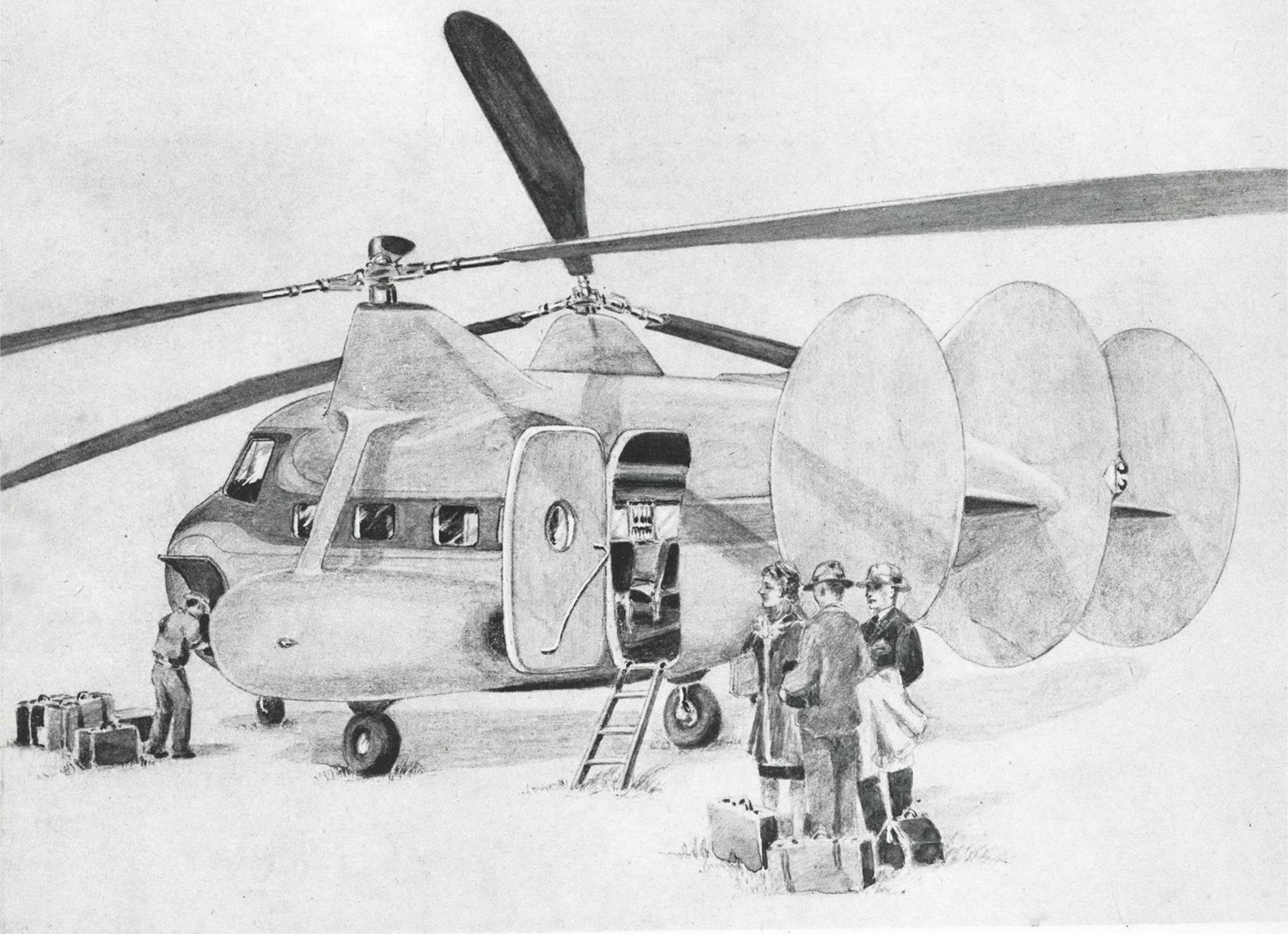


Aviation News

McGRAW-HILL PUBLISHING COMPANY, INC.

JULY 22, 1946



First Twin-Engine Commercial Helicopter: Designed to carry 10 passengers plus pilot and co-pilot, or to handle cargo loads of 1 ton or more, the forthcoming Kellett KH-2 helicopter is expected to be the world's first commercial twin-engined helicopter. It will use intermeshing twin rotors with 65 ft. diameter, and will operate from areas the size of a baseball diamond at 90 mph. cruising speed, or 118 mph. top speed, the manufacturer, Kellett Aircraft Corp., North Wales, Penna., estimates. (See story on page 8)

Grounding of Constellations Disrupts Air Services

Fire causes were diverse, according to early indications as tests begin.....Page 7

Kilgore Research Bill Passes Senate, Goes to House

Calls for President-appointed board; patent rights rouse industry opposition.....Page 11

Non-Sched Carriers File Operations Data With CAB

About 20 percent of unscheduled lines meet July 15 report deadline.....Page 17

Expect Mail-Pay Ruling to Give 25c. Rate to Feeders

New lines will need higher payment; traffic calculations too rosy.....Page 34

The Birdmen's Perch

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

Did we ever mention that we're fond of aviation?

And all its wonderful people? Like the wonderful engineers who perfected the Navy's wonderful counter-rotating props. But discovered that the two propellers created a stroboscopic effect—a line traveling slowly in the opposite direction to the aft propeller, for instance—which made the oldest and most expert pilots dizzy, green, and disinterested.



And the wonderful gal (an honest-to-goodness female woman of the opposite sex!) who plunked down \$1250 and flew away a surplus P-38! Repeat: P-38!

And the wonderful laundry that picks up and delivers laundry and dry cleaning twice a week, *by plane!*

And the wonderful Baltimore pilot who put an automobile horn on his plane to summon airport attendants when he wants attention!

Yessir, we love every wonderful one of 'em!

We also love the wonderful Alchlor Process that makes Gulfpride the wonderful lubricant it is.

You probably know that we tack on this additional refining step after the oil has already been refined. Maybe because of that, you've wondered if it really made a great deal of difference in the long run . . . even though we've told you that the Alchlor Process *does* get extra carbon and sludge formers out of Gulfpride.

Well, sir, when we Alchlor-Process 10 quarts of the oil we've already refined by conventional methods—we take out a whole quart and a half of impurities, leaving only 8½ quarts of Gulfpride oil!

See why you get better lubrication with wonderful Gulfpride Oil?

SANI-SOIL-SET . . . PART 2

We were telling you last month about Gulf Sani-Soil-Set which makes dust lay like linoleum.

And we hadn't finished.

You know what a dirt port can be like with someone running up an engine and the wind blowing the wrong way, don't you?

Well, with Sani-Soil-Set on the ground, that doesn't happen! Water sprinkling is eliminated, cleaning and dusting inside buildings is minimized and so is frequent resurfacing of the field due to "blow away."

And a single application of this dust-laying agent often lasts a whole year. It doesn't evaporate. It doesn't wash away during rains.

Want some more information? Drop us a card.

LITTLE KNOWN FACTS DEPT.

Here's another month gone by with no Senior Grade Perch Pilot in The Little Known Facts About Well Known Planes Department.

Meanwhile, here are the new Perch

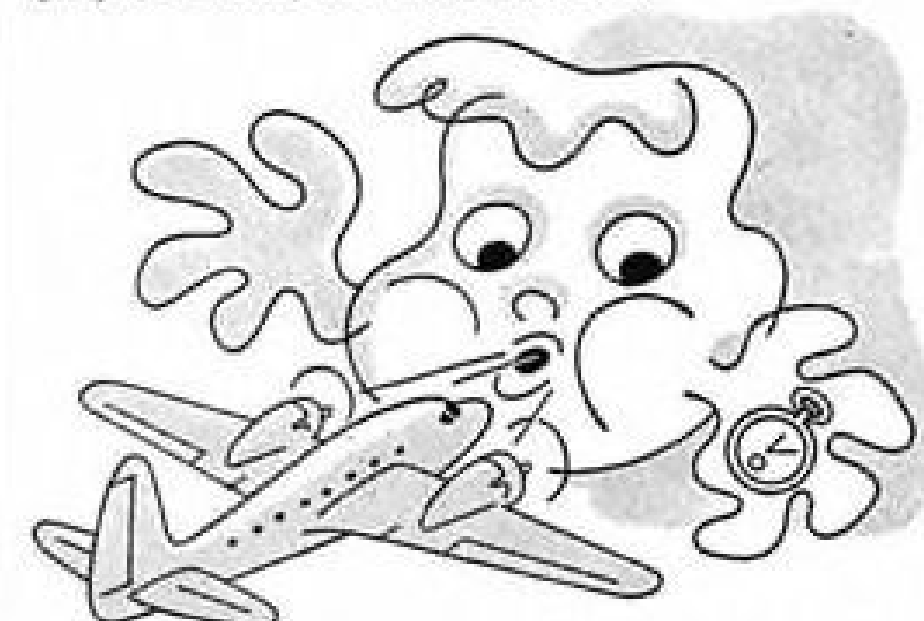
Pilots (bottom rung) and the "Facts" that won them their rank:

Stewart Hartshorn (P-97507), 250 Fifth Ave., N. Y. C., is now a Perch Pilot because:

"World War I bombers used shade rollers and shade cloth as 'bomb chamber' doors. They were operated by the pilot and designed to reduce wind resistance after bombs were dropped through the paper bomb bay covers!"

How about that?

And William Murphy, 184 Ferry Street, Malden 48, Mass., is now a Perch Pilot (br) because he discovered:



"It takes 5 minutes longer to fly from Boston to New York than it does to fly from New York to Boston, according to airline schedules. Reason: Prevailing winds!"

Okay, now you try. Yes, YOU!

Mail your "Fact" to the address above.

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..SAKE GET 'EM CLEANED AND STOP WASTING THAT MAGNIFICENT HERO OF THE OCTANES



GOOD GULF AVIATION GASOLINE!



THE AVIATION NEWS

Washington Observer



SURPLUS TRANSPORTS ABROAD—Canadian and Latin American prospective purchasers of surplus C-47's, unable to find suitable aircraft in the U. S., are journeying to Europe to inspect stocks of the Foreign Liquidation Commission. FLC in France alone has nearly 50 C-47's in good condition which are for sale at prices averaging \$20,000. U. S. customers are forbidden to bring back surplus stocks abroad, but FLC attorneys believe that permission can be granted to veterans to buy from FLC stocks provided the planes will be used only in their own businesses.

BARGAIN BASEMENT TRAINING—Some of the major air schools are beginning to worry about the effect of "bargain basement" flight instruction being offered to veterans under the G. I. Bill of Rights program. At least two leading schools have stopped accepting students for private pilot training because they are unwilling to meet the price cuts of "johnny-come-lately" competitors. Although Veterans Administration established a ceiling of \$11.50 per hour for dual instruction, many large flight schools charge only \$9 or \$10. Now, some advertise rates as low as \$4.

SERVICE CHARGES OR TAXES?—In their discussions with T. P. Wright on CAA's new fees for aircraft registration and other services, industry representatives debated at length over whether the charges were "taxes" imposed by administrative rather than legislative decree. Point of the discussion: industry prefers to have charges, if they are deemed necessary, imposed by Congress, to grant an opportunity for appearance before the proper committee. CAA contends these are service charges which Congress directed to be levied, and are not taxes.

CAB SLICES BACKLOG—Dispatch with which Civil Aeronautics Board has been considering and disposing of pending cases brings a prediction from a high CAB source that by Jan. 1 it will be operating on a current basis. Decisions are expected soon in the Texas-Oklahoma and North Central area cases, although the former was argued only recently.

POSTAGE CUT FADES—Absence from Washington of globe-girdling Postmaster General Robert Hannegan and Second Assistant Postmaster General Gael Sullivan dims chances for Senate action on the House-passed bill directing a cut in airmail postage from eight cents an ounce to five. Hannegan and Sullivan are not expected to return until mid-August. Sen. Dennis Chavez, chairman of the Senate Post Office

Committee, states that his group will withhold action on the bill until Hannegan and Sullivan return and testify on the P.O.'s over-all policy on mail service. Congress may adjourn in the meantime. Railroad interests last week objected to the lowering of the airmail rate, which would capture a considerable volume of the mail now shipped by rail.

BRIDGES DEFENDS AIR FORCE—The total damage inflicted by the AAF during the war could have been inflicted by 100 aircraft, if equipped with atomic bombs, according to New Hampshire Sen. Styles Bridges. In a Senate speech countering attempts to belittle the effectiveness of the bomb and the AAF—on the basis of results of the Bikini tests—by "people . . . trying to pull the wool over the eyes of America for their own purposes," Bridges reported that during the war the AAF dropped a rough total of 2,060,000 tons of bombs. The U. S. could now direct the same effective weight of explosives, he asserted, against 100 enemy cities by dispatching 100 aircraft, each carrying one atomic bomb. The 100-aircraft attack would kill off 10,000,000, he said, "and defeat at one stroke the nation at which it was directed."

SAFETY BUREAU GROWS—CAB's Safety Bureau, confronted with increased demands on its limited personnel as scheduled and non-scheduled operations grow and its duties are increased through changes in accident investigation methods (*Aviation News*, April 22), has tentative plans for expansion of its staff and minor changes in its organization chart. These contemplate increase in personnel of all three divisions: accident analysis, safety rules, and accident investigations, particularly the addition of six men to the 18 field investigators now in the accident investigation division, and establishment of a Bureau office at Anchorage, Alaska. The Bureau has had a total authorized personnel of 83, including clerical help, but hopes that recent Congressional appropriations will permit its enlargement to 116.

DECENTRALIZATION IN AGAIN?—Industry wonders if it is again to be confronted with the subject of decentralizing the aircraft industry, in the wake of the D'Olier report on possible protective steps against atom bombs. The report declared a need for decentralizing industrial and medical facilities. This subject, as it pertains to aircraft, has been dormant for months, following an explanation to the Army that the aircraft industry did not oppose decentralization provided it included all industry, and not just facilities for aircraft.

ANOTHER

AVIOMETER
CORPORATION

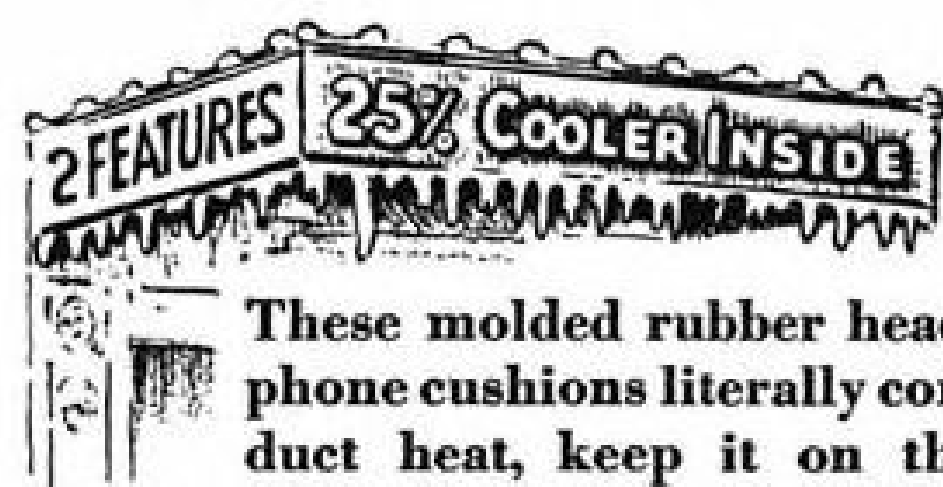
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AVIATION NEWS

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Editorial Headquarters
National Press Building
Washington 4, D. C.

Publication and Executive Offices,
330 W. 42nd St., N. Y. 18, N. Y.

Pacific Coast Office, 621 So. Hope St., Los Angeles

Published weekly by McGraw-Hill Publishing Co., Inc.
Price 50c a copy. Allow ten days for change of address.
Subscription rates—United States and possessions, \$5
a year, \$8 for two years, \$10 for three years. Canada,
\$6 a year, \$10 for two years, \$12 for three years. Pan
American countries \$10 for one year, \$16 for two years,
\$20 for three years. All other countries \$20 a year,
\$30 for two years, \$40 for three years. Entered as
second-class matter July 31, 1943, at the Post Office
at New York, New York, under the Act of March 3, 1879.
Printed in U. S. A. Cable Address: "McGrawhill, New
York." Please indicate position and company connection
on all subscription orders.
JAMES H. MCGRAW, Jr., President; CURTIS W. MCGRAW,
Senior Vice-President and Treasurer; HOWARD EHRICH,
Vice-President and General Business Manager; EUGENE
DUFFIELD, Editorial Assistant to the President; JOSEPH
A. GERARDI, Secretary, and J. E. BLACKBURN, Jr.,
Vice-President (for circulation operations), 330 West
42nd Street, New York 18, N. Y. Branch offices:
Chicago, 520 North Michigan Ave.; San Francisco, 608
Post Street; Los Angeles, 621 So. Hope Street; Aldwych
House, Aldwych, London, W. C. 2; Washington, Phila-
delphia; Cleveland; Detroit; St. Louis; Boston; Atlanta.
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News Digest

DOMESTIC

House passed and sent to Senate legislation directing the Post Office to set up an air parcel post system.

Army-Navy Aeronautical Board agreed to adopt the Navy's knot and nautical mile in all aerial operations. AAF charts, instruments, and field manuals will be changed in accordance with the new designation.

Nonstop B-29 flight over the North Pole from Honolulu to Cairo will be aimed at smashing the world long distance flight record. Another B-29 recently completed a 5,000-mile round trip over the Pole from Edmonton, Canada.

Prescott A. Tolman, a veteran of ten years' service with Eastern Air Lines, has been named general traffic and sales manager for the line.

Linus Walker, assistant to CAB member Josh Lee, will join KLM on Aug. 1 as adviser on American operations. Ross Newman, a CAB examiner, will take Walker's place.

Second Annual Meeting of the Feeder Airlines Association will be held Aug. 5, in Washington at the Hotel Statler.

PCA plans to eliminate passenger delays in waiting for tickets by making them out when reservations are made and having them ready when the passenger arrives at the ticket office. Further simplification is predicted when tickets in branch ticket offices will be made out from a main office by teletype.

FINANCIAL

Curtiss-Wright's engine manufacturing subsidiary, the Wright Aeronautical Corp., shipped \$536,878,082 worth of engines during 1945 compared with \$778,229,095 in 1944.

Charles A. Rheinstrom, head of Aviation Consultants, Inc., has been retained by Continental Air Lines as an adviser on sales, traffic, and advertising.

Profit of \$84,323,335 was shown by domestic and foreign airmail for the fiscal year ended June 30, 1945, according to the Post Office.

FOREIGN

A Gloster Meteor IV is reported to have bettered the official world air speed record of 606 mph. in an unofficial test in England.

Air Services, Ltd., of Johannesburg, South Africa, has ordered air pick-up equipment from All American Aviation.



► **PCA-Capital Airline** will join the list of U. S.-Flag international air carriers in the near future, in the opinion of Washington observers, who say the company has an important advantage over the other two applicants—American and Pan American—for the South Atlantic route to be awarded in the near future.

► **AAF took delivery** on one Lockheed P-80 fighter and four Boeing B-29 heavy bombers in June, along with seven Fairchild C-82A transports, three Sikorsky R-5D helicopters and four Culver radio-controlled PQ-14A target planes. The Navy, took delivery of 47 planes to the AAF's 19. Navy plane acceptances included 16 Grumman F-7Fs, 21 Chance-Vought F-4Us, and 5 Grumman F-8Fs, all fighters; 2 Martin PBM-5E medium bombers, and 3 Curtiss XBT2C light bombers.

