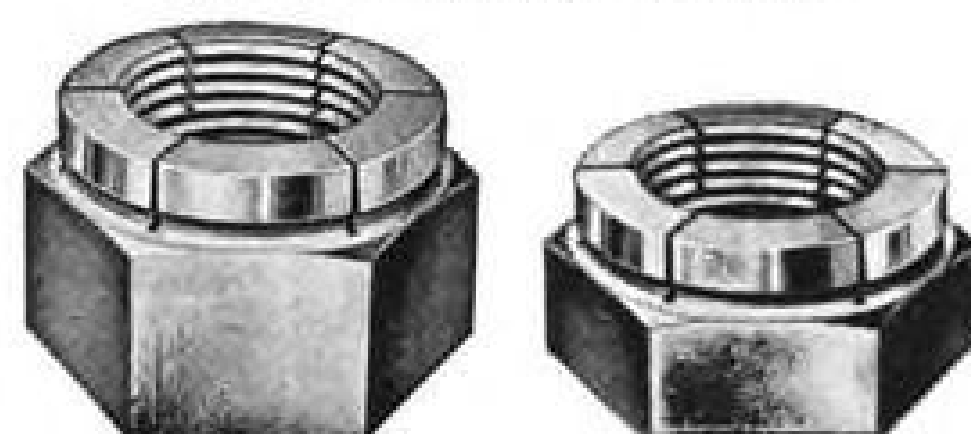


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AVIATION WEEK

Vol. 49, No. 15

Oct. 11, 1948

Rentzel Housecleaning Hits CAA Heads

Deputy administrators cut to one, jobs of seven assistants ended in reorganization.

By Alexander McSurely

First official disclosures last week of a far-reaching CAA reorganization which is to become effective Nov. 1 had most of the 17,300 Washington and field employes of the federal agency avidly seeking more details. Another keen observer was the vitally affected aircraft industry.

Delos W. Rentzel, who has been planning the reorganization since he took office as administrator in June, said the new streamlining was aimed at eliminating duplications and overlapping and should result in considerable economies in expenditures and personnel.

► **Policy Board Guide**—Reorganization, he said, was intended to follow recommendations of the President's Air Policy Commission and the Congressional Air Policy Board, and also considered recommendations of the Brookings Institute which is surveying the agency for the Hoover Commission.

First effects were felt in Washington in Rentzel's own top echelon organization where the following changes were announced:

- George Burgess, one of two remaining deputy administrators, was transferred to an economic post in Rentzel's office leaving Frederick B. Lee, as the single deputy administrator.

- Posts of seven assistants to the administrator for: personal flying, research, technical, investigations, meteorology, charts and statistics, and foreign operations (Germany) were abolished, and their functions transferred elsewhere in the organization.

- Six advisory committees to the administrator were transferred to report to various divisions instead of directly to the administrator.

- Office of field operations, headed by Howard Rough, assistant administrator, and charged with Washington supervision of the nine CAA regions, was abolished and Rough was reassigned to Rentzel's office.

- Title of assistant administrator, held by five other CAA officials and Rough was abolished, but four of the old basic

CAA offices at Washington—airports, aviation safety, airways, and business management—continue to maintain their separate entities, headed by directors.

► **Transfers Slated**—For some key CAA executives in Washington the reorganization meant largely a change in title. Others were transferred and a few appeared headed for separation as a result of abolition of their posts.

Ed Sturhahn, assistant administrator, business management; William E. Kline, assistant administrator, airways, and Richard Elwell, general counsel appeared to be set in their present post. H. Lloyd Child, assistant administrator for personal flying, was scheduled to be transferred to a similar post in the new aviation development office.

► **Stern Downgraded**—Ben Stern, assistant administrator, aviation information, was to be transferred to a section chief post in the new aviation development office still heading aviation information except certain activities assigned directly to Rentzel's office. Al Koch, assistant administrator, aviation safety, was scheduled for transfer to an unannounced post.

Howard Sinclair, director of aviation training, like Stern, still headed his condensed organization in the new aviation development office. Dr. Dean Brimhall, assistant to administrator, research, appeared likely to be separated with the abolition of his post.

► **Hook Transferred**—H. A. Hook, assistant administrator, airports, has been transferred to the Sixth Region CAA (Los Angeles) to be regional airports chief at his own request because of ill health, Rentzel said. Edgar N. Smith, Hook's deputy has been named acting director, filling the post in airports which replaces assistant administrator.

Two new CAA offices in Washington will be: Office of Program Planning and Evaluation, which supersedes the old staff programs office, and an Office of Aviation Development, which combines the present office of aviation information, domestic and foreign aviation training, personal flying promotion,

flight in formation service and air marking promotion, the last two functions taken from airway office.

► **Top Echelon Reshuffle**—The reorganization likewise reshuffles positions in the top echelons of the CAA regions. New setup provides for a parallel structure with the Washington organization chart, as far as an operations planning and evaluation division, and a legal division are concerned.

Eliminated as staff officers to the regional administrator are the regional medical officer, foreign staff officer, and the three assistants for personal flying development, aviation training and information and statistics. Each regional administrator has one deputy administrator and one assistant to administrator.

Rentzel emphasized in announcing the new organization plan that the basic function of his Washington staff was planning, evaluating and controlling the program as executed by the field offices. He expects the regional administrators to be finally responsible to him, or someone delegated by him.

The Washington directors who issue orders to the field are instructed to be sure that they are "consonant" with other orders issued by the administrator or by other directors (assistant administrators).

► **Reporting Personnel Cut**—A feature of the reorganization in Rentzel's office was the reduction of the number of persons reporting directly to the administrator, from 27 to 19. Similarly on the regional administrator level the number of persons reporting directly to the regional director is reduced from 17 to 8.

In the regional offices the business administration division, airports division and the airways operations division have essentially the same branches and the same functions as at present. Remainder of the regional functions are reclassified into three new divisions, facilities, aircraft, and safety operations.

► **New Divisions**—Facilities division responsible for construction, modification and maintenance of regional air navigation facilities, includes a facilities engineering branch, a facilities construction branch and a facilities maintenance branch. This marks a new organizational departure for CAA air navigation engineering, which was previously divided between two professional engi-

neering fields into a plant and structures branch of civil engineering personnel and a communications branch with electronic engineering personnel.

Aircraft division is responsible for engineering and flight tests of newly developed aircraft, and manufacturing inspection, and includes three branches, one for each of these assignments.

► **Safety Division**—Safety operations division combines all aviation safety activities, whether for air carriers, fixed base operators, schools, airmen or aircraft, and is divided into the following branches: flight operations, airman standards, and maintenance inspection.

The regional medical office is included as part of the airman standards branch.

CAA's technical center at Indianapolis is renamed the Technical Development and Evaluation Center and will work under assignment of the program planning and evaluation office on projects earmarked for research and development.

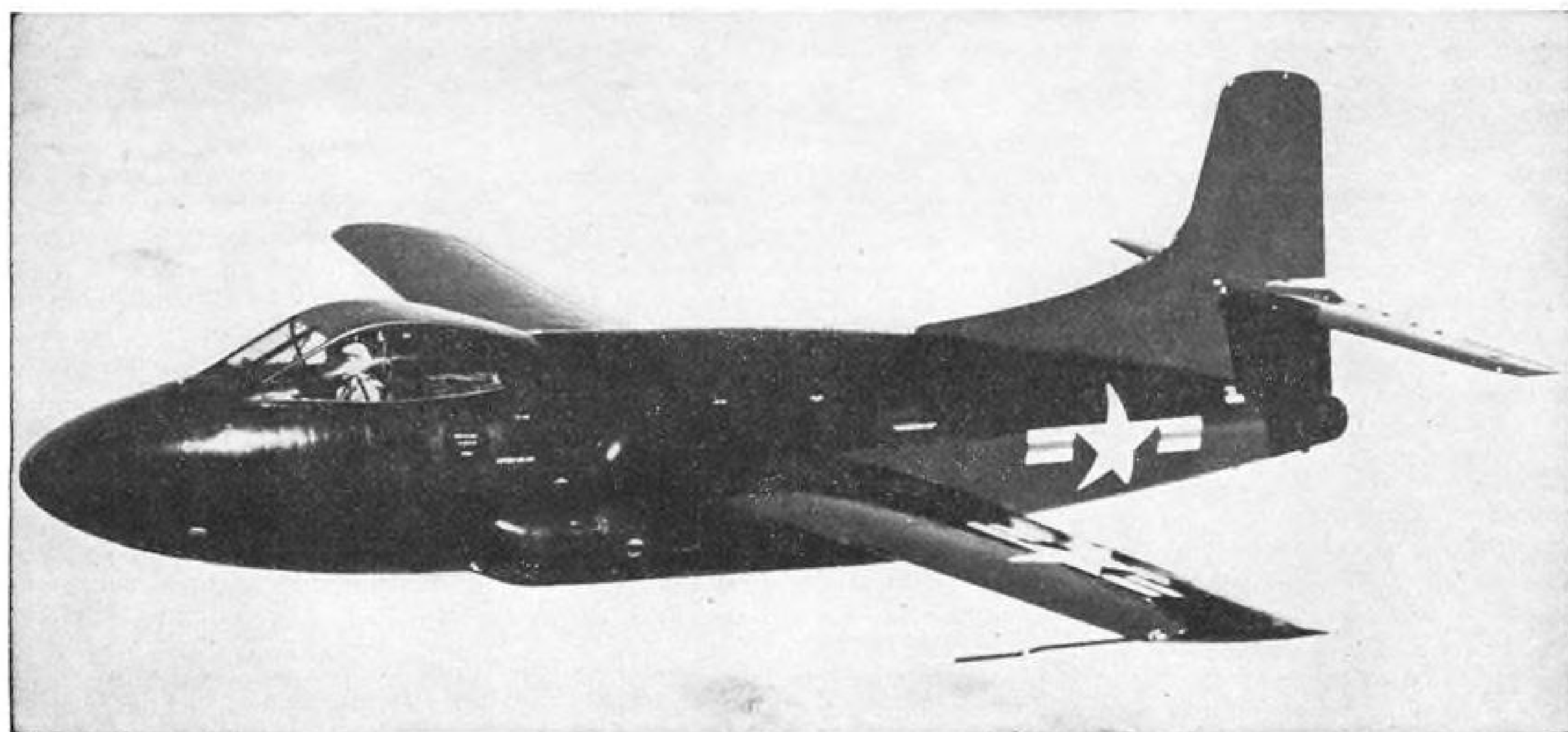
CAA's aeronautical center at Oklahoma City, will likewise follow program assignments from the Washington program office.

There will be no change in the organization of Washington National Airport or its relation to the Washington

office at this time the announcement said.

Donald Nyrop, assistant to Rentzel, is charged with monitoring the many changes necessitated in the reorganization and the heads of the various offices are instructed to submit not later than Nov. 1, their drafts of proposed orders to reflect the changes outlined.

This indicates that the complete reorganization probably will drag out for some time beyond the Nov. 1 "effective" date. Target date for a review of reorganization orders and their final approval by the Secretary of Commerce, is set at Nov. 30.



Navy Reveals New Night Fighter

Douglas twin-jet Sky Knight forerunner of future high performance planes that will equip supercarrier.

Navy offered a glimpse into the future of its aviation last week unveiling a design sketch of its new 65,000 ton supercarrier and a new twin-jet fighter that is symbolic of the revolutionary types of planes that will use the giant carrier.

The plane is Douglas Aircraft's Sky Knight (F3D) which will go into production primarily as a night fighter for both the Navy's carrier fleet and the land-based U.S. Air Force. Three experimental models of the F3D have been flying at Muroc since last April with both Navy and Air Force pilots. Both services have given the plane a high evaluation resulting in an initial Navy order for 23 F3Ds. (AVIATION WEEK, June 21).

The Air Force is considering an order for at least 100 F3Ds in its fiscal 1950

procurement program. Douglas is readying an F3D production line at its El Segundo plant which is scheduled to begin operations next fall.

► **Night Fighter**—The Sky Knight was designed as a carrier-based night fighter. It is powered by two Westinghouse 24C turbojet engines and has been engineered to take the latest and most powerful modifications of that engine including the 24C-8 and 24C-10. Engines are mounted semi-externally on either side of the fuselage belly.

Design of the F3D airframe is that of a fairly conventional mid-wing monoplane with tricycle gear, fuselage dive brakes and a large dorsal fin. Big selling point of the plane to both Navy and Air Force is its relatively good maneuverability. It is roughly 10,000 lb.

lighter than both the Northrop F-89 and the Curtiss-Wright F-87, its 15 ton competitors in the all-weather fighter class. In addition it is considerably farther along from a production standpoint. The F-89 prototype began its flight test program late in August at Muroc while the F-87 is in the midst of extensive redesign that will delay production by about 12 months.

► **500 Mph. Top Speed**—The F3D is not as fast with its present engines as the Northrop F-89. F3D top speed is slightly over 500 mph. compared to about 550 for the F-89. Combat radius of the F3D is about 700 miles. Armament of 20 mm cannon is contained in two indentations on either side of the lower nose section. Radar equipment is housed in a plastic nose.

Most unconventional features of the F3D are centered in the cockpit containing a two-man crew seated side by side. Forward windshield between two metal supports is of heavy glass and contains a new type night fighter radar that projects the radar scope onto a screen directly in front of the pilot.

Gun sight equipment is also incorporated in the screen allowing the pilot to fly his plane, track a target and fire without shifting his head. Top of the canopy is heavily armored with plexiglas side bulges providing good lateral visibility.

► **Belly Bail-out**—The F3D cockpit is equipped with an unusual chute for bailing out through the belly at high speeds. This chute is uncovered by swinging aside one of the pilot's seats and can accommodate only one man at a time. Special backlighting system to eliminate glare features lucite letters and numerals on all gauges lighted by red bulbs behind the instrument panel. This special lighting system was designed by Douglas. Cabin is also equipped with pressurization and a refrigeration and heating system.

► **Composite Carrier**—Design sketch of the 65,000 ton carrier will reveal it is primarily a composite of the best previous features of carrier types rather than a radically new type. Its flush deck is as old as the Langley, first Navy carrier. Side stacks come from the Ranger. Large rear elevator was a feature of the Yorktown and Enterprise. Side elevators were first used on the Wasp.

It is in the combination of these features into a single ship plus a few new features and a large increase in capacity of all kinds that makes the new carrier a sizeable step forward in the evolution of sea-based air power. Main results aimed at in the new carrier are increased durability; increased range of striking power both through larger supply capacity of the carrier and in its complement of longer-ranged planes; faster tempo of operations through faster planes, a faster ship and faster handling of planes in landing and take-off operations.

► **Catapult Quartet**—Use of four compressed air catapults that can operate simultaneously will permit a combat fighter patrol of 32 planes to be launched in less than half the time it takes a conventional carrier to put a squadron into the air. With faster speeds in offensive aircraft and its consequent decreased warning time launching speed becomes a paramount factor in carrier defense. Four side elevators are arranged on both sides to feed aircraft from the hangar deck directly to the four catapults. Use of the catapults will also permit simultaneous landing and take-off operations on the 190 ft. wide flight deck. Speed of plane handling is particularly important with jet planes due to their critically short supply of fuel.

► **Armored Flight Deck**—The armored flight deck will add to the defensive protection of the carrier and permit landing impacts of planes well over 100,000 lb. gross weight. Anti-aircraft

defense are handled conventionally. Flight deck control and a surface navigation control post are housed in retractable conning towers that can be lowered flush with the deck. Real control center of this carrier will be below the flight deck with all navigation and operational control of aircraft handled by electronic devices. Only landings and take-offs will be handled by visual direction.

The supercarrier prototype will not be ready for action before 1955 and is designed to operate a generation of planes still on the drawing boards. New jet-powered Navy attack and fighter planes now in the experimental flight test stage will be obsolete by the time the supercarrier is ready for its planes. The supercarrier's air group will probably consist of substantially more fighters than are now carried on large carriers with an attack group of fewer but very much larger bombers.

Airlift Need

LeMay wants 105 additional C-54s to supply Berlin, stripping MATS.

The Berlin airlift can be kept going at the required capacity through the winter only by stripping the Military Air Transport Service bare of its remaining Douglas C-54 transports.

Lieut. Gen. Curtis E. LeMay, commander of the U. S. Air Force in Europe, estimated that he would need an additional 105 C-54s to meet the 3400-ton daily requirement recently set by Gen. Lucius Clay, U. S. European commander. MATS now has only 136 C-54s left in its global operations with an additional 15 in a maintenance pool. ► **MATS Strapped**—Filling LeMay's needs would leave MATS with only 31 C-54s to support the Berlin airlift with its North Atlantic service and operate its world-wide trunkline transport service for the Army, Navy and Air Force.

USAF has now committed 120 C-54s to the Berlin airlift plus one Douglas C-74 and five Fairchild C-82 Packets. The Globemaster and Packets are being used to haul bulky equipment, principally for airfield construction, that would have to be dismantled to fit into a C-54 fuselage.

MATS moved last week to bolster the trans-Atlantic support of the Berlin airlift by shifting four Douglas C-74s to the Westover Field-Frankfurt run. Another five C-74s will join this operation as soon as they complete canopy modifications now under way at Douglas's Santa Monica plant. The "bug-eye" canopy is being replaced by a full canopy covering the entire cockpit. The

single C-74 previously operating on the Frankfurt-Berlin run averaged 17.7 tons of payload per trip in contrast to the 9.5 tons per trip average of the C-54. MATS does not now plan to use the additional C-74s on the run to Berlin.

MATS also issued an appeal for several hundred airline crewmen who hold reserve commissions to volunteer for temporary duty with the Berlin airlift. MATS is setting up a duplicate Berlin-Frankfurt corridor near Great Falls, Montana, to train both regular Air Force and reserve volunteers in the instrument techniques required for Operation Vittles. Bulk of the volunteers are expected to come from unemployed airline crewmen. There are no plans yet for taking air crews directly from the airlines.

► **4700 Ton Mark**—As the lift now stands the USAF has been averaging 32,000 tons daily against the 3400 tons daily requirements set by Clay as the USAF share of a 400 ton daily total. This 4000 ton figure is Clay's minimum with a 4700 ton daily lift the "desirable" mark.

In the first three months of operation USAF has moved about 200,000 tons into Berlin. Peak lift was on Sept. 18 when 895 flights deposited a total of 7000 tons of coal in Berlin to celebrate Air Force day. Of this total 651 flights and 5572 tons were flown by the USAF and 254 flights and 1428 tons by the Royal Air Force. More than half of the 24 hour period used was bad weather with fog, rain and high winds.

► **LeMay Statement**—LeMay stated flatly in Weisbaden recently that he could not meet Clay's requirements through the winter months without an additional 105 C-54s. He also said that so far all Russian attempts to interfere with the airlift through anti-aircraft practice, formation flights of fighters and attempted imposition of new instrument flight rules had not affected the allied airlift in any degree.

Big problem on the Berlin end of the lift remained airport capacity. Construction work has already required 2½ days capacity of the lift.

F-84s Are Back in Air Minus Wing Tip Tanks

Following a preliminary investigation, Air Force last week removed the grounding order imposed on all Republic F-84 Thunderjets after several accidents (AVIATION WEEK, Oct. 4).

The F-84s go back into service, however, under a restriction against flying them with wing tip tanks. This will be in force until USAF and Republic complete a further investigation. The Air Force announcement stated, "Wing tip tanks were designed for use in extending the range of airplanes in level flight, but not for use in combat maneuvers."

World's Largest

Supersonic wind tunnel unveiled by NACA has 6x8 ft. test section.

By Robert Hotz

Largest supersonic wind tunnel in the world was unveiled by the National Advisory Committee for Aeronautics during an inspection of the newly-named Lewis Memorial Laboratory at Cleveland.

Test section of the new tunnel is 8 ft. high and 6 ft. wide. It is designed for testing full scale models of turbo-jets and ramjets up to Mach 2 under conditions of temperature and pressure equivalent to flight conditions at 35,000 ft. This new tunnel compares with the 6 x 6 ft. test section at NACA's Ames (Calif.) Laboratory designed to test aerodynamic shapes up to Mach 1.6.

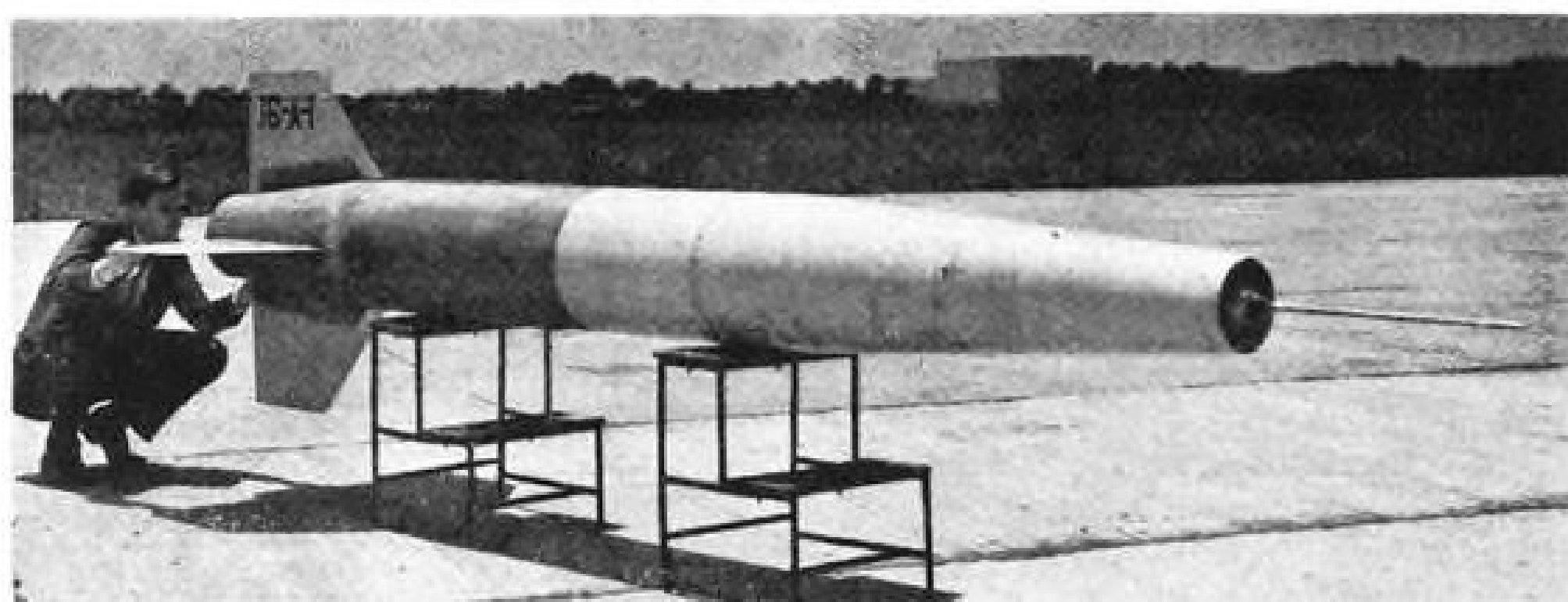
► **Discharges Air**—Unusual feature of the Cleveland tunnel is discharge of its air from the test section into the atmosphere. Most wind tunnels recirculate their air. Contamination and increase in water content resulting from operation of jet engines within the tunnel make it impractical to recirculate the air in this equipment. Air from the tunnel is discharged through a large conical diffuser fitted with an exhaust muffler to reduce noise. The diffuser is enclosed in a concrete structure.

The Cleveland tunnel also features an adjustable throat with two stainless steel side walls automatically flexed to the desired width by means of hydraulic jack screws. The flexible throat makes it possible to vary the speed to the flow through the test section.

► **87,000 Horsepower**—The tunnel is powered by three electric motors coupled on a single shaft to provide a total of 87,000 hp. The motors drive an 18 ft. diameter, seven-stage axial-flow compressor at speeds from 770 to 880 rpm. The compressor has more than 1000 blades.

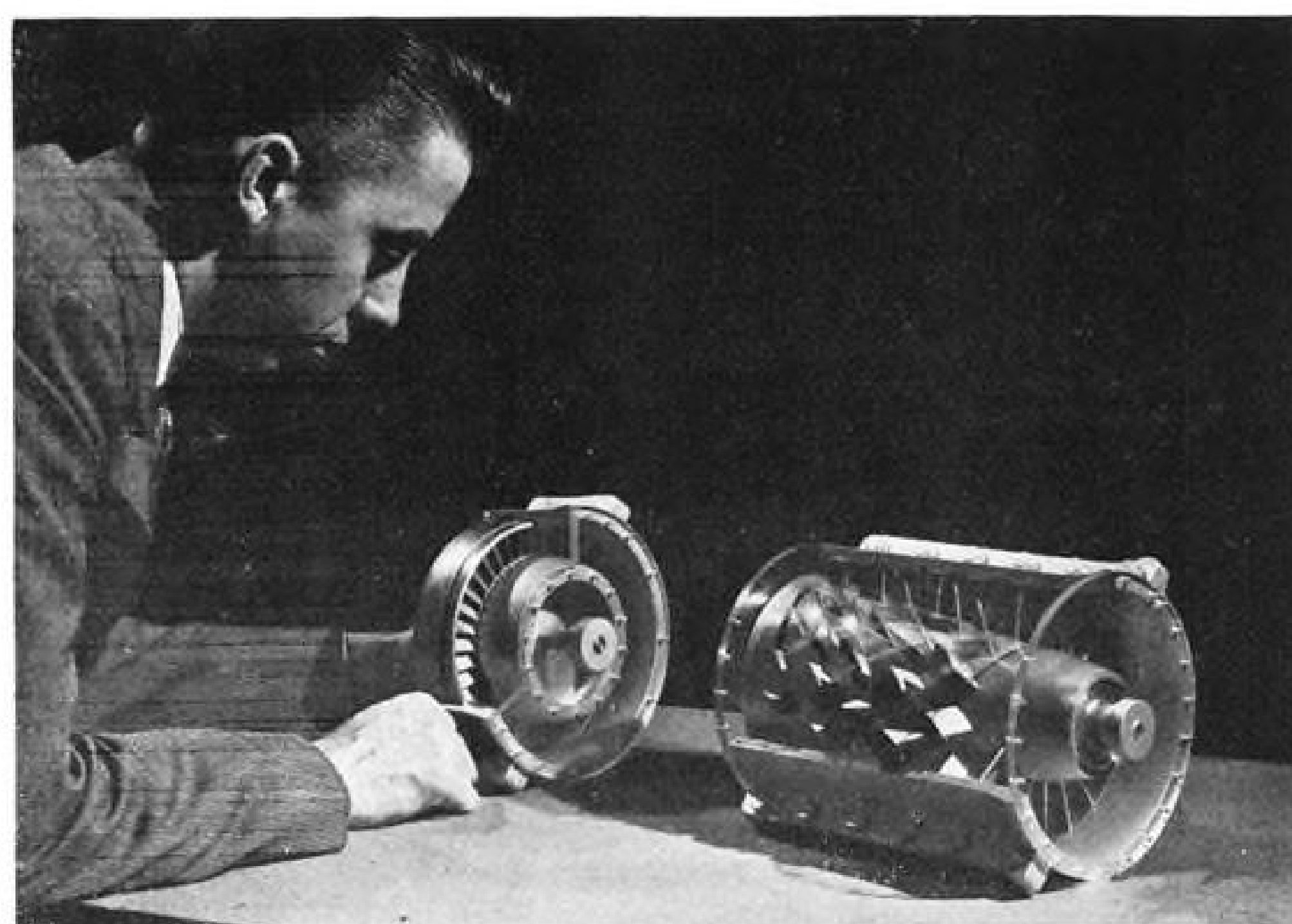
Air for the tunnel is drawn through the largest air dryer to be built in this country. It is capable of drying 2,200,000 cubic ft. of air per minute down to a dew point of minus 10 deg. Fahrenheit by passing through beds of activated alumina. Heated air passed through the drying beds for several hours at a time reactivates the alumina.