► In 1945, 13 airlines had 29 first pilots and 9 supervising pilots over 50 years old. Dr. Ross A. McFarland, testifying before the White House fact-finding board on pilot wages, said that flying careers may be longer than commonly believed. With proper diet and exercise, and moderation in use of alcohol and tobacco, many pilots can stretch their earning life to 50.

► **National Air Cargo Corp.**, Los Angeles, has asked CAB for a certificate to provide "second-class air service only" on transcontinental and West Coast routes. Carrier says it would not carry first-class passengers, air mail or air express, but would haul first-class mail and air freight and offer second-class passenger accommodations, omitting meals, hostesses and reclining seats.

► Taking off July 5 with three passengers and a cargo of fresh strawberries, fish, wearing apparel and flowers, a DC-4 *Skymaster* arrived back at Oakland Municipal Airport on Tuesday July 9 with nine passengers to complete the first non-scheduled round trip flight of the Air Transport Division of the Matson Navigation Company to Honolulu.

► A project devoted exclusively to developing and testing all-weather aircraft landing aids now is being operated by United Air Lines at Arcata, Calif. under a letter of intent from the Navy Dept. Included in the factors to be studied are airfield and approach lighting; fog dispersal such as the new high-pressure fuel oil burners for dissipating fog; continued use and testing of radio and radar approach systems; supersonic fog dispersal methods and basic aerological research.

► Representatives of the Military Pilots' Association and of non-scheduled and contract carriers in the Miami area are in Washington voicing protests against new and proposed CAB regulations. Congressmen and officials in the executive departments were told that the non-scheduled restrictions would exterminate 95 percent of the charter airlines organized by ex-servicemen.

► The Aeronautical Board has proposed, as an economy measure, issuing the Index of Army-Navy Aeronautical Standards on a semi-annual rather than bi-monthly basis, as now. The main editions would be released in January and July, with monthly supplements.

► Although the project has received little publicity since PCA and a major manufacturer jointly announced the idea several years ago, the seadrome is still being studied, and the Army Engineers have completed a series of tests on a model 280-ft. long, scaled down from a planned actual size of more than 6,000-ft. Anchored at sea, the unit would furnish a landing strip for trans-oceanic aircraft. Tests were conducted at Sun Shipbuilding yards at Chester, Penna.

► Manufacturers' shipments of complete planes (except a few undisclosed military planes) for May totalled 3,198 planes at a total value of \$44,000,000, according to the Bureau of the Census tabulation, representing a 33 percent increase in number but a 1 percent decrease in dollar value from April shipments. Unfilled orders as of May 31 amounted to 49,952 planes, valued at \$1,036,285,614. Of total shipments 3,001 were two-, three- or four-place planes, the largest monthly production of lightplanes since the war, and probably the largest in the industry's history.

► **Air Transport Association** has completed its move from its former Washington headquarters at 1515 Massachusetts Ave. to its new quarters at 1107 Sixteenth St.



PAN AMERICAN WORLD AIRWAYS

orders a fleet of 20 new Convair-240's!

PAN AMERICAN WORLD AIRWAYS, with its globe-girdling network of air routes, is another major airline ordering a fleet of America's most modern post-war airliner—the Convair-240.

This airline selected the Convair-240 to fill its need for a new type of transport plane, to supplement its huge 4-engine ships—and to offer speed and advanced comfort features to the air-traveling

public on flights of intermediate range.

It was only natural that in its search for such an airliner, Pan American should turn to Consolidated Vultee—the company which designed and built the famed Liberator bomber, the Catalina Patrol bomber, the Coronado, and other well-known war planes—the company which operated a vast transpacific military airline service for the Air Trans-

port Command during World War II.

The wonderful new Convair-240 airliner will carry 40 passengers at 300 miles per hour and with a new high standard in air-travel comfort and convenience.

Below, for example, you'll find ten of the many reasons why your first flight in the modern new Convair-240 airliner will be an experience you'll want to repeat over and over again!

CONSOLIDATED VULTEE AIRCRAFT CORPORATION

San Diego, California • Downey, California • Wayne, Michigan (Stinson Division) • Fort Worth, Texas • Nashville, Tennessee

10 reasons why you'll enjoy flying in the Convair-240

1. 40 Passengers—at 300 M.P.H.!
2. Auxiliary jet exhaust thrust—for added speed!
3. You'll fly in a quiet, air-conditioned cabin!
4. "Air Brakes" for smoother landings!
5. You'll enjoy "Sea-Level" comfort at high altitude!
6. Heated wings prevent icing!
7. Tricycle landing gear with dual tires!
8. Full-visibility cockpit—for added safety!
9. New safety-type wing!
10. You'll relax in easy-chair comfort!

VOLUME 6 • NUMBER 4

Aviation News

McGraw-Hill Publishing Co., Inc.

July 22, 1946

Grounding *Constellations* Disrupts All International Air Services

Early indications that TWA and PAA fires not due to same cause; tests underway with fuel injection systems; no indication that giant transports will be flown until after CAA hearing.

By WILLIAM KROGER

Through what seemed to be an unfortunate chain of circumstances, rather than a major fault in the aircraft involved, U. S. air transport was crippled last week and the future of two of the biggest companies in aviation deep in shadow.

An accident occurring at Reading, Pa., to one of Lockheed Aircraft Corp.'s *Constellations*, the newest, biggest and fastest U. S. airliner, came shortly after another "Connie" mishap at Willimantic, Conn. CAA grounded all *Constellations*. TWA, Inc., operator of the plane at Reading, as well as Pan American World Airways, involved in the Willimantic incident, and American Overseas Airlines, were affected.

► **BOAC Hit Too**—Across the Atlantic, the effect was felt by British Overseas Airways Corp., which recently resumed U. S.-England service, using "Connies," and whose Government, following the lead of CAA, grounded the carrier's *Constellations*.

At Burbank, Calif., Lockheed sat with orders for 121 *Constellations*, involving some \$65,000,000; 75 have been delivered, 60 to airlines, 15 to the Army.

TWA, whose president, Jack Frye, collaborated in the design of the aircraft, shared with Lockheed the biggest stake in the situation. TWA's future plans were to a large extent built around the "Connies," with the expectation that 30 would be in service before the end of the year, and 18 more on order.

With 46 *Constellations* grounded (TWA, 17; PAA, 22; AOA, 2; BOAC, 5), international operators had to pull DC-4's off domestic routes to take up some slack. In addition, TWA had been flying 10 "Connies" domestically. This made

the impact of CAA's order felt in domestic service. Pan American, with an exclusive *Constellation* operation in the Pacific, probably was the hardest hit, although BOAC might claim that doubtful honor, with its service to the U. S. wiped out.

► **Using "Liberators"**—BOAC was left with converted *Liberators* operating to Montreal. It had some British-made *Lancastrians*—civilian version of the bomber—flying the South Atlantic and hoped to be able to divert some to the London-New York trade, despite their slowness and high operating cost. Meanwhile, the air express division of Railway Express Agency embargoed international air express shipments to points on Pan Am routes; and hundreds of passengers temporarily were stranded.

When the suspension order would be lifted, permitting the *Constellations* to fly again, was doubtful late last week. Date for a CAB hearing on the Reading accident had not been set; presumably the suspen-

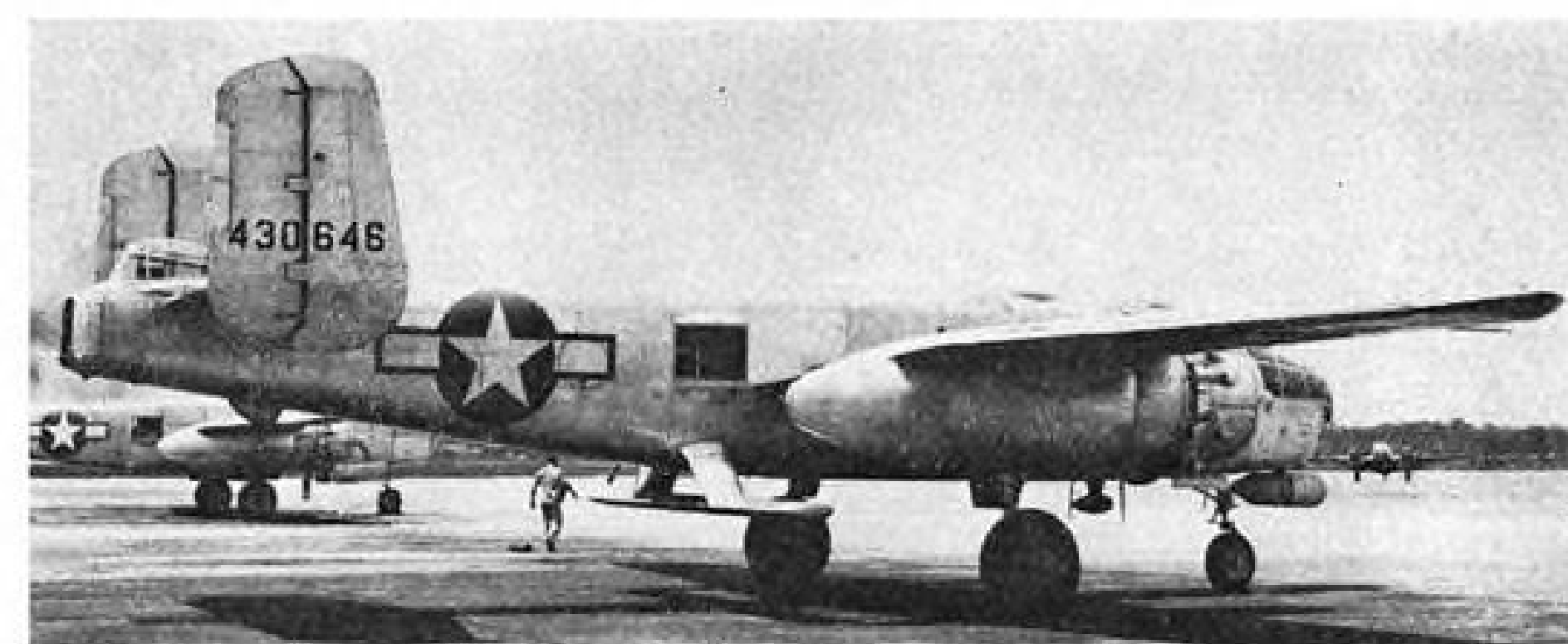
sion order would continue until after the hearing.

► **New Engines**—One distinct benefit is in the offing: when the *Constellations* are permitted to operate most, if not all, will have the engines equipped with direct fuel injection systems. Lockheed had a test plane in the air last week with this innovation. The system, developed by Curtiss-Wright, maker of the Model 3350 engines powering the "Connies," has been given a temporary CAA certificate which will be made permanent when 100 hours have been flown. Also, Lockheed was rushing direct fuel injection conversion kits to *Constellation* users.

But while out of the grounding will come a long-desired improvement in the fuel system, none of the three accidents which directly precipitated the suspension order could be laid to malfunctioning of the fuel system.

The chronology is this: last Fall, a *Constellation* operated by Pan Am for the Air Transport Command caught fire at Topeka, Kans. Last month, a Pan Am-operated "Connie" in commercial service caught fire over Connecticut, but was landed at Willimantic without injury to passengers or crew. Week before last, came the Reading accident when a *Constellation* with TWA personnel on a training flight caught fire and crashed.

► **Two Crashes Similar**—The Topeka and Willimantic accidents are at-



TEST-TUBE MITCHELL:

A North American Mitchell bomber, designated B-25J-25NC, being used at Wright to experiment with a variety of radar devices. Test installations are shown at the waist and under the nose. (Martin & Kelman photo)

tributed to a break in the shaft through which power was transmitted from the engine to the cabin pressurization system. Either the dislodged shaft, or some other part, clipped the hydraulic fuel line, spraying the liquid under pressure onto the red-hot shaft.

Although no official cause can be given for the Reading accident pending outcome of the hearing, informed sources gave this version: A fire started in the passenger cabin of the plane, filling it with smoke. All of the crew were up front. One went back for some reason and left a door open and the pilot compartment then became so smoke-filled the pilot was unable even to see the instruments. Before he could get a window open, the plane had lost so much altitude as to make a crash of the craft unavoidable.

Drifting around those salient facts are a host of reports, charges, guesses and opinions. Chief of these is that fires have not been strange to the Constellation (David L. Behncke, president of the Air Lines Pilots Association, insists that "a definite fire hazard" exists in Constellations, and called for a Congressional investigation.) Actually, according to Lockheed, there have been two induction system fires, caused by backfires, and both have been minor in extent.

Testing Fires — Lockheed and TWA engineers are collaborating in a series of tests, deliberately starting induction fires, and then extinguishing them. Only apparent result is that induction fires can be started and can be extinguished simply.

One possibility advanced for the cause of the Reading fire is the electrical system. Lending point to this theory was the fact that last week both Lockheed and TWA were investigating the electrical system of the big plane. While CAA has given permission for "Connies" to be flown back to the home base, TWA is not moving theirs until completing the electrical system study.

Overall opinion of many in the industry is that Lockheed and TWA were the principal twin victims of a series of once-in-a-lifetime happenings. Unlike other large transports now in operation, the Constellation in a sense is being "proved" in the rigors of commercial operation. It is the biggest, newest, and fastest plane in use. It has "bugs" and operational quirks all its own.



WILSON HONORED:

Maj. Gen. Arthur B. Wilson, TWA vice president and a former top-ranking Army officer in Europe, is congratulated by British Ambassador Lord Inverchapel following presentation to Wilson of the order of Honorary Companion of the Military Division of the Most Honored Order of the Bath. Wilson was cited for his work as commanding general, continental advanced section, Communications zone in the European Theater of Operations.

Lockheed's Answer—It will take some time for all of these to become apparent and be corrected.

Meanwhile, the demand for air transportation is so great and the flying equipment still so limited that the "Connies" had to be put in service. Because of their newness, because they are admittedly spectacular, and—perhaps primarily—because international air travel is growing so fast, a mishap involving a Constellation draws disproportionate attention.

Lockheed's answer is a string of figures from the record: 182,758,000 passenger miles flown without injury to any occupant (until the Reading accident); three and one-half years of flying experience without accidents; tests by the Army at Wright Field through which the "Connie" came with better-than-average ratings.

With the exception of the switch to direct fuel injection, contemplated for some time (the first of the new "Connies" with this system will be off the line this Fall), Lockheed plans no major changes in the aircraft. Pratt and Whitney R-2800 engines have been optional equipment all along; some purchasers have ordered this installation and these ships will be flying some time next Spring.

Twin Engine 'Copter Developed by Kellett

Commercial version of military model powered by two Continental 550 HP engines; will cruise at 90 mph, carry 10 passengers.

The first twin-engined commercial helicopter is in process of development from Kellett Aviation Corp.'s twin-engine military helicopter, the XR-10.

As a commercial vehicle, the projected Model KH-2 will either carry 10 passengers or a cargo load of one ton or more, besides a crew of two, and can operate from a field the size of a baseball diamond, said President W. Wallace Kellett.

Flight testing is due soon on the army helicopter, now being completed. Following these tests, Kellett will build the commercial version from flight test experience and from customer requirements. The company now has a full scale mock-up of the commercial version available for inspection at the plant at North Wales, Penna.

1100 Horsepower—Powered with two 550 hp. Continental engines carried in nacelles at the sides of the fuselage, the KH-2 is designed for a 90 mph. cruising speed, top speed of 118 mph. and zero landing speed. Absolute ceiling is expected to be over 15,000 ft, and the machine is to have cruising range with fuel reserve, of 180 miles, when carrying 2,000 lbs payload and 122 gallons of fuel.

The fuselage resembles that of a conventional transport plane and is equipped with tricycle gear and triple tailfins. The system of two rotors with synchronized intermeshing "egg-beater" blades, which has been used successfully previously on the smaller Kellett XR-8 Army two-plane helicopter and also on the German Flettner helicopters, will be used on the XR-10 and on the KH-2.

Principal advantage of the KH-2 over other helicopters previously announced is seen in the added reliability of its two engines. Power transmission is designed so that it can operate with either engine in emergencies.

All-Metal Construction—The all-metal aircraft is to have styling comparable to the most modern fixed-wing transports, and is expected to have excellent stability and lack of vibration.

The first KH-2s built will be

offered to transport operators providing air transport between mid-city or residence areas and outlying commercial airline terminal airports. Additional shuttle and short-haul operations are being developed through conferences with industrial users. Initial operating costs studies indicate that passengers will pay rates in the range of taxicab fares for the same distances.

President Kellett said the company expected to concentrate for several years in development of multi-engine transport-type helicopters, and hoped to announce conditional orders for a "moderate initial quantity" of the commercial helicopters following the flight tests of the military design. The price of the KH-2, not yet fixed, will be comparable to present-day prices for conventional twin-engine high performance airplanes of similar all-metal construction. (See photos.)

Conferences Cancelled

The National Aeronautic Association has cancelled both its Airport Users Conference, and Air Youth Conference, originally scheduled for this week and next in Milwaukee, Wisc. Inability to obtain complete panels of speakers because of vacations is given as the reason.

AVIATION CALENDAR

July 18-19—IAS national annual summer meeting, Hotel Hollywood-Roosevelt, Los Angeles.
July 18-21—World's Fair of Aviation, Omaha, Neb.
July 19-20—NAA national convention, Omaha.
July 20-21—Dedication of Mansfield, Ohio, Airport.
July 26-27—NAA Joint Private Flying Conference, Milwaukee.
Aug. 1-2—National Flying Farmers Association first annual convention and Oklahoma Flying Farmers conference, Oklahoma A & M College, Stillwater, Okla.
Aug. 3-18—First post-war National Soaring and Gliding Contest, Elmira, N. Y.
Aug. 17-18—Port Columbus, Ohio, Air Show.
Aug. 21-28—First world congress on air age education, International House, New York City.
Aug. 22-24—SAE National West Coast Transportation & Maintenance Meeting, New Washington Hotel, Seattle, Wash.
Aug. 30-Sept. 2—National Air Races, Cleveland.
Aug. 30-Sept. 2—National Championship Model Airplane Contest at Wichita, Kan.
Aug. 30-Sept. 7—First post-war Canadian air show, sponsored by NAA of Canada, De-Havilland Airport, Toronto.
Sept. 5-15—St. Louis, Mo., Aviation Week.
Oct. 3-5—SAE National Aeronautic (Fall) Meeting and Aircraft Engineering Display, Biltmore Hotel, Los Angeles, Calif.
Oct. 14-17—Fourth Annual National Aviation Clinic, Oklahoma City, Okla.
Oct. 16-17—SAE National Transportation & Maintenance Meeting, Hotel Knickerbocker, Chicago, Ill.
Oct. 23-25—Second Annual Arizona Aviation Conference, Phoenix.
Nov. 7-8—SAE National Fuels & Lubricants Meeting, Mayo Hotel, Tulsa, Okla.
Nov. 15-24—National Air Show, Cleveland.
Nov.—International Aeronautic Exhibition, Paris, France.
Dec. 2-4—SAE National Air Transport Engineering Meeting, Edgewater Beach Hotel, Chicago.

Stoll New Manager Of Bendix Products

Manhart gets top sales post; West resigns as Boeing vice-president.

George E. Stoll has been appointed general manager of the Bendix Products division of the Bendix Aviation Corp. He has been with Bendix since 1929 and has been assistant general manager of the products division since 1943. J. H. Quam will be Stoll's assistant.

Charles D. Manhart has been

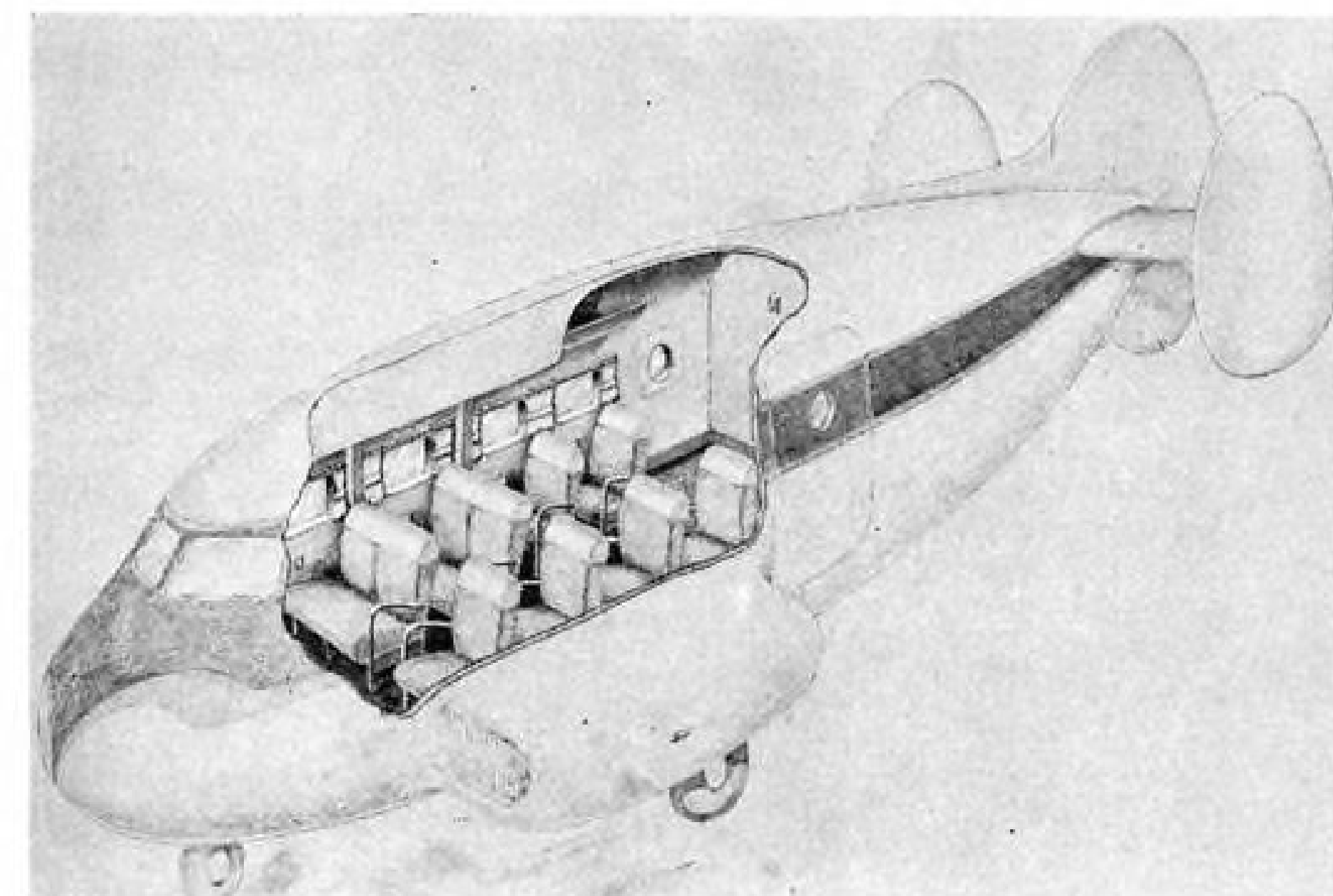


G. E. Stoll

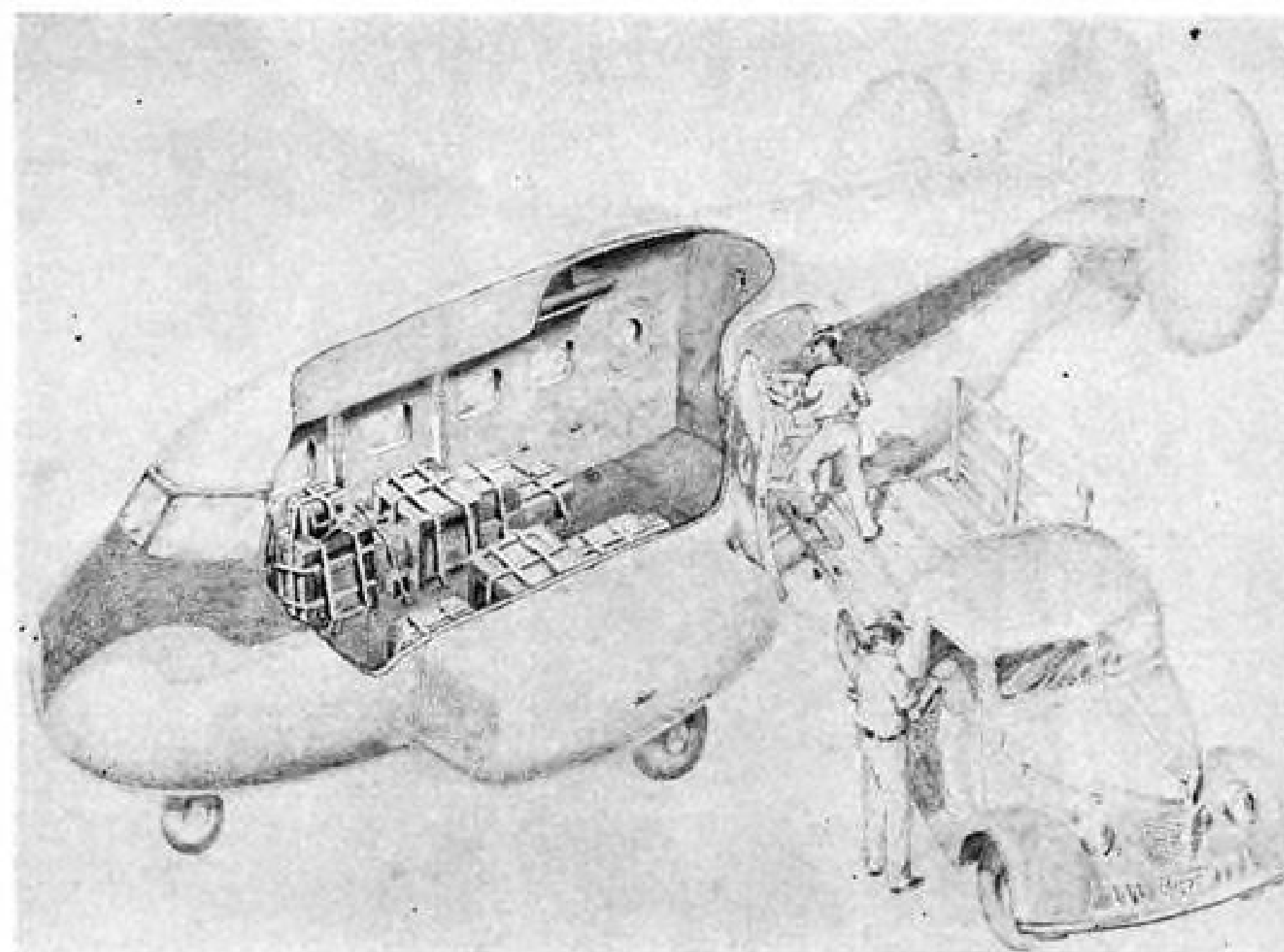


C. D. Manhart

named sales manager in charge of all aviation products sales of the division and I. F. Richardson is his new assistant. Manhart, a former



Passengers or Cargo: Two cutaway sketches of the projected Kellett KH-2 commercial twin-engine helicopter transport with single-engine performance, show the seating arrangement for a ten-place passenger transport, and the space available in a cargo version. The KH-2 will be a development of the all-metal military twin-engine helicopter, XR-10, now being completed under an AAF contract and soon to be flight tested.



army pilot, has been with Bendix since 1935. Other appointments:

► **Boeing Aircraft Corp.**—H. O. West has resigned as executive vice-president; H. F. Brown, formerly works manager of the Wichita division, succeeds him.

► **Braniff**—Thomas H. Lockett, former counselor of the embassy in Bogota, Colombia, has resigned from the State Department to become a vice-president of Braniff.

► **American**—F. D. Miller has been named to succeed J. M. Wooten as director of cargo sales with Joseph Boylan, formerly general cargo agent, as his assistant.

► **National**—O. M. Foxworth has been appointed manager of the new air cargo division. He was formerly manager of tariffs and schedules.

► **Wiggins**—Edward S. Brewer former Navy commander, is now assistant to the president. He was formerly a floor member of the Boston Stock Exchange and a partner in Byam Whitney & Co.

► **TACA**—A. H. Gray, formerly of Trans-Canada Airlines, is now agency and interline passenger representative in New York. Lucia Donnelly, formerly with the State Department, is Washington public relations director.

► **Chicago & Southern**—D. G. Richardson has been named assistant to the executive vice-president and will be in charge of developing New Orleans-Caribbean routes recently awarded C&S by CAB.

► **Air Cargo Transport**—Herbert A. Walker, a financial executive of the Atlas Corp. for 14 years, has been named comptroller.

► **Pan-American**—Sylvester J. Roll has been named special representative in the Scandinavian countries with headquarters in Stockholm.

► **Feeder Airlines Association**—Doris Miller has been named assistant to vice-president Joseph Mitchener. She was formerly with the CAB and American Airlines.

► **Pioneer Airlines**—Robert L. Sicard, former lieutenant-colonel in the AAF, has been named superintendent of maintenance.

► **Flying Tigers Line**—Allen Chase, president of Standardized Aircraft, Inc., of Los Angeles, the Moku-o-Leo Corp., Honolulu and the Continental Export and Import Co., Mexico, D. F.; James E. Davidson, president of the Great Western Biscuit Company of Los Angeles, Duncan Shaw, vice-president of the Market Basket, supermarket chain in Southern California, and T. J. Sullivan, president of Finance Syndicate, Chicago, have been named to the board of directors of National Skyway Freight Corp.

Half Propeller Failed, Hughes Tells Doctor

Critically injured, in the crash of his new XF-11 army photographic plane, Howard Hughes, multi-millionaire pilot and aircraft builder last week told his physician, Dr. Verne R. Mason that he believed the four-bladed rear half of his right propeller had reversed pitch and caused the accident. (At AVIATION NEWS deadline last week Hughes was reported gaining strength but not out of danger).

"The airplane felt as if someone had tied a barn door broadside onto the right wing. The front four blades of the (dual-rotation) propeller were trying to push the airplane ahead while the rear four blades were trying equally hard to push it backward. These eight blade whirling around, fighting each other, created a dead drag on the right hand side, equal to that of a steel disk, seventeen feet in diameter, turned broadside to the wind at several hundred miles per hour," Hughes said.

The pilot looked out the windows of the cabin, thinking that some large part such as a section of the wing, tail or landing gear door might have torn loose and swung into a broadside position, but could see

nothing which affected the flight. "Yet it felt as if some giant had the right wing of the airplane in his hand and was pushing it back and down. I have thought about it carefully. I am absolutely certain it was the propeller. Tell the Army to look in the wreckage, find the rear half of the right propeller and find out what went wrong with it. I don't want this to happen to somebody else," he concluded.

Cause of Army Mixmaster Crash Is Undetermined

A clean bill of health was given to both the Douglas-built XB-42 Mixmaster and its two Allison V-1710 engines in the report of the Army's board investigating the accident last December which destroyed the radically-designed aircraft.

While stating that the cause of the accident could not be determined definitely, the board expressed the opinion that the possibility of fuel shortage could not be discounted.

On a routine flight over Washington, the XB-42's engines cut out and the plane's occupants parachuted to safety. The Mixmaster had flown to Washington from Los Angeles, establishing a new intercity record of five hours, 17 minutes.



GLOBEMASTER INTERIOR:

The 75 ft. by 12½ ft. cargo hold of the Douglas C-74 Globemaster. It carries a load of 45,000 lbs., has a range greater than 7,000 miles and a top speed of 315 mph. The plane has three loading elevators to permit loading from ground level, each capable of carrying a 16,000-lb. unit.

Research Problem Put to House As Senate Passes Kilgore Bill

Patent rights are big issue of industry opposition; plan calls for Presidential appointed board and \$15,000 a year administrator.

The aircraft industry last week was watching the House for an indication of what form its future research and development contracts would take as far as patent rights are concerned.

The Senate has put the issue up to the House by passing the National Science Foundation bill which, in effect, reverses the long-standing method between the Army and Navy and the industry of handling inventions arising from research contracts.

Stemming from two separate measures originally proposed a year ago by Sens. Warren G. Magnuson (D-Wash.) and Harley M. Kilgore (D-W. Va.), the bill as passed establishes a Foundation to be administered by a \$15,000-a-year Administrator appointed by the President after recommendations by a National Science Board, also appointed by the President.

► **Plan Seven Divisions**—The Foundation would comprise seven divisions, including one for national defense, one for engineering and technology, one for scientific personnel and education, and one for publications and information. Other divisions would be concerned with mathematical and physical sciences, biological sciences and health and medical sciences.

The Foundation would not do research, but would coordinate government efforts and authorize work under grants by private research firms and educational institutions.

Firmly in accord with the principles and objectives of the bill, the industry takes a dim view of Section 8 which—in an attempt to further the aim of making the findings "fully and freely available to the public"—lays down strict regulations regarding patenting of inventions based on Federally-aided research and development.

► **Patent Provisions**—Section 8 provides that such inventions shall be made freely available to the public and, if patented, be freely dedicated to the public within certain limits. One of these is that the head of the Government contracting agency may arrange for the contractor to retain patent rights if (1) he

makes a "finding that the agency has made every reasonable effort to arrange for the conduct of the necessary research . . . without entering into a contract" giving patent rights to the contractor; (2) the contractor makes, or has made, substantial contribution to the development with his own funds; or (3) the Government is given an irrevocable, non-exclusive, royalty-free license to use the invention.

The industry's objections to the patent provisions of the bill are based on the theory that patents, and royalties arising from them, are incentives to research. There is accord with the view that when the Government finances all research, inventions stemming from it should be Government-owned. But when private funds have contributed to the development, the industry believes that incentive will be destroyed by making the resultant inventions public property.

► **AIA in Opposition**—On this basis, the Aircraft Industries Association, as well as the Navy Industrial League, opposed the patent provisions of the Kilgore bill, supporting instead an amendment introduced

Boeing Uses Turbo

The Boeing Stratocruiser will be the world's first commercial airliner to use the war-proved General Electric engine turbo-supercharger. The installation is claimed to be able to save operators of the 80-passenger, double-deck, airliner up to a maximum of 14% in fuel consumption at cruising altitudes.

The turbosupercharger was first tested and perfected in the Boeing B-17 and later in the B-29. It operates from the force of otherwise wasted exhaust gas.

In addition to supercharging the 3500 hp. Pratt and Whitney Wasp Major engines, the new turbo also will provide air for cabin altitude-conditioning system. The modified installation is smaller and lighter in weight than the conventional maximum hp. turbo. It is designed to supercharge the engine at cruising powers only and is not needed during takeoff.



MEDAL TO VON KARMAN:

General Carl A. Spaatz, AAF commanding general, pins the Medal for Merit on Dr. Theodore von Karmann, director of the Guggenheim Aeronautical Laboratory at California Institute of Technology, for his contributions to aeronautical research during the war. (INS photo)

by Sen. Alexander Smith (R-N. J.) which would require merely that each contract let by the Foundation contain provision for the disposition of inventions so as to protect both the public and also the contractor.

AIA pointed out that the War and Navy Departments have objected to the patent provisions on the ground that they would restrict the number of firms willing and able to participate in research work.

With the Smith amendment voted down, in almost a straight party split, the Kilgore bill went to the House Interstate and Foreign Commerce Committee, a subcommittee of which already has completed hearings on a bill introduced by Rep. Wilbur D. Mills, (D-Ark). This measure is a companion of the original Magnuson bill, and contains a patent clause similar to that introduced by Smith in the Senate.

A House committee spokesman said last week that no action had been decided on the Senate bill. Nor has the subcommittee reported the Mills bill to the full committee. If the committee should report out the Mills bill, the controversial patent sections then would have to be ironed out in a Senate House conference committee, unless the applicable parts of the Kilgore bill were inserted during the House debate.



WE ARE RAISING THE PRICE OF THE *Seabee*

Effective July 15, 1946, the list price of the standard Republic Seabee

becomes \$4495. ☞ The original figure announced late in '45, was based on

sound evaluations of man-hour and material expenses. Since V-E Day, mounting

costs of every part...innovations in the plane itself...and the voluntary

raise in wages by Republic to meet increased living needs, are the sole

reasons for this new price. ☞ The four-place Seabee amphibian is of all-metal

construction, including wing and control surfaces. It is built by the makers of

the mighty Thunderbolt, to standards of ruggedness and performance which

would cost thousands more if it were not for Republic's simplified methods of

design and manufacture. ☞ Of prime importance to the owner, we have

refused to consider any compromise with standards of material or workmanship.

Hence, despite the modest increase, this versatile airplane is without question

the unparalleled buy which all acclaim as the outstanding value for 1946-47.

Republic Aviation Corporation, Farmingdale, Long Island, New York.



PRIVATE FLYING

New Sensenich Controllable Propeller Built for Lightplanes

Two-position blade shifted by cockpit control flight-tested on
Piper L-4 model; CAA approves two hub sizes.

By ALEXANDER MCSURELY

First details released describing the new hydraulic controllable lightplane propeller developed by Sensenich Brothers, of Lancaster, Penna., disclose that the manufacturer has already obtained CAA approval on two different hub-sizes, has made numerous test flights with it on lightplanes, and has amassed considerable flight experience with it on the Piper XL-14 experimental Army liaison plane.

Basically, the new Sensenich Skyblade is a two-position model which "shifts gears" from high to low pitch and back again, at the will of the pilot, by operation of a simple cockpit control. The two blades are held in high pitch position by the twisting force of centrifugal action upon two counterweights which are attached to the blade shanks.

To shift to low pitch, the pilot's cockpit control opens a two-position oil control valve on the engine, which permits oil to flow from the engine oil pressure system into a cylinder in the hub, pushing this cylinder forward. Movement of the cylinder is transmitted to an arm which actuates two levers which actually pull the blades around from high to low pitch.

► **Flown Successfully**—The two-position propeller has already been flown successfully, but experimentally, with a new constant speed governor attachment, which in effect makes the two-position propeller a constant-speed propeller. The governor, built by another manufacturer, is still in experimental status and has not yet been announced.

In addition to the pre-war Culver Cadet used by Sensenich as a flight test plane for the Skyblade, it has been flown extensively, on the post-war Culver Model V two-place plane, and is being specified as standard factory-installed equipment on that plane. The Culver

Model V installation uses a hub which has CAA approval for 95 hp. at 2600 rpm, continuously, with 2800 rpm. permissible at takeoff. A larger hub already has CAA approval for 150 hp. at 2600 rpm, continuous, with 165 hp. at 2800 rpm. permissible at takeoff. This second hub is similar to the one used on the Piper XL-14 liaison plane, and approved by the AAF for this use in June 1945.