► **Supersonic Compressor**—NACA also revealed more details of its supersonic compressor (AVIATION WEEK, Oct. 20, 1947) that promises increased efficiency and weight savings in jet engine construction. The experimental compressor consisting of a single row of rotating blades operating at supersonic speeds



This 16-in.-diameter ramjet (above) has been dropped by NACA from 30,000 ft. to obtain performance data up to speed of Mach 2.4. Ramjet is mounted under wing

of an F-82 (below). Long needle in nose of ramjet is telemeter antenna through which data are transmitted to receiver which is located on the ground.



NACA also revealed more facts on its supersonic compressor (left), shown in comparison with conventional compressor

(right). Weight and space savings are apparent and supersonic compressor does the same amount of work.

can do the work of a conventional axial-flow compressor's five rows of blades operating at subsonic speeds. Shock waves forming on the leading edge of conventionally designed compressor blades have barred operation at supersonic speeds.

Design of the supersonic compressor blades shifts the shock waves from the leading edge of the blades to well

inside the compressor where they do not interfere with blade operation. These blade tips can travel more than 1000 mph. with little loss in efficiency.

► **Use Shock Energy**—Energy absorbed by the shock waves instead of jamming the compressor blades is used further to compress the air to the desired high pressures required. Use of the supersonic type compressor on production

model jet engines is expected to result in considerable reduction in the length and weight of future jet engines.

Some more wraps also were removed from the 16 in. diameter experimental ramjet engines (AVIATION WEEK, Oct. 20, 1947) used by NACA to obtain test data on this type engine at speeds up to Mach 2.4. This ramjet, originally dropped from a B-29, is now carried to test altitudes of 30,000 ft. in a modified North American twin Mustang (F-82).

Combustion chamber of this experimental ramjet is 14 ft. long and 16 in. in diameter. Central compartment located within the inlet section houses radio transmitter, fuel and controls. Four fins at the rear end of the tube provide aerodynamic stability. Big problem now under study by NACA is control of the shock waves forming around ramjet inlets at supersonic speeds.

During the inspection, the Cleveland Flight Propulsion Laboratory was formally renamed the Dr. George E. Lewis Memorial Laboratory in honor of the late NACA director of aeronautical research (AVIATION WEEK, July 19).

2-0-2s Get O. K.

NWA returns planes to service after grounding for tests following crash.

Northwest Airlines' Martin 2-0-2s were slated to go back in regular service last week for the first time since the carrier voluntarily grounded the twin-engine craft following the accident near Winona, Minn., on Aug. 29.

NWA President Croil Hunter said his company's entire fleet of 24 2-0-2s should be flying within two weeks. During the month following the mishap, the planes have undergone intensive investigation of their structure to determine the degree of stresses to which they were subjected and what, if any, improvements and refinements could be effected.

► **Hearing Scheduled**—The Winona crash, in which 37 persons were killed, occurred while the 2-0-2 was flying through a sudden storm of tornadic proportions. Cause of the accident has not been determined. A hearing is to be held at Winona this week. Another NWA 2-0-2 which also passed through the storm area suffered a broken main spar in the right wing (AVIATION WEEK, Sept. 13).

Hunter declared that results of the many tests conducted during the investigation demonstrated that the Martin aircraft more than meets requirements of the Civil Air Regulations for structural strength and could withstand much heavier loads. Martin engineers decided, however, that an enlarged

fillet of the spar cap attachment at the juncture of the center wing panel and the outer wing panel would be a refinement, and further that additional strength would be obtained by using 36 instead of 32 bolts in the splice attachments at this point.

► **Inspection Procedure**—CAA listed the following steps taken in going over the 2-0-2s:

- (1) Remove and inspect wings on all planes. If no cracks are found by visual and Zygo method, machine a fifth step in the front spar lower chord.
- (2) Install a new, longer wedge fitting. (This is the section of the lower spar chord which attaches the outer panel to the center section.)
- (3) Buff and sandblast all sharp corners and stepped and curved surfaces.

As an extra precaution after the planes are back in service, all wings will be pulled at the time of engine overhaul (not to exceed 900 hr.); paint will be removed from the fittings and a careful inspection made. In addition, individual airplanes will be inspected at 200 hr., 400 hr., and 600 hr., to provide a check prior to completion of the 900-hr. interval. VG recorders will be carried in all planes, and the 200-hr., 400-hr. and 600-hr. inspections will be made if possible on aircraft which the VG recorders indicate have been subjected to the higher loads.

VG records will be analyzed at intervals of probably not over 200 hr. Operating crews will receive more de-

Fast Dive

A Boeing Stratocruiser has been dive-tested at 498 mph.—faster than any other airplane its size has even flown—the company announced this month.

N. D. Showalter, Boeing assistant chief engineer, said the 70-ton airliner attained the record speed in a dive at full-rated power. Purpose was to test the craft's aerodynamic and structural characteristics at extreme speeds, he declared. Normal cruising speed is from 300 to 350 mph.

Diving from 21,000 ft. with Boeing Test Pilot James Fraser at the controls, the double-deck aircraft was down to 12,000 ft. in 50 seconds, reaching the 498 mph. maximum true speed just before the pullout. It was the final test in a series of high-speed dives designed to prove the plane's ability to withstand strains well in excess of any which might be encountered under the most severe airline operating conditions.

tailed instructions on the need for reducing speed in turbulent air, and Martin will advise CAA and Northwest at semi-monthly intervals of all developments.

► **Financial Troubles**—Meanwhile, Northwest has issued another urgent appeal to CAB for higher temporary mail pay to offset losses which were increased by the 2-0-2 grounding.

In the "big five" mail rate opinion of last April, CAB increased NWA's temporary mail pay from 60 to 70.9 cents a ton mile, retroactive to Jan. 1. The carrier vigorously protested its grouping with the four industry giants—American, United, TWA and Eastern—for mail pay purposes and early last summer said it would require \$1.56 a ton mile to break even.

► **Picture Darkens**—During the past several months the picture has darkened further. Northwest now states it will need \$2.03 a ton mile, retroactive to Jan. 1, to break even on domestic operations. The carrier said that under the present mail rate of 70.9 cents a ton mile it will lose between \$2,745,000 and \$4,694,000 (depending on how depreciation is figured) this year, compared to CAB's estimate of a \$2,331,000 profit for "a future year."

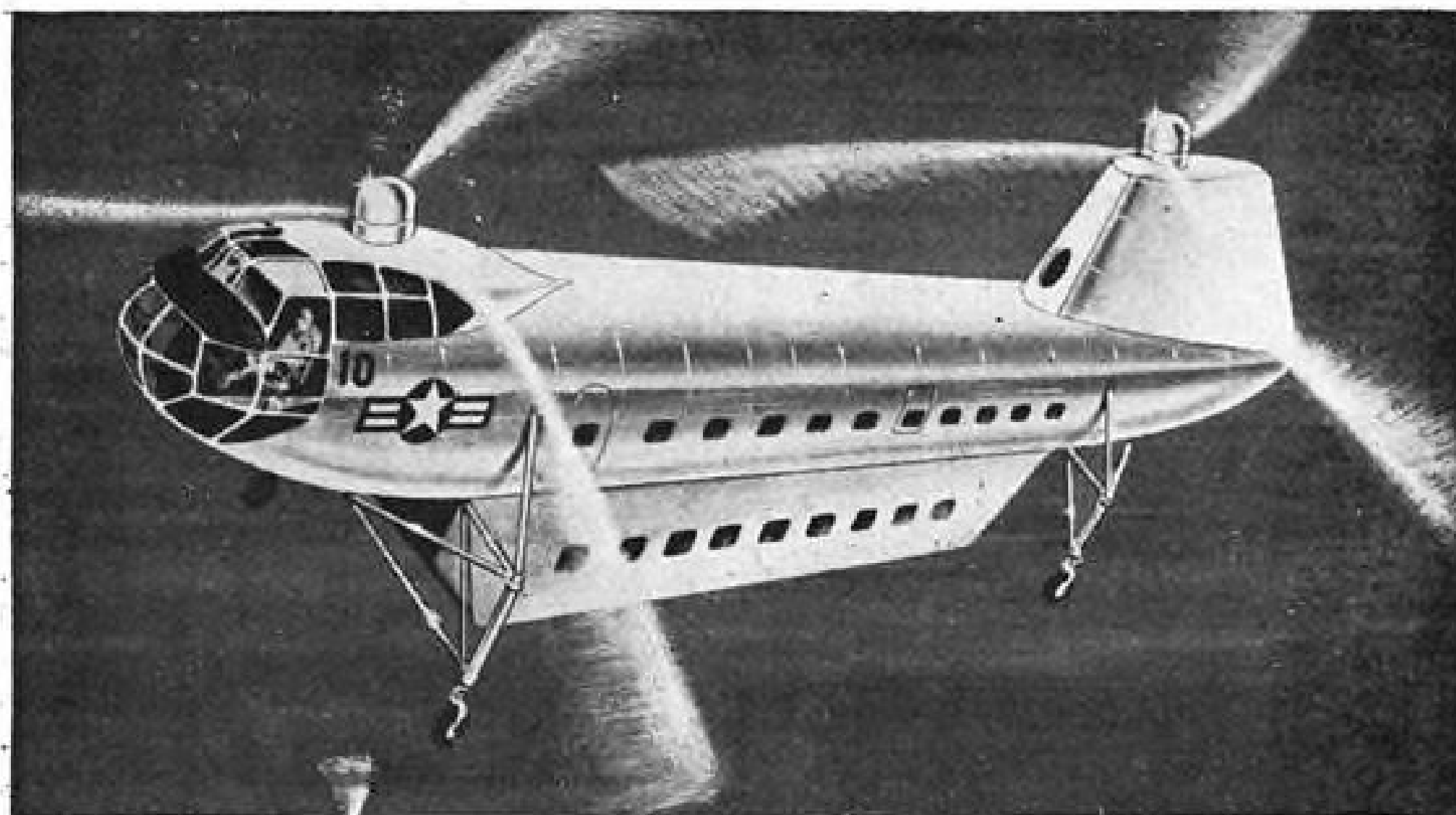
NAL Stockholders Uphold Management

The Civil Aeronautics Board's newly instituted investigation to determine whether National Airlines should be dismembered and parceled out among at least three other carriers failed to bring about a management upheaval during NAL's recent stockholders' meeting at Miami.

Instead, all officers and directors of the strike-crippled carrier were re-elected. The meeting also gave the management, headed by President G. T. Baker, a vote of confidence.

Shortly before the session, Baker issued a statement criticizing CAB's probe. He said that despite the unprecedented action, National's management will continue to provide dependable service to the public and protect the interests of the investors in its securities.

► **Effect of Probe**—"The company believes that subjecting the industry to such proceedings will destroy the ability of the airlines to raise capital and negotiate with labor in enforcing safety requirements. The Board's present action is amazing in view of the fact that only seven months ago CAB extended National's routes to include Washington, Baltimore and Richmond. NAL has consistently been one of the country's low-cost, profitable operators, and its capital position today is superior to many other airlines," Baker declared.



New Copters: U. S. and U. K.

Unabated interest in helicopters, both civil and military, is evidenced by these designs which are either in development or test stage. They range in size from transport to personal types, in power from reciprocating to pulsejet engines.

PIASECKI (U. S.)

The Morton, Pa., builder of the Navy's HRP-1 Rescuer is developing this even larger transport for the Air Force. Designated the XH-16, it will be about the size of a C-54 and is designed to have a longer range than any helicopter yet built.

BELL (U. S.)

Flight testing is underway on the Niagara Falls Company's XH-15 two-place liaison copter, three of which have been ordered by the Air Force. This craft follows in general design the YH-13, 85 of which are being built by Bell for the armed forces. The XH-15 is powered by a 275 hp. Continental engine, has a top speed of more than 100 mph., service ceiling of 20,000 ft. and combat radius of 100 mi. Gross weight is 2700 lb.

MARQUARDT (U. S.)

First photo of the experimental pulsejet helicopter of Marquardt Aircraft Co., Venice, Calif., shows the craft in hovering flight. It mounts 8-in. Marquardt engines at rotor blade tips. Designers claim that it is the "first known" pulsejet-powered helicopter. Specifications give it 1000 lb. gross weight, 29 ft. rotor disc and wood-steel rotor blades using NACA 8-H laminar flow airfoil sections. Performance data await extension of tests currently being performed by the Marquardt company at their California plant.

CIERVA (BRITISH)

This two-place Skeeter was shown for the first time by the Cierva Autogiro Co. at the Society of British Aircraft Constructors annual display. While designed along the same lines as the Bell Model 47, the big difference is in weight. The Skeeter, Britain's first light helicopter, weighs but 1120 lb. Designated the W. 14, it is powered by a 100 hp. engine. Rotor diameter is 29 ft., length 35 ft. 7 in., disc area 660 sq. ft., empty weight 810 lb., cruising speed 75 mph., range 180 mi. Predesign data were obtained from the earlier Cierva research helicopter using tail jet anti-torque control.

PRODUCTION

B-47 Job Goes to B-29 Plant

Boeing's Wichita facility, top wartime producer of Superforts, restaffs and re-equips for Stratojet.

The plant and the team that were the first and largest producers of B-29s have gone back into the bomber business to turn out the Superfort's successor, the Boeing B-47 Stratojet.

Dormant for four years, used only for tool storage, Boeing Airplane Co.'s Wichita Plant II was reopened last spring to modify B-29s. Now the Air Force has decided to put the B-47 production program in the huge white buildings adjoining Wichita Municipal Airport. Last week the nucleus of wartime management and production personnel was returning to the plant.

Harold Olsen, wartime production manager at Wichita, was due from Seattle to take over the job of factory service manager. With him was to be Kurt Hoffman, superintendent of production engineering in the B-29 days, now the new Plant II production manager. Both had left Kansas early in 1947 after Boeing scrapped its plans to build a feeder transport in Plant I.

► **Re-Hiring**—And from Wichita and its surrounding farm towns, workers who had not been inside the 2,898,000 sq. ft. plant since it closed in March, 1944, were returning to swell a production force that J. E. Schaefer, Boeing-Wichita vice president then and now, says eventually will number 15,000.

Initially, the Stratojet program calls for only ten planes. But more may be added. At first, chances are, production will be fairly close to a hand job. Yet, consideration must be given to expansion if necessary.

A chartered Alaska Airlines C-46 has flown crates of engineering and production drawings from Seattle to Wichita. In a few weeks, one of the two prototype XB-47s is expected to be flown in, for first-hand examination by engineering and production personnel.

► **Planning Conference**—Another sign of life at the big plant was the recent conference there of Air Materiel Command officers and Boeing engineers to plan production, industrial mobilization, contracting and management. Talks concluded at Wichita, part of the group flew on to Seattle. There the top B-47 engineers—George C. Martin, newly named as chief project engineer, L. L. Pierce, Robert L. Plath, Albert H. Webber and Robert M. Robbins—will superintend

the project from a distance.

Plant II has been stirring since the B-29 modification job started last March. Some workers were called back, tools were hoisted into place and some of the original B-29s produced at Wichita once again began moving along the line in the easy bay area of the 1,711,000 sq. ft. main building. By mid-August about 400 modified Superforts were back in service. There were roughly 1500 more to go.

How long it will take to run through the B-29 program is the Air Force's and Boeing's secret, but with the long-complicated tooling job ahead on the B-47, it is certain that before Plant II is ready to go into heavy production on the sweptwing jet bomber the B-29s will be out of the way.

► **Employment Rush**—Boeing at this projection room.



OFF TO WORK THEY GO AT BOEING

This crowd at the gates of the Seattle plant of Boeing Airplane Co. resulted on the day after the strike ended when the company asked the strikers not to return to work until they were called, and the Aero Mechanics union told all its members to return to the plant. Only 1000 who had been given assignments went to work while the correct addresses of the others were registered. Although all the strikers are being

time doesn't anticipate much trouble in obtaining the employees to carry out Plant II's new assignment. In March, when the decision was made to put the modification program in the plant, Boeing placed an ad in a Saturday evening paper asking for 1000 qualified applicants. On Monday about 2500 job-seekers lined up at the employment office. By Tuesday, mail was being received from nearly every state, from Canada and Cuba. On Wednesday, a cablegram arrived from Guam.

Facing the workers in the new program is the tremendous record of Plant II in wartime. It was given the job of starting B-29 production, ironing out the bugs in manufacturing the largest combat plane ever put into quantity production up to that time, and also handling the initial modification dictated by battle experience. The plant still turned out more B-29s than any other: 1644 of a total of 3970.

IAS Builds in San Diego

Construction has begun on a building to house the San Diego, Calif., section of the Institute of the Aeronautical Sciences.

The structure will contain 12,000 sq. ft. of floor space and include an auditorium, library, lecture room, kitchen and dining room, lounge, stage and

► **Employment Rush**—Boeing at this projection room.

Production Progress Report

AIRCRAFT Month	Personal Type		Transport Type		Military		Total	
	No.	Value	No.	Value	No.	Value	No.	Value*
January.....	449	\$2,018,069	13	\$2,498,533	140	602	\$9,288,991	
February.....	447	2,125,996	14	3,994,084	155	616	11,329,335	
March.....	564	2,491,739	14	5,198,991	278	856	12,459,451	
April.....	750	3,028,139	16	5,401,869	165	931	13,016,444	
May.....	778	3,164,874	34	15,819,336	141	953	23,310,207	
June.....	926	3,783,096	33	13,065,634	227	1186	21,813,029	
July.....	903	3,432,040	17	6,078,713	199	1119	13,090,571	
Total.....	4817	\$20,043,953	141	\$52,057,160	1305	6263	\$104,308,028	

ENGINES Month	Civil		Military		Total	
	No.	Value	No.	Value	No.	Value**
January.....	779	\$4,721,385	287	\$18,885,879	1066	\$23,675,922
February.....	1007	5,380,545	355	20,504,714	1362	25,938,747
March.....	1093	5,174,775	379	24,893,251	1472	30,157,553
April.....	975	5,234,761	416	25,601,422	1391	31,121,882
May.....	1293	4,801,522	491	25,500,262	1784	30,570,757
June.....	1458	8,891,736	313	n.a.	1771	9,191,898
July.....	641	3,203,455	427	n.a.	1068	3,373,193
Total.....	7246	\$37,408,179	2668	\$115,385,529	9914	\$154,029,952

* Does not include value of military shipments but includes aircraft parts and conversions.
** Includes parts and other products. Monthly and cumulative totals do not include value of shipments of engines and parts for military customers after May.
Figures based on "Facts for Industry," Bureau of the Census.

PERSONAL AIRCRAFT

Company	August		Jan.-Aug.	
	No.	Value	No.	Value
Aerona.....	54	\$139,000	421	\$1,116,000
Beech.....	54	442,000	540	4,233,000
Bellanca.....	1	5,000	25	125,000
Cessna.....	179	798,000	1196	4,582,000
Engineering & Research.....	25	60,000	127	342,000
Fairchild.....	20	85,000	71	297,000
Luscombe.....	76	186,000	521	1,464,000
Piper.....	120	293,000	1268	2,500,000
Republic.....	17	71,000	17	71,000
Ryan.....	61	411,000	359	2,375,000
Stinson.....	65	298,000	686	3,375,000
Taylorcraft.....	15	27,000	67	123,000
Texas Engineering.....	30	96,000	198	635,000
Total.....	700	\$2,849,000	5486	\$21,238,000

Figures as reported to Aircraft Industries Association.

Production Declines In Units and Value

Aircraft and aircraft engine output, along with exports of engines, parts and complete planes, showed marked declines for July, according to the monthly report by the Bureau of the Census and the Civil Aeronautics Administration.

Measured by airframe weight, aircraft output for July was 22 percent below figures for the previous month. Airframe weight for July was 3,288,800 lb., compared with the June figure of 4,201,300 lb.

A total 1119 aircraft were shipped during July, of which 920 were civil types and 199 military aircraft. Civil type shipments were valued at \$9.5 million, a drop of 4 percent in number and 43 percent in value from June figures of 959 aircraft valued at \$16.8 million.

Military aircraft shipments accounted for 70 percent of airframe weight for July; personal type civil aircraft 19 percent, and transport type civil aircraft, 11 percent.

► **Engines Drop**—Total value of civil aircraft engines and parts shipped during July was \$3.2 million, a 64 percent decline from the \$8.9 million shipped during the previous month.

Complete aircraft exports in July decreased 27 percent in number and 39 percent in value from June's figures. A total of 247 aircraft with a value of \$4.3 million was recorded for July as compared with 339 valued at \$7.1 million for June.

Only increase contained in the report was employment figures. Aircraft plants employed 144,391 employees in July, and 140,382 in June.

Bombsight Order to AC

AC Spark Plug division of General Motors Corp. has been awarded an Air Force contract aggregating more than \$23 million for new-type bombing navigation computers.

The computer was developed by Sperry Gyroscope Co. and the AC contract is believed to be smaller than other unannounced orders already awarded for the computer.

To fulfill its \$23 million contract, AC will re-open a warbuilt, 400,000 sq. ft. plant at Milwaukee, Wis., which was operated by A. O. Smith during the war. The plant will be used also to produce part of a \$1,500,000 Air Force order for new gun-, bomb- and rocket-gyro computer sights developed at Massachusetts Institute of Technology.

New President For Lear, Inc.

Lear, Inc., Grand Rapids, Mich., elected William P. Lear to the newly-created post of chairman of the board, and Richard M. Mock as president. Lear was also confirmed as director of research and development for the electrical and radio equipment manufacturing firm.

Mock has been executive vice president of the company since June 1947. Upon his present election, the office of executive vice president has been eliminated. Lear, who has been president of the firm since its inception, has been freed from administrative duties to devote his time to technical development of aircraft radio, automatic flight control and wire recorder products.

► In other personnel actions:

Jack and Heintz Precision Industries Inc., Cleveland, elected Kenneth G. Donald president succeeding Byron C. Foy, who resigned as president and chairman of the board. The latter position is now abolished. Donald will also continue as vice president of Robert Heller & Associates, Cleveland management engineering firm.

York Corp., York, Pa., named Marshall G. Munce a vice president. He was previously assistant to the president.

General Electric, Schenectady, appointed Frank T. Lewis manager of manufacturing in the firm's aeronautic and ordnance systems divisions. He was formerly assistant manager of the Schenectady works.

Beech Aircraft Corp., Wichita, elected John P. Gaty to the board of directors. Gaty is vice president and general manager.

Chance Vought Aircraft, Dallas, appointed Charles D. Woodruff as contract administrator and Harry E. Kay, assistant contract administrator.

Consolidated Vultee Aircraft Corp., Fort Worth, named Ray O. Ryan division manager of the Fort Worth plant. Ryan has been assistant division manager for the past two years.

Air Associates, Teterboro, N. J., appointed Carl A. Carlsen as sales manager. He was formerly U. S. purchasing agent for Scandinavian air carriers.

Servo Corp. of America, New Hyde Park, N. Y., named Fred B. MacLaren head of the Servo-mechanisms Laboratory.

Monsanto Chemical Co., St. Louis, Mo., appointed Kenneth W. Short purchasing agent for the company's plastic division. He succeeded Glenn M. Bullard, who retired October 1.

Vic Pastushin Industries, Inc., Los Angeles, announced that William C. Cook, formerly with Douglas Aircraft Co.'s Santa Monica plant for 18 years, has joined the firm.

General Motors Corp., New Departure division, Bristol, Conn., made these staff changes: Lorne F. Lavery, from manager Detroit office to assistant general sales manager at Bristol; Charles D. McCall, formerly manager of automotive sales at Detroit to succeed Lavery; Howard A. Offers becomes manager of the mid-western region and Raymond J. Lynch becomes supervisor of engineering for the central and mid-western regions.

Republic Aviation Corp., Farmingdale, L. I., appointed Thomas A. Murphy subcontract manager. He was formerly wartime Air Force representative at the plant.

Hughes Tool Co., Houston, Tex., central organization for Hughes Aircraft Co. and TWA, elected Malcolm Smith a vice president. Smith was formerly a partner of J. H. Whitney and Co., N. Y., and is a director of the Spencer Chemical Co., the Vendo Co., and the Sunflower Natural Gas Co., all of Kansas City, Mo.

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1000 cu. in. disp.	24 V. DC	19 lbs.	756
3350 cu. in. disp.	12 V. DC	27 lbs.	36E03
3350 cu. in. disp.	24 V. DC	27 lbs.	36E00
4360 cu. in. disp.	24 V. DC	26.75 lbs.	1550*
4360 cu. in. disp.	115/208, 3 phase, 400 cycle	25.50 lbs.	15E48*

*For engine jaw to crankshaft ratio of 3:1.