The propeller is designed for use with engines equipped with flange-type crank-shafts. It also requires that the engine be provided with an oil passage connecting the engine lubricating oil pressure source with



New Prop: Installation of the new Sensenich Brothers two-position hydraulic propeller, on the Culver Model V two-place personal plane, shows laminated birch blades with stainless steel tips and monel leading edge strips, counterweights on blade shanks. Model shown has CAA approval for 94 hp. at 2600 rpm, continuous, with 2800 rpm. for take-off.

the front end of the hollow propeller shaft.

► **Anticipate Uses** — The manufacturer anticipates that the Skyblade will be specified as alternate equipment at extra cost on many of the newer model planes coming on the market. Interest in test flying the new model has already been expressed by many companies, among them Piper, Stinson, Taylorcraft, Cessna, Commonwealth, also Globe Swift and Johnson Rocket.

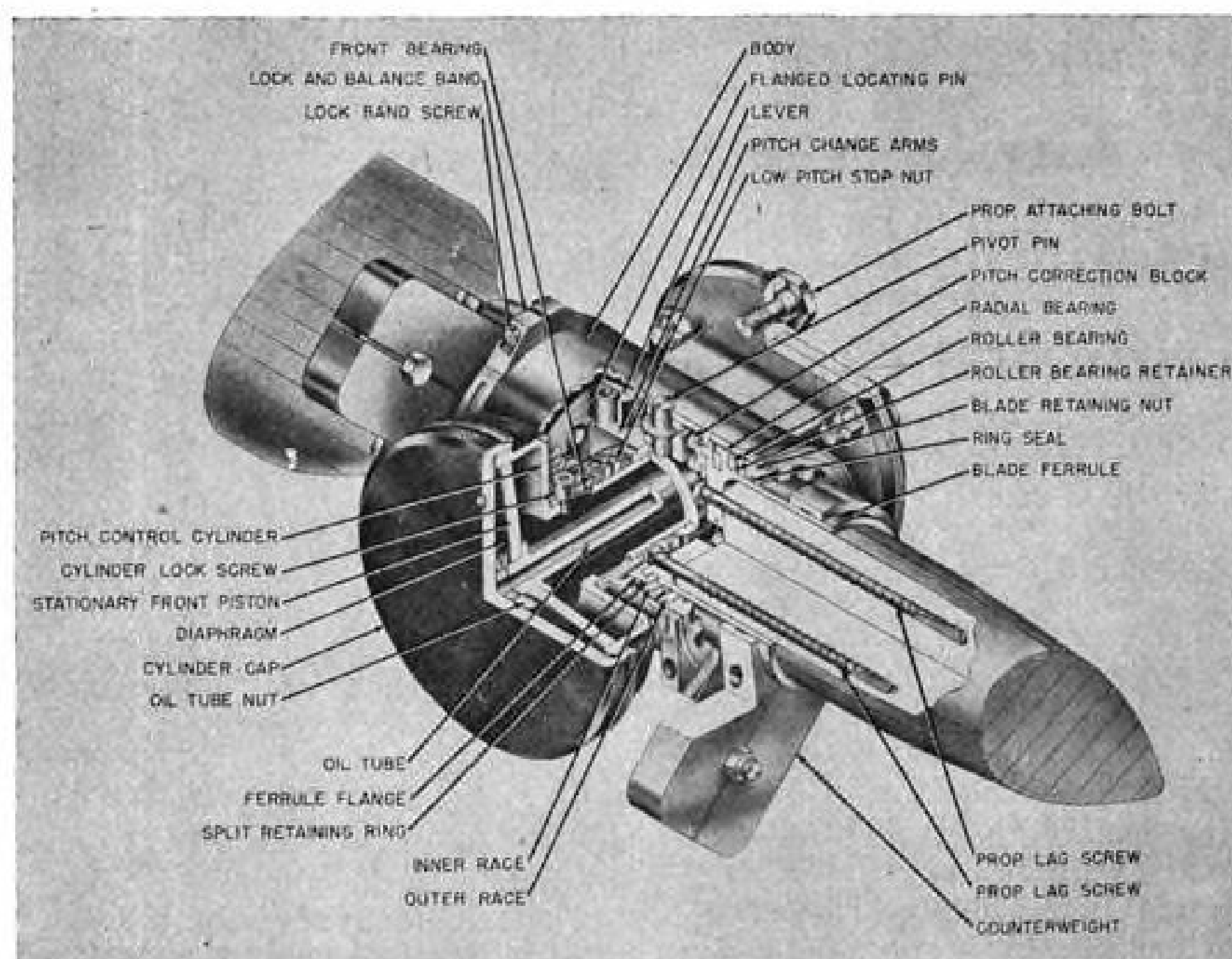
Present indications are that the company can sell all it can produce in the immediate future for planes using the newer model engines already equipped to use it. Eventually it is likely that the engine manufacturers may modify some of the older type engines for flange type shaft and the oil passage from the engine oil system to the propeller.

The hub assembly uses a hollow alloy steel forging for the hub body, with steel and magnesium bushings, containing phenolic bushings which serve as bearings for the pitch control cylinder. Inside the pitch control cylinder is a phenolic stationary piston fastened to the oil tube. A neoprene diaphragm serves as an expanding seal between the oil tube assembly and the front cylinder and cap.

► **Construction Detailed**—The pitch change actuating arm is threaded onto the pitch control cylinder, and moves with it. Two steel pins on each side of the hub body serve as fulcrums for the lever arms which link the pitch change actuating arm to the pitch adjustment blocks and the pins to each ferrule flange. Cylinder lock screws engage opposite slots in the pitch control cylinder to prevent rotation while the cylinder is operating.

The blades are birch or maple wood laminations bonded with either a phenolic resin glue or a thermosetting resin glue which produces a waterproof glue joint. Steel ferrules are attached by screws to the wood blade shanks. Outer 12 inches of the blade is covered either with doped fabric, or a plastic sheeting glued to the wood. Stainless steel cap tips and monel leading edge strips are attached to tip and leading edge with screws and countersunk rivets. The blades are coated with a special propeller varnish, as protection against moisture penetration.

Built by a conservative company which has more of its fixed-pitch propellers in flight than any other manufacturer the new two-control



Sensenich Prop Cutaway: Cutaway drawing of new Sensenich Brothers two-position hydraulic propeller hub shows actuating mechanism, assembly of parts, method of attachment to flange-type crankshaft.

Sensenich model is a strong indication of the growing trend toward variable pitch propellers for all but the minimum-price personal planes, noted in AVIATION NEWS July 15. The company makes no announcement of claims of performance for its new product, beyond a statement that a considerable increase in fuel economy is obtained at cruising level flight at 4,000 ft. or more.

Pittsburgh Leading Base For Seaplanes, Survey Shows

A survey by Edo Aircraft Corp., College Point, Long Island, indicates that Pittsburgh is probably the busiest center of floatplane flying in the nation. Ten seaplane bases are already in operation in the Pittsburgh area, and another is under construction. The bases have

an average of three floatplanes now in operation and many additional planes on order. Explanation for the floatplane flying in the heart of the Alleghenies, is the fact that there is available more smooth river surface for landings and takeoffs than level land surface.

Fairchild Leases Site For New Plane Center

Strother Field, Kansas, to house plant and development facilities for personal planes.

Fairchild Engine and Airplane Corp. has leased buildings and installations at the former army pilot training center at Strother Field, Kansas, for a new personal plane manufacturing and development center.

While details of the new planes to be produced here have not been disclosed it is known that the company has under development a four-place all-metal low-wing monoplane, tentatively designated as the Model F-47, which will be powered by a Continental 185 hp. engine, and is expected to cruise at approximately 150 mph.

► **Now at Dallas**—Currently Fairchild's Personal Plane Division is located at Dallas, where Texas Engineering and Manufacturing Co. is producing Fairchild's pre-war high-wing four-place plane, the F-24, under sub-contract, to be marketed by Fairchild distributors. The move of the division to Strother Field indicates that Fairchild is returning to active manufacturing of personal planes after the cessation of such activities in the war to make trainers and the C-82 twin-engine cargo planes and engines.

J. Carlton Ward, Fairchild president, said last week that the new location on a 1500 acre flying field with three 6,000 ft. runways offers excellent facilities both for development and manufacture of personal planes. He said the company would continue its extensive research and development program for personal planes under supervision of Sherman M. Fairchild, chairman of the board.

► **McKay in Charge**—Harry M. McKay, general manager of the Personal Plane Division, will supervise production at the Strother Field plant. He has been with Fairchild since 1942, formerly was vice-president of St. Louis Aircraft Corp., and recently succeeded Lee Smith as manager of the division. Harvey

Gray is director of sales and service for the division.

Fairchild has signed an eight-year lease with Winfield and Arkansas City, Kan., the two municipalities which hold title to Strother Field since its release by the Army, and which will operate it jointly as a municipal airport.

Besides the main manufacturing activity at the new center, the new plant will include a large service base and spare parts storage center for Fairchild personal-type aircraft including the F-24, and PT-19 low-wing trainer, now being used widely as a personal plane.

Anti-Noise Campaign Is Making Progress

Studies by CAA cut prop howl on trainers; ATA tackles problem of transports.

Campaign of CAA Administrator T. P. Wright, and his assistant John H. Geisse, for reduction of noise emitted by airplanes last week was producing tangible results including:

► **A report** from a technical committee of the Aircraft Industry Association defining the problems principally for large aircraft, which admittedly make most of the racket.

► **Studies** at Bush Field, Augusta, Ga., CAA base, on the flatpitch propellers of surplus army trainer types, which are another principal offender.

► **Continuation** of lightplane noise abatement studies by the National Advisory Committee for Aeronautics.

Administrator Wright appealed for quieter airplanes and quieter operational procedure, pointing out that aviation is facing a severe handicap in locating new airports, because of the public antagonism to airplane noise.

A report prepared by a committee of aircraft industry engineers headed by A. E. Raymond, vice-president of Douglas Aircraft Company, in answer to the Administrator's appeal analyzed the problem of aircraft noise reduction thus:

► **Changes** in propeller blade form, disc, area, etc., can vary propeller sound output through a range of 20 decibels, and is worth investigating.

► **Use** of a heat pump in connection with engine exhaust provides a reduction of noise level on the order of 10 decibels without commensurate reduction in jet thrust.

► **Compounding** turbo-jet engines

New Roadable Plane

Consolidated-Vultee Aircraft Corp. disclosed last week it is testing a new experimental two-place roadable plane, with removable wing, at San Diego, Calif. The new plane is designed by T. P. Hall, who is in charge of its development. Hall, previously has designed one roadable plane for Convair which was flown in 1940, and was afterwards taken over by Southern Aircraft, Dallas, for additional development. (AVIATION NEWS Feb. 4, 11, and 18, 1946) The second roadable plane has all-metal fuselage with fabric-covered wing and tail surfaces. Like its predecessor it uses a tractor propeller arrangement.

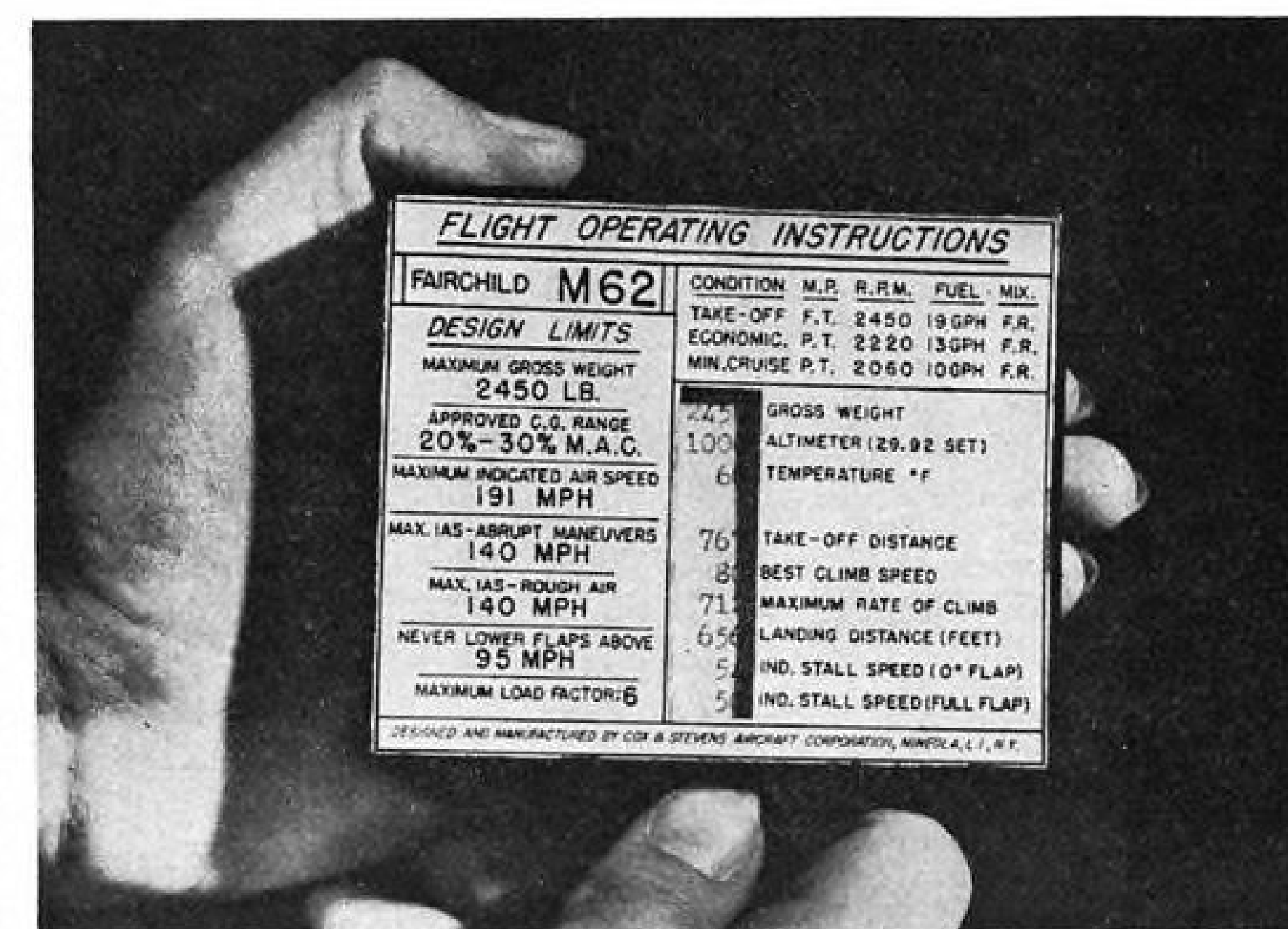
mined, but the noise is in higher frequency and is certainly heard for a shorter time at any one point on the ground.

The report indicated that the noise problem was growing in proportion as power of engines went up, and that solution of the problem was regarded as highly important both from the standpoint of users of the aircraft and from the standpoint of people on the ground.

"We have reached the point of no return for conventional sound-proofing" (of cabins of transport planes) the report said.

Geisse reported that studies were going on at Bush Field, with propellers for the objectionably noisy military trainer type planes. Investigation includes use of clipped-tip propellers. Preliminary results indicate blades of appreciably smaller diameter, with resultant lower tip speeds, can be used with only a negligible loss of the power employed.

For lightplanes, NACA has already indicated that the multi-bladed propeller or turning at slow



PROPOSED FLIGHT PLANNER:

CAA has asked personal aircraft manufacturers to study possibilities of an experimental indicator, shown above, which will supply a pilot with easy-to-use information about his plane's performance in varying conditions of altitude, temperature and gross weight. A clamp attaches the indicator to the instrument panel to be available for instant use just before takeoff or landing. To operate, the pilot turns a knob at the bottom until the proper setting for gross weight, altitude and temperature appears. The other figures then show exactly what his plane will do in those conditions. The indicator may be especially useful for pilots in hill and mountain country who frequently fly in varying altitudes, and temperatures. Performance data would be calculated and supplied separately for each plane type if manufacturers vote in favor of its use in personal planes.

\$3 AN HOUR PLUS DUES:

Members of the Linde United Flyers Club, Inc., Tonawanda, N. Y., are shown taking delivery on their new Aeronca Champion at Niagara Falls airport, from Billy Orcutt (left) of Niagara Falls Aeronautical Corp. The 15 club-members all employees of Linde Air Products Co., pay \$3 a month dues in the club, and \$3 an hour for flying time, agreeing to pay for a minimum of 3 hrs. flight time a month.

rpm. is the probable best solution. Dr. Theodore Theodorsen, chief physicist at the Langley Field (Va.) laboratory, sees an immediate reduction of as much as 50 percent in lightplane propeller noise, if this fan-type propeller is used, and says the reduction may be around 80 to 90 percent with additional study. As an alternative, Geisse has suggested using several propellers of small diameter capable of absorbing the power which one larger propeller with higher tip speed would absorb.

Commissioner Arthur Wallach of the New York police department, who founded the New York police aviation detail in 1929 as a lieutenant, last week instructed his aviation police to "bear down" on low flying noisy planes in the New York area.

CAA officials and other advocates of noise-abatement within the industry are fearful that local government officials may take action seriously handicapping further growth of aviation through zoning restriction on airports, or altitude restrictions on flights, unless the industry itself takes prompt corrective measures.

Manufacturers' Problem

After Aug. 15 manufacturers who do not have their new airplanes registered in the name of the ultimate purchaser before delivery flights may run into a chain of CAA recordation fees which could cost as much as \$20 before the title was certificated to the private owner. New CAA requirements call for the plane to be recorded with prepaid \$5 fee, before the plane is flown away from the home plant.

With backlog of cash deposit orders now on hand, presumably most manufacturers can register planes in the name of the owner, before they are flown away for delivery. However, if the manufacturer registers the plane in his own name, another \$5 fee will be required each time the title is transferred. Assuming that it passes down from manufacturer, to distributor, to dealer to consumer, this would involve three payments for transfer before the title was in the hands of the ultimate buyer. It is expected industry will press to get a simplification of this process which will eliminate the need for the various transfers on new planes.

Briefing For Private Flying

LABORATORY PLANES—Three radio companies recently have taken delivery on Beechcraft Model D18S twin-engine transports for use as combination flight laboratory planes and executive transports. William P. Lear, president of Lear, Inc., Grand Rapids, Mich., has been flying one of the new Beeches for some time, while Collins Radio Co., Cedar Rapids, Iowa, and Bendix Radio division, Baltimore, recently purchased similar planes. The planes will carry new experimental radio navigation and communication equipment being developed by the three companies, and will also be used for tests on standard equipment. The plane is regarded as well-suited for this work, having a range of more than 1,000 miles, and a cruising speed of around 180-190 mph. with its two Pratt and Whitney 450 hp. Wasp Jr. engines.