JET ENGINES			
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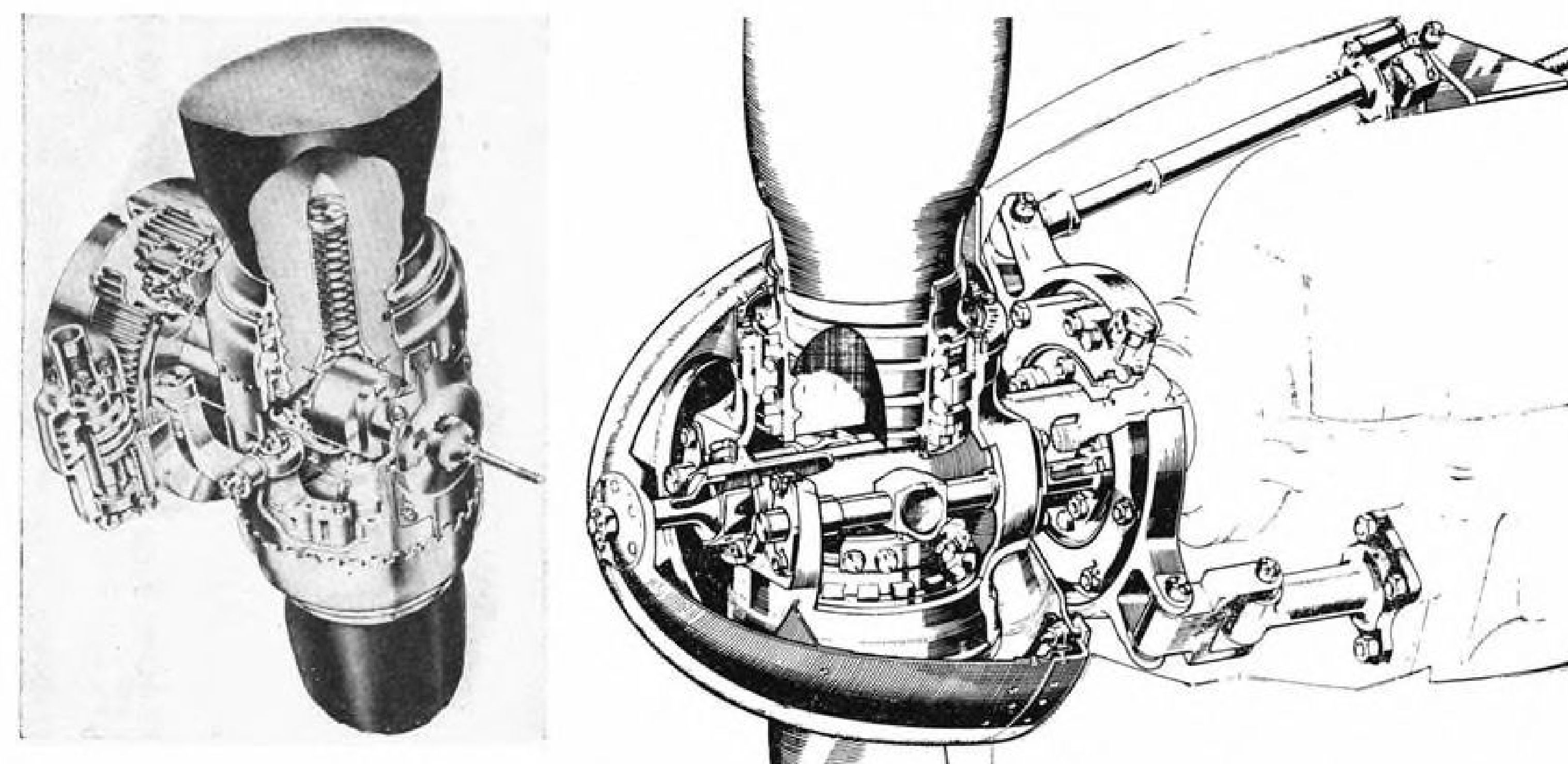
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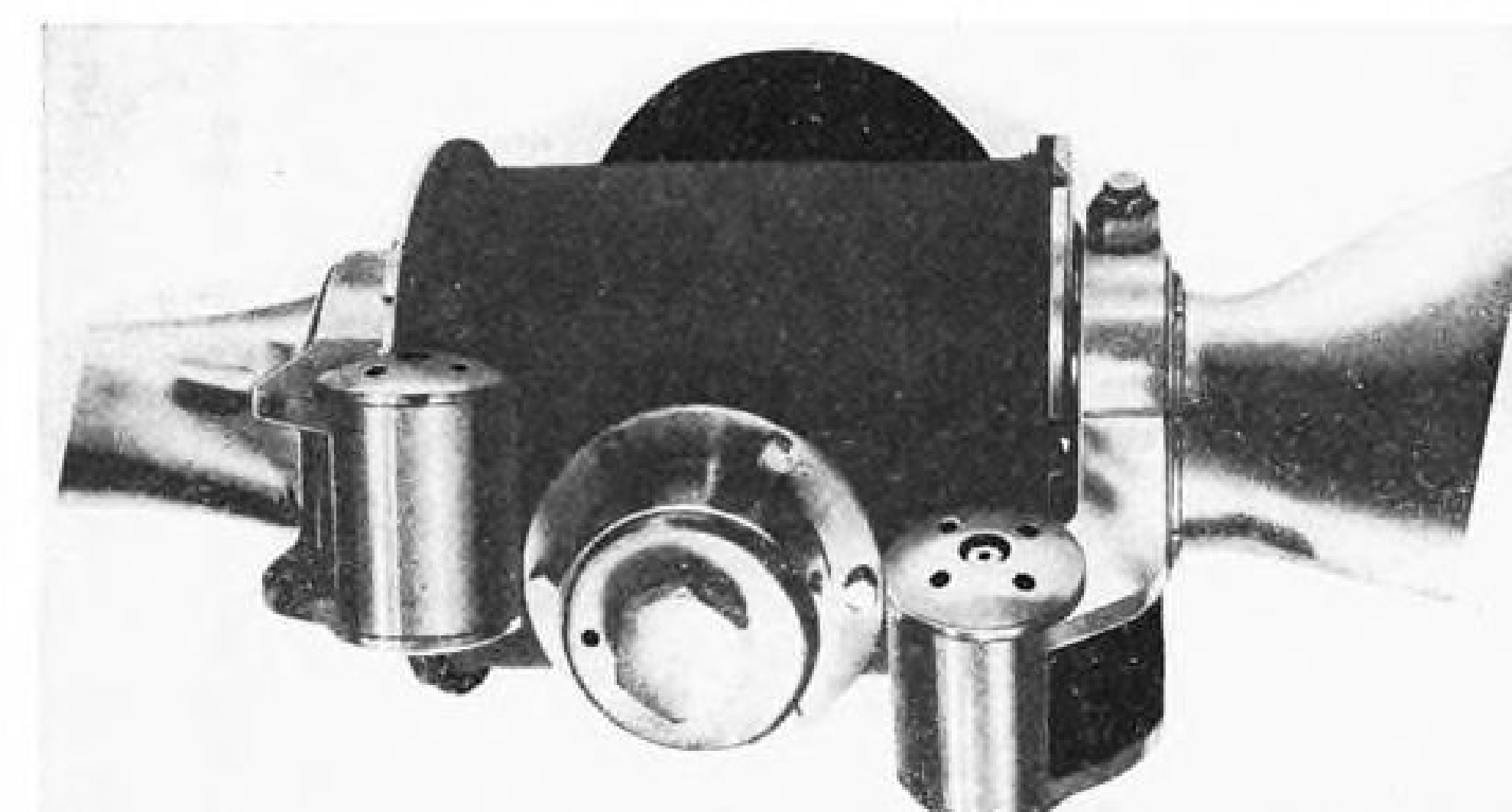
DIVISION OF



ENGINEERING



BRITISH propellers: de Havilland (left) for 75-150 hp. and Rotol (right) for 100-150 hp. are manually controlled, variable-pitch units.



FRENCH: Ratier's "Heramatic," designed for 70-125 hp., is similar to U. S. Aeromatic.

Foreign Lightplane Props Analyzed

Design trends in postwar development abroad favor both automatic and manually controlled pitch change.

By Sidney H. Fedan*

Personal inspection of new European propellers for lightplanes has disclosed some interesting design features, particularly the pitch-changing mechanisms.

In Britain, I was shown the de Havilland and Rotol light propellers, both of which had emerged from the experi-

mental stage. Although the British had small automatic and constant speed units under development before the war, both of the types now in use are manually controlled.

► **de Havilland Prop**—The de Havilland firm believes that manual variation of pitch is necessary for both lightness and simplicity. (Possessing a weight of 42 lb. and an extensive gearing system, the propeller may not achieve those aims.)

Design of the de Havilland propeller

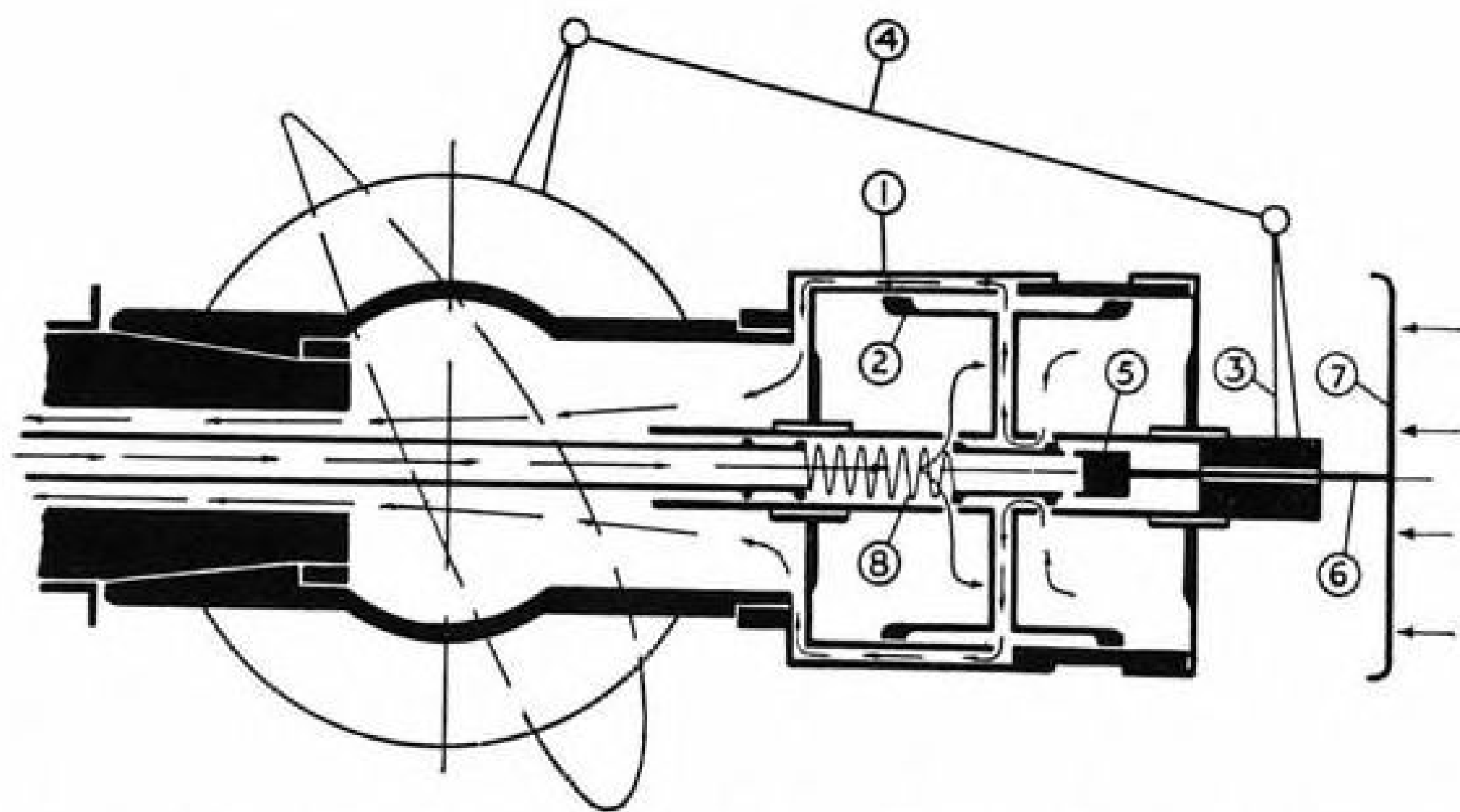
was completed and flight trials on a Moth Minor (90-hp. Gipsy Minor) were just beginning when the war put an end to normal development. However, the Moth Minor continued in service as a communications airplane, and the propeller trials could thus be extended through the six arduous years which followed.

It proved satisfactory to critical pilots and, despite exposure to all weather, proved completely trouble-free maintenance-wise.

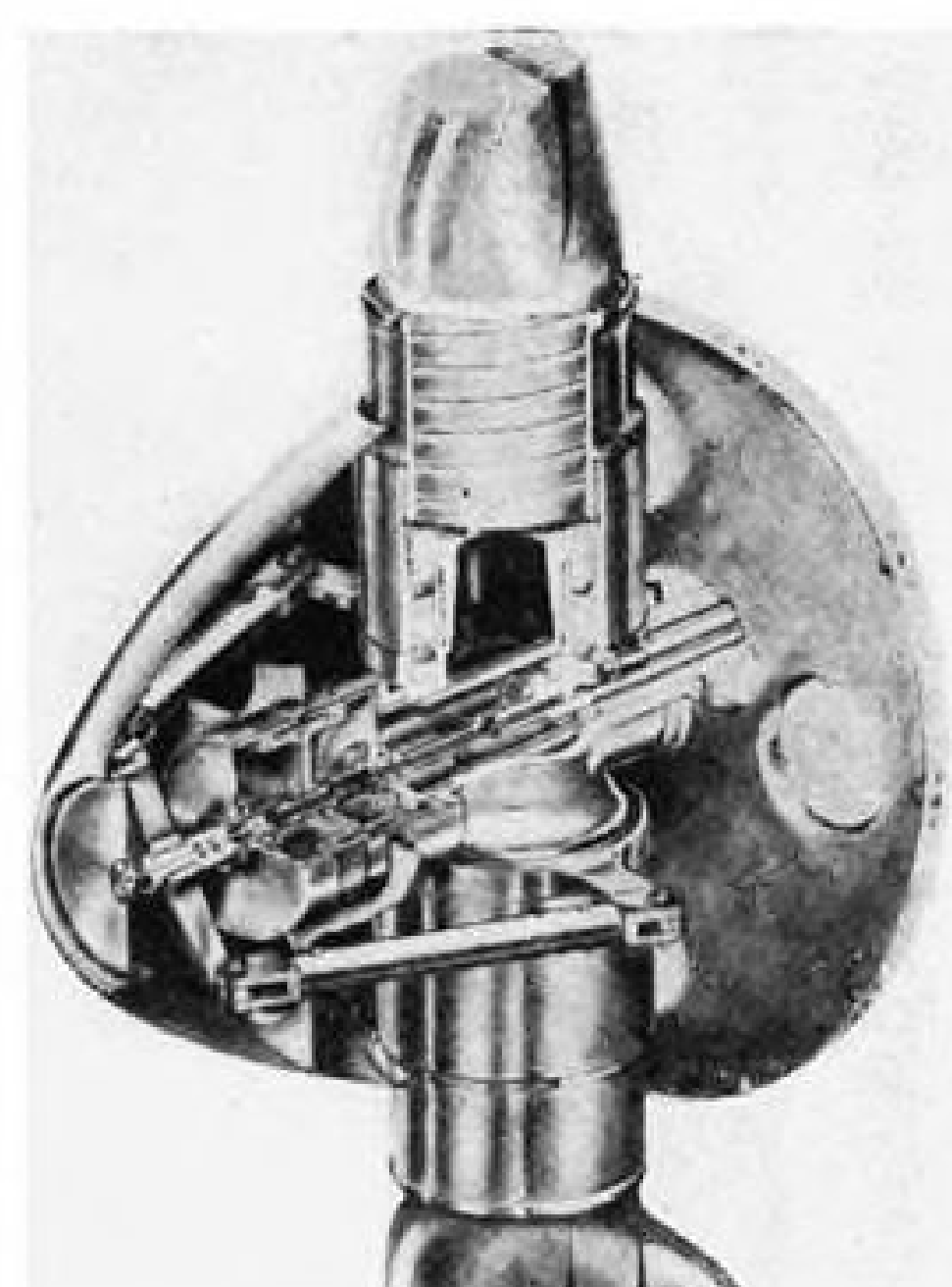
This manually-variable-pitch propeller is a departure from standard de Havilland practice in that wooden blades are employed and the hub consists of only one major component, the barrel, designed to carry the combined torque, thrust and centrifugal loads. It is splined internally to fit the engine shaft.

The blades, fitted with a means for initial indexing to a basic pitch angle, are mounted in the barrel with ball races of special design, and are retained by sleeve nuts whose locking is effected by the plate which also locks the propeller retaining nut.

► **How Pitch Changed**—Pitch of the blades is changed by a small pilot-operated handle which, through a flexible shaft, activates a worm gear in a box on the engine nose immediately behind the propeller. By a nut-and-screw-thread mechanism one race of a ball bearing is moved axially to the propeller shaft, and from the other race (which rotates with the propeller) links attached to the blade roots alter the pitch.



SWEDEN: Operational diagram (left) and cutaway (right) of Skandinaviska Aero's prop for 100-150 hp. Dynamic pressure of air on forward disk effects automatic pitch variation.



Since the worm gear is irreversible, the blades lock wherever they are left, giving an infinite variety of fixed pitches within the range between high and low pitch stops.

► **On French Plane**—A de Havilland m.v.p. propeller was sent to France and installed in a S.N.C.A. du Sud-Est S.E. 2300, which is a two- or three-seater, low-wing monoplane trainer fitted with a Renault 4P-01 engine of 141 bhp. takeoff at 2400 rpm. It has an all-up weight of 2200 lb., top speed of 150 mph. and cruising speed of 100 mph. Comparative trials were conducted with this aircraft and showed a 20 to 25 percent reduction in takeoff run, a rate of climb improvement averaging nearly 20 percent in tests conducted from sea level to 10,000 ft., and a gain in time to 10,000 ft. of 18 percent.

Swept diameters available for this model are from 5½ to 7 ft.

For twin-engine installations, a small, button-operated electric motor is being developed which will synchronize propeller pitch-change.

► **Rotol Details**—The Rotol manually controlled propeller was designed for engines of from 100 to 150 hp. Propeller alone weighs 47 lb., and electrical controls weigh 11 lb. more. The electrical equipment is made available principally for twin-engine applications, where it provides 12-sec. feathering and rapid pitch change by depressing the cockpit control button.

Mechanism for changing pitch consists of links (attached to the blade-roots) connected to a transfer bearing which is actuated by direct manual or electrical control.

The operating links are connected to the blade-roots by pins working in plastic bushings, and are positioned horizontally in the hub. They have a reciprocating movement when pitch is being changed, hence cause the operating pins to move radially relative to

the blade axis. The rear ends of the links are attached to the inner member of the transfer bearing housing located at the rear of the hub.

► **Screwjack Operation**—The housing is actuated by a lever which encircles it. Lower end of the housing is attached to a crankcase bracket as a fulcrum, while its upper end is connected to a screwjack which moves the lever to obtain the desired pitch alteration.

The screwjack comprises an encased, quick-action actuator fitted with a reduction gear at its fixed end. Pinion of the reduction gear is driven by a flexible shaft from the hand-turning gear controlled by the pilot.

Thus the general scheme of pitch-control is that the screwjack pulls, or pushes, the upper end of the actuating lever. This moves radially on its fulcrum and causes the transfer bearing housing, to which the operating links are attached, to turn the operating pins radially, changing the pitch of the blades.

► **French Ratier Prop**—Long the home of novel, small, airscrew designs, France now has but one new propeller, and this does not appear to be entirely original. It is a fully automatic type built by Ratier, the largest French propeller firm.

Designed for 70- to 125-hp. engines, the Ratier prop features solid dural blades incorporating a lag angle and counterweights clamped around the blade shanks. Thrust moment obtained by the lag angle rotates the blades to low pitch at time of high thrust, and the counterweights balance thrust and move the blades to high pitch as thrust decreases.

Weight of the propeller, designated Hiramatic, is 53 lb. Cost is over \$700. Recent tests with the French Norecrin sport plane show that the Aeromatic propeller maintains better constant speed control of the engine and pro-

duces higher performance figures than the Hiramatic on the same ship. Top speed results with the two propellers were similar.

► **Sweden's Contribution**—One of the most unusual postwar European propellers is the "Dynamatic," designed and produced by Skandinaviska Aero A. B. of Norrtälje, Sweden.

Operation of the propeller is described with reference to the accompanying sectional diagram. Movement to adjust the blades is obtained from a servo-motor, located in a forward extension of the propeller shaft, consisting of a cylinder (1), force piston (2) connected via a lever (3) to two rods (4) attached to the propeller blades. When the piston moves backward or forward in the cylinder, the propeller blades are twisted to a smaller or greater angle.

A regulator piston (5) within the force piston is connected via rod (6) to a circular air disk (7) located in a recess in the nose of the spinner. Rear side of the force piston is connected to a spiral regulator spring (8), aft end of which rests against a fixed point in the hub.

Lubricating oil under normal operating pressure serves as the power source for the movement of the force piston.

The air disk is responsible for the automatic pitch variation through action of the dynamic pressure of the air. When stationary ground condition, or at low speed, this pressure is small and the regulator spring forces the piston with its air disk to its most forward position, corresponding to a small blade angle. At high speed the pressure of the air on the disk becomes larger and the regulator piston is pressed back, causing the force piston to follow it through the action of the oil, turning the blades to a greater angle.

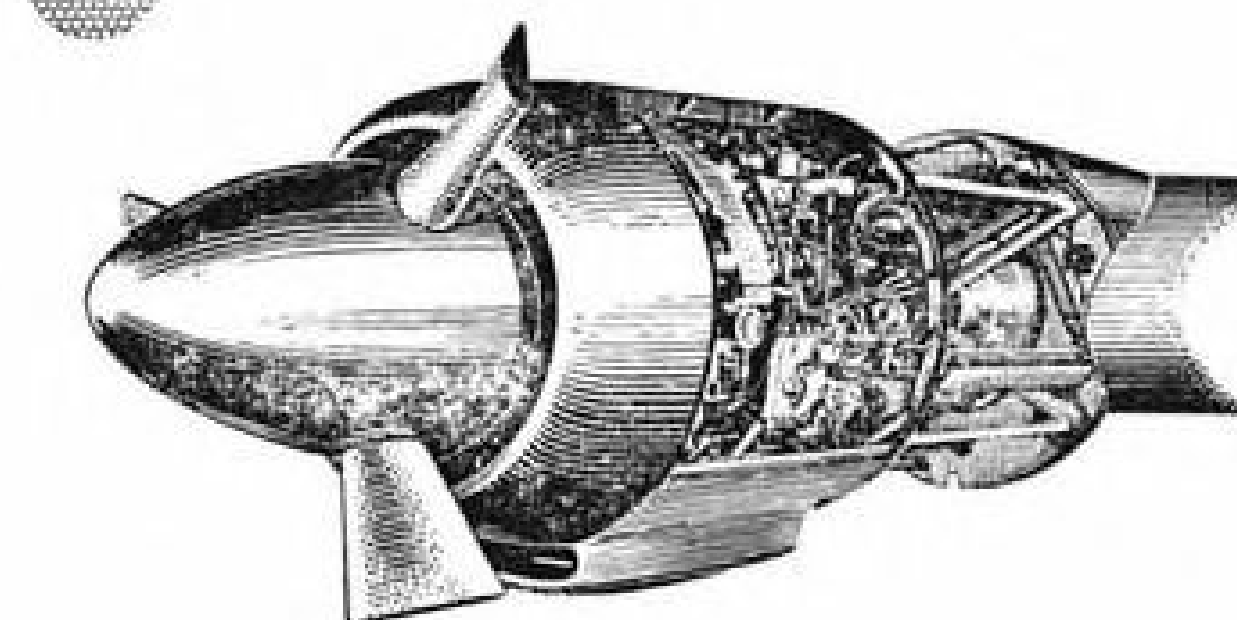
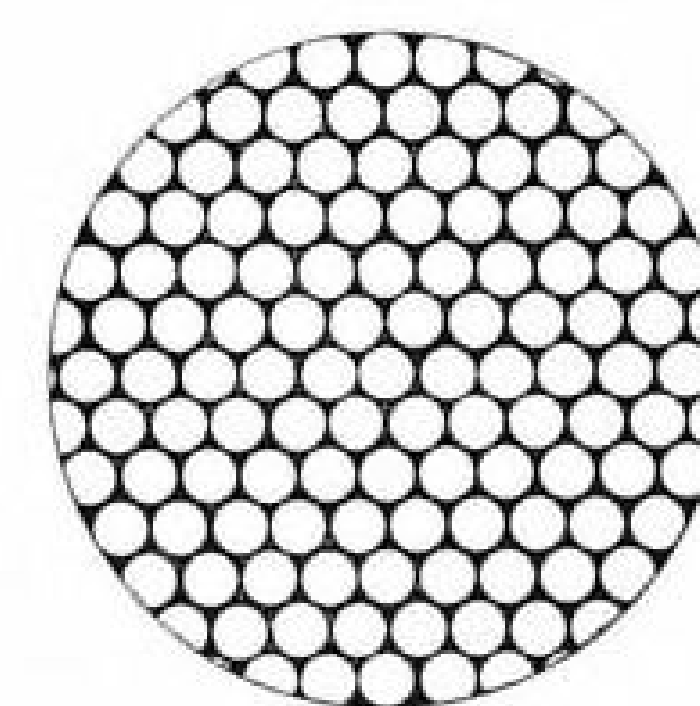
Force necessary to move the regulator piston is very small. It varies from

Mamba

memoranda

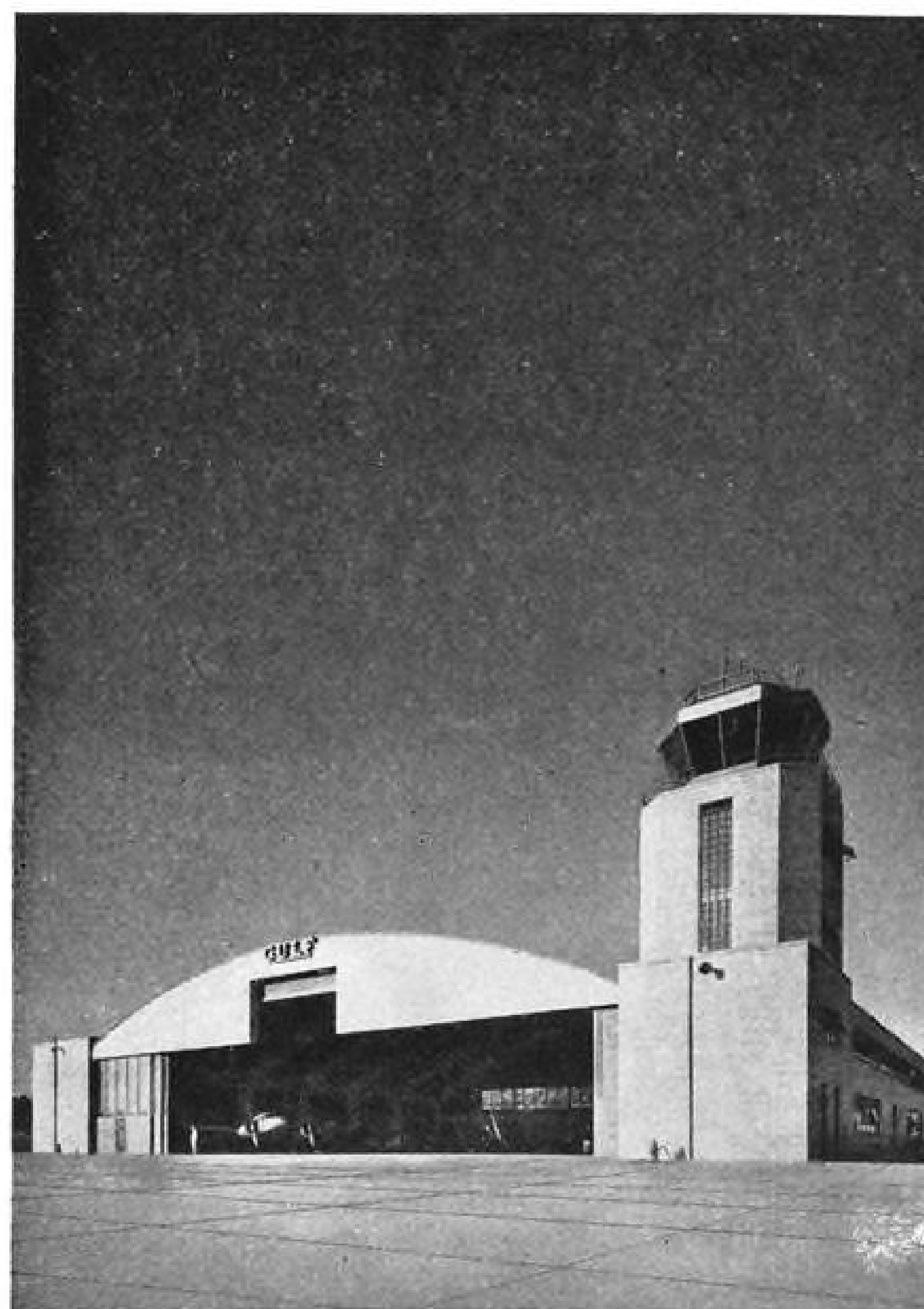
REDUCTION OF COOLING DRAG

The heat to be removed from a Mamba engine by external cooling is only 1/25th of the heat to be removed from an equivalent piston engine.



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a few ounces to about two pounds and depends mostly on the regulator spring, which always tends to press the piston forward. However, the force piston follows the regulator with a force of about 200 lb.

As the variable-pitch characteristics of the "Dynamatic" are partly dependent on the properties of the regulator spring, trimming of the propeller is quite simple. By using different spiral springs the propeller can, for example, be made to operate in one of the following ways:

- Two positions, takeoff and speed.
- Three positions, takeoff, climb, and speed, with continuous adjustment between climb and speed positions.
- Constant speed with a large range of variations.