PRICE INCREASES—A general trend of price increases among personal planes, a logical consequence of the general upward price spiral adds still another complication to the already confusing personal plane market picture. Republic Aviation Corp., which had stuck to its originally announced figure of "less than \$4,000" for the four-place "Seabee" amphibian since the first announcement in December 1944, hiked the price \$500, last week, from \$3,995 to \$4,495, due to increased cost of materials, parts and tooling. Republic officials commented: "Republic cannot hold the line alone." The "Seabee," recently certificated by CAA, has a production goal of 6,000 units in the next 12 months with peak rate expected to be reached December or January. Delays in previous schedules are attributed in large part to strikes at plants of sub-contractors and parts makers. How the general upward price trend will affect quantity sales of personal airplanes, will be watched anxiously. There is the ominous possibility that many potential customers, never enthusiastic about the high cost of personal planes, may become even more discouraged with the increases in price, and decide to check personal planes off their buying list for a few more years.

CAA CONSISTENCY—The CAA admitted in a press release with some reservations, last week, what many lightplane enthusiasts have been pointing out for years, that the chief makers of airplane noise are transport (and military) aircraft. The same announcement contained a seemingly inconsistent statement, that Administrator T. P. Wright had asked that air investigation to be conducted by NACA on airplane noise, start with the lightplanes. Actually this is not quite as paradoxical as it sounds. The non-flying public firmly believes that virtually every airplane makes just as much noise as the multi-engined high horsepower transports and military planes. If the personal planes are to be permitted to land at close-in airports, the flyers, manufacturers, and operators are going to have to sell the non-flyers on the fact that the low-powered lightplanes are an entirely different breed of cat. Emphasis on quietness should be a major point in lightplane sales promotion until it is thoroughly dinned into the public's not-too-penetrable consciousness that a personal plane with a well muffled engine of even 150 to 200 hp. and a properly designed propeller which does not have to wind up to a terrific top speed won't do the things that people have been complaining to CAA about:

1. Wake the baby. 2. Break up conversation. 3. Make a night's sleep impossible. 4. Rattle the dishes in the cupboard. When the lightplanes have gone as far as they can go in noise reduction, and let the public know, the principal objection to close-in airports is answered. Chances are the military and transport planes will continue to make more noise, and that they will be moved out farther into the open country to bigger airports because of this fact, with well-muffled aerial shuttle service between the big air terminals and downtown helicopter fields.

\$1,500,000 IN FLYAWAYS—Leon Wilder, president of American Fly Away Service, Inc., which now has branch offices in Washington, Dallas, and Ft. Worth, with other offices opening in Wichita and New York, besides the home office in Dayton, Ohio, says that since VJ day, his organization has flown over half a million miles delivering new planes from factories to distributors and dealers, and that planes delivered are valued at \$1,500,000. The service was described more fully in "Aviation News," Feb. 11, 1946.

—Alexander McSurely

SPECIAL AIR SERVICES

CHARTER

NON-SCHEDULED

INTRASTATE

Non-Scheduled Carriers File Data on Operations With CAB

Caribbean Air Transport nets \$40,783 profits in six months period; Lone Star Air Cargo claims \$3,498 gain; Air Cargo Transport, Inc. in red.

Approximately 20 percent of an expected 300 non-scheduled airlines filed operations reports with CAB under Amendment 2, Section 292.1 of the Economic Regulations by the July 15 deadline. Required information includes data on corporate setup, present and proposed services, equipment, rates, traffic carried and revenue.

While Board officials indicate considerable grace probably will be granted in view of delays in distributing registration forms, the Operations Division of CAB's Economic Bureau is preparing letters to be sent to more than 200 companies beginning this week, calling attention to the amended regulation.

Reports Analyzed—Analysis of the first 30 of 60 reports received show 17 filed by carriers operating DC-3 equipment or larger. Flying services conducting small-scale charter activities with twin-engine Cessnas and Beechcraft or single-engine planes accounted for the other 13.

The 17 larger operators reported 59 DC-3's or C-47's on hand and either in operation or undergoing reconversion. The only carrier listing DC-4's was Veterans Air Express Co., which has two. Eleven of the 17 major operators filed profit and loss statements covering from two to six months, and seven of these were in the red.

Latest registrations and other industry developments reported as follows:

► **Caribbean Air Transport, Inc.**, Miami. Officers: Roger D. Edwards, president; Donald E. Husted, vice president; Anita Price, secretary-treasurer. Operated contract passenger flights between Miami and New York from Jan. 14, 1946, to May 18; flew 255,559 revenue plane miles; carried 2,741 revenue passengers 3,052,139 revenue passenger miles. Revenue Jan. 2 through June 30: \$197,169 with \$40,783 net profit. Company owns three DC-3's and had 40 full-time employees on May 18. Preparations are now underway to carry cargo and passengers between the U. S. and South America.

► **Lone Star Air Cargo Lines**, Love Field, Dallas. Officers: L. Walker Boggs, president; Arlie J. Ullrich, Jr., and Anthony F. Spann, vice presidents; Chandler Lloyd, Secretary. Capitalization: \$75,000. Operates contract freight and passenger service in continental U. S. with three owned DC-3's at cargo rates of 11 to 15 cents a ton mile. From May 1 to June 30 flew 73,477 revenue miles with \$34,866 operating revenue and \$3,498 net profit. Employees June 30: 16.

► **Air Cargo Transport Corp.**, New York City (operations base Newark, N. J.). Officers: H. Roy Penzell, president and treasurer; H. Mat Adams, executive vice president; Harvey K. Miller and William M. Miller, vice presidents; Thomas M. Reilly, secretary. Carries contract cargo to any point in U. S., Newfoundland, Cuba, Haiti, Puerto Rico, Canada and Venezuela. Service started July, 1945, with present scale of operations beginning in January, 1946. Between April 26 and June 27 operated 195,389 revenue miles and carried 1,179,202 lbs. of cargo 1,259,990,000 pound miles with \$105,999 total revenue and \$66,402 operating loss. Owns nine C-47B's; leases five others from War Assets Administration and had 127 full-time employees on June 30.

► **Veterans' Air Express Co.**, Newark. Officers: Saunie Gravely, president; Harvey G. Stevenson, executive vice president; Nellie C. Brenner, John W. Greenleaf, George Leu, vice presidents. Operates non-scheduled and charter to U. S. and foreign points and soon will file application with CAB for scheduled international service. Between April 15 and June 15 flew 61,664 revenue plane miles, carrying 52,542 lbs. of cargo 233,551,750 pound miles and 326 passengers 96,000 revenue passenger miles. Total freight revenue for two months \$124,149, passenger \$10,083. Has two DC-3 passenger and cargo planes and two DC-4 cargo craft; charges 20-25 cents a ton mile for domestic cargo and has 100 full-time employees.

► **National Air Cargo Corp.**, Los Angeles. Officers: Stanley J. Jackson, president; Mather A. Carson, vice president; H. R. O'Neil, Jr., secretary-treasurer. Began service Dec. 18, 1945, and operates coast to coast averaging two long hauls daily carrying both passengers and cargo, with a freight rate of 13 to 20 cents a ton mile. During April and May flew 117,500 plane miles; carried 154,845 lbs. of cargo and 354 revenue passengers. Total revenue \$96,011; net loss for two months \$11,826; net profit for May \$6,918. Has five DC-3's on hand and five more planes probably will be purchased in next three months. Employees May 31: 48 full-time.

► **San Diego Sky Freight**, Lindbergh field, San Diego, Cal., a partnership of Edwin F. Bennett, Harlyn L. Semar, Walter H. Ray, Arnold J. Hecker and Joseph J. Hecker. Carries passengers to any point in U. S. or Mexico under charter with one DC-3. Total revenue as of May 31, \$31,310 with \$12,445 net profit.

► **Pegasus Airfreight, Inc.**, Philadelphia. Officers: J. Gilpin Bright, president; Peter Wright, vice president; Joseph C. Bright, secretary-treasurer. Operates average of one charter flight weekly in continental U. S. carrying passengers and cargo. Service inaugurated April 15. Revenue plane miles flown to June 15, 29,450; 3,800 lbs. of cargo carried 8,700,000 pound miles and 175 passengers flown 350,000 passenger miles for total revenue of \$10,937 and \$2,500 operating loss. Cargo rates: 20 cents a ton mile. Equipment consists of two C-47A's licensed and third being converted. Full-time employees: 22.

► **Pubuc Flyers, Inc.**, New York City (operating base Teterboro, N. J., Air Terminal). Officers: J. Cameron Oodwin, president; James E. Brown, vice president; Roderick V. Spalding, secretary-treasurer. Operates in continental U. S. carrying passengers and cargo, latter at 17 to 30 cents a ton mile. Cargo flights began June 9. Equipment: one C-47 and one Beech 18A, with four additional C-47's to be purchased for cargo service.

► **U. S. Airlines**, St. Petersburg, Fla., now has nine C-47's in cargo operation, with three more being reconverted. Company employs about 262 persons and has been losing up to \$50,000 monthly according to testimony at a recent CAB hearing.

► **Slick Airways**, San Antonio has contracted to fly 5-ton loads of California strawberries and raspberries to Eastern cities six times weekly starting late this month. The deal has attracted widespread interest among West Coast berry growers, some of whom plan to expand their acreage to supply the new market. Slick says fresh California berries have not been on Eastern tables in commercial quantities heretofore because they can not stand up under the long haul by rail.

► **Pan Maryland Airways**, Baltimore, is flying about 1,200 copies each of Baltimore's two afternoon newspapers—the *Evening Sun* and *News-Post*—to Ocean City, Maryland seaside resort. Marked "Airplane Edition," the papers now reach Ocean City news-stands via Pan Maryland's *Bellanca Crusair* about 3½ hours earlier than when carried by bus. Both newspapers, it is reported, are studying the feasibility of air distribution to other Eastern Shore points.

► **Boote Hatcheries**, Worthington, Minn.,

Line Uses Pipers

Believed to be the only airline using lightplanes, Island Airways has started two daily round trips between Seattle and other Puget Sound cities with two passenger Piper Cruisers. A 7-passenger *Norseman* is also used for the company's longer hops. Paine Field, north of Seattle is the metropolitan terminus. Other points served are Port Angeles, Port Townsend, the isolated resorts on San Juan Islands, and Bellingham. Acceptable airports are available everywhere except on the islands, where pastures are used until better fields are completed at Friday Harbor and on Lopez and Orcas Islands. W. W. Paull, Seattle ex-Navy commander, who has been flying since 1927, heads the firm. All five pilots are veterans. Seattle-Friday Harbor fare is \$6.85 for 55 miles; 100-lbs. of freight costs \$3.42.

is advertising air delivery of hours-old turkey poults (chicks) to any point in the U. S. in 56 hours. Shipments are made via company's own Noorduyn *Norseman* or such scheduled carriers as United Air Lines and Mid-Continent Airlines.

► **Columbia Airlines**, Baltimore, has been charged with flagrant violation of the Maryland Public Service Commission's orders in operating a combination plane-limousine service from Baltimore to Ocean City, Md. The complaint was filed by Chesapeake Airways, intrastate carrier, and Red Star Motor Coaches, Inc., which seek a cease and desist order from the PSC. Chesapeake and Red Star assert they are rendering adequate service between Baltimore and Ocean City under authority granted by the PSC in February. Columbia, it is argued, infringed on their rights by starting an operation to a town a few miles from Ocean City and having passengers transported from there to Ocean City by limousine.

► **Dennis Powelson**, Miami, Fla., is planning a contract passenger and cargo service with five C-47's he already owns. In a registration filed with CAB, Powelson states he will operate "to any point on earth or any other point that may hereafter be opened to commerce."

► **Atlantic Central Airlines**, New Jersey intrastate operator, has asked CAB for a certificate to carry persons, property and mail by helicopter on two routes between New York City and Paterson, N. J., via various intermediate points, according to Bowman R. Otto, president.

► **Waterman Steamship Corp.**, last week planned to establish non-scheduled air service from New York and New Orleans to San Juan, P. R., with a 44-passenger DC-4.

► **British Columbia Air Lines**, Vancouver, non-scheduled charter operator, this month became the first Canadian airline to have its license suspended by the Dominion's Air Transport Board. The carrier was charged with failure to abide by the standards of keeping ac-

counts and records as set forth under the Canadian Aeronautics Act.

► **Air Services, Inc.**, Washington National Airport, has acquired a third Cessna UC-78 and soon will receive delivery on a Noorduyn *Norseman*.

Commuter Services Planned by Empire

Empire Airlines, New York City, intends to bring every major up-state population center within air commuting distance of Metropolitan New York by the end of next month when its present network will be expanded over 100 percent to include 12 more communities.

President Dean Alfange states that his company's goal is to have a new fleet of 10 eight-passenger Beech D-18C's in operation to 21 New York cities by Aug. 31. The Beechcrafts will replace eight Cessna UC-78's which now fly 13 daily round trip schedules from La Guardia Field.

Already one of the largest intrastate carriers in the nation, Empire flew 5,247 passengers over a million passenger-miles between December, 1945, when operations began, and July 1.

Cities now on Empire's routes besides New York City are Binghamton, Elmira, Jamestown, Utica, Schenectady, Watertown, Plattsburg

and Glens Falls. Communities to be added shortly are Albany, Syracuse, Rochester, Buffalo, Niagara Falls, Ogdensburg, Massena, Malone, Olean, Auburn, Cortland and Poughkeepsie.

Future plans, as shown in CAB applications, include expansion to interstate operations in the six New England states, Pennsylvania and Ohio.

Challenger Airlines Plans To Stop Interstate Flights

Challenger Airlines, Salt Lake City, planned to discontinue its interstate flights to Phoenix last week because of CAB's narrowed definition of non-scheduled operations but was slated to double its intrastate service at the same time.

Rejected as an applicant in the Board's Rocky Mountain decision, which it wants reopened, Challenger has been continuing its operations to prove the need for the services it has proposed. Latest of the periodic traffic reports which the airline has been filing with CAB shows 293,990 passenger-miles operated between March 4, when flights began, and June 29.

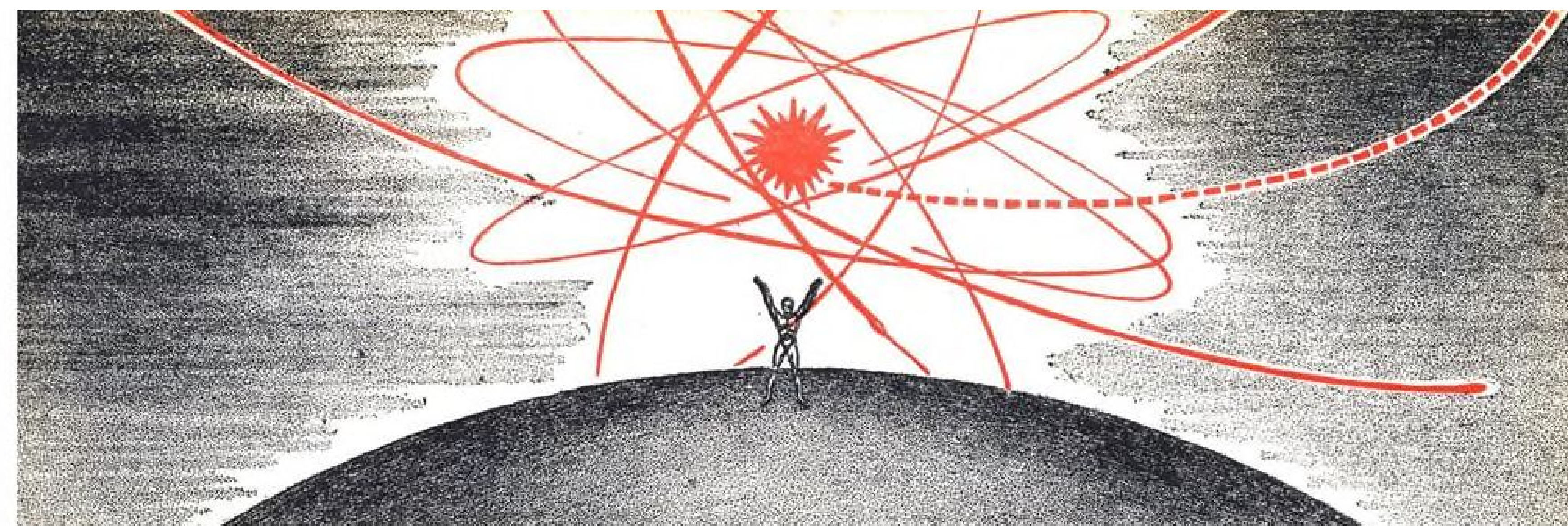
With fares based on 5 cents a mile, the company's overall load factor for both interstate and intrastate operations was 64 percent during the first 17 weeks of service. Challenger has been using a Beech D-18S but expects to have its new D-18C ready next month.

Long Island Commuters Get Service in Widgeons

Inauguration of scheduled commuter service between New York City and five Long Island points was scheduled this month by Long Island Airlines, A. Royce Grimm, president, stated recently. The carrier will operate from the 23rd Street seaplane ramp on New York's East River to West Hampton, Riverhead, East Hampton, South Hampton and Montauk Point.

Using four Grumman Widgeon four-passenger amphibians, the airline plans to make 19 round-trip flights daily. Later the company intends to place four 12-passenger, \$90,000 Grumman Mallards in operation, boosting daily schedules to 46.

Grimm said his company was established with private funds but soon will offer a public stock issue. Future plans include establishment of commuter air service between Key West and Miami and inter-island service in the West Indies.



MAN vs ATOM-YEAR 1

WHEREIN WE SIGNALIZE THE FIRST ANNIVERSARY OF THE ATOMIC AGE, CONSIDER THE ALTERNATIVES INHERENT IN BOTH GOOD AND EVIL POTENTIALITIES OF NUCLEAR FISSION, THEN VENTURE A GLIMPSE INTO THE FUTURE

A YEAR AGO, July 16, 1945, at Alamogordo, New Mexico, man created the first atomic explosion. Most impressive events diminish in stature as they recede in time. This one grows bigger with each passing day. It truly marked the beginning of a new age.

As Year 1 of the Atomic Age ends and Year 2 begins, we are engaged in three portentous projects.

At Bikini Atoll we are detonating the fourth and, possibly, the fifth atomic explosions in the history of the world.

At Oak Ridge, Tennessee, we are building the first atomic energy plant for peaceful purposes.

Most important, in New York we and all the other United Nations are engaged in the first attempt to subject atomic energy to international control. Literally, the fate of the world hangs on this attempt.

As this introduction is written, the United Nations Atomic Energy Commission has just begun its work. People everywhere pray for its success—for their own sake, but even more for their children and for their grandchildren. If this Commission fails let everyone everywhere be warned: the world has taken a step toward destruction.

As we enter the second year of the Atomic Age, the nations of the earth are embarked on an atomic armaments race. There is no blinking that fact. We have had official notice served on us. Therefore, we must understand that unless the United Nations Commission can

arrest the drift of events, we are moving toward a horrible war. The Commission must succeed.

The American delegate, Mr. Baruch, has brought to the Commission an ably thought out plan. It would internationalize nuclear science, and release for mankind the beneficent applications of atomic energy. But it would "control" atomic bombs only to the extent of giving the world brief warning of any nation's preparation to use them, so that we might have foreknowledge of disaster.

Therefore, the real and enormous task before the world becomes clear. We must end war. No other control of atomic weapons exists. If war comes, atomic weapons will be used. If they are used, our children who survive will curse their fathers. Understanding the consequences of failure, we *must* succeed.

Because we cannot succeed without knowledge, I have asked my associates at McGraw-Hill to condense into the following pages what we know at the close of Year 1 about this great new atomic force—its basic science, its possible uses and its political repercussions.

James H. McGraw, Jr.

President, McGraw-Hill Publishing Co., Inc.



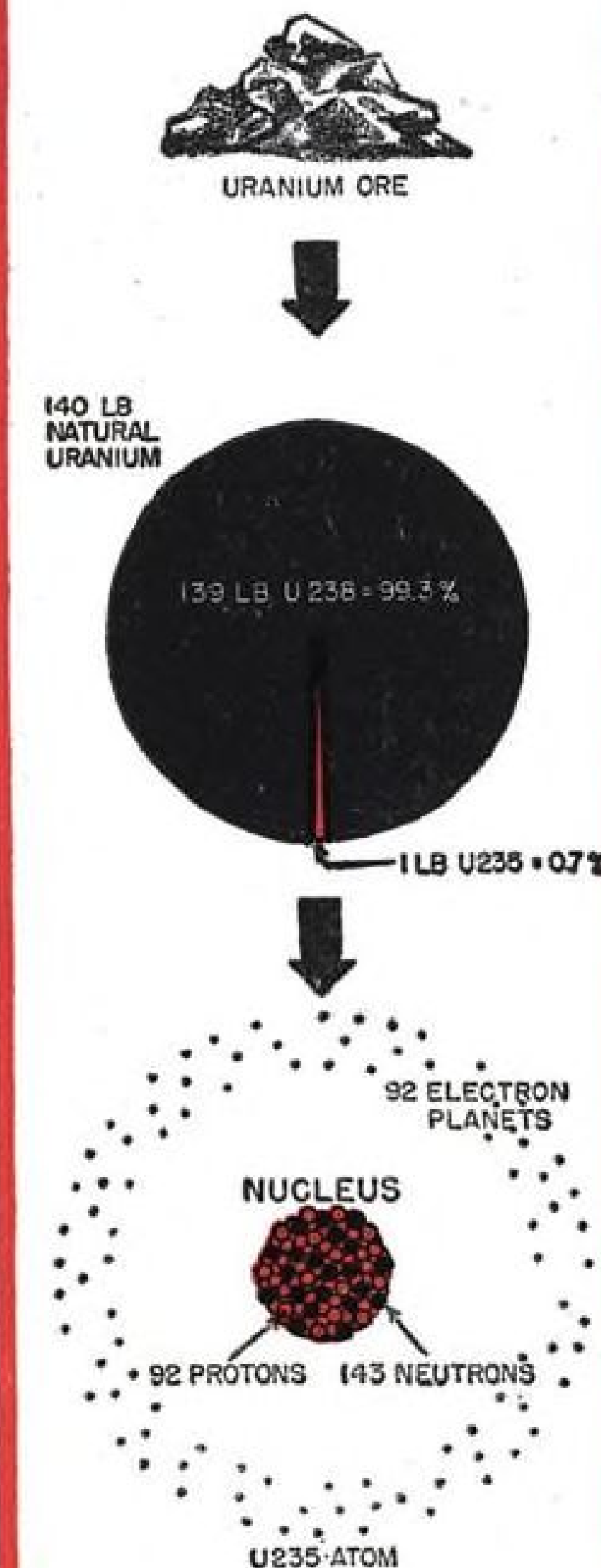
OIL BURNERS RUSHED ACROSS COUNTRY:

Picture shows loading of 180 household oil burners, carried from Newark Airport to Seattle, Wash., by California Eastern Airways for use in veterans' housing. The shipper, HomeEas Products Division of Bogue Electric Co., Paterson, N. J., estimated that weeks were saved because air transportation was used. The shipment was facilitated by the fact that the burners are of aluminum alloy construction, and were manufactured completely in one plant.

This Fateful Atom...

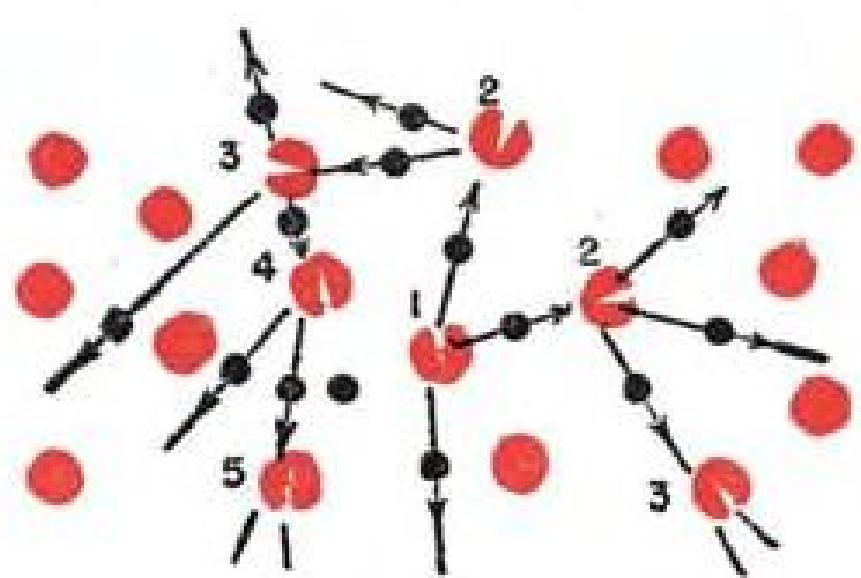
1 ORE TO U235

Only 0.7% of natural uranium is U235



2 CHAIN REACTION

Fragments from earlier nuclear explosions smash other nuclei



LOOKING BACK twelve months to the birth of Year 1, Atomic Age, we begin to sense the majestic import of the atomic bomb that blasted the naked desert at Alamogordo, N. M., on July 16, 1945. There man first shattered atoms in an explosive *fast-chain* reaction. Then came Hiroshima and Nagasaki.

In every case the fateful atom was either uranium 235 (U235), or plutonium derived from the action of U235 on U238. Every pound of U235 atoms split in these unprecedented blasts yielded the energy of 11.4 million kilowatt-hours, or 1400 tons of coal — slightly more for plutonium.

No matter where one mines uranium ore, the purified natural uranium (Fig. 1) always contains 99.3% of the "garden" variety U238, and a mere 0.7% of the precious U235.

An atom is like our solar system. The central sun is the nucleus—a bunched mass of protons and neutrons, each weighing one unit. The planets are electrons. Each proton has one plus electrical charge — each electron an equal negative charge. There must be as many negative electron planets as positive protons in the nucleus. This is also the "number" of the atom. Neutrons have no charge, but add weight.

The atomic number of uranium is 92 because the uranium atom always has 92 nuclear protons and 92 electron planets. The isotopes U238 and U235 differ only in the number of neutrons; U238 has 146 neutrons, and weighs $92 + 146 = 238$ units. U235 has 143 neutrons, and weighs $92 + 143 = 235$ units.

Ordinary chemical reactions, such as TNT explosions, release only a fraction of

the modest energy of the whirling electrons in the outer atom. Nuclear reactions unlock the immensely greater energies which bind together the nucleus.

Even the gentle tap of a slow-moving neutron bullet will split the atom of U235 or of man-made plutonium into two medium-weight atoms, yielding also one to three spare neutrons plus energy. Thus these *fissionable* materials supply both their own bullets and a highly sensitive lot of high-explosive targets — a perfect setup for a *chain reaction* (Fig. 2).

Chain reactions work like chain letters. Neutrons from one nuclear explosion hit and explode other nuclei. But, since atoms are mostly open spaces a chain started in a small block of U235 or plutonium quickly dies out because most of the released neutrons escape from the block.

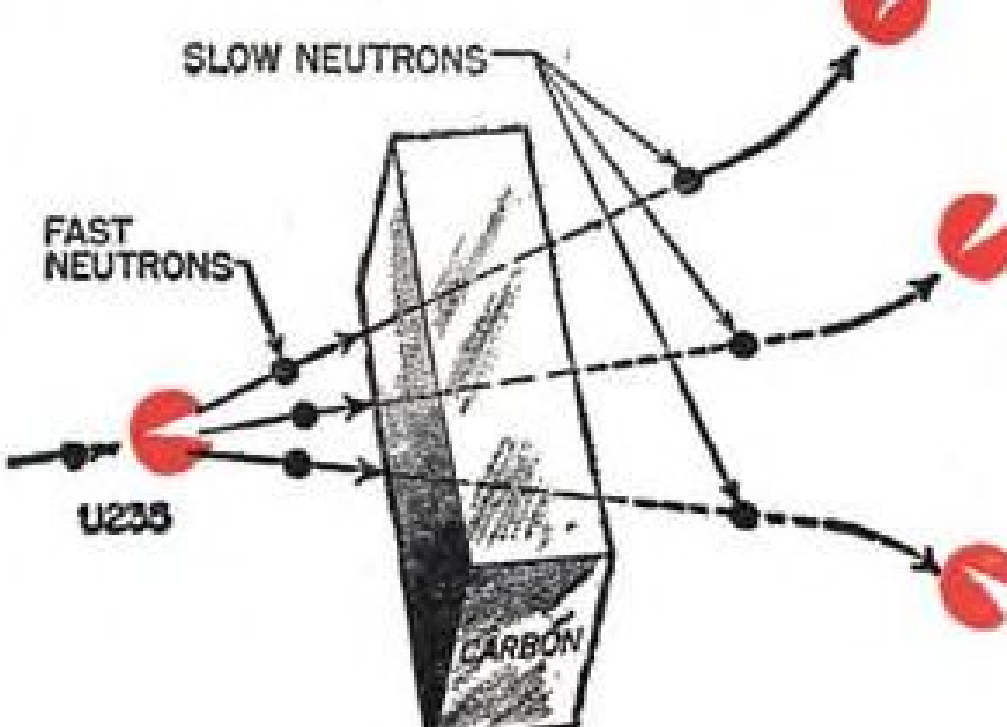
The bigger the block, the smaller will be the percentage of escaping neutrons, and the more left to split other nuclei. When the block is rapidly built up beyond a certain secret size the fragments of 1000 nuclear fissions split many more than 1000 additional nuclei. Then fissions multiply geometrically, and the block disintegrates with explosive speed and violence — as in a bomb (Fig. 3).

This bomb explosion is a fast-neutron chain. For economy and ease of control, uranium piles for the gradual release of nuclear energy for commercial purposes will normally use a lean fuel—that is U235 or plutonium diluted with U238, thorium or other less costly materials.

To maintain a chain reaction such piles must be large and artificially stimulated by using carbon blocks or some other *moderator* (Fig. 4) to slow many of the neutrons. Slow neutrons make more hits than fast neutrons because there is more time for them to be swerved from a straight path by the attraction of nearby nuclei, as shown below.

4 SLOW NEUTRONS MAKE MORE HITS

A slow neutron is more easily swerved from a straight line



can Serve Man...

THE FATEFUL U235 ATOM can serve man as a new, compact source of heat energy for power generation, comfort heating or industrial processing. Peacetime applications of atomic energy will use dilute U235 or plutonium as a "fuel," mixed with carbon or some other moderator to slow some of the neutrons and thus keep the chain reaction going.

The diluting agent may be either U238 or thorium, or both. These will do double duty, because neutron bullets convert U238 into the energy-yielding plutonium, and thorium into U233, which may prove equally serviceable.

Thus the commercial piles of the future will "burn" U235 to make other atomic fuels, plutonium and possibly U233, which in turn will deliver heat energy to the pile. In that way it will be possible to get from the pile far more heat than the equivalent of 1400 tons of coal for each pound of U235 split. This highly attractive prospect will speed the day when nuclear energy can compete with coal.

While already mechanically obsolete, the piles making plutonium for bombs at Hanford, Wash. (Fig. 1) reveal the basic principle on which future piles for power and heat will operate. The heat now wasted in vast quantities will be put to work. The plutonium, now removed for bomb manufacture, will be returned to the pile (or left in) as supplementary fuel.

ATOMIC POWER

The possible everyday applications of nuclear heat pictured in Fig. 2 have been recognized from the very first day of the Atomic Age. Year 2 will see the building of the world's first atomic power plant (a pilot plant) at Oak Ridge, Tenn.

Beyond question such installations will produce power, but it may be years or decades before they prove economical. To compete with conventional plants the piles must first be redesigned to run at temperatures high enough for good power-plant efficiency. Also the techniques of operating piles by remote control through the heavy radiation screens must be radically streamlined.

The Hanford piles run on natural uranium containing only 0.7% of U235. The typical commercial atomic power plant of the future will use more than 0.7% of U235 or plutonium, but less than 50%. This will avoid both the low efficiency of the too-lean mixture and the excessive fuel cost of the rich mixture. It will permit piles of moderate size and take maximum advantage of U238 and thorium as potential sources of plutonium and U233.

One should not expect U235 to replace coal generally in this generation, although a few central power stations and ships will

try it out before Year 10 of the Atomic Age. Plants far from traditional sources of fuels may turn much sooner to uranium and thorium as concentrated heat sources, that may easily be transported even to remote corners of the earth.

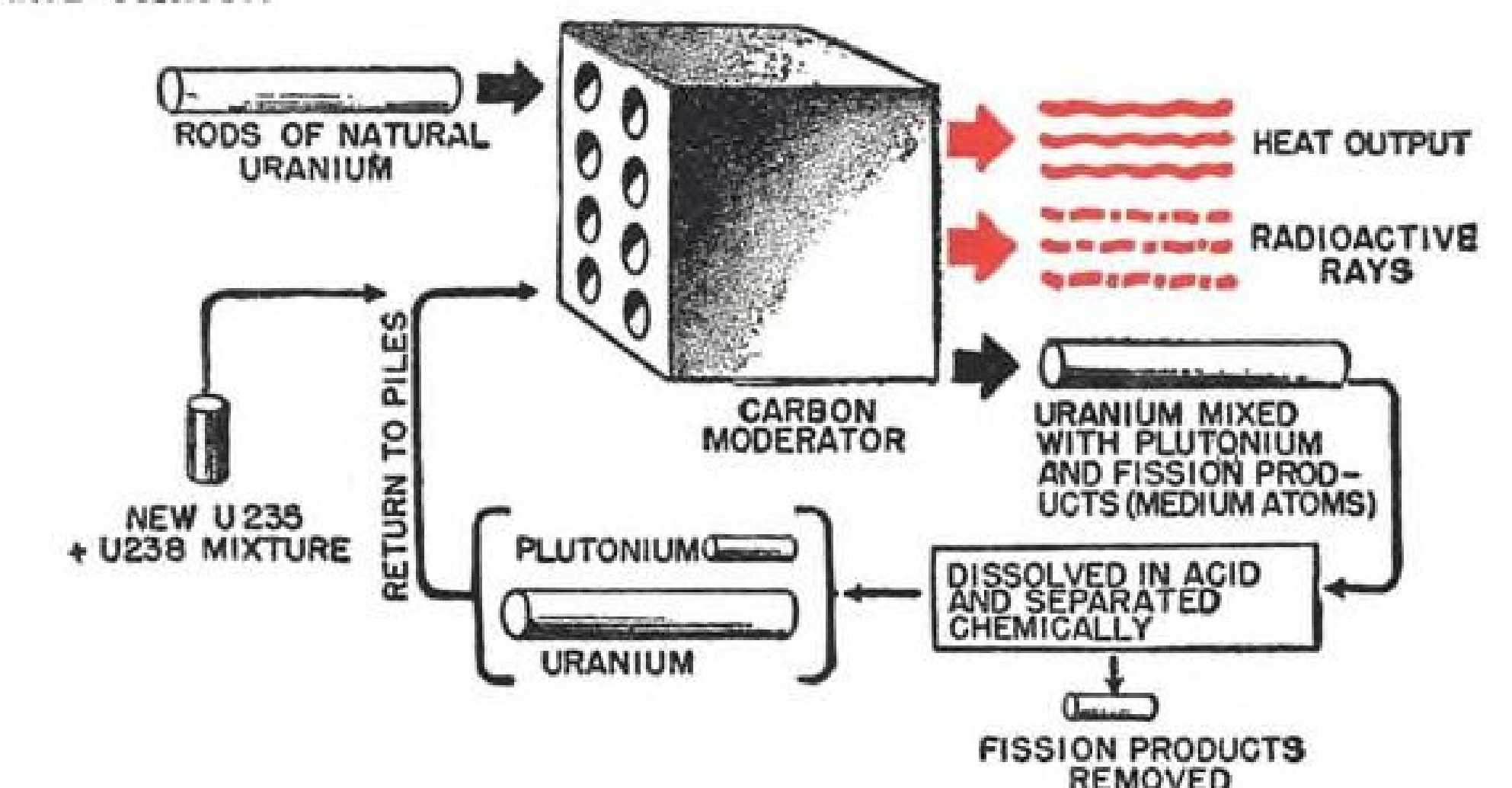
Atomic power, in forms now known, is impracticable for automobiles and small airplanes, because of the large initial investment in uranium and the need to carry 50 tons of shielding to protect riders and pedestrians against the deadly radioactivity accompanying nuclear fission.

RADIOACTIVE ISOTOPES

More immediately important than the heat and power applications of nuclear energy are the services that the radioactive byproducts of pile operation can render. Because these materials act chemically like their ordinary non-radioactive cousins, but can be followed and detected easily, they are expected to play tremendously vital parts in medicine and biology. For more details, see the last page of this section.

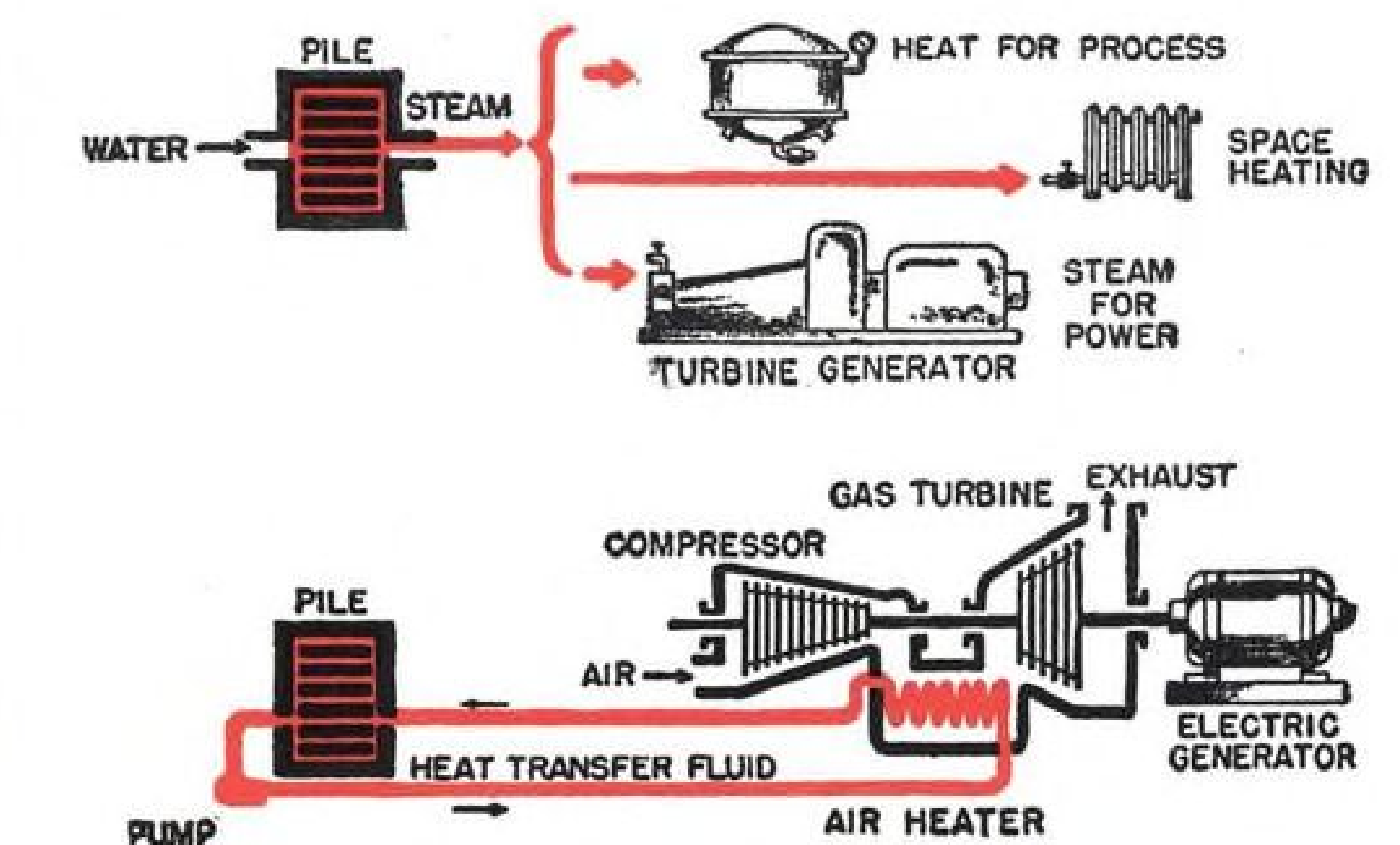
1 SLOW-NEUTRON PILE

Can make plutonium for bombs—or heat for power, process and comfort



2 PRACTICAL APPLICATIONS

Include steam for turbines, process and comfort heating—also heat for gas turbines



or Destroy him...