Other combinations can also be obtained.

Weight of the propeller for an engine of 100 to 150 hp. is 40 to 44 lb. This high weight to horsepower relationship is probably because of the heavy hub and blade retaining sleeves.

The wooden blades are composed of alternate laminations of different woods.

Although the "Dynamatic" features a novel combination of appointments, none is essentially new. A French Ratier propeller of 1934 employed an anemometer, or air pressure plate, to release the confined pressure in a pneumatic bag and permit a spring to effect pitch change.

Jet Fuel Spray Angle Measured via Impeller

A nozzle-spray-angle indicator for jet fuels, an essential device for correcting combustion chamber distribution difficulties, has been developed by the controls unit, Power Plant Laboratory, Air Materiel Command. It is now in use at the jet engine overhaul base of the Oklahoma City Air Force Depot.

Angle of the fuel spray has an important bearing on the extent of fuel-air mixing within combustion chambers and, hence, on turbojet performance.

A small impeller wheel, mounted on a 1-in.-dia. tube, is inserted in the lower end of a spray chamber, opposite to the nozzle. As the impeller is moved toward the incoming spray, it begins to move. The sooner it moves the wider is the spray angle.

Angle indications are shown on a 10-in. calibrated wheel connected by a lever to the impeller.

The new device is claimed to measure spray angles to within 2 deg., an accuracy much greater than with previous methods.

The chamber spray supply provides spray pressures from 10 to 500 psi.

Guided Missile Heat Is Problem

Temperatures present material and structural considerations which indicate the advantage of night firings.

By Robert McLarren

The outer space atomic rocket traveling at hypersonic speed may have to be launched at night if solar heat is not to consume it in its flight.

While missile speeds of 25,000 mph. and altitudes of 1,000,000 ft. may sound fantastic to the layman, problems inherent in such operations now occupy much of the thought of the U. S. Air Force. This assuredly must claim equal attention by Russian Air Force officers and scientists.

The friction heating effect of high subsonic speed is already well-known and modern jet fighters are equipped with cockpit refrigeration as standard equipment.

For example, the Lockheed F-80, Republic F-84 and the Boeing XB-47 at top speed experience a temperature rise of 70 F. above free air temperature, which may bring cockpit temperatures as high as 170 F. on summer days, well above comfort and dangerously near the limit of human endurance. Effect of higher Mach numbers on skin temperatures is shown in Fig. 1.

► **Temperature Variations**—As the airplane or missile begins to climb, however, a large number of factors become increasingly manifest.

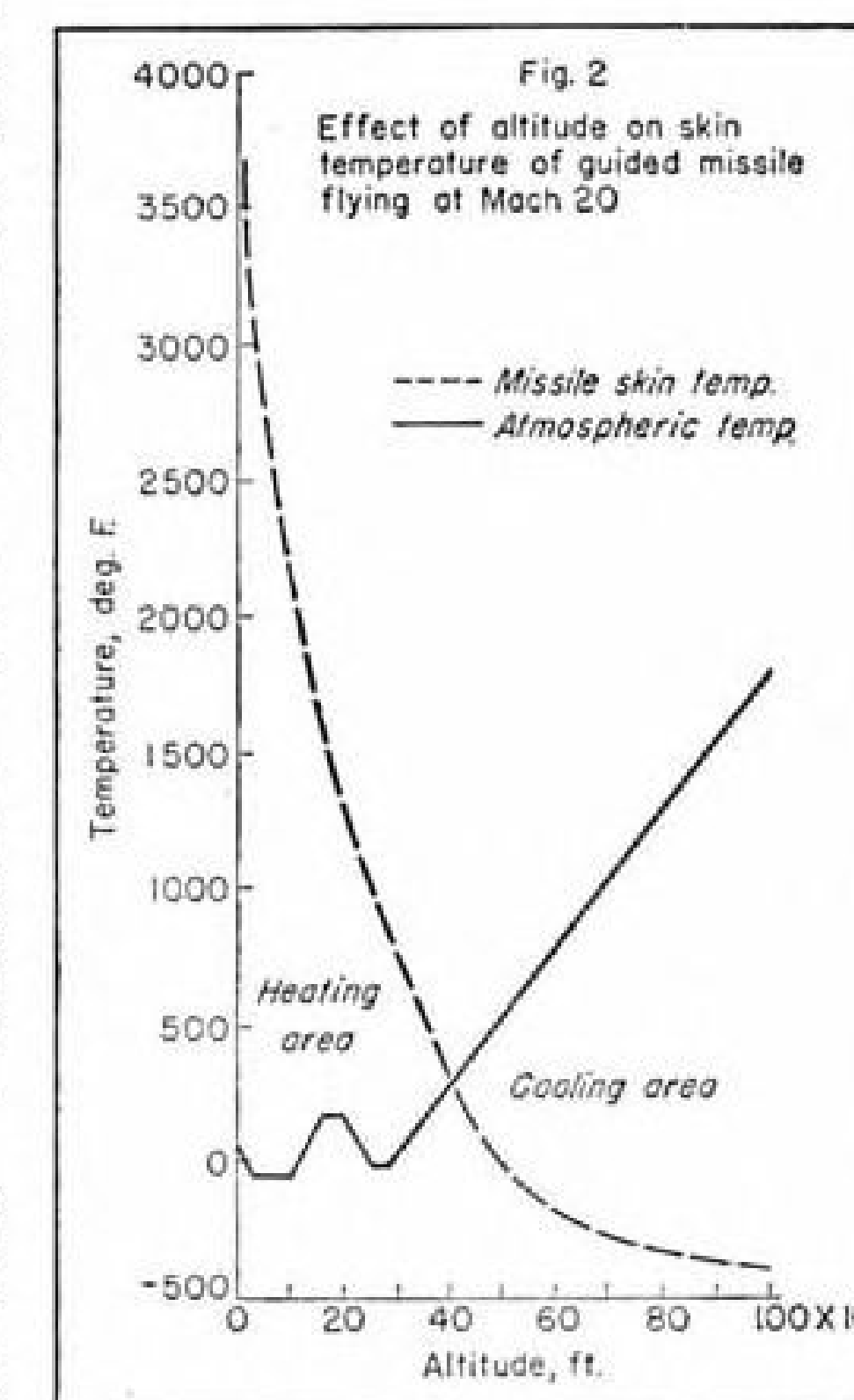
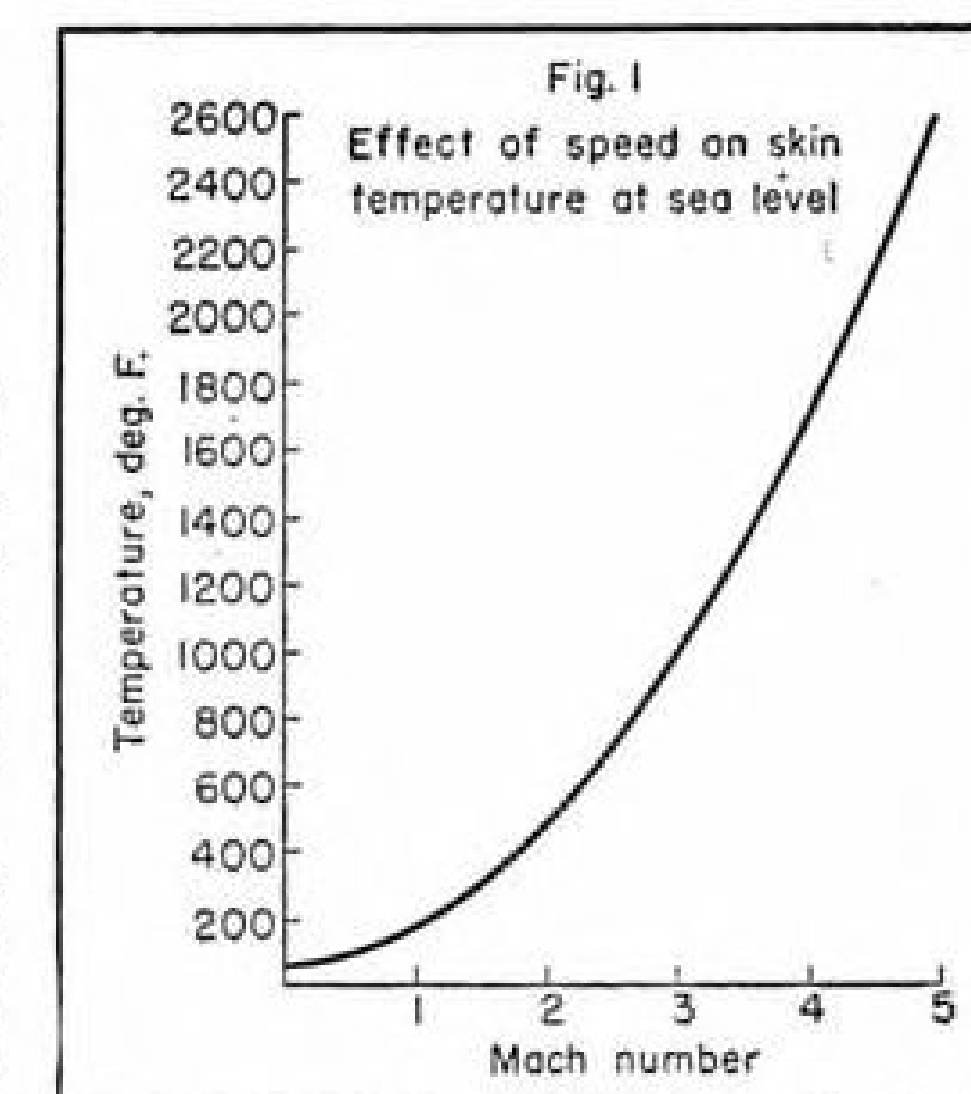
First of these is the ambient air temperature, which drops off rapidly with altitude until it reaches -67 F. at 35,332 ft. under standard atmospheric conditions.² The cockpit of the jet fighter or bomber would have cooled to only 11 F. and heat would be required for comfort.

This -67 F. temperature remains approximately constant up to about 105,000 ft., at which point the atmosphere reverses itself and begins to increase its temperature until it reaches 170 F. at about 165,000 ft.³

After remaining at this value to nearly 200,000 ft., it again reverses itself and starts to grow cold, the temperature dropping down to -28 F., remaining so to about 273,000 ft. Then it begins a climb until it reaches 215 F. at about 400,000 ft., the highest altitude for which it has been officially calculated.

At higher altitudes the temperature continues to increase indefinitely, until that of the sun is approached.

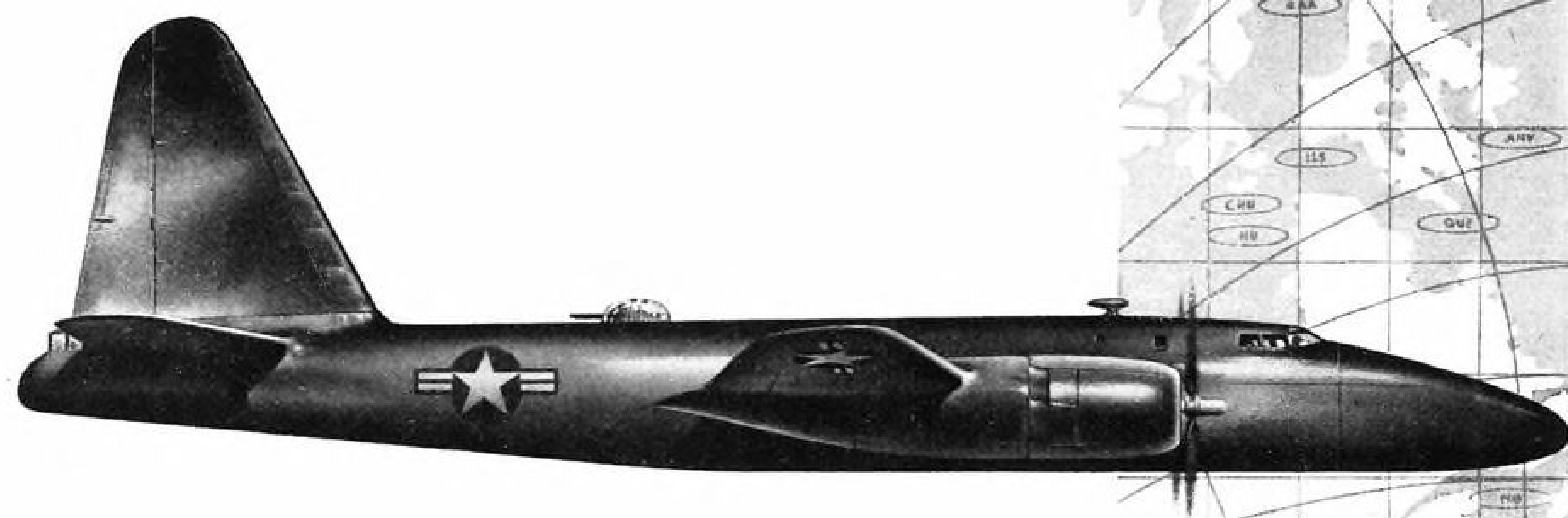
► **Density Changes**—Meanwhile, however, as the altitude has increased, the density has steadily decreased from 0.002378 slugs per cu. ft. at sea level to 0.0000331 at 100,000 ft., 0.0000007 at 200,000 ft., 0.000000019 at 300,000 ft.



and 0.000000001 at 400,000 ft. These extremely low densities qualify the atmosphere at these altitudes as a rarified gas and, as such, the mean free path of the molecules becomes of considerable importance.

For example, at sea level the mean free path is 0.0000035 in. and the atmosphere is, therefore, considered a continuous mass. However, as the density decreases the mean free path increases to 0.00027 in. at 100,000 ft., 0.01 in. at 200,000 ft., 0.3 in. at 300,000 ft., 1.0 ft. at 400,000 ft. and 30 ft. 9½ in. at 500,000 ft.⁴

In other words, at an altitude of less than 100 mi., the molecules of air are more than 30 ft. apart, indicating the



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In its fleet of Lockheed P2V Patrol Bombers, the U.S. Navy possesses the longest-range aircraft in the world.* The Lockheed P2V gives the Navy long-distance sight and security — tireless, swift, reliable. Lockheed Aircraft Corporation, builder of the Navy's P2V, takes the occasion of Navy Day, October 27, to salute the men of the Navy on sea, on land, and in the air.

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extremely low density prevailing only a short distance from the earth.

► **Equations Specified**—Heat generated in the skin of the missile by its passage through this air is dependent on the number of molecules of air it encounters at a given altitude and speed. This number may be determined from the equation:

$$n = \frac{NV_m}{2\sqrt{\pi}} \left\{ e^{-\frac{U^2}{V_m^2} \sin^2 \theta} + \sqrt{\pi} \frac{U}{V_m} \sin \theta \left[1 + \phi \left(\frac{U}{V_m} \sin \theta \right) \right] \right\} \quad (1)$$

in which n , is number of molecules striking body; N , number of molecules per unit volume of gas; V_m , most probable molecular speed in fps.; e , base of natural logarithm, 2.7183; U , mass velocity in fps.; θ , angle of incidence in deg.; and ϕ , error function,

$$\frac{2}{\sqrt{\pi}} \int_0^x e^{-x^2} dx$$

For rough calculation, the term within the braces (outside brackets) may be taken as 4.2 for a value of $\frac{U}{V_m} \sin \theta$ of 1; 7 for a value of 2; and 14 for a value of 4.

Amount of energy of the molecules striking the body may be determined from the equation:

$$E_t = 2nkT \quad (2)$$

in which E_t is in ft.-lb. per sq. ft.; n is determined from Eq. (1); k is 5.66×10^{-24} ft.-lb. per deg. F. per molecule; and T is the temperature in deg. F. absolute.

Amount of energy radiated by the missile may be determined by the equation:

$$E_r = (E_t + nkT_s) (1 - \alpha) \frac{5}{2} \alpha nkT_p \quad (3)$$

in which E_r is in ft.-lb. per sq. ft.; E_t is determined from Eq. (2); n determined by Eq. (1); T_s , temperature of the molecules; α , equal to $(E_t - E_r)/(E_t - E_r)$ (in which E_p is energy of the molecules at skin temperature, and E_t is energy of incident molecules in ft. lb. per sq. ft.); and T_p , skin temperature.

► **Skin Temperatures**—From these equations, a series of calculations indicate that in a night flight at an altitude of 400,000 ft. and a missile speed of Mach number 20, the skin temperature would be 340 F., or 120 deg. hotter than the ambient air.*

As the altitude is increased to 528,000 ft., however, the skin temperature drops to -60 F., or 565 deg. cooler than the ambient air (Fig. 2).

This remarkable difference is created by the substantial increase in the molecular mean free path and the considerable increase in radiation from the missile. The paramount importance of missile stability and accurate guidance is revealed in the fact that should the missile skew as little as 5 deg., the temperature under the above conditions

would increase to 740 F. and 40 F., respectively.

At higher altitudes, skin temperature continues to decrease, dropping to -210 F. at 125 mi., to -340 F. at 150 mi., and -410 F. at 190 mi. altitude. When it is considered that the ambient temperature at these altitudes is 925, 1275 and 1530 F., respectively, the tremendous heat radiation of the hypersonic missile is graphically revealed.

Flight during the day presents a considerably different picture however, with the missile skin attaining a temperature of 900 F. at an altitude of 75 mi. and 700 F. at 190 mi.

► **Night Firing Advantage**—These data indicate that in direct contrast to high speed flight in the lower stratosphere, which generates enough friction heat to actually consume the warhead of the V-2 missile, flights in the upper stratosphere and ionosphere at hypersonic speed are subjected to substantially lower temperatures.

During exposure to solar radiation, however, even these temperatures are high enough to present materials and structural problems indicating the advantages of night firings of missiles.

Since aerodynamic problems disappear at the extreme altitudes in which there exists no atmosphere, missile shapes can be determined on the basis of thermodynamic requirements.

Since positive angles presented to the airstream generate excessive heat, it follows that the missile body should incorporate as much negative angle surface as practicable. This can be attained by placing the maximum cross section far forward followed by a gently sloping afterbody.

These data also indicate the practical importance of thermal contact between all portions of the missile so that the lower temperatures of the afterbody can radiate much of the heat absorbed by the bow area. The emissivity of the skin must be made as high as possible, opening a new field of metallurgical and structural research.

References

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SPECIFY GENERAL CONTROLS hi-g* valves for aircraft

AUTOMATIC PRESSURE, TEMPERATURE AND FLOW CONTROLS

 <p>AV-16</p> <p>Electric motor valve, suitable for fuel, hydraulic fluid and lubricating oil shut-off. High flows at low pressure drop, explosion-proof motor and switch cover.</p>	 <p>AV-11</p> <p>3-way Electro-Magnetic valve used for distribution of fluid flow or for "feed in" and "exhausting" fluid from a cylinder, piston or vessel.</p>	 <p>AV-2</p> <p>Same as AV-1 except is normally open type. For control of various fluids, oil, water, gasoline, air, etc.</p>
 <p>AV-7</p> <p>Four-way selector type control—operating pressure up to 3000 P.S.I. for control of fluid pressure operated cylinders.</p>	 <p>AV-9</p> <p>Electro-Magnetic valve for medium and high pressure applications. Controls hydraulic oils, fuels, lubricating oils, water, etc. 50 P.S.I. to 3000 P.S.I. operating pressure.</p>	 <p>TM-11</p> <p>Temperature modulating control—providing fully automatic electro-hydraulic operation for control of engine coolant and lubricating oil.</p>
 <p>AV-1</p> <p>Normally closed type Electro-Magnetic valve—for control of all types of fluid, gasoline, air, water, hydraulic fluids or oils, anti-icing fluids, etc.</p>	 <p>AV-7</p> <p>Electro-Magnetic Double-Four Way selector type valve for control of fluid pressure operated cylinders.</p>	 <p>AV-1</p> <p>Electro-Magnetic type valves with various magnet sizes, full ported or restricted ports, for all types of fluid, gasoline, air, water, oils, etc.</p>

For complete specifications and engineering data, request new Catalog.

*hi-g TRADEMARK

GENERAL CONTROLS

Manufacturers of Automatic Pressure, Temperature & Flow Controls

FACTORY BRANCHES: BIRMINGHAM (3), BOSTON (16), CHICAGO (5), CLEVELAND (15), DALLAS (2), DENVER (10), DETROIT (8), GLENDALE (1), HOUSTON (2), KANSAS CITY (2), NEW YORK (17), PHILADELPHIA (40), PITTSBURGH (22), SAN FRANCISCO (7), SEATTLE (1) • DISTRIBUTORS IN PRINCIPAL CITIES

Turbojet Operated With "Cold" Blades

Navy and National Advisory Committee for Aeronautics observers have shown interest in a turbojet engine in which turbine blades, cherry red at the start of operation, turn black with "cold" as speed is increased to 20,000 rpm. and higher.

The demonstration was made to display combustion characteristics of a new turbojet burner designed by John C. Hawkins of Skyhawk Motors, Inc., North Hollywood, Calif.

Hawkins, whose plans for a large jet engine employing his new combustor already have been reported, currently is making tests with a single burner feeding an engine built from a surplus supercharger.

Thrust and pressure studies are to be conducted in the near future.

Hawkins claims ability to obtain nearly-complete combustion of fuel within the combustor and delivery of gases to the turbine wheel area at reduced temperatures, yet with little or no loss of mass flow and velocity.

Engineers who have seen the engine run insist that merit of his system will hinge largely upon measurements of thrust and fuel consumption after an efficient tail cone, now being developed, has been attached to the engine.

Hawkins claims that thrust can be developed to a high degree without subjecting turbine blades to extreme high temperatures.

If he is right, he may have a solution to a major problem of turbojet builders—the perfection of alloys for turbine blades subjected to extreme heat.

In test runs before representatives of Navy, NACA, and AVIATION WEEK, the engine showed an unusually smooth start upon ignition at 4000 rpm. Turbine blades quickly glowed cherry red, and then, as speed went beyond 8000 rpm., "chilled" and turned black. No heat colors could be observed through advancing speeds, and blades remained black when speed was held at 24,000 rpm.

Externally, the Hawkins combustor varies from the conventional circular turbojet burner in that it is an extended rectangular box of stainless steel. The inventor has not disclosed its interior details of fuel mixing and ignition.

He says: "Current types of gas turbines, because of the design of the combustor employed, have comparatively large pressure losses between compressor and turbine. The pressure loss of necessity increases the entropy of the gases, or the amount of heat which cannot be converted to work in the turbine or by expansion in the tail cone and nozzle.

"This waste heat not only increases the fuel consumption of the engine (fuel was burned to obtain it), but also increases the temperatures throughout its hot portion.

"Conventional thermodynamic considerations show that for a constant turbine capacity, an improvement of 10 to 30 percent in fuel consumption, together with corresponding decreases in the temperature of the turbine and associated parts, can be obtained by eliminating the pressure loss—which we believe we have accomplished."

Over-Water Garment Has Built-In Safety

A new "three-in-one" flying suit, combining a life preserver vest, emergency rations kit and a light garment into a single unit, is now being tested by the clothing branch, Aero Medical Laboratory, Air Materiel Command.

Flotation is obtained by a circular neck bladder and a rectangular chest bladder. These are inflated by a 1-oz. supply of carbon dioxide. An oral valve is provided to permit the wearer to compensate the bladders for leakage.

To protect an unconscious airman in a water landing, the chest bladder forces the wearer to float at an angle of 10 deg. from the vertical and face-up.

Emergency rations are carried in trouser legs, behind the calves. Each leg carries a strap around the foot to prevent the trousers working up.

Live-tested in a jump from a Douglas C-47 at 20,000 ft. into Indian Lake, Ohio, in company with two other crewmen wearing the standard Type B-5 life preserver, the new suit proved satisfactory and offered no restriction to free movement in the water.

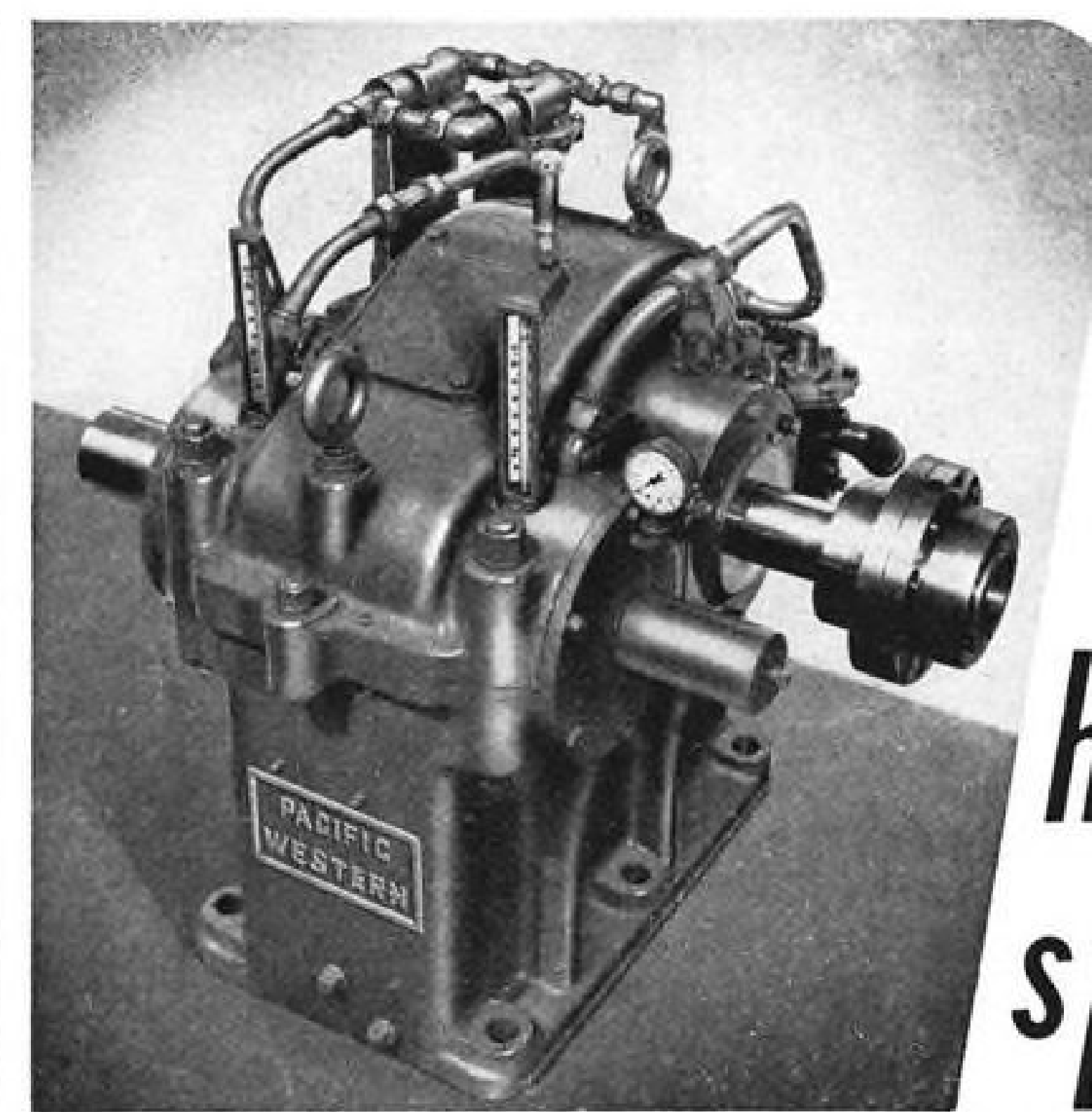
Piston Deposits Gaged By Applying Voltage

To eliminate the time-consuming technique of removing piston deposits by hand and then weighing them, The Texas Co.'s research laboratory at Beacon, N. Y., has developed a lacquer thickness gage.