URANIUM 235 and plutonium are now man's slaves. They will build or destroy as he orders. Man dreads this vast force only because he distrusts himself. War is proof that man in the mass has never achieved self-control. He has always sought better weapons; yet the perfect weapon now brings him no satisfaction for he sees in the atom bomb his own destruction as well as that of his enemy.

The ultimate benefits of nuclear energy may well surpass its present terrors, but the terrors are here now in awful dimension, and man must face them. He must pay this price for unlocking the wealth of the inner atom.

ATOMIC BOMB

This page, then, is about the atomic bomb. Nothing will be said here that is not either a certified scientific fact or a conclusion shared by the majority of the leading scientists, engineers and statesmen who have studied the matter.

As already explained, an explosive nuclear chain reaction spontaneously sweeps through a block of U235 or plutonium when the block is rapidly enlarged beyond a certain "critical" weight X. That weight is still a military secret; the official Smyth

report vaguely suggests that it is more than 4 lb and less than 200 lb. Each piece of U235 in the dormant bomb must weigh less than X. At the desired instant of explosion the bomb mechanism assembles these pieces rapidly into a single piece considerably heavier than X.

The explosion itself drives the U235 pieces apart, thereby quenching the atomic conflagration before all the atoms are split, so the bomb efficiency is far less than 100%. For each pound of U235 (or plutonium) atoms actually split, the bomb releases the energy of 1400 tons of coal.

This explosion is mainly ordinary heat at work in unprecedented concentration. Bomb metals become incandescent vapor millions of degrees hot. This, and the enveloping sphere of glowing air, radiate a blinding flash that chars human flesh at half a mile and blisters at over a mile. There is a destructive shock wave (sound) and a second-long hurricane of unimaginable force—the outrushing of the expanding heated air. Deadly neutrons and gamma rays speed out from the bomb.

A single atomic bomb killed about 100,000 at Hiroshima. Fewer died at Nagasaki only because the circle of potential destruction included much vacant land. Bombs ten times more powerful can be made by the thousands in any major industrial country with the plants and the know-how. One bomb could saturate Minneapolis or downtown Manhattan.

Many experts estimate that a complete set of American atomic "secrets" and blueprints might save a foreign power two to three years at best in its race for atomic arms. With no help at all from us, any advanced industrial nation can, in five to ten years, acquire the raw materials, the plants, the know-how and enough bombs to knock out the big cities of any other country overnight. In Year 2 of the Atomic Age this arms race is already on.

It will not fail for lack of raw materials; every country has lean ores worth working for bombs.

THE CHEAPEST DEATH

Cost need not deter, for the atomic bomb is by far the cheapest method of destruction ever devised. General H. H. Arnold estimates that atomic bombs can be manu-



A single improved atomic bomb can devastate ten square miles of city

factured and delivered for less than \$500,000 per square mile of destruction.

Don't be misled by the two billion dollars America spent on a project that dropped only two bombs on the enemy. New plants can be built at a fraction of wartime cost, and the investment spread over thousands of bombs, not just two.

NO DEFENSE

So the bombs can be made in ample quantity and paid for, but can they be delivered? The answer is: "Yes; by the time the bombs are ready they can be delivered anywhere and overnight." If the defenses of the target country are weak, piloted planes can get through in ample number. Ten percent would be enough.

For more effective delivery radio-steered pilotless planes and rockets can carry the atom bombs faster than sound. Such weapons will be almost untouchable by either antiaircraft artillery or manflown fighters.

Greatest threat of all will be the transoceanic rockets. The German V-2 rocket, which never once was stopped by Britain's defenders, points one way. It needs only transatlantic range (with atomic propulsion) and an atomic bomb in the nose. Forty-six feet long, loaded with 7500 lb of alcohol fuel and 11,000 lb of liquid oxygen, the V-2 of World War II rose 60 miles in the air and arced 200 miles in five minutes to deposit one ton of TNT in London.

Seeing so many strange things come to pass, the man in the street cannot distinguish between possible miracles and the impossible variety. From the very start of the Atomic Age he has been hoping for a "ray" that will explode the atom bomb far off. Competent scientists and engineers say that cannot be.

The only way to bring down a 3500-mile-per-hour rocket at a safe distance is to chase it with your own 4000-mph rocket. You can't win at this game often enough to establish ironclad protection.

The only specific defense against the atomic rocket known in Year 2 of the Atomic Age is to disperse all cities and put key industries underground. This would be very costly in time, money and national morale.

MORE AND BETTER BOMBS?

Some will ask whether the U.S., as the most powerful industrial nation, could not build more and better bombs and carriers than any other nation. Probably yes, but there is still no real security. If the "weak"

opponent has enough atomic weapons to destroy us once, what advantage is there in being able to destroy him twice?

Shooting first could protect us now, but not after the world is atomically armed. If we were to destroy the enemy's cities, we would probably miss his well-concealed and protected bomb magazines and rocket launchers. A few minutes later he could return the atomic fire. In brutal simplicity, that is the picture of future atomic war. Everybody loses.

At this point one grasps at another straw: "If everybody is to lose who would be so foolish as to start an atomic war? And didn't the Germans refrain from using gas for a similar reason?" Possibly yes. It may work that way. But in a world

atomically armed to the teeth some nervous finger may pull the fatal trigger.

ONLY ONE WAY OUT

Throughout history each new offensive weapon has called out its appropriate defense. But now the offense leaps centuries ahead in a single bound and the defense lies almost helpless everywhere, unless some technical protection, unknown as Year 2 begins, can be devised.

The situation is extremely dangerous. There is no clear way out except through some sort of international action first to stop the atomic arms race and, before it is too late, to hobble war itself.

Can it be done? Perhaps not, but there is no alternative except atomic chaos.

...so he faces the Atomic Dilemma..

THE DILEMMA

Nations must either face the probability of an atomic World War III, which would surely be the most deadly in history...

Or, the experts propose, yield both atomic weapons and war potential to international authority backed by superior force.

What the Experts Say

1. In five to ten years any major industrial nation can make enough atom bombs to destroy all the major cities of any other country overnight.
2. This assumes no "secret" information or other help from us.
3. The necessary uranium ores will be at hand.
4. The cost will not be too high.
5. The bombs produced can then be carried thousands of miles by bombers, or by atomically powered guided missiles moving faster than sound.
6. There will probably be no effective military defense against such weapons.
7. Dispersing cities, and putting key industries deep underground, will give some protection if accomplished in time,

but at incredible cost in money and human discomfort.

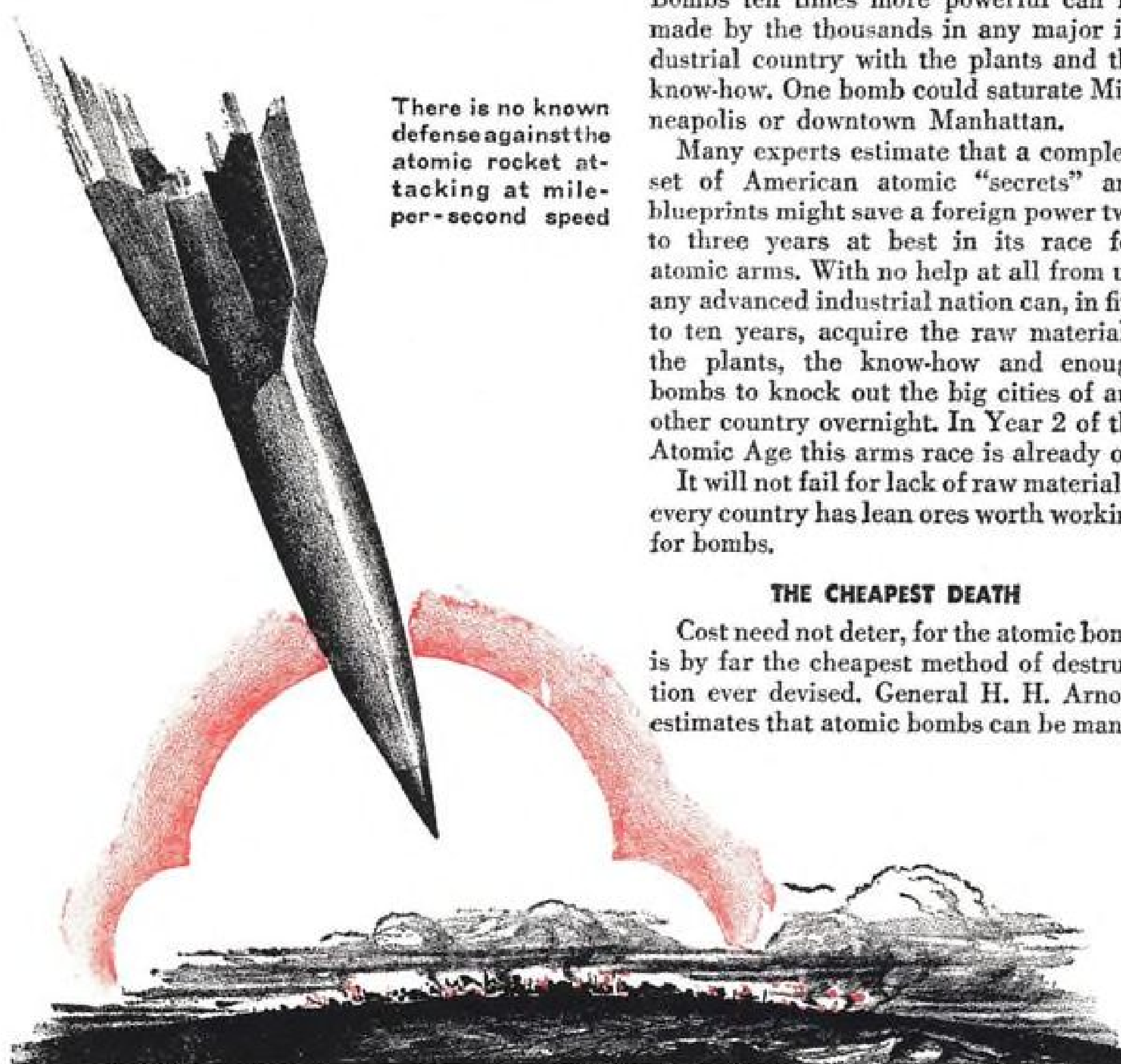
8. In a world atomically armed, nations can probably protect their bomb stocks and rocket launchers from enemy assault.
9. If so, nation A can destroy the cities of any other nation B, after which B's rockets will destroy the cities of A. Shooting first will not win an atomic war.
10. This knowledge may not restrain the trigger finger of a suspicious power.
11. Having more and better atomic weapons than the other fellow won't help much if he has enough to destroy us. No use to kill a man twice or rebomb urban ruins.
12. Every nation is vulnerable in the Atomic Age, including the U. S. A.
13. National security will be impossible without (first) international control of atomic arms and (not too long there-

after) international control of all war potential, both backed by superior physical power.

14. If action to this end is long delayed, it may become impossible to halt the atomic arms race already started.

15. At best, the necessary degree of international control, with some real delegation of national sovereignty, will be a revolution in human affairs. It may prove to be humanly unobtainable at this time. If so, men and women everywhere must face the probability of an atomic third world war—by far the most destructive in all history.

In this atomic age no nation can be safe through its own unaided might

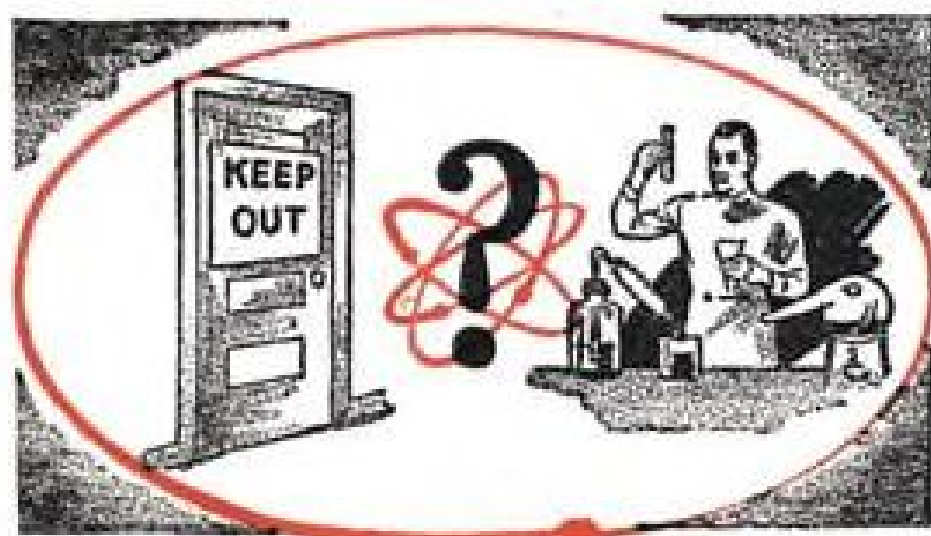


There is no known defense against the atomic rocket attacking at mile-per-second speed



..and the Great Debate unfolds

ATOM YEAR 1 has probably been marked by more debate on a single subject than any other twelve months in the world's history. Social, economic and political as well as purely technical issues have been pressing for realistic solution. Let us look at these issues and see where we stand:

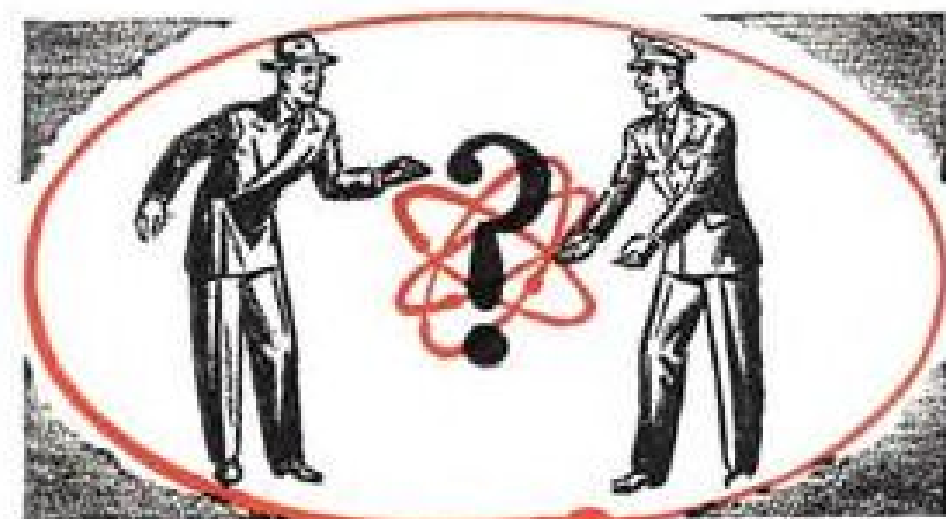


SECRECY VS. FREE SCIENCE

Throughout the first year of the Atomic Age hot debate has raged around "keeping the secret of the bomb." To prevent potential enemies from making atom bombs some have urged a complete black-

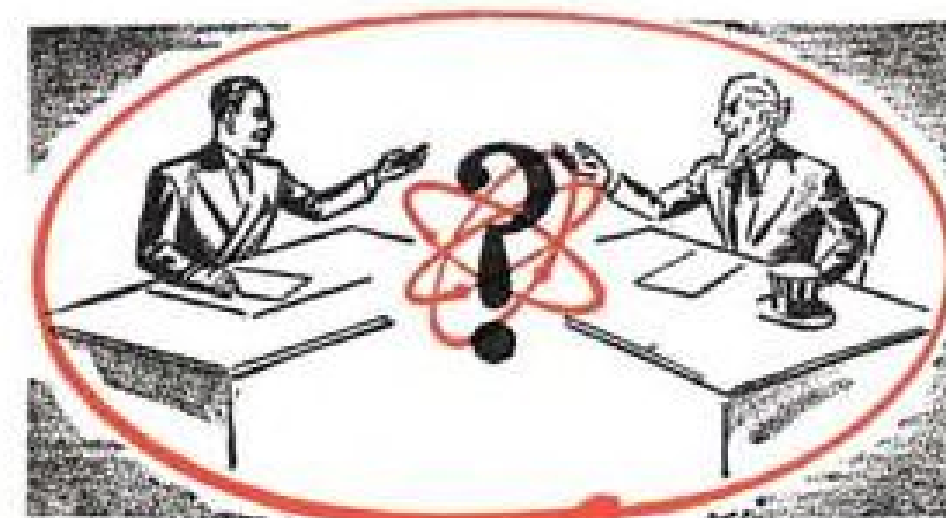
out of all phases of atomic energy — even of the scientific fundamentals of nuclear physics. Others have sought immediate and complete disclosure of all bomb "secrets," both scientific and technological. These have held that such information cannot be effectively hidden, that secrecy blocks progress and breeds wars.

A year of debate has brought the great mass of vocal opinion to this middle ground: (1) Ease restrictions on the exchange of basic physical knowledge. (2) Release for industry's benefit many of the devices and methods developed for the bomb project. (3) Hold tight to specialized information on atomic bombs and bomb-material production until international safeguards are fully operative.



CIVILIAN VS. MILITARY

Because the atomic bomb is the world's greatest weapon, the armed forces would like to control it. But because atomic energy can also be used for peaceful, beneficial purposes, civilian control seems equally essential. These conflicting viewpoints had their strong proponents before the Congress which finally reached a fairly satisfactory compromise in the Atomic Energy Bill of 1946, setting up a competent civil board with which the armed forces will have continuing liaison. As we go to press, just before Year 2 of the Atomic Age begins, this bill has passed the Senate, but there is still a question how rapidly it will be enacted into law.