The new instrument is designed to give an accurate reading of thickness at any spot, in contrast to other methods which give the overall average for the piston.

Utilizing two high-voltage terminals, one attached to the piston, the other touching the deposit, the device measures the amount of voltage required to burn through the deposit.

Since it takes a known amount of voltage to penetrate a given deposit, thickness can be measured easily.



high speed

This typical Pacific-Western high-speed unit is fully enclosed, and has integral lubrication and cooling systems. This type of unit is available in a complete range of ratios and capacities.

ON THE GROUND

The terrific rotational speeds that must be attained in modern aircraft-development laboratories, for the engineering and testing of modern aviation mechanical needs, are easily provided by Pacific-Western high-speed units.

Special features were designed into a Pacific-Western gear box to test a new type of axial-flow compressor. In this application, input is 350 hp at 3600 rpm; output speed is 24,000 rpm. Pitchline velocity is 12,000 fpm, journal velocity is 11,000 fpm. Actually, this Pacific-Western unit is capable of speeds up to 36,000 rpm — 3½ miles per minute pitchline velocity. That's fast for any gear box operating up to 8 hours at a time.

More than fifty years of experience, and the finest gearmaking facilities in the West, are ready to serve you at our 3 plants. In the aircraft field, our experience encompasses virtually every mechanical power-transmission problem in aviation—in the air and on the ground. Our technicians are continually at work to extend known practices for the solution of unprecedented problems.

Why not consult our staff of engineers on your current problems of mechanical power-transmission?

New Aircraft Products catalog available. Please use your company letterhead when requesting your copy.

Write, wire or phone our Lynwood plant for complete information, or if you prefer contact our office nearest you.



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Equip with **FEDERAL ALL-METAL SKIS**

Increase Airplane Revenue

In winter, many new sources of income from Ski-plane operations are possible. Organized hunting, fishing, skiing, sleighing and other winter sporting events, will add new flying pleasure and stimulate enthusiasm for year around flying.

Increase Airplane Sales

Business concerns, farmers and ranchers can be interested in airplane ownership as a business necessity when shown that it is practical, economical, and safe summer and WINTER.

Go to businessmen in your community. Analyze their personnel travel requirements. Tell them how an airplane will economically, safely and conveniently handle transportation of personnel at low cost and minimum travel time.

Increase Airplane Rentals

Don't let snow stop winter flying operations. Equip your planes with skis and make winter flying hours turn in a profit.

Stimulate winter flying interest among students, pilots, sportsmen, businessmen, salesmen, field servicemen, etc. who do not own their airplane. Encourage, more charter trips for sales, service, emergency deliveries.

When heavy snowfalls stop other means of transportation, you can get there with airplanes equipped with Federal skis.

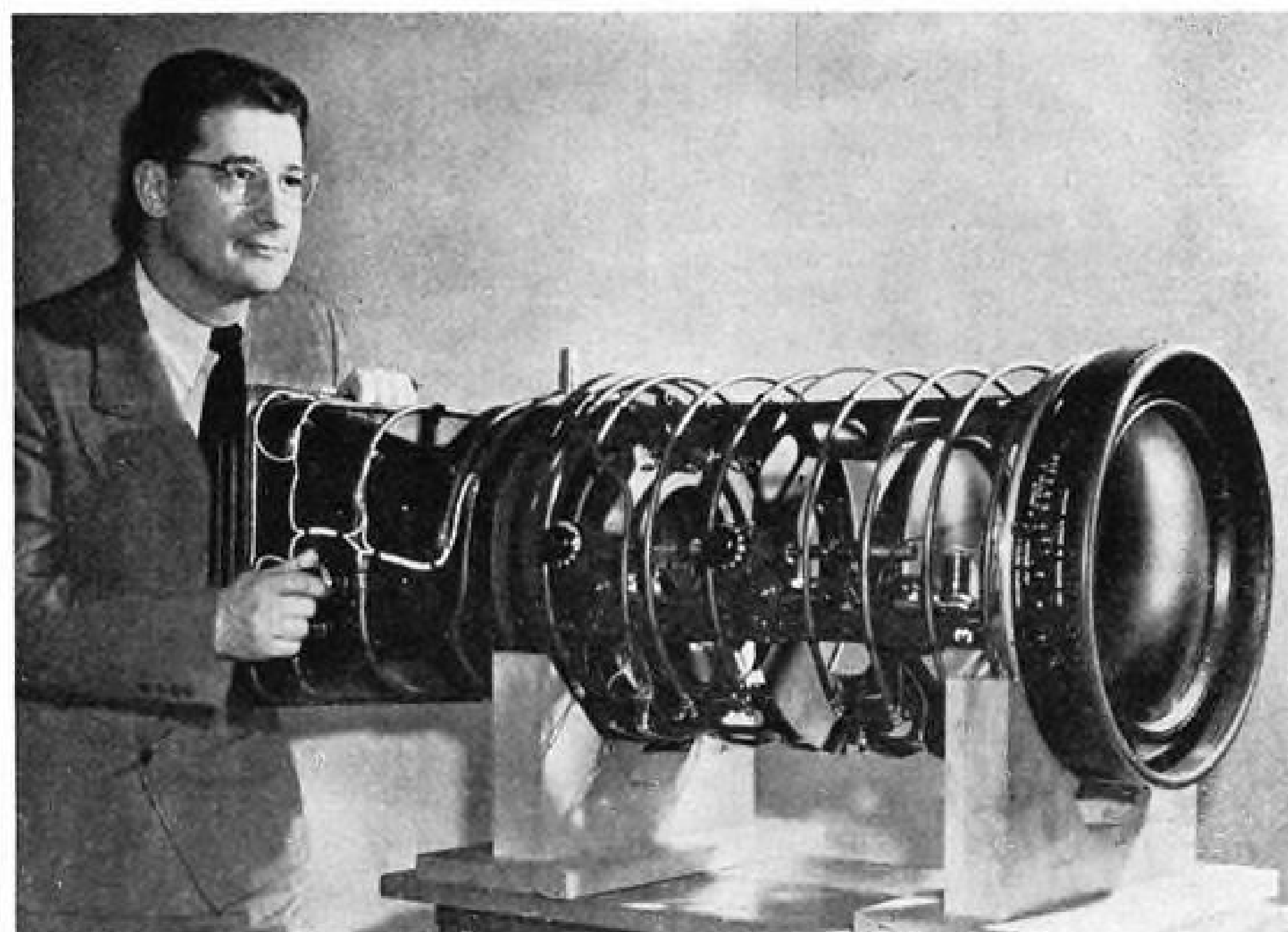
Increase Student Training

There are more good flying hours in winter, for airplanes equipped with skis than in summer for airplanes equipped with wheels. Encourage and promote student flying through the winter months, when other outdoor activities are minimized. Organize social groups among high schools, colleges and business concerns. Have them meet socially at the airport. By providing entertainment facilities, you can stimulate interest in winter flying. A few meetings and demonstrations of the fun of flying in the winter on skis will keep your planes flying profitably throughout the winter.

Increase Flying Safety

Federal Skis are low cost insurance. Almost any area large enough to land an airplane is a safe and satisfactory landing field in winter for ski equipped aircraft.

FEDERAL
AIRCRAFT WORKS
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New Aerial "Eye" Has Ten-Mile Sight

A giant telephoto lens—nearly four ft. long and 15 in. in diameter—has been produced for U. S. Air Force aerial reconnaissance.

Designed and manufactured at Eastman Kodak's Hawk-Eye Works, this large "eye" will be used with the Service's K-34 aerial camera for taking pictures on 9 x 18-in. film at altitudes up to ten miles. By overlapping successive pictures, a huge map will be formed.

The lens is comprised of five glass elements. Focal length is 60 in. and speed is f/6.0.

For high altitude operation, a thermostatically controlled electrical heating device is built into the mount to maintain proper focus by counteracting low temperatures which would cause

the metal of the mount and camera to contract. And because thin air at high altitudes results in a different index of refraction, accurate adjustments in the mount are provided to compensate for effects of variation in atmospheric pressure and also to focus the lens sharply for any distance from one to ten miles.

Lens elements are covered with a microscopic coating of magnesium fluoride, by Kodak's lumenizing process, to increase light transmission and reduce flare. Interchangeable filters fit into the body of the lens mount to lessen the effect of atmospheric haze.

In the accompanying photo, depicting the lens minus its cover, two glass elements are visible. The circular tubing is for electric heating at high altitudes.

"Single-Point" System Boosts Fueling Rate

An Air Force decision to equip all future aircraft with its single point refueling system is being implemented at major airframe plants by a lecture series utilizing a "classroom" Boeing B-29 completely equipped.

A military team, led by Capt. David Samiran, inventor of the system, provides demonstrations and technical data through the use of working models.

Developed by Installation Branch, Power Plant Laboratory, Air Materiel Command, the installation permits filling of all tanks aboard an airplane from a single filler point, or from all filler points simultaneously. The latter procedure permits the complete fueling of 20,000 gal. in a B-36-size bomber by only two men in one hour.

With present installations it requires six men eight hours to fuel an airplane with 7,000 gal.

Float-operated shut-off valves installed in each tank provide two features: Ability of the system to be filled from any point, and automatic transfer of fuel in flight as the balance of the airplane changes.

During ground fueling the valves shut off automatically when the tank is full, shunting the fuel flow into an adjacent tank. Valves are entirely automatic and do not require electrical power for operation.

The system operates at a normal pressure of 40 psi. at the filler points, which produces a flow rate of 300 gpm. The pressure may be dropped to as little as 15 psi. to reduce flow rate to 150 gpm.

All system components are designed to function satisfactorily over a range of temperatures from -65 to 135 F.



The Birdmen's Perch

By *Major Al Williams, ALIAS, "TATTERED WING TIPS,"*
Gulf Aviation Products Manager, Gulf Bldg., Pittsburgh 30, Pa.



We're going to start off the reactivated Little Known Facts About Well Known Planes Dept. with a bang.

We had so much help (by mail) from so many people when we were questioning whether to continue the "Facts Dept." that we figured we owed you all a vote of thanks.

So we're sending some token Perch Pilot Commissions (bottom rung, naturally) to a fistful of names that we've pulled out of our mail bag. If you missed out on one of these "gift" commissions, remember that you can still *earn* one by sending in a Little Known Fact that's unusual enough to print.

Welcome to our select little group, Edward Watson, Cedarcrest Farms, Independence, Mo. And welcome to Sabra Baker, Cornell Pilot's Club, Ithaca, N.Y. And to Elbert Schory, Supervising Pilot,

Ohio Forest Fire Patrol, and Dr. Verne F. Gouger, 5352a Devonshire, St. Louis, Mo., and Sgt. Don Edmonston, AF 16226013, Sqdn. K-2, Scott Air Force Base, Belleville, Ill.

Just watch how business improves, now that you're a Perch Pilot (br), John Isaacs, manager of Isaacs Field in Stanley, Wis.!



Like we said, these commissions are free for you six people—a gesture of good will, you might say. But if any one of you can get to sleep tonight without sitting down and writing up a few Little Known Facts for us, we'll be horrified, scandalized, and disappointed!

TRIED IT YET?

Have you tried the great new Gulfpride Aviation—Series D—oil yet?

Like we've said, it'll free sticking valves and rings and it will *keep them free* for a long time.

And it'll give you many, many more hours between overhauls because of its ability to clean foreign matter from engine surfaces and keep it in suspension so that it flushes away at oil drains.

Remember, though, that this great new super-lubricant has been especially designed for horizontally opposed engines . . . should not be used in radials.

Remember, too, that we're inviting *all* dealers and operators to carry Gulfpride Aviation—Series D—so if yours does not have it yet, remind him that he can save money on spare parts and overhauls with this sensational new Gulf Oil!



NOTE: We're still getting acquainted with our new F-8 Gulfhawk. We'll try to let you know more about her next month. We can tell you now that she's got a lotta muscle!

Gulf Oil Corporation and Gulf Refining Company... makers of





J-M Thermoflex Blankets protect new Boeing XB-47 Stratojet Bomber



ABOVE: Arrows indicate Thermoflex Blanket around turbine casing of the Boeing XB-47.

BELOW: Close-up of Thermoflex Blanket showing flexibility which assures easy application.



THE BOEING XB-47 is powered by six General Electric J-35 axial-flow jet engines of 4,000 lbs. thrust each. Shielding the intense heat at tail cones and around turbines are J-M Thermoflex Blankets.

Developed by Johns-Manville expressly for insulating the engine cones, turbine casings and tail pipes of jet engines, the Thermoflex Blanket combines excellent thermal properties with the light weight and

flexibility that are also essential in this service. It gives continuous, satisfactory performance against the temperatures encountered in current jet engines and its construction is such as to permit ready adaptability to future advanced designs.

Thermoflex Blankets are custom-made in thicknesses of $\frac{1}{8}$ " and up. The complete blanket as used in the XB-47 is $\frac{3}{4}$ " in thickness and averages 9 ounces per square foot in weight. Lighter weight blankets

using various types of meshes, screen cloths and foils are also available.

For further information about Thermoflex Blankets, address Johns-Manville, Box 290, N.Y. 16, N.Y.



Johns-Manville

PRODUCTS for the AVIATION INDUSTRY

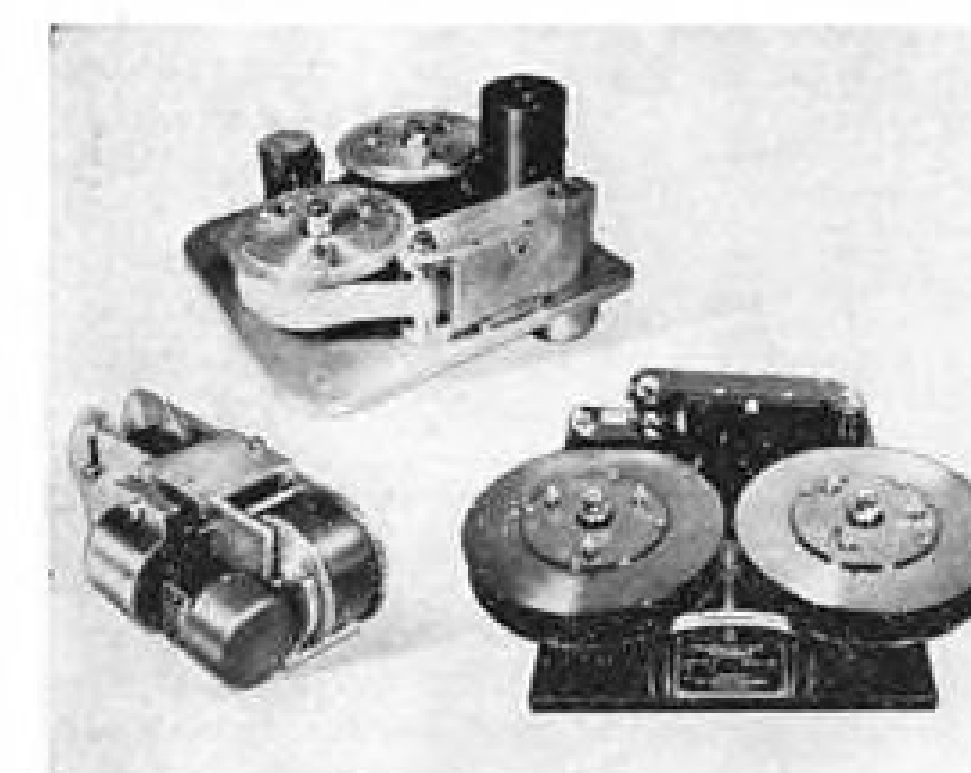
Packings and Gaskets • Friction Materials • Insulations • Asbestos Textiles
Transite Conduit • Transite Pipe • Industrial Building Materials

NEW AVIATION PRODUCTS



Cuts Evaporation

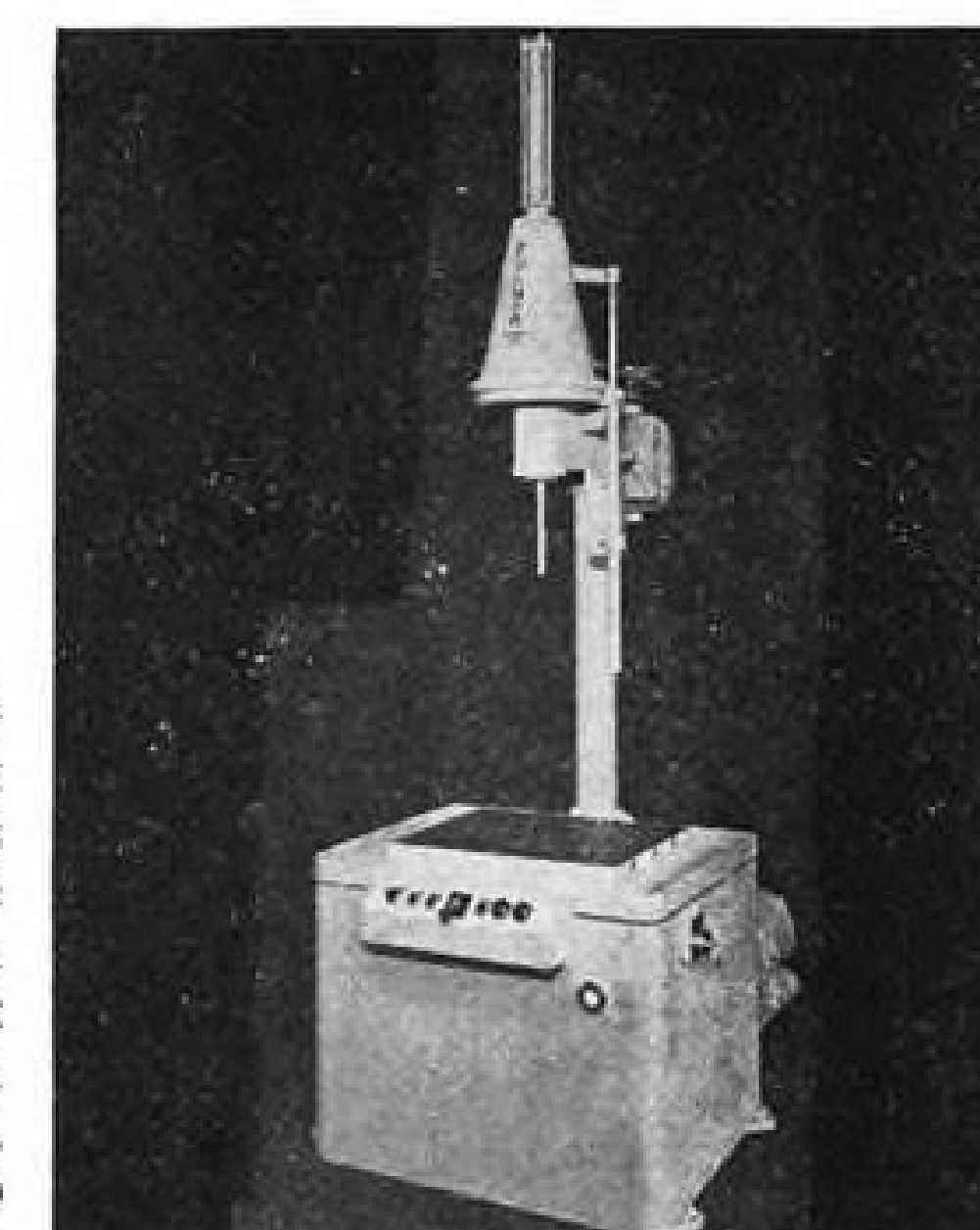
For fixed base and airport shops, self-priming drum pump for alcohols, light oils, and other volatile liquids is equipped with positive shut-off valve for protection against evaporation losses. Made by General Scientific Equipment Co., 2700 W. Huntington St. Phila. 32, Pa., No. 750 pump has no pistons, rings or leathers, or rotating parts to stick or wear. Fill-spout affords easy transfer to measuring cans, and waste is prevented by automatic drain-back which empties hose and pump when handle is lifted. Capacity is 15 gpm.



Records Flight-Test Data

New line of recording mechanisms use magnetic tape to store variable or transient data under conditions of severe shock acceleration for later re-running and analysis. Built by Cook Research Labs., 1457 Diversey Pkwy., Chicago 14, Ill., designs have multi-information channels, and in addition, include time base channel for speed and error compensation. Model MR-2, with 12 information channels and recording time of 15 min. is suitable for tests of engine temperatures, accelerations,

strains, etc. Model MR-3 with 6 channels, records for 3 min., and is applicable to guided missiles. MR-6 is normal-weight-and-size, 6-channel general purpose unit with 25 min. recording time.

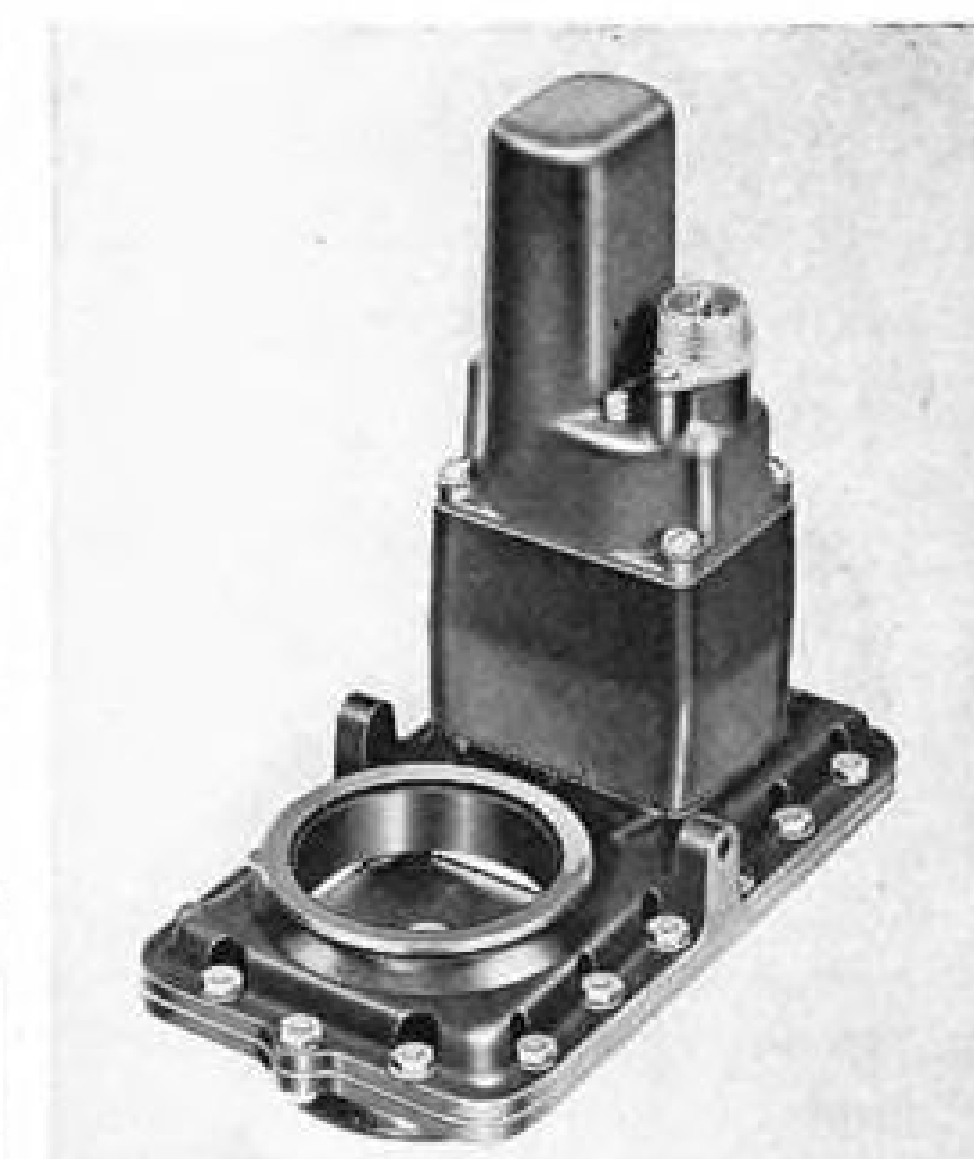


Small Parts Honer

Designed for rapid, accurate honing of aircraft cylinders, sleeves, connecting rod bores, bushings, bearing housings and ball bearing races, small size hydraulic honing machine for unit diameters from $\frac{1}{2}$ to 4 in., is produced by C. Allen Fulmer Co., First National Bank Bldg., Cincinnati 2, Ohio. Maximum stroke is 12 in. and reciprocating speeds are from 0 to 80 fpm. Hydraulic power is supplied by Vickers vane pump driven by 3-hp. motor. Splined, 1 $\frac{1}{2}$ -in., three-speed spindle, with No. 3 Morse taper to fit production type honing tools, is driven by separate 3-hp. motor. Welded steel base contains 45 gal. of coolant delivered by 1/10-hp. Ruthman motor-driven pump.

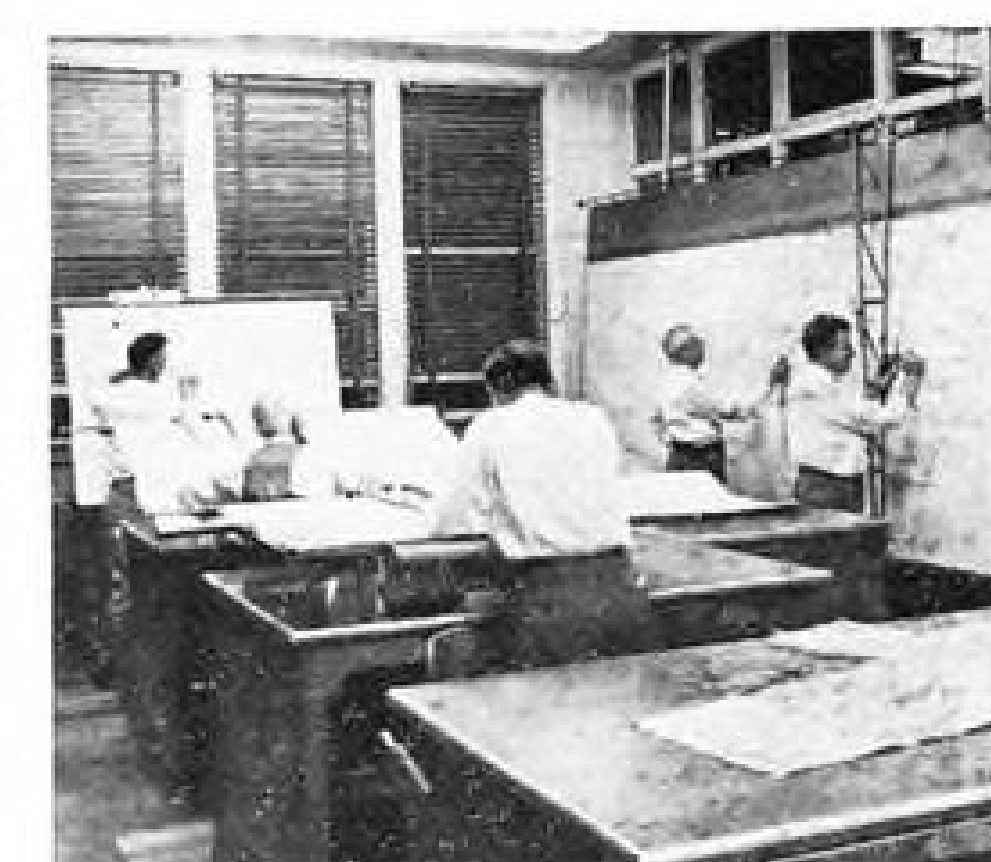
Powder Lubricant

Suggested as factory-applied dry lubricant for mechanical parts, "Molykote" is claimed suitable for high, low, and room temperatures. Made by Alpha Corp., Greenwich, Conn., material consists mainly of molybdenum disulfide powder which may be mixed to a paste with SAE 10 motor oil. Tests are reported to show low friction coefficient and capacity to prevent galling, seizing, or metal-to-metal contact at bearing pressures of over 100,000 psi.



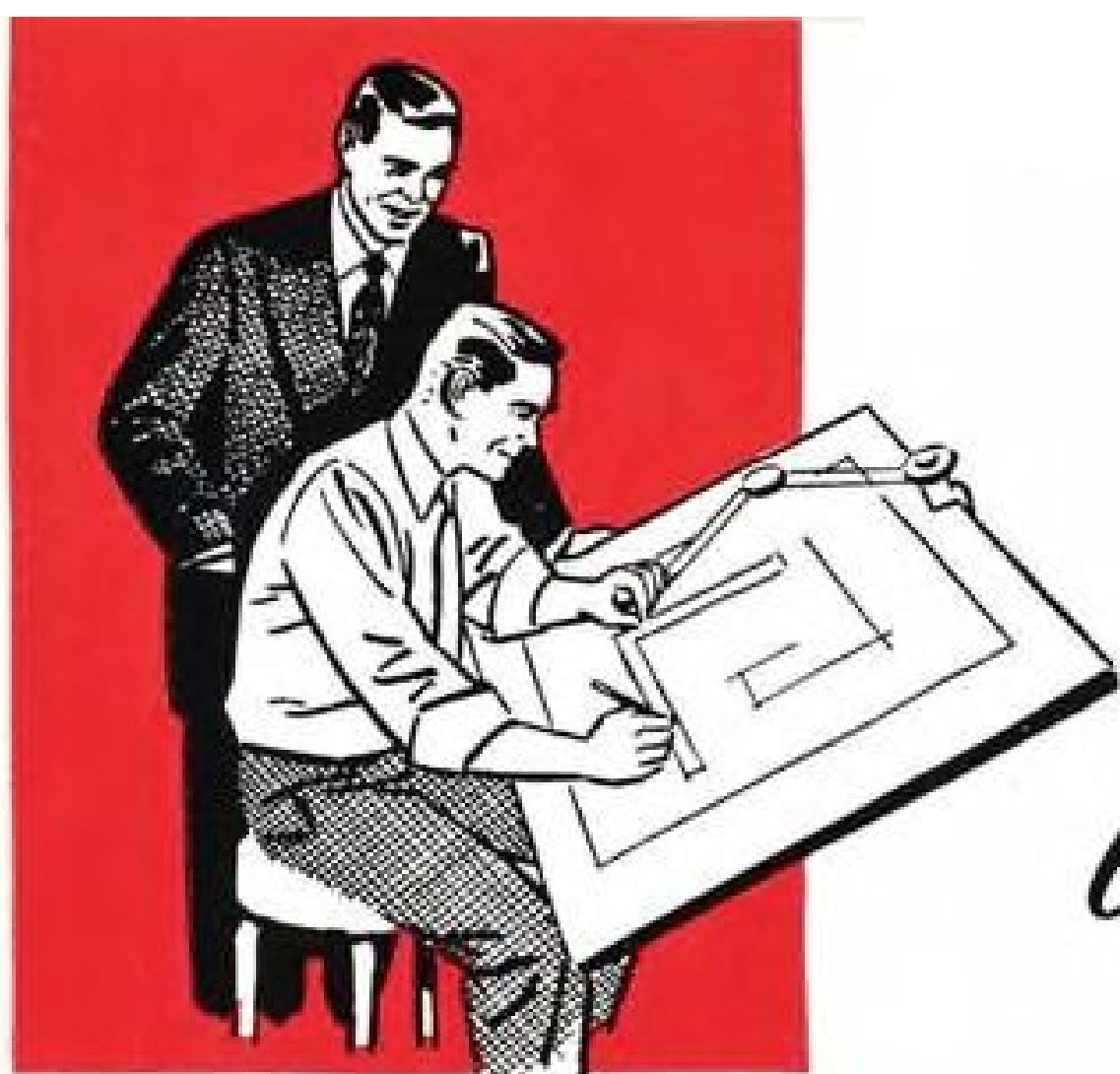
High Temperature Valve

Designed for jet aircraft, lever or motor-operated slide valve announced by Wm. R. Whittaker Co., Los Angeles, Calif., controls heated high-pressure air taken from intermediate stage of engine compressor for anti-icing, fuel tank pressurization, windshield defrosting, cabin air temperature and pressure regulation, ammunition control, etc. Special compounded heat-resistant sealing rings provide shutoffs with leakage of less than one percent under maximum temperature and pressure ratings. Features include sliding gate and crank arrangement and optional two-speed transmission for motor-operated models permitting slow opening and quick closing of valve. Taking temperatures up to 550 F. and pressures to 125 psi., units come in $\frac{1}{2}$, $\frac{3}{4}$, 1, 2, 2 $\frac{1}{2}$, 3, and 3 $\frac{1}{2}$ -in. port diameters.



Facilitates Layouts

Stainless steel drafting machine, affording convenient operation in positions from horizontal to vertical, is made by Emmert Mfg. Co., Waynesboro, Pa. Fast indexing of angles is via micromatic quadrant allowing setting of every 3 deg. by flipping screw, adjustments as fine as 2 $\frac{1}{2}$ min. being obtained with slight turn. Unit is made for boards ranging from 24 to 132 in.



HAVE YOUR AIRPORT LIGHTING *Engineered* by L-M Airport Specialists

When you buy airport lighting from Line Material, you buy an **engineered lighting system**. Equipment is designed by airport lighting engineers. Your installation is planned by airport lighting engineers. And that is true for any size airport—large or small.

Line Material has been in the airport lighting business for many years. L-M-Bartow units were the first successful high-intensity elevated runway lights—and they were designed as a **lighting system**. During the war these systems were installed and successfully used throughout the world. Today, improved L-M-Bartow units with four times more beam candle-power plus a movable beam are in successful operation at many commercial airports.

For smaller airports, L-M offers specialized equipment, available as a lighting "package" costing as little as \$1 per foot of runway. This equipment is CAA-approved, and has the same careful engineering, the same knowledge behind it, as the larger L-M-Bartow units.

Get the details on this airport lighting engineering and equipment. Write Line Material Company, Airport Lighting Division, E. Stroudsburg, Pennsylvania.

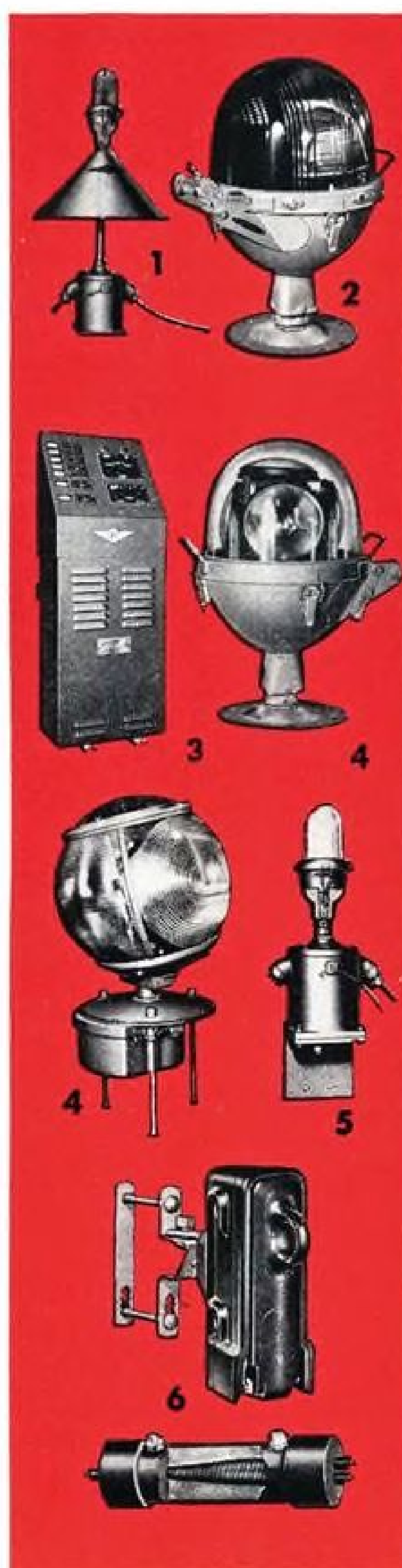
Write for the
Literature You Want

"Open all Night" describes lighting for smaller airports. "L-M Rotating Beacon for Class 1, 2, and 3 airports"—details of this economical, weatherproof beacon.

"L-M-Bartow Rotating Beacon"—description and specifications of the large 36" beacon.

"The Lights that Bring Them In" is a handsome technical brochure for large airports describing the basic requirements of runway lighting; what the pilot must see in approach and landing; the principle of L-M-Bartow Beam Control. Charts, diagrams, explanatory text.

Also available: engineering data sheets, specifications, wiring diagrams, and a simple estimating sheet for smaller airports. Write for the literature you would like to see. Address Line Material Company, Airport Lighting Division, East Stroudsburg, Pennsylvania.



1. L-M Medium-Intensity Elevated Runway Lights—for smaller airports and for secondary runways and taxiways at largest fields. Three brightness stages. Various mountings available.

2. L-M-Bartow High-Intensity Elevated Runway Lights: both fixed and movable beam types, 200 and 500 watts, the latter giving up to 200,000 beam candle-power.

3. L-M Power and Control Units: Several types; provide brightness control, simple beam focusing switch, beacon switch, indicator lights, transformer, circuit breakers, fuses, etc.

4. L-M Rotating Beacon for Class 1, 2, and 3 airports. Light, efficient, completely sealed, with no external moving parts. White and green beams plus ceiling height indicator. Up to 400,000 beam candlepower. L-M-Bartow 36" Rotating Beacon for class 3 to 7 airports: Two 24" bullseye lenses for main beam, clear, or in colors as required; 80-degree sweep beams. Both beacons have automatic switching to spare lamps, and telltale indicator on control panel if lamp burns out.

5. Marker and Obstruction Lights: has many features of the medium-intensity elevated runway lights, permitting economical parts interchange. With or without transformer and mounting bracket; red fresnel lens.

6. Other Equipment: Transformers, fuse cutouts, cable and all other electrical equipment required, including L-M's ingenious cable splice kit which greatly simplifies splicing of two, three, or four cables. Complete Airport Lighting Engineering Service.

SALES & SERVICE



Twenty-five planes at the resort airport is not unusual on weekends.



Sportsman pilots fly in for fishing and deer hunting at Otis Lodge, northern Minnesota resort airport run by Mr. and Mrs. Art Otis.

Resort for Flying Sportsmen

Farmer turns his clover fields into runways, builds dock on his lake to attract air-minded vacationers.

Every season, hundreds of pilots are landing airplanes ranging from Piper Cubs up to and including Douglas DC-3s at Wilderness Airport to vacation at Otis Lodge on Sugar Lake, near Grand Rapids, Minn. In 1947 over 1000 planes stopped at the field or made float landings at the seaplane base on the lake. The total for 1948 is expected to be greater.

While the summer tourist season is about over Art Otis, the proprietor, and his flying family are still looking forward to the annual influx of sportsman

pilots who move into the lodge and its 14 adjacent cabins for the coming of the deer season.

► **From All Over**—The summer vacationers fly in from as far as California, Washington, D. C., New York and St. Louis, but many of the visitors come from St. Paul and Minneapolis, 170 miles south, and from Duluth, 70 miles southeast.

Otis was running a fishing resort and farm back in 1927 when a barnstorming pilot in a biplane first dropped into his clover patch.

► **Fields Into Runways**—Otis decided then to work his fields into an airport. Neighboring farmers helped him remove stones from his fields, and he topped the trees near the approaches to his north-south 3000-ft. runway. The next year he cleared a 2000-ft. east-west runway.

Runways are heavily sodded with clover and grass and AVIATION WEEK's correspondent reports: "They are as smooth as a table top. I drove my car over both of them at 50 mph. and it was about like riding on concrete. They are mowed regularly with fairway mowers, the type used on golf courses. The only trouble is that the well-sodded runways also attract numerous deer at night making an extra hazard to night landings."

► **Flying Family**—Today Otis and his son and daughter, John and Jane, all have pilot licenses, and his wife acts as Art's navigator when they make their cross-country trips during the winter season in their Beech four-place Bonanza.

The field has a hangar, fuel pumps and an all-night rotating beacon which is automatically turned on at sundown and shut off at daybreak. Art expects to install some runway lights soon. His resort also has a nine-hole golf course adjoining the airport.

Sunday is a special day at Otis Lodge. From North and South Dakota, the Twin Cities, Duluth and other cities, a dozen or more pilots who are lovers of good food—Art and Mrs. Otis still feature the same chicken dinners on Sunday that attracted the barnstorming pilot in 1927—fly into Wilderness Airport for dinner. Some also come in early Sunday morning for breakfast at the Lodge.

► **Annual Event**—Each spring the Otises are hosts to a flight breakfast. This year



Mr. and Mrs. Art Otis, and their college student children Jane and John, proprietors of Otis Lodge and its airport and seaplane base fly their Cessna 140.

100 planes and 300 people came from five states.

There never has been an accident at the field.

Vacationing guests, and each year an increasing number of them come by air in their own planes, pay \$10 per day per person for cabin, meals, the use of boats and the nine-hole golf course between the Lodge and the landing field. No charge is made for the use of the airport.

Crosswind Gear Patented

Patent No. 624,708 for a mechanical crosswind landing gear which is optionally casting and controllable from the cockpit has been allowed by the U. S. Patent Office, on application filed by Charles R. Jamison, Morgantown, W. Va., Oct. 21, 1946.

Jamison, a former fixed base operator, lost his aviation equipment in a hangar fire at Morgantown in July, 1947, and currently operates an automotive service. He also has applied for additional patents on an hydraulically actuated control system for the same basic crosswind gear, designed primarily for large transport aircraft with tricycle landing gear. Casting mechanism is in the landing gear strut.

The inventor believes that the alternate arrangement to freely casting gears, permitting selection of casting and steerable wheels, is preferable for large aircraft.

Oregon Decline

Decline in airport operations in Oregon was reported by the state board of aeronautics after a recent tour of the state's principal fields. Report attributed slackening business to Veterans Administration restrictions cutting off GI flight training, and to public fear of airplanes increased by two recent small plane crashes involving prominent Oregon men, despite a general safety record in the state which is "actually remarkable," Chairman Ben Ruffner stated.

Examples of closed operations cited in the report: at Astoria, Klamath Falls, and Tillamook there is now only one fixed base operation at each city. Formerly there were four at Astoria, four at Klamath Falls and five at Tillamook.

New Manual

New edition of the CAA flight information manual, containing 236 pages of data for pilots, now is available for \$1 from the Superintendent of Documents, Government Printing Office, Washington 25, D. C. Two new chapters on weather service for pilots, and the air rescue league are included. Manual lists all U. S. airports, indexes range station facilities, and overseas communications stations.

BRIEFING FOR DEALERS & DISTRIBUTORS

BRITISH DEMONSTRATIONS—Two of the most interesting American experimental developments in the personal aircraft field, Bob Fulton's Airphibian autplane and Horace Pentecost's baby helicopter, the Hoppicopter, went to England recently. Fulton took his detachable automobile-airplane overseas this summer for a demonstration under the sponsorship of a British newspaper and just got it back in time for his appearance at the National Air Races.

Pentecost is currently reported to be making demonstrations under auspices of the British Ministry of Supply. His one-man "flying tripod" is still in experimental status, but he is looking forward to possible production next year.

Fulton, as previously reported, is winding up his CAA certification requirements on his experimental Airphibian No. 2 and is also considering small scale production next spring.

BEECH AIR CONDITIONER—An experimental air conditioning unit for the Beech Bonanza which works on the water evaporation principle is being tested. The unit is still in early stages and Beech has made no decision about its future use on production models. It fits into the cabin roof of the Bonanza.

NEWS FROM LUSCOMBE—Add to the long list of Luscombe models the new Silvaire Cropmaster which is planned as a modification of the bubble canopy tandem Observer. The all-metal design will be powered with a 90 hp. Continental engine, will have a stalling speed below 40 mph. together with unusual maneuverability, rate and angle of climb. The manufacturer states it is to be ready for delivery in time for spraying next spring.

Special spray tanks will be designed into the airplane, and Luscombe engineers are trying to make the airplane so that it can be used alternately as a standard commercial licensed airplane after removal of spray equipment. Two professional aircraft spray operators have already flown an experimental version of the Cropmaster without spray equipment, and have praised its performance, the manufacturer states.

EFFICIENCY REGATTA—Approximately 100 personal type airplanes are expected to enter class competitions of the fall regatta at Wings Field, Ambler, Pa., Oct. 16. Competition begins at noon but all competing airplanes are expected to be on the field the day before. Five or more entries in each of the following stock model classes are expected: Cessna 140 and 120, Beech Bonanzas, Beechcraft D-18s, Bellancas, Ercoques, Navions, Stinsons, Piper PA-14s, Luscombes, Aeroncas. Speed and fuel consumption will be determining factors in picking the winners. A triangular cross-country course will be flown for two laps with a total distance of approximately 200 miles.

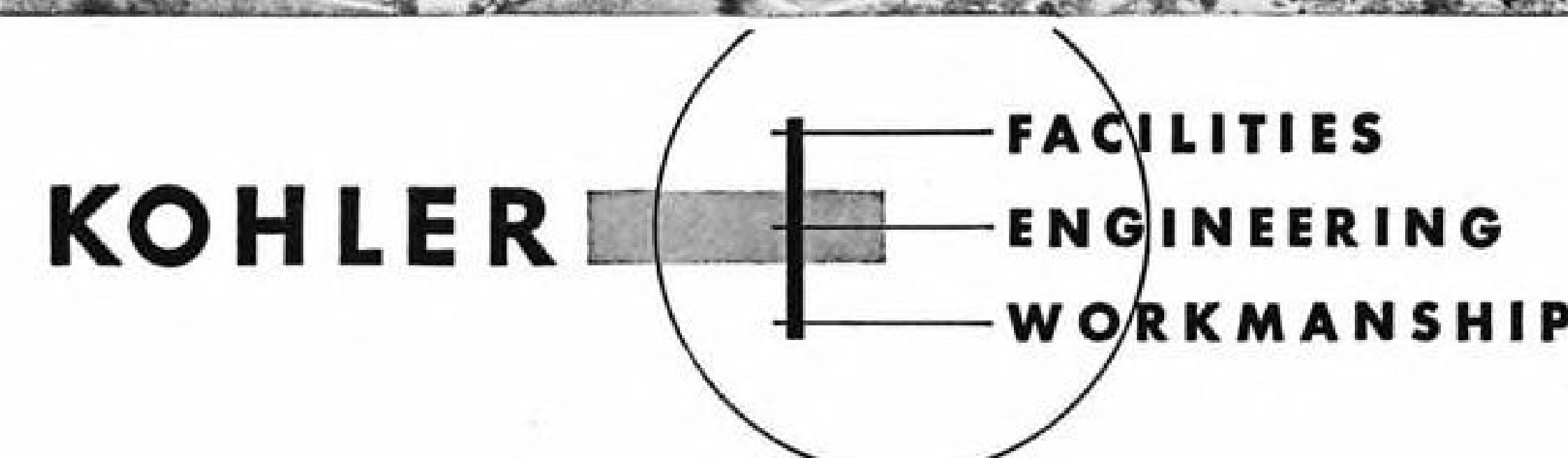
ANDERSON AT MADISON—Anderson Air Activities, Milwaukee, has announced purchase of Hefty Flying Service at Truax Field, Madison, Wis. E. Merritt Anderson, head of the Milwaukee fixed base operation says his new Madison service includes a lease on the modern hangar occupied by Hefty, and the gasoline concession for the field, from the city of Madison.

The field, originally known as Madison Municipal Airport, was expanded into a Class V airport by the Army during World War II. New Anderson base may offer opportunity for developing a college flight training program in conjunction with University of Wisconsin students. Anderson operated a basic training school for Air Force cadets at McBride, Mo., during World War II, where students flew 70,000 hours without a cadet injury or fatality.

He returned to his prewar operation at Milwaukee at war's end with an outstanding record as a training school operator and has been the best known and probably the largest aircraft dealer and training operator in Wisconsin since.

65s ON WAY OUT—William T. Piper, Sr., has been telling his friends that the improved performance of the 90 hp. Piper Cubs is such that his company plans to drop manufacture of the 65 hp. Cubs very soon and concentrate exclusively on the higher horsepower two-seaters and the Family Cruiser.

ALEXANDER McSURELY



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AVIATION WEEK, October 11, 1948

AIR TRANSPORT

Radar Grows as Weather Weapon

Greater role in approaching winter indicated by new developments; unit prices go down as orders go up.

An increasingly important role for radar in the joint military-civil attack on the problems of all-weather flying is evident as the airlines and Air Forces face the beginning of another winter's foul flying weather.

Following are significant developments:

- **Civil Aeronautics Administration** is preparing to buy an additional 30 airport search radar sets and another 20 precision beam approach radar sets (GCA).

- **Air Transport Association** officially approved GCA as a "satisfactory approach procedure" and urged member airlines to file for CAA approval of GCA as a primary bad weather approach method at Chicago, New York and Washington.

- **Production contract** for a new airport traffic control radar (CPN-18) was awarded Bendix Radio division by the U. S. Air Force.

- **TWA became the first domestic airline** to get CAA approval for use of GCA as a primary bad weather approach at its Wilmington, Del., base for both passenger, cargo and ferry flights. CAA approved an initial reduction of 100 ft. in ceiling and one-quarter mile in visibility under current weather minimums when GCA is used. A similar reduction was approved for every six months of operational use to an ultimate GCA minimum of 200 ft. ceiling and one-half mile visibility.

- **Four U. S. international carriers** have received CAA approval to use GCA at three foreign airports with a similar reduction of weather minimums. They are Pan American, TWA and American Overseas at Gander, Newfoundland; Northwest Airlines at Shemya, Alaska; and AOA and Pan American at London.

Acceleration of the airport radar program as urged in the RTCA SC-31 report and executed by the CAA has spurred keener manufacturer competition for the 50 radar sets now up for bidding. In addition to Gilfillan Bros. of Los Angeles and Bendix Radio division of Baltimore, principal competitors, for the initial CAA radar bids, Westinghouse, General Electric and Federal Telephone and Radio Corp. are bidding for the new contracts. CAA

will open the bids Nov. 2-3.

CAA indicated that with the expansion of the airport radar program cost of individual units would show a startling decline. In stepping up its purchases from a single set to eight CAA last year reduced cost of the search radar to \$103,324 and precision beam approach radar to \$97,225. This represents reductions of \$164,514 for the search and \$119,276 for the precision over a single set order.

► **Comparative Costs**—These figures indicate that the cost of airport radar is coming into line with those of the VHF radio beam approach system (ILS) now installed at some 60 U. S. airports. In quantities of 40, a complete ILS installation including marker beacons, monitoring systems and standby equipment now costs \$121,117. The ILS is comparable in function to the radar precision beam set. Search radar is required for air traffic control regardless of whether ILS or precision radar is used as the final approach systems.

Deliveries of the current airport radar sets on order from Gilfillan Bros. are

scheduled to begin next March with installations scheduled for next year as follows: Los Angeles, April 15; Washington, Aug. 15; New York, Sept. 15; Chicago, Oct. 15; Atlanta, Nov. 15; St. Louis, Dec. 15 and Boston, Jan. 15, 1950. Military surplus equipment now at Chicago, New York and Washington will be replaced by new civil airport models.

► **GCA Schedule**—All precision beam radar sets and 20 of the 30 search radar sets now under bid are scheduled for installation at the following airports: Houston; Portland, Ore.; Kansas City; Cincinnati; Jacksonville; Denver; San Francisco; Pittsburgh; Detroit; Seattle; Newark; New Orleans Salt Lake City; Indianapolis; Philadelphia; Memphis; Minneapolis; Honolulu; and Anchorage and Fairbanks, Alaska.

In putting its approval on GCA as a primary approach method, the Air Transport Association warned its member airlines that unless they begin to use GCA formally they will have little voice in the future use of GCA and in determining operational procedures under which it will be used.

► **ATA Recommendation**—In a bulletin to member airlines, Milton W. Arnold, ATA vice president for operations and engineering, recommended that the airline industry officially recognize GCA as an acceptable primary approach procedure when desired, in order that the airlines may have a voice in planning its future. Arnold said that formal use of GCA would "prove of great value to the airlines at the present time, for example, if for some reason the ILS were inoperative."



IATA EXECUTIVES AT BRUSSELS

Two presidents of the International Air Transport Association met with Director General Sir William P. Hildred, center, at the close of the world airline organization's recent fourth annual general meeting at Brussels (Aviation Week, Sept. 27). They are Gilbert Perier, left, president of the Belgian airline, Sabena, and current president

of IATA; and Dr. Albert Plesman, president of KLM Royal Dutch Airlines, elected at Brussels to take office when IATA holds its next annual meeting at The Hague in 1949. Next year's meeting will mark the 30th anniversary of the founding of both KLM and IATA's predecessor, the International Air Traffic Association.

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Arnold recommended that all airlines using Chicago, New York and Washington file an additional form 511 with the CAA requesting approval for an instrument approach procedure based entirely on the use of GCA. Current practice is for airline pilots to formally file an ILS approach at these fields with a request that they be monitored by GCA. Formal application by domestic airlines for GCA use would influence the flight operations division of CAA to adopt a definite position with regard to GCA and the scheduled airlines, Arnold pointed out.

► **Foreign Use**—At present scheduled airline use of GCA is confined almost entirely to international operations. The main north-Atlantic terminals of Gander, Shannon, London and Paris are all equipped with GCA. Anticipated language difficulties with international use of GCA have so far failed to materialize. Recently at London Airport a British GCA crew controlling in English successfully landed four engine transports of the Irish Aer Lingus; Belgian Sabena; Dutch KLM; Air France and BOAC.

Heavy fog made a zero ceiling with only 600 ft. visibility during these landings. Both northern and central Pacific routes to the Orient have GCA at their main terminals. On the northern route, Edmonton, Fairbanks, Nome, Anchorage, Shemya, Adak, Tokyo, Okinawa and Shanghai have military GCA sets.

Total of 166 GCA sets are now in operation, with 76 in the continental U. S.

Certificate Ordered

By direct order of President Truman, Pan American Airways last week became the second carrier in little over two months to be certificated for the Pacific Northwest-Hawaii route—a link which a CAB examiner said contained too little traffic potential to support even one operator without high subsidies.

Northwest Airlines late in July was given a five-year certificate to fly from Seattle, Tacoma, Wash., and Portland, Ore., to Honolulu. CAB's new supplementary opinion gives PAA authority to operate between the same points, but Pan American is prohibited from making strictly shuttle trips between the Pacific Northwest and Honolulu. All PAA's flights must continue to other points on its routes beyond Hawaii.

President Truman declared that the national security and the public welfare required establishment of the most direct and expeditious air service possible between the northwestern United States and points on Pan American's existing routes in the South Pacific, the Philippines, Japan and other parts of the Orient.

CAB Critic

Airline economist offers 13-point plan to solve problems facing carriers.

W. L. McMillen, director of economic planning for American Airlines, criticized the Civil Aeronautics Board last week for fostering "unrealistic competition" and advanced a 13-point program as a solution to airline ailments.

He talked before the aeronautic meeting of the Society of Automotive Engineers at Los Angeles, explaining that the plan he suggested was his own and he was not speaking for American. ► **Palliatives**—McMillen declared that the continual (a) bolstering of inefficient units of the industry with high subsidy, (b) constant fare increases, and (c) debts piled upon debts just as route duplication is now piled upon route duplication may work for a short time, but they are palliatives, not remedies.

Cautioning against using only one or a few of his suggestions, the American Airlines official presented his entire 13 recommendations as a package for a

collective or integrated remedy.

► **Remedy Offered**—His program comprised the following:

1. The industry can and must make further economies by new methods and simplification of present ones.

2. The industry can and must be more aggressive and imaginative in its selling.

3. Relentlessly press for better performance and regularity.

4. Stop certificating more competition.

5. Stop encouraging non-certificated carriers, in effect operating a scheduled service in direct violation of the regulations, should be stopped now. CAB has made a gesture, but its legal processes are slow.

6. Stop encouraging non-certificated cream-skimming competition.

7. Permit and even encourage any airline merger or consolidation that makes sense, at least if it brings about a reduction in number of carriers between cities where there are now too many.

8. The airlines should initiate and the CAB should permit and encourage promotional rates and fares which result in filling seats or space now running empty, for the expense is there whether there is revenue or not. These special rates should be directed at those not now flying, rather than directed toward diverting traffic which would otherwise fly at the regular rate.

9. Use the palliatives of high subsidy, increased fares, and government loans only in those cases where it is clear that financial soundness of the carrier is attainable in a short period, that is, months rather than years.

10. CAB should use its power of effecting plane interchange to a greater extent.

11. After some of the ridiculous competitive situations are eliminated, airline rate and fare structures should be revised so as more nearly to make each type of traffic bear its share of the cost.

12. Discourage unnecessary "non-stop" schedules among competitive airlines.

13. The transportation tax should be eliminated.

State Regulation Challenged

A protest on behalf of all certificated airlines operating in Indiana against state economic regulation of scheduled air carriers was made recently by Warren N. Martin, research assistant in TWA's governmental affairs department. As spokesman for TWA, American, Chicago & Southern, Delta, Eastern and United, Martin urged the Indiana Aeronautics Commission to discourage "ill-advised legislation which would seriously jeopardize the further development of air transportation not only in Indiana but throughout the United States."

Nonskeds in Middle Of Three-Way Squeeze

A three-way squeeze applied by CAB, the Federal courts and the scheduled airlines was tightening around at least nine nonscheduled and charter operators early this month, although the uncertificated carriers were taking steps to ease the pressure.

Court proceedings against Standard Air Lines, transcontinental nonsked, and Modern Air Transport, which flies the New York-Puerto Rico route, were at a critical point last week. American Airlines was seeking a temporary or permanent injunction against Standard in New York District Court, and review of CAB's order of Aug. 4 suspending SAL's letter of registration still was pending in the U. S. Circuit Court for the District of Columbia.

► **Enforcement Cases**—CAB is seeking a temporary or permanent injunction against Modern in U. S. District Court for the Southern District of New York to enjoin the company from "further and continued violation of the Civil Aeronautics Act." Other enforcement proceedings under way before CAB involve Viking Airlines, NATS Air Transportation Service, Golden North Airways, Mt. McKinley Airways, American Air Transport, Transocean Air Lines and Virgin Island Air Service, all of which operate large-type transports. The Board is also investigating a TWA complaint against Seaboard & Western Airlines.

Latest CAB action was the suspension of letters of registration held by six large irregular operators for failure to file proper reports with the Board. The carriers are Alaskan Southern Airlines, Seattle; Burke Air Transport, Miami; Delta Aircraft Co., Brownsville, Tex.; Golden Airways, Long Beach, Calif.; Northern Airlines, Seattle; and Virgin Island Air Service, Miami Springs, Fla. (A receiver for Northern Airlines, for a time one of the largest operators on the Pacific Northwest-Alaska run, was appointed recently.)

► **Washington Meeting Set**—Meanwhile, the newly-formed Independent Air Carrier Association (AVIATION WEEK, Sept. 13) has invited all CAB members and the Civil Aeronautics Administrator to attend a meeting in Washington Oct. 18 and 19 "to seek constructive answers to the problems and issues affecting large noncertificated operators." IACA has asked CAB to withhold further action against the operations and interests of large irregular carriers until after this session.

Four members of the Air Coach Association, composed of transcontinental nonscheduled operators, have appealed to CAB for immediate hearings on their applications to establish regularly-

scheduled service. Standard Air Lines, Air Transport Carriers, Viking Airlines and Air America—all based in California—said that further delay will permanently deprive the public of inexpensive coast-to-coast air travel.

The nonskeds' New York-California fares are now about \$60 lower than those charged by the certificated airlines. But at least one of the scheduled transcontinental lines may follow the lead of Pan American Airways and Capital Airlines by establishing low-cost "skycoach" service.

Airlines Hear Details On TWA Money-Saving

TWA's economy program, which has pared costs more than \$400,000 monthly during the past year, was explained to representatives of 18 airlines during a recent three-day meeting called by the Air Transport Association at Kansas City, Mo., for the express purpose of studying the company's "astounding progress" in the budgetary control field.

Henry McGrew, director of TWA's budgetary control department, explained that constant surveillance over all costs has resulted in big and little savings which pyramided into a substantial figure in a year's time. Recent organizational changes alone are estimated to have saved the company \$200,000 monthly.

► **Personnel Cut Back**—During the last 18 months, personnel has been cut back from around 17,000 to 13,500. With 17,000 persons TWA grosses about \$60,000,000 annually. This year, with 3500 fewer employees, a \$100,000,000 gross income is anticipated.

Typical of some smaller economies was a saving of \$5000 annually at one point alone in the cost of overalls when arrangements were made to have a laundry furnish them free in order to get the cleaning business. Distilled water was eliminated from water coolers in favor of city water, with savings of \$15 to \$30 monthly per cooler at the airline's 52 airport station offices.

Number of forms was slashed from 1800 to 1100 in one year, and within another year it is hoped the total can be further reduced to less than 800. Savings in this category are estimated at \$10,000 monthly.

► **Cooperative Arrangements**—Floor space occupied by the company's offices in the U. S. alone was appraised critically, with resulting economies aggregating more than \$25,000. This was done by sub-leasing unused office space to other airlines or commercial firms. In Chicago, a jeweler leased part of the showroom ticket office, and Chicago & Southern Air Lines took over unused space at the Kansas City ticket counter. Cooperative arrangements are in effect with other airlines at 27 points.

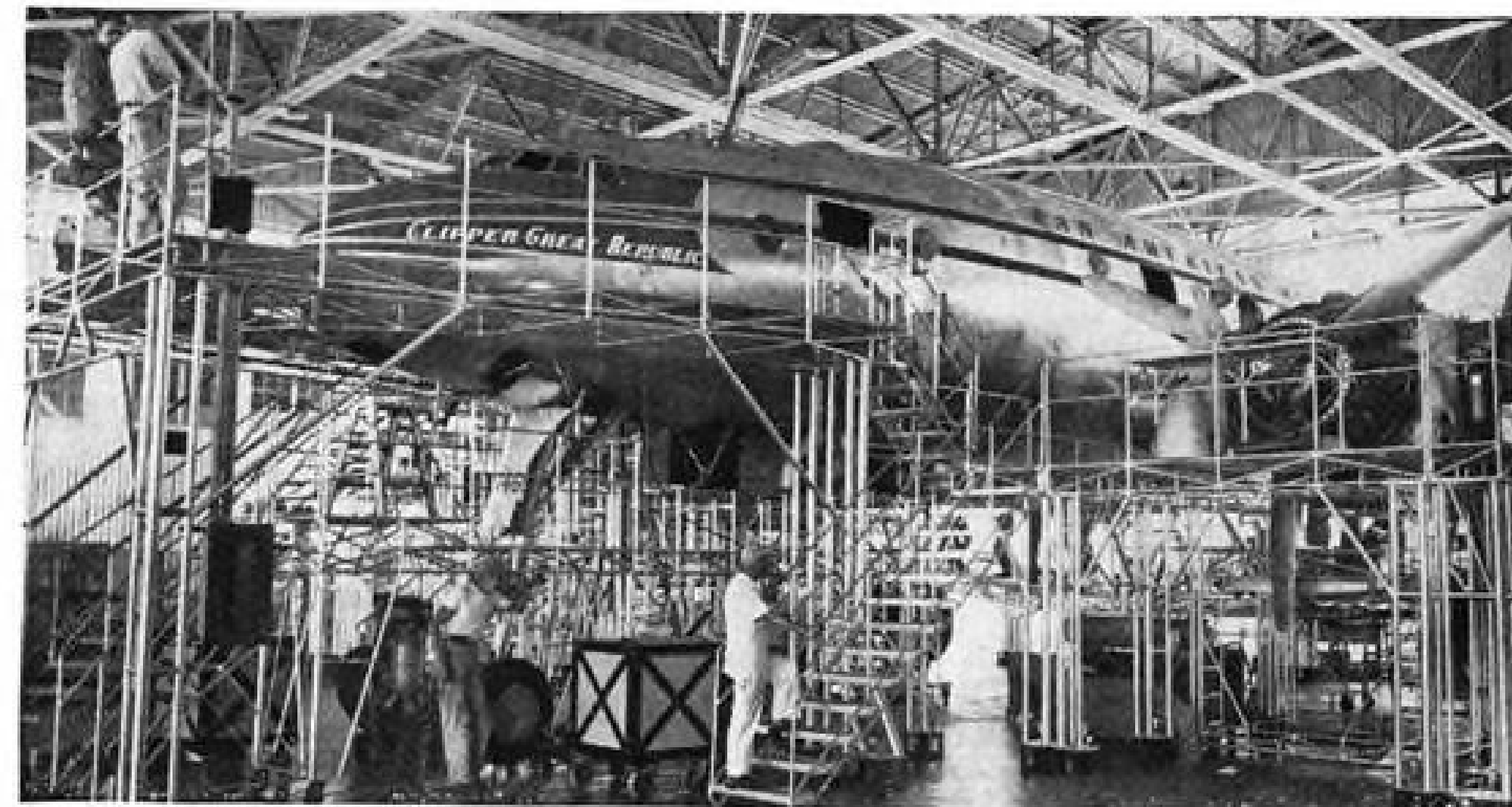
Economies of \$3000 a month were achieved by closer supervision of long distance telephone calls and elimination of duplicating telephone instruments. Additional thousands of dollars were saved by reducing food wastage. On-time flight performance was increased, helping to reduce employees' overtime pay.

► **Ton-Mile Costs**—A. V. Leslie, TWA's vice president and treasurer, summed up the results of the economy program. He said that in the first six months of 1947 the company flew 70,146,000 available ton miles at a cost of 35.95 cents a ton mile.



PARCEL POST STUDY

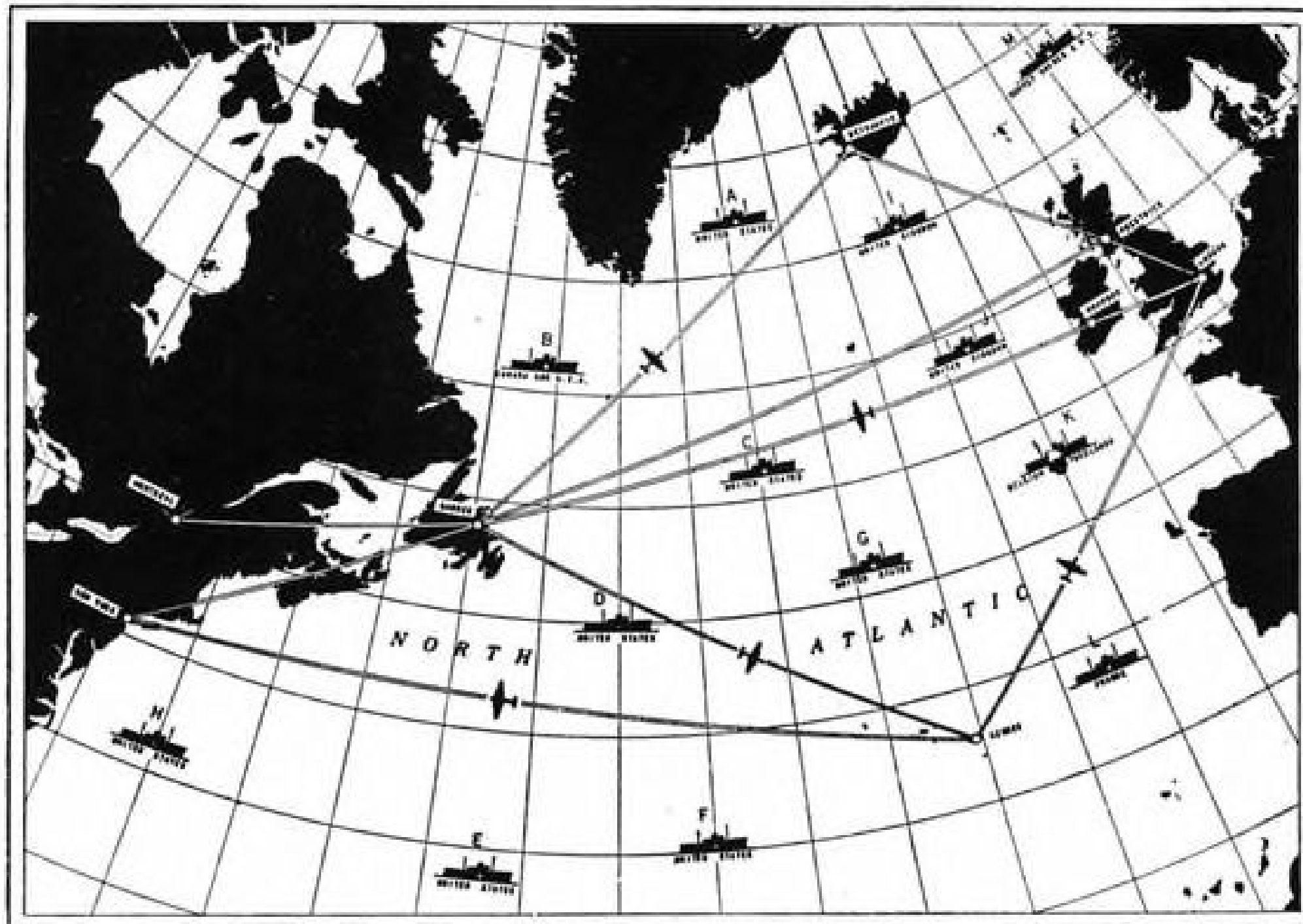
Vigorous promotion by both the airlines and Post Office Department is bringing a steady rise in the volume of domestic air parcel post. Shortly after the service was inaugurated last month the New York City postmaster reported that 4058 parcels were mailed at his stations during a 24-hour period. Of this number, 944 went to the eighth, or far west, postal zone. Volume is expected to soar during the Christmas season when late shoppers will want to expedite their parcels. Mail order houses in Chicago and other cities are expected to take full advantage of the new service. Acting Postmaster John Haderlein of Chicago is shown above making a personal inspection of air parcel post handling methods at Chicago Municipal Airport.



OVERHAUL DOCK FOR CONNIES

First Pan American Airways Constellation to be serviced in the company's Miami shops is shown in a specially constructed dock undergoing an eight-day overhaul after flying 800 hr. The trans-Atlantic Clipper, flown south from PAA's Atlantic division

headquarters at LaGuardia Field, inaugurated the airline's new mass production maintenance program under which four-engine equipment operating to all parts of the world will be overhauled at Miami. Steel dock was made by PAA's metal shop.



NORTH ATLANTIC WEATHER STATIONS

Airlines operating over the North Atlantic will be able to rely on a complete 13-ship ocean weather station network by next June, according to the International Civil Aviation Organization. Eight of the stations maintained by nations whose territories ring the North Atlantic are now in operation. The U. S. has notified ICAO

that the remaining five positions (stations D, E, F, H and G) will be manned in the next nine months. An ICAO weather ship, the U. S. Coast Guard cutter Bibb, manning ocean station C, rescued 69 passengers and crewmen of the flying boat Bermuda Sky Queen when it ran short of fuel and landed in the Atlantic a year ago.

In the second half of 1947, available ton miles were increased to 89,496,000, but the cost per ton mile fell to 33.22 cents, and the resulting saving was \$2,443,241 during the six-month period. In the first half of 1948, when TWA flew 90,053,000 available ton miles, the unit cost was lowered still further to 33.15 cents. And in the first three weeks of September, the cost per available ton mile dropped slightly below 30 cents. Leslie emphasized that savings would have been materially greater but for the continued increase in the cost of wages, materials and supplies.

Tax-Free Fare Plan For Commuter Out

The Bureau of Internal Revenue has shattered the airlines' hopes of giving their best customers relief from the 15 percent federal transportation tax.

Last Month (AVIATION WEEK, Sept. 27), the Bureau ruled that Mid-Continental Airlines could offer tax-free books of four or more 30-day "commutation" tickets between various pairs of cities on its system. Immediately much of the air transport industry started a commuter fare bandwagon rolling. Some airlines said they would offer commuter fares between every pair of points on their systems regardless of distance.

mont Airlines and Southwest Airways, have made similar moves; and Northeast Airlines has a family fare tariff effective on every day but Saturday and Sunday.

On the Atlantic run, American Overseas Airlines and other operators have reported heavy public response to the reduced roundtrip fares to Europe which went in effect Oct. 1. Reservations already made as a result of the fare cut indicate a substantial increase in passenger traffic during October compared to the same 1947 month, according to R. E. S. Deichler, AOA's vice president-sales. The excursion rates, which will be valid until next spring, are offered by all trans-Atlantic flag carriers and provide for roundtrip travel at one and one-third times the former one-way fare.

Turn-Around Maintenance

TWA has announced transfer of turn-around maintenance on its overseas equipment from the New Castle, Del., overhaul base to LaGuardia Field.

Made in the interest of economy and efficiency, the change went into effect Oct. 1 when turn-around inspection on 13 DC-4s was shifted to LaGuardia. A similar move affecting 12 Constellations is slated for Nov. 1.

The New Castle overhaul base will continue to handle such major jobs as engine changes and structural inspection and maintenance. The program is planned so that at least one of TWA's overseas aircraft will be undergoing major overhaul at New Castle at all times.

Personnel-wise, the change involves the transfer of about 21 mechanics and 24 other workers from New Castle to LaGuardia. A staff of about 425 mechanics, together with more than 1000 other employees of TWA's international operations division, will remain at New Castle.

Alaska Calls Planes Back

Alaska Airlines has called all but one of its transport planes back from Europe to provide emergency service between the United States and Alaska, which has been isolated by a West Coast maritime strike since early September (AVIATION WEEK, Oct. 4). The planes had been operating across the Atlantic and in Europe as auxiliaries in the Military Air Transport Service's Berlin airlift.

With addition of the planes formerly in Europe, Alaska Airlines will have six DC-4s and six C-46s available for the Seattle-Alaska supply run. President James A. Wooten said his company is now ready to fly 100,000 lb. of freight daily into the Territory, and even 148,000 lb., if necessary. The carrier has temporary authority from CAB to operate freely on the Seattle-Alaska run during the strike emergency.

SHORTLINES

► **American**—Had taken delivery on 35 of its 75 Convair-Liners by Oct. 1.

► **Braniff**—Showed \$274,256 net income for the three months ended June 30 after making adjustments to reflect increased mail pay offered by CAB recently (AVIATION WEEK, Sept. 27).

► **BOAC**—Will begin transferring its Montreal maintenance base to Great Britain this week.

► **Challenger**—A CAB examiner has recommended a one-year extension of the feeder's temporary certificate. Present expiration date is Mar. 31, 1949.

► **Eastern**—Has announced plans to build a \$250,000 recreation center for its 4000 employees at Miami. Unit will occupy an area approximately two blocks square directly across the street from EAL's operations and maintenance base on NW. 36th St.

► **Flying Tiger Line**—Reports \$349,263 net loss for year ended June 30 against a \$778,129 deficit for the preceding fiscal year. Operating revenues were \$3,281,815 against \$4,725,544 the previous year.

► **Inland Airways**—The Washington intra-state carrier has asked CAB for a certificate to operate between Walla Walla (its home base) and Seattle, and between Spokane and Portland, Ore. Company has two Lockheed Lodestars.

► **KLM**—Revenue passenger miles flown on the West Indies division increased 49.4 percent from 13,036,748 in the first half of 1947 to 19,472,492 in the same period this year. Air freight volume was up 55.9 percent, and mail gained 45.3 percent.

► **National**—Will absorb ground transportation costs for passengers making connections between New York International (Idlewild) Airport and other New York fields. NAL recently started service into Idlewild, but other domestic carriers have not yet moved in.

► **Northeast**—Reports a \$39,500 operating profit in August and a \$7016 profit in July, compared with a \$33,700 profit in August and a \$62,325 deficit in July last year.

► **Northwest**—Is training 15 pilots for its new route between the Pacific Northwest and Hawaii.

► **Sabena**—About 68 percent of all passengers booked last month for October travel to Europe took advantage of the 30-day roundtrips excursion rates to Brussels, London and Paris. Officials report reservations were heavier than

usual for the beginning of the fall season and that the low-cost excursion rates which became effective Oct. 1 appear to be developing new business.

► **TWA**—Has asked CAB to reconsider its decision denying the carrier a Washington-New York link. United Air Lines, whose bid was also turned down by the Board, has made a similar request.

CAB SCHEDULE

Oct. 11—Prehearing conference in reopened case involving sale of Western Air Lines' Denver-Los Angeles link to United Air Lines. (Docket 2839.)

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

Oct. 13—Prehearing conference in Florida trunkline service case. (Docket 2215 et al.)

Oct. 18—Oral argument in all-expense "Skycruise" case. (Docket 2377 et al.)

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

Oct. 25—Oral argument in Latin American route amendment case. (Docket 2811 et al.)

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

Oct. 26—Hearing on transfer of Western Air Lines' San Diego-Yuma route segment to Arizona Airways. (Docket 3440.)

Nov. 15—Hearing in reopened Mississippi Valley and Southeastern States cases. (Docket 548 and 501.)

Nov. 29—Hearing in New England States service case. (Dockets 2196 et al and 3337.)

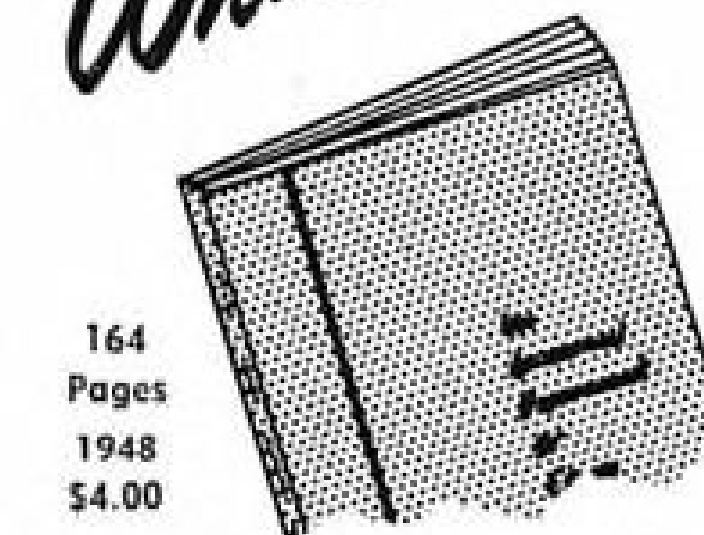
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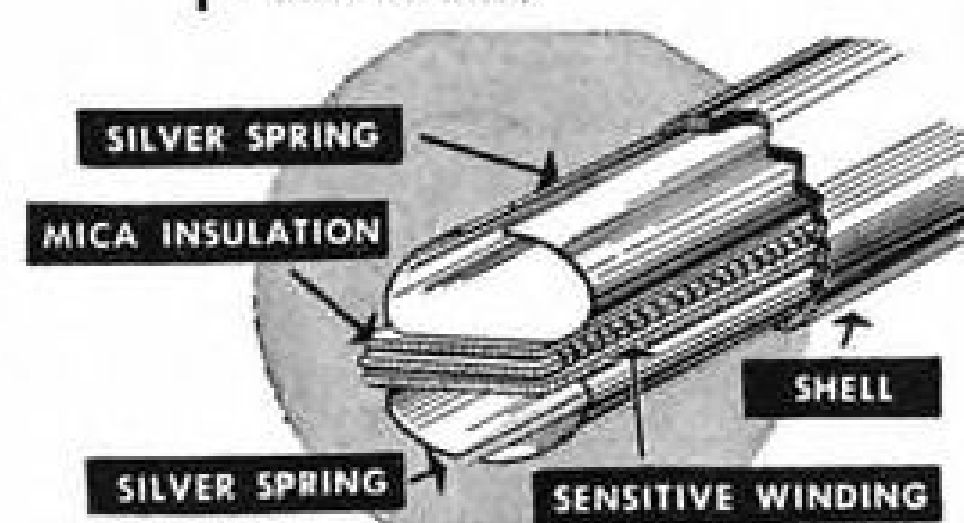
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French Halt Cormoran Production

(McGraw-Hill World News)

PARIS—Recent crash of the 40-ton French Cormoran transport prototype near Villacoublay airfield outside Paris was caused by failure of the flap controls in the opinion of aeronautical experts investigating the crash.

Experts ruled out possibility of pilot error, sabotage, or shifting of the ton and a half of ballast. Flaps suddenly came all the way down as the plane was coming in for landing at 600 ft. altitude. The plane stalled and nose dived to earth landing on its back.

Production was immediately halted on the four Cormorans already under construction, and plans for starting production on 20 of the transports ordered by the French Air Force were postponed following the crash. French engineers are going over the blueprints for the Cormoran with a fine-toothed comb looking for basic miscalculations of design. If none is found, another prototype will be built and tested before production of the plane is resumed.

► **Press Uproar**—The crash of the Cormoran raised an uproar in the Paris press. It was the fourth French plane to crash on a test flight since the beginning of the year. The prototype of the helicopter NC-2,001 crashed on Jan. 3, the pilot bailed out of the prototype of the VB-10, a twin-engine pursuit plane a week later, and the Latecoere 631

flying boat Lionel-de-Marmier made a forced landing off the coast of South America on Feb. 21. The moderate and rightwing press thought this was a pretty bad record and blamed inefficiency of the nationalized aircraft industry for the string of disasters.

The press recalled that an inspector-general of the Air Force, testifying recently before the National Assembly, warned that design details of the Cormoran had not been studied sufficiently to justify construction of a prototype much less putting the plane into production.

► **Pride of France**—The Cormoran known to the French Air Force as the "N.C. 211" was the pride of the French nationalized aircraft industry and France's largest plane. It was estimated that 100 of the ships could transport a full division of troops.

Here are the plane's specifications: wingspan 143 ft., height 32 ft. 9.6 in., wheel gage 25 ft., length overall 99 ft. 1.2 in., weight per sq. yd. 400 lb., weight empty 20.9 tons, weight loaded 44 tons, payload 17 tons, topspeed 250 mph., cruising speed 200 mph., rate of climb 13 ft./sec., ceiling 28,000 ft., takes off in 650 yd., lands in 430 yd., at 90 mph. range 1000 miles, four Gnome and Rhone engines developing 1600 hp. each on takeoff and 800 hp. each at cruising speed.

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LETTERS

A Pilot's View

Your editorial on our action against National Airlines using Strikebreaker Johnson to promote publicity for themselves noted and appreciated.

The pilots have respect for you. Your news and editorials are generally as fair as labor can hope for.

We are only human. A strikebreaker is our bitter enemy. By strikebreaking, a man proves he is not a sportsman. He has taken unfair advantage of a situation to better, or attempt to better, his own position. He contributed nothing. He is taking all.

So I simply ask—Would you have any respect for us if we showed no spirit or fight?

Please remember our major action is not against Johnson. We respect his winning the Thompson Trophy. We are in a terrific struggle with National Airlines, and it is our duty to attempt to, and to counteract any publicity they might receive.

TOM SUTOR
Regular NAL Pilot
Hotel Hamilton
Washington, D. C.

A Common Complaint

I return your letter (from the circulation department) asking me to state my interest in aviation, justifying the privilege of subscribing to your magazine. This must be quite a privilege. . . .

I am not a licensed pilot, do not operate any kind of plane, and am not an aviation technician of any kind whatever, and hardly know a flap from a propeller. . . .

However, I am intensely interested in this still infant industry, which with all its present handicaps should in not too many years become the accepted form of transportation.

I have accordingly acquired some stocks and hope to acquire some more. And, although admittedly very timid about it, I am trying to become an "at ease" passenger, and would like to board the planes with the same assurance that I get into my automobile.

The roads and streets are so crowded now, the planes ought to be safer. The airlines know it, the pilots know it, but do I know it? I thought maybe your magazine would help me out in these interests.

It sure is hard to get your magazine.

WILLARD SHAMBAUGH
Fort Wayne, Ind.

(Like all business magazines, AVIATION WEEK prefers its readers to be engaged in some phase of industrial aviation. Our advertisers want to reach the important business men in this field. They are not interested in reaching "fans," youngsters, or the public generally. If they were they would advertise elsewhere. A business magazine must stick to its own business. It cannot

and does not wish to compete with general magazines with their millions of readers. That is why AVIATION WEEK is on no newsstands. That is why anyone who sends us a subscription order without identifying his business connection in aviation is queried before his subscription starts. This strict adherence to quality standards may help to explain why AVIATION WEEK has the most important list of business and industry subscribers in the aeronautical publication field. We are proud of our readers.—Ed. Note.)

Commissions for Fixed Basers

Here is a matter you may want to take up the cudgels on some day after making your own investigation in your own way.

The Air Transport Association puts fixed base operators in the same category as hotel porters when it comes to paying them a commission for developing air travel.

As you know, the Merchants Trade Journal has subscribers in 10,000 to 11,000 cities and towns, and because of the interest these smaller communities have in air transportation I have followed this feeder line development closely.

There are many cities of 5,000 to 50,000 where the train service is bad into major terminals. The trains reach these larger medium-sized cities at ungodly hours, both coming and going, and the local fixed base operator has a marvelous opportunity to develop a charter business into the nearby terminals of the airlines and can feed a terrific volume of traffic into them.

Certainly the operator is in the business of air transportation and if he were to receive the 5 percent commission that is paid to the travel agencies, I am sure it would be fine for the traveling public as well as the airlines and operators.

I happen to know from personal experience in dealing with many travel bureaus, and the experiences of many friends, that these bureaus absolutely do not initiate air travel.

We wrote recently to two bureaus for information regarding tours to Mexico City and to Lake Louise. In both cases they assumed we were going by rail and sent us the rail schedules. I had to write to them for the air schedules and they were very lackadaisical and indifferent in encouraging air travel.

I have had that experience in previous years. So have many of my friends. Yet these travel bureaus get paid 5 percent by the airlines without putting themselves out to promote air against rail transportation. The fixed base operators certainly have every incentive for developing business in the smaller communities for the airlines.

Before retiring as president of NAA, I tried very hard to get the airlines to see the light on this subject, and with not too much success up to now.

ARTHUR I. BOREMAN, Publisher
Merchants Trade Journal
Des Moines, Iowa

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Of Aviation Week, published weekly at Albany, N. Y., for October 1, 1948.

State of New York) ss,
County of New York)
Before me, a Notary Public in and for the State and county aforesaid, personally appeared J. A. Gerardi, who, having been duly sworn according to law, deposes and says that he is the Secretary of the McGraw-Hill Publishing Company, Inc., publisher of Aviation Week, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Acts of March 3, 1933, and July 2, 1946 (section 537, Postal Laws and Regulations), printed on the reverse of Form 3526, to wit:

1. That the name and address of the publisher, editor, managing editor, and business manager is: Publisher McGraw-Hill Publishing Company, Inc.; Editor, Robert H. Wood; Managing Editor, Merlin H. Mickel; Business Manager, John G. Johnson, all of 330 West 42nd St., New York 18, N. Y.

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J. A. GERARDI, Secretary.
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(My commission expires March 30, 1950.)

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STRICTLY PERSONAL

INSIDE STORY OF CAB & "AIR CRASH"—The airlines don't have enough travail so Universal is filming something called "Air Crash." The industry has been looping the loop because a title like that out of Hollywood could rival the effect of a nationwide epidemic of front page banner headlines about a real airline accident.

The ATA's fears skyrocketed when a Universal agent dropped by a Los Angeles plane factory on a shopping trip for one of its big ultra-modern four-engined airliners. The manufacturer's happiness over a prospective sale was wiped out when Universal calmly said they needed a real luxury airliner for a thrilling, honest to gosh big crash scene right before the cameras. We think the plane deal is off. We hope the picture is, too.

But if it isn't, ATA will at least offer every possible constructive suggestion, and its public relations director, John Thompson, has offered many already. So has CAB. CAB's cooperation, incidentally, has been the subject of so much gossip that we devote this space today to Ed Slattery, the Board's chief of public information. He has made known his side of the controversy in a letter written to Edgar H. Bauman, syndicated aviation columnist, who requested Slattery's story.

Slattery nails a rumor that he inspired the picture. His first knowledge of it was from a letter written him by Universal's public relations director, who had requested and obtained CAB air carrier accident reports, all of which had been released to the public. The PRO had obtained the reports on a visit to Washington during Slattery's vacation.

Slattery writes:

"About two weeks later (late July) Jerry Bresler, producer, called at my office and requested additional copies of accident reports. He outlined his tentative plans for the production of the picture at this time and I arranged for him to meet with the chairman of the CAB that afternoon. At a luncheon meeting, prior to his brief visit with the chairman, Mr. Bresler discussed the proposed picture with Gen. Oliver P. Echols, president of AIA, Mr. Robert Ramspeck, vice president of ATA, and Mr. Stuart Tipton, general counsel of ATA. Earlier the same day I urged Mr. Bresler to discuss the picture also with representatives of the Air Line Pilots Assn., in order that everyone concerned would be fully informed of the project, and he assured me that he would do so.

"Universal took the position that the thorough investigation carried out by the Federal government in seeking to determine the cause of air carrier accidents, in order to prevent similar accidents, was a dramatic story of American air safety and one that would be reassuring to the public. Universal informed us they were desirous of producing a picture that would be interesting and authentic, presented in documentary style, and intended to reflect credit on the air transport industry. Moreover, Universal took the time to discuss the picture with aviation industry leaders and was made aware of their feelings in the matter, and told of the possible harm that could result to air transportation if the picture was over-dramatized. Nevertheless, from the very beginning, the fact that Hollywood was desirous of producing a picture on the subject worried me.

"Like most aviation people I have been often dismayed by a Hollywood tendency to produce technically inaccurate aviation pictures featuring a series of flaming crashes supplemented by horror close-ups. I realize, of course, that Universal is one of the better studios and would be far less apt to indulge in such Hollywood histrionics than would a small, second-class company specializing in blood and thunder productions. These thoughts were much in my mind, however, when Universal, by letter from Mr. Gordon (PRO) and verbally through Mr. Bresler, asked the Board's cooperation to the extent of accepting Board comments and suggestions on the first draft of the movie script, and on the final screen play. We agreed to accept this offer. Universal pointed out that they also considered the aeronautical accuracy of this picture an important part of the story and asked for the services of a Board employee to review certain scenes in the picture and I recommended that Mr. William K. Andrews, Director of the Board's Bureau of Safety Investigation, be available to serve Universal as a technical consultant whenever required.

"From the time that Universal first proposed to make such a movie there were two courses open to the Board: (1) We either did nothing except supply public air carrier accident reports to Universal which they could adapt to the screen without restriction or guidance, or (2) We participated to the extent of being able to edit out as much harmful Hollywood interpretation as possible. Inasmuch as Universal is determined to produce this picture, I believe the course we followed will prove wisest."

R. H. W.

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"Airline Record," 1948 edition, published by Roy R. Roadcap, 208 So. La-Salle St., Chicago 4, Ill. Includes route development, management, traffic statistics, income accounts, payload analysis, balance sheets, capitalization ratios and historical financial summaries for 24 scheduled airlines during 1947. Bound, 120 pages, \$7.50 per copy.

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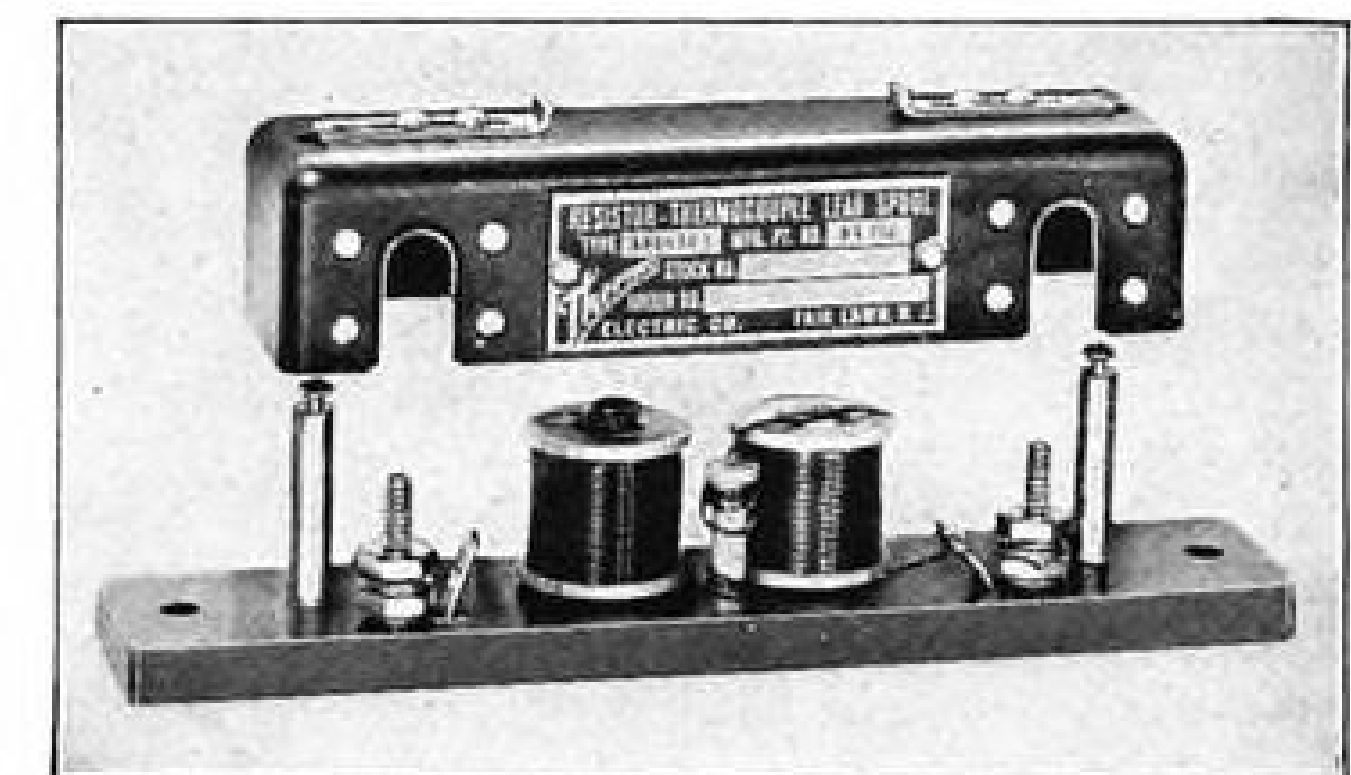
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EDITORIAL

Operation Whirlwind—Helicopters Proven

A little group of 35 men completed a year's operation of the world's first scheduled commercial helicopter service Oct. 1, and a civic celebration hailed a significant milestone in aviation history and public service.

Los Angeles Airways' industrious group call their effort "Operation Whirlwind." It all began when LAA was organized in 1944 and applied to CAB for a mail certificate, which was granted in May 1947, for a three-year period. Service started Oct. 1, 1947. Forty-four suburbs within a 50-mile radius of Los Angeles airport are served three times daily—including night flights—on three routes. A fourth segment to Los Angeles terminal annex Post Office is flown 12 times daily, frequently with a half dozen extra sections.

Never has the youthful helicopter been given such an opportunity to prove its worth. Never did a sprawling city enjoy such swift mail service.

Has the helicopter proved out? Far beyond expectations. Mileage performance was over 93 percent every month except one from November through June. Operations costs have been trimmed. Public enthusiasm is at a peak. Air mail usage has risen sharply at all of the suburbs as well as the main post office. Safety record is perfect. Service interruptions due to mechanical difficulties have been almost nil. The company expects to complete 1948 in the black. Even better service is ahead.

"The reliability and safety of the helicopter is virtually a proven fact," LAA's president and dynamo, Clarence Belinn, reports. "It is a result of one year's extremely vigorous operation on AM-84. It is the product of over 40,000 precision landings and takeoffs carrying over 1,750,000 lb. of mail and parcel post in its first year. It delivers the mail in minutes instead of hours. Formerly, it took as long for a letter to travel between the communities of the metropolitan area as it did to cross the continent."

LAA flies 356 route miles. It is performing close to 5,500,000 pound-miles a month. In September it carried 273,956 lb. In its first month it carried 60,360 lb. It flies over 400 revenue hours a month, and about 25,000 revenue miles. Total operating expense was \$1.26 a mile in August, \$1.12 in July, in contrast to \$1.70 in October, 1947.

Public response to LAA has amazed the company. From March to August LAA poundage generated at Alhambra increased 257 percent; Burbank increased 142 percent; Colton (serving San Bernardino, Rialto and Bloomington) went up 416 percent; Glendale 211 percent; Santa Monica 255 percent, and Terminal Annex P. O. 415 percent.

Response of the U. S. Post Office Department has been gratifying generally, although since the resignation of Gael Sullivan, former second assistant postmaster general in charge of airmail, P. O. officials have grown cooler toward plans for launching similar metropolitan helicopter services elsewhere. Nevertheless, the Department in behalf of LAA, urged the Civil Aeronautics Board to "consider an area extending beyond 50 miles from downtown Los Angeles as reserved for potential development of services by Los Angeles Airways, Inc."

Despite its unpredictable problems and costs, LAA's loss for the year ended Dec. 31, 1947, was only \$22,400. Deficit at that

date was \$38,910, much of it acquired during the early inoperative period in pressing an application for a southern California feeder airline certificate, which was not granted. At Dec. 31, 1947, assets totaled \$358,620.

Nearly all of the company's income is mail compensation. CAB originally set a rate of \$1 a mile. This was increased June 10 to \$1.50 a mile for the retroactive period Oct. 1, 1947, to Apr. 30, 1948. On and after May 1 the rate is \$1.25 for the first 33,000 miles in any month and 75 cents a mile over 33,000. Cost to taxpayers based on latest P. O. data, for July, is about 5.9 mills per letter.

In a year of spiralling costs elsewhere, LAA has cut expenses 100 percent. Despite high non-recurring development costs, plus the fact that flight equipment is being depreciated on a three-year basis with a 10 percent residual, the company expects to close 1948 with a profit. Net profit to Sept. 1 was \$5,091.

What of the future?

Belinn admits hard work is ahead. "But, someday helicopters will have only about half as many parts and the human equation becomes more efficient with experience. It is our considered opinion that as the speed and size of helicopters increase the ton mile cost will decrease so as to compare favorably with that of any other type of vehicle. This, coupled with the ever-increasing air mail loads will result in virtually a helicopter conveyor system between the large airports and downtown centers."

LAA has no ambitions for higher mail rates from the government. It will fight to cut them. The answer is new equipment and government approval for carrying taxi passengers. Belinn sees AM-84 as an immense, compact passenger and cargo potential. The five million persons could thus be served in a new manner by the company's network, which now operates 204 flight movements every day at Los Angeles Airport. Even a minute penetration of this passenger potential will keep the company in the black, with lower mail compensation, Belinn believes. "It wouldn't take a mathematical wizard to see what the end product could be if we had a helicopter which could carry about six passengers at 25 cents a mile, which is about what taxicabs charge.

"We have reason to believe that sometime in 1951 twin-engine helicopters of approximately 10,000-lb. gross weight will be available, which will be capable of operating with one engine at 120 mph. cruising speed. Based on this it would appear we would be authorized to fly a straight line flight track of 12 miles between the airport and the Terminal Annex. This, plus the added speed of the new helicopter, will result in a flying schedule of six minutes." The present five single-engined ships, adaptations and modifications of the wartime Sikorsky Model R-5, now must detour around a central area, flying 18 miles in 12 minutes.

LAA's 1949 development program centers on automatic flight and navigation. Belinn will concentrate on a modified three-dimensional radar facility. Although it will be costly in the experimental stages, it, with other improvements planned, should result in "extremely significant regularity, safety and economies."

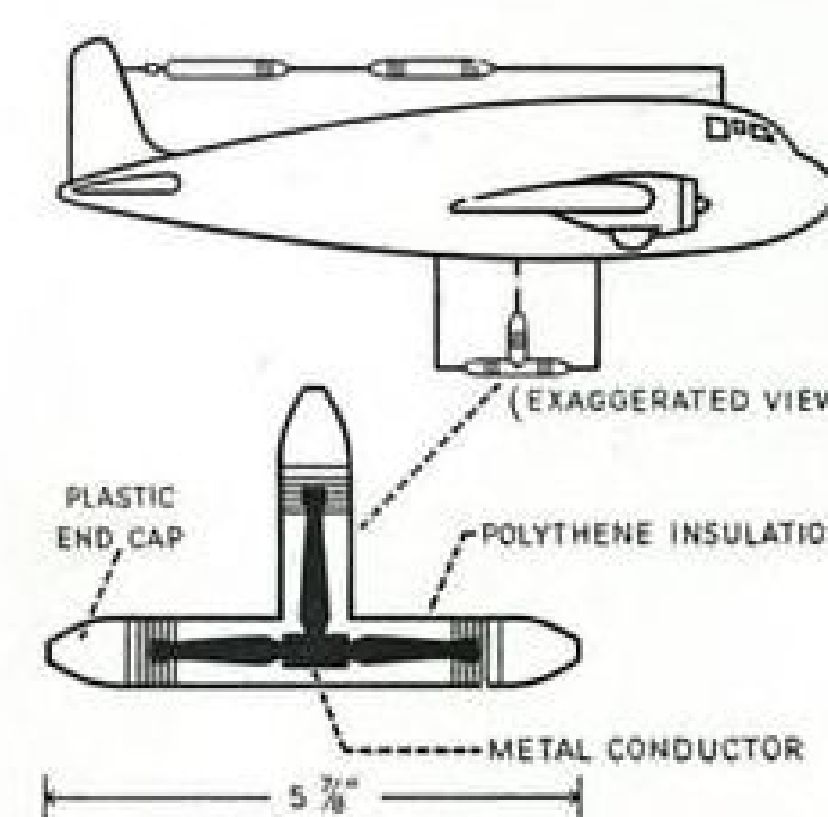
Los Angeles Airways goes down in the history books as a vital pioneer of flight. Its year's achievement is enormous. Its future is assured.

ROBERT H. WOOD



CEILING ZERO...RECEPTION UNLIMITED

Antenna fittings insulated with Du Pont polythene cut precipitation static as much as 90%



Above is a typical example of how polythene-insulated fittings are installed in an Anstat Safety Antenna System. Simple design makes these fittings easy to handle, quick to install, with no special training required. Because of their rugged qualities, maintenance costs stay low, replacements are minimized. And as further indication of the versatility of polythene, polythene-insulated wire is recommended for use with this system.

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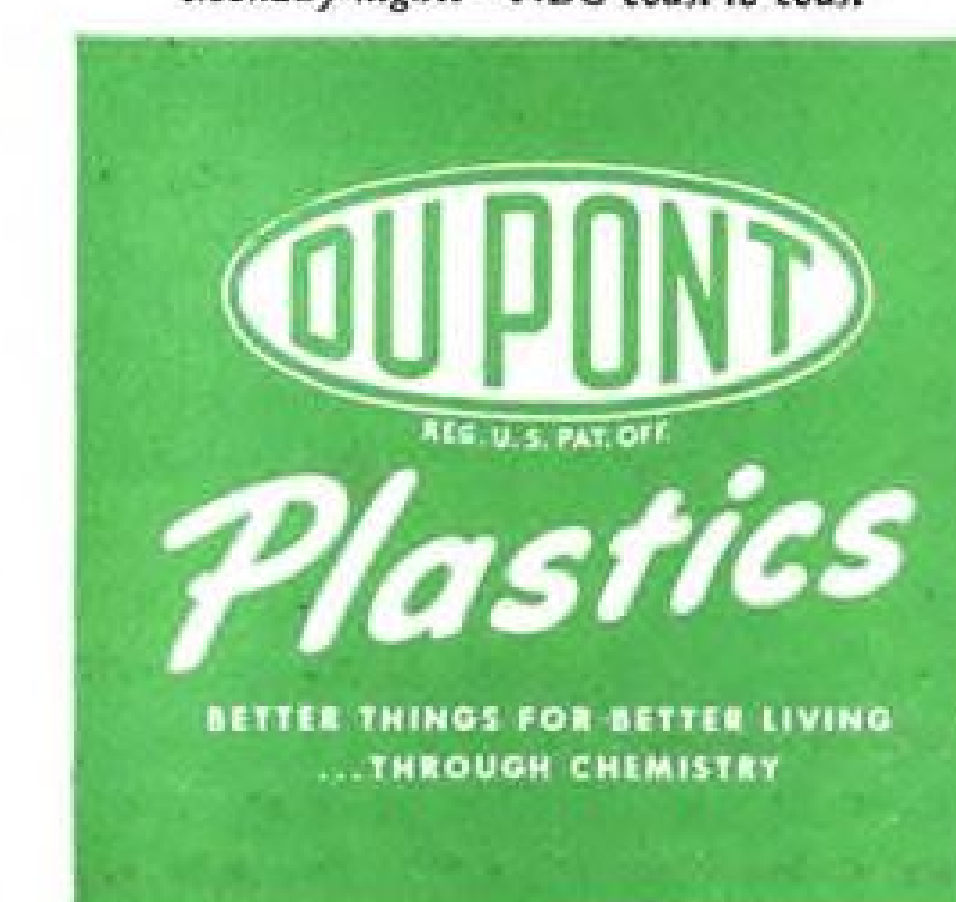
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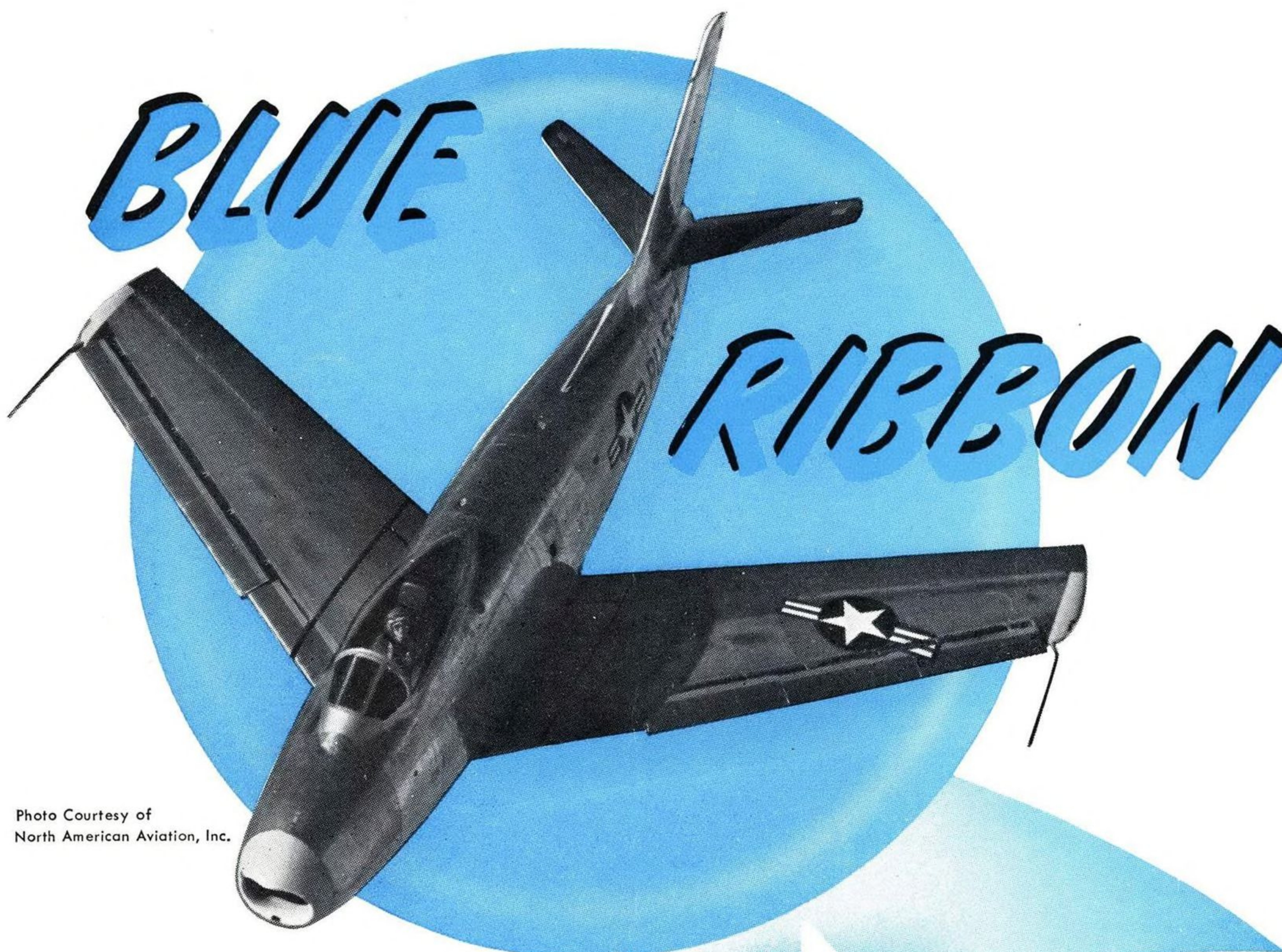


Photo Courtesy of
North American Aviation, Inc.

The North American F-86, powered by a General Electric TG-190 (USAF Type J47) turbo-jet engine, is the "blue ribbon" winner of the new official world speed record of 670.981 miles an hour.

Piloted by veteran ace Major Richard L. Johnson, the turbo-jet plane bettered its own unofficial record of 669.75 mph set at the National Air Races at Cleveland. The F-86 was completely armed and carried a full complement of ammunition. The new record was announced on Air Force Day by General Hoyt S. Vandenberg, Chief of Staff of the Air Force.

The TG-190 power plant of the super-streamlined F-86, was developed and produced by G-E's Aircraft Gas Turbine Divisions at Lynn, Mass. The former speed record of 650.796 miles per hour was set by a Navy Douglas D-558 "Skystreak" propelled by the General Electric designed TG-180.

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