PRIVATE VS. PUBLIC

Atomic energy is "too big" and "too hot" to be handled privately. It must be nationalized and internationalized. The questions are *how* and *to what extent*. Fortunately, as the "boxes" on these pages show, there are means that may attain reasonable safety against misuse of the atom, and still do so without public control of many "non-dangerous" applications.

DOMESTIC CONTROL AS PLANNED IN THE ATOMIC ENERGY BILL OF 1946

McMahon Committee Bill contains the following provisions.

Policy. Declares it the policy of the U. S. to develop and utilize atomic energy to improve the public welfare, increase living standards, strengthen competitive enterprise and promote world peace.

Organization. Establishes the Atomic Energy Commission (AEC) of five administrators to direct four divisions on research, production, engineering, and military applications—to work in liaison with three committees from (1) the armed forces, (2) outstanding civilians, and (3) joint Congressional representatives.

Production. AEC to own and operate (under management contracts with industry if deemed desirable) all facilities for the production of fissionable materials, such products to be distributed with their radioactive byproducts under license for private industrial and medical research.

Military Application. AEC to engage in development work and produce atomic bombs as directed by the President, to be delivered only on his order to the Armed Forces.

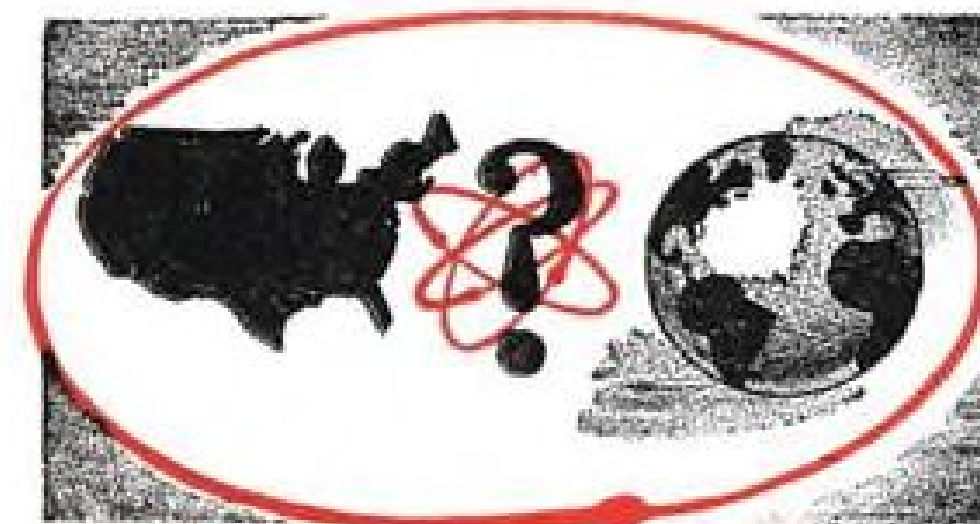
Industrial Utilization. Permits AEC to conduct research, design and manufacture equipment for atomic-energy utilization, license its use, produce and sell power obtained as a byproduct in the production of fissionable materials. Directs AEC to give widest safe scope to private initiative.

Control of Information. AEC to enforce a ban on the dissemination of restricted data that might be used to injure the U. S. or secure advantage to a foreign nation, yet to provide leeway for ultimately relaxing restrictions as future conditions warrant.

Patents and Inventions. No private patents permitted for production of fissionable materials or their utilization for military weapons, but AEC will justly compensate for such inventions, when made by private citizens. Patents for non-military applications may be purchased or condemned by the AEC only when public interest is affected.

Appropriations. "Such sums as may be necessary and appropriate to carry out the purposes and provisions of the act" plus unexpended funds of the Manhattan Engineer District.

while Time runs out



NATIONAL VS. INTERNATIONAL

Born of nationalism, the Atomic Age began when three nations discovered a weapon that today gives them the greatest military power on earth. The prime question is: Shall the atom remain the

servant of its conqueror, nationalism?

During Year 1 of the Atomic Age the Truman-Atlee-King declaration, the masterly report of the State Department's atomic consultants, and the U.S. representative on the United Nations Atomic Energy Commission, have all called for international control of atomic energy. Year 2 will start with no such control. This failure to decide and act is in part a natural result of the extreme difficulty of the problem and the obvious dangers of unwise decisions. Nations everywhere face a triple dilemma in this Atomic Year 2: the dangers of nationalism, the dangers of internationalism, the supreme danger of not being able to make any decision in time to meet the atomic bomb threat.



Leading industrial nations can produce atomic bombs in five years, competent scientists announced after Hiroshima. Already one year of the precious five has been consumed in debate without international action. Soon it may be too late to check the growing momentum of the atomic arms race.

INTERNATIONAL CONTROL AS PROPOSED BY THE U. S. TO U. N. ATOMIC COMMISSION

Baruch statement follows constructive path laid out by Atomic Consultants in "Acheson-Lilienthal Report."

The Plan. The U. S. has proposed that all nations band together to outlaw the use of atomic energy for war and to promote and harness its development for the benefit of mankind. To this end an International Atomic Development Authority would be set up, and to it the U. S. would turn over, at various stages of its organization, all atomic bombs, know-how, raw materials, facilities, and stockpiles of fissionable material. Thus IADA eventually would supersede national authorities on some matters and supplement them on others.

Owner and Operator. IADA would take over from national authorities or private ownership full management and control of all atomic energy matters that afford a possible threat to World security. These include:

1. Raw Materials—Supplies of uranium and thorium to be inventoried, controlled, and developed by IADA.
2. Facilities—IADA to control and operate plants producing fissionable materials and to own and control their products.
3. Research—IADA to undertake research and development on all aspects of atomic energy and to possess exclusive right of research on atomic explosives.

Private Initiative. Will have its chance to push forward the use of atomic energy for peacetime (non-dangerous) purposes. With IADA providing raw materials and carrying out necessary inspection, national and private enterprise may operate "safe" power piles, and produce and use radioactive isotopes for research, clinical and other applications. Radioactive isotopes produced by IADA also can be distributed for peacetime use.

The Mechanics of Safety. No plan is a certain guarantee against future atomic war. This plan should, however, prevent surprise attack with atomic weapons; for IADA is to buttress positive ownership or management controls with wide powers of inspection. Obviously, successful inspection rests on complete freedom of access or egress in any area.

Sanctions. At the heart of the plan lies the problem of penalty for violation—a matter for profound statecraft. To the U. S., one aspect of sanctions appears crystal clear: Here is an area where the veto right now held by the five great Powers must be redefined if it is not to be incompatible with the meaning and purpose of the proposed control.

TIMETABLE—ATOM YEAR 1

1. July 16, 1945. World's first atomic bomb detonated in New Mexico.
2. July 26, 1945. President Truman and Prime Minister Churchill issue Potsdam ultimatum threatening Japan's destruction if she continues.
3. August 6, 1945. Atomic bomb dropped on Hiroshima.
4. August 9, 1945. Atomic bomb hits Nagasaki.
5. August 11, 1945. Army releases Smyth Report on "Atomic Energy for Military Purposes."
6. August 14, 1945. Japan accepts terms of Potsdam declaration.
7. November 15, 1945. Truman-Atlee-King issue declaration of intention and procedures looking toward international control of atomic energy by United Nations.
8. March 28, 1946. State Department issues Acheson-Lilienthal Report on the "International Control of Atomic Energy."
9. April 12, 1946. Manhattan Engineer District announces program for experimental development of atomic power.
10. June 1, 1946. "Atomic Energy Bill of 1946" passes Senate unanimously, is referred to House of Representatives.
11. June 14, 1946. First meeting of United Nations Atomic Energy Commission (Bernard Baruch as American member). Manhattan District announces availability of radioactive isotopes for research use.
12. July 1946. Joint Army-Navy tests of atomic bombs at Bikini.

...but if Man Masters Atom...

IF MUTUAL DESTRUCTION by the atomic bomb can be avoided, the first century of the atomic age will bring immense advances in scientific knowledge, health and living standards. Already many prospective benefits can be outlined, but those we can neither foresee nor suspect may be even more important.

This prediction is grounded in scientific experience; the most fundamental discoveries have always been the most fruitful. The study of molecules gave us chemistry. Faraday's experiments with electricity and magnetism are the foundation stones of the great electrical industry. Can one expect any less from an understanding of the heart of every atom?

BENEFITS

Atom-splitting benefits clearly visible today fall mainly in three classes: (1) heat and power applications of the uranium piles; (2) general industrial applications of equipment and methods originally developed for the bomb project; (3) chemical, biological and medical uses of the "tagged atoms" (radioactive isotopes) now abundantly available from pile operation.

It is now evident that the energy yield of the U235 in an atomic pile can be multiplied many times by returning to (or leaving in) the pile the plutonium and possibly the U233 produced respectively from the U238 and the thorium in the pile. This is an indirect way to "burn" inexpensive U238 and thorium, and thus greatly extend the supply and reduce the cost of atomic fuels.

POWER APPLICATIONS

Although present piles run at low temperatures, it is certain that temperatures high enough for the efficient operation of steam and gas turbines will be attained. Already an experimental atomic power plant has been ordered. Atomic power for certain remote installations (say, for heating Arctic airports) may not be far off.

In five or ten years uranium piles will be driving a few experimental ships and submarines. In 20 or 30 years uranium may begin to compete widely with coal as a fuel for suitably situated large central heating and power plants. The 50-ton minimum weight of shielding rules out nuclear power for automobiles and small piloted planes.

SPECIAL USES

Some day ultra-high temperatures from splitting atoms will be used for special industrial operations on metals and other materials. Even the dread atomic bomb might easily serve peaceful ends—blasting lakes in deserts, changing the course of rivers, leveling mountains.

INDUSTRIAL BYPRODUCTS

The special industrial equipment and methods developed for the bomb project will find hundreds of important uses—mostly for purposes unrelated to atomic energy. These developments include pumps with neither seals nor leaks, leak detectors of amazing sensitivity, ultratight welding, a portable mass spectograph for quick and automatic gas analysis, new ways of handling corrosive and poisonous materials, new diffusion barriers for the separation of gases and of petroleum products.

TAGGED ATOMS

Yet more important than any of these, in the long run, will be the hundreds of radioactive isotopes now available as by-products of pile operation. Chemically indistinguishable from the ordinary forms of the elements, these isotopes serve as tagged atoms or "spies" if mixed with common stable atoms of the same species. They "fly with the flock," and can later be identified as surely as banded birds. With these amazing tools of research, the course of any element or compound may be traced through the bodies of men, animals and plants. Similarly, tagged atoms

may be used in studying the course of many kinds of industrial and chemical operations.

BIOLOGY AND MEDICINE

A suspected hyperthyroid condition can be diagnosed by feeding the patient a minute measured amount of radioactive iodine. The click of a "Geiger" counter placed on the patient's neck will tell (1) what percentage of the swallowed iodine concentrates in the thyroid cells and (2) how rapidly that concentration is accomplished—giving a definite indication of the state of the gland.

In similar fashion the radioactive isotopes of hydrogen, oxygen and carbon will trace out the intricate transformations of carbohydrates and proteins in the human body. Radioactive phosphorus will explore the bones. Radioactive iron will show how and where blood cells are formed. Radioactive sodium will time the circulation of blood.

USES IN INDUSTRY

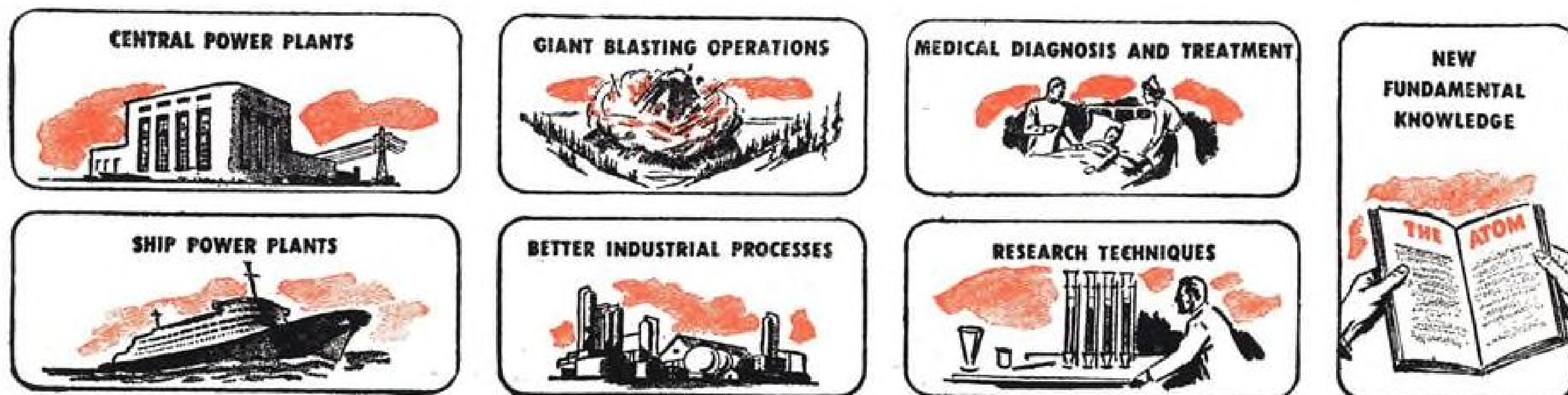
In chemistry the radioactive isotopes will speed the understanding of metallurgical and organic reactions. In industry they will measure flow, detect leaks, and do other useful work.

Meanwhile the uranium piles will be manufacturing certain radioactive isotopes that can serve as cheap but effective substitutes for high-cost medical radium.

KNOWLEDGE COMES FIRST

It is already clear that the chief benefits of atom splitting will come first as new scientific knowledge rather than as new engines and gadgets. But in the long run man's new understanding of the inner atom will enrich the whole range of human activity. This has always been the case with less fundamental discoveries in science. It can hardly be less with this most fundamental discovery.

ATOM SPLITTING WILL SERVE MAN IN:



PRODUCTION

Canadian Aircraft Industry Swings Into Post-War Production

A. V. Roe enters picture with *Tudor II*, jet propelled fighters and conversion of *Lancasters*; British-U. S. capital equal.

Forced by the war to become an important producer of aircraft, Canada emerged from the war with sizable aviation manufacturing facilities on which its industry has been quick to capitalize. While no engines are yet being made in the Dominion, domestic aircraft designs are more numerous, and production far ahead of prewar days.

Strengthening the overall framework is the entry into Canada of A. V. Roe Ltd., one of Britain's major firms. In aircraft manufacturing, unlike in most other Canadian industrial fields, British capital is equal to, if not greater than that from the U. S. In addition to Avro, de Havilland, Percival and Rolls-Royce have Canadian companies. U. S. companies with subsidiaries in Canada are Fairchild, Piper, Pratt & Whitney, and Curtiss-Wright.

Most aircraft production is cen-

tered in eastern Canada, with the bulk of it being done in the Montreal and Toronto areas. At Montreal, Canadian Car & Foundry Co., Ltd., is now producing Noorduyn *Norseman* V aircraft powered with Pratt & Whitney 550 hp. engine, for domestic use and export, primarily to the Latin American countries.

Canadian Car & Foundry also has produced a prototype of the Burnelli CBY-3 "flying wing" passenger-cargo transport, but has not yet gone into production of this aircraft.

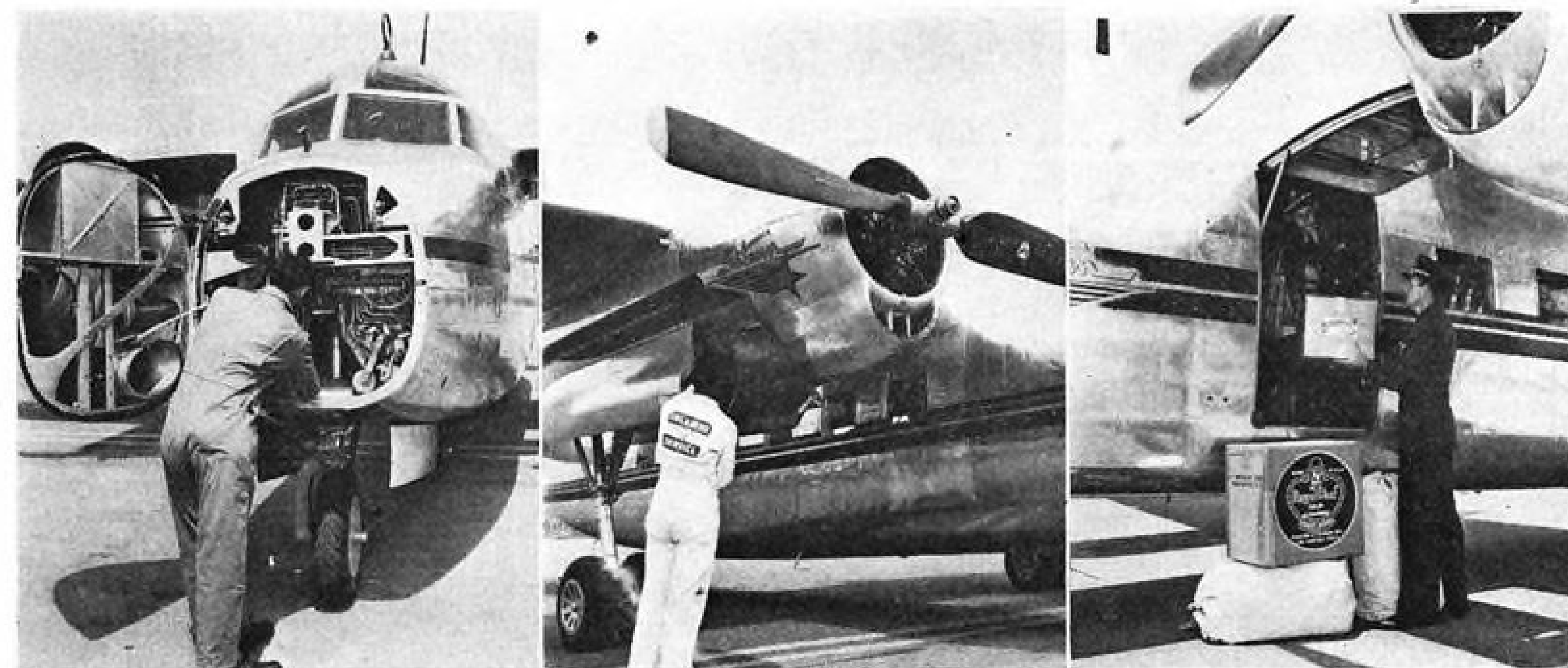
Canadair Ltd., Montreal, a government-owned company, is manufacturing a Canadian version of the Douglas DC-4 for Trans-Canada Air Lines and for export. Aircraft will be powered with Rolls-Royce Merlin engines and will be used on TCA domestic and international and transocean routes. Initial or-

der is understood to be for 50 aircraft. Company is also converting war surplus DC-3 aircraft for TCA.

Fairchild Aircraft Ltd., Montreal, has started production on a new Canadian-designed bush freighter, F-11 *Husky*, a 7 to 8 passenger all-metal transport or cargo plane, designed following a survey of bush pilot requirements. Planes are expected to be in production late this autumn and are to be available with wheel, ski or pontoon landing gear, and powered with new or used Pratt & Whitney Wasp SB3 or TIB3 engines.

Engineering Products of Canada, Ltd., Montreal, is building the first Canadian helicopter, the Sznycer & Gottlieb Mark VI. Prototype was scheduled to be ready during the summer. It is designed to carry two passengers and pilot, plus 100 lbs. of baggage.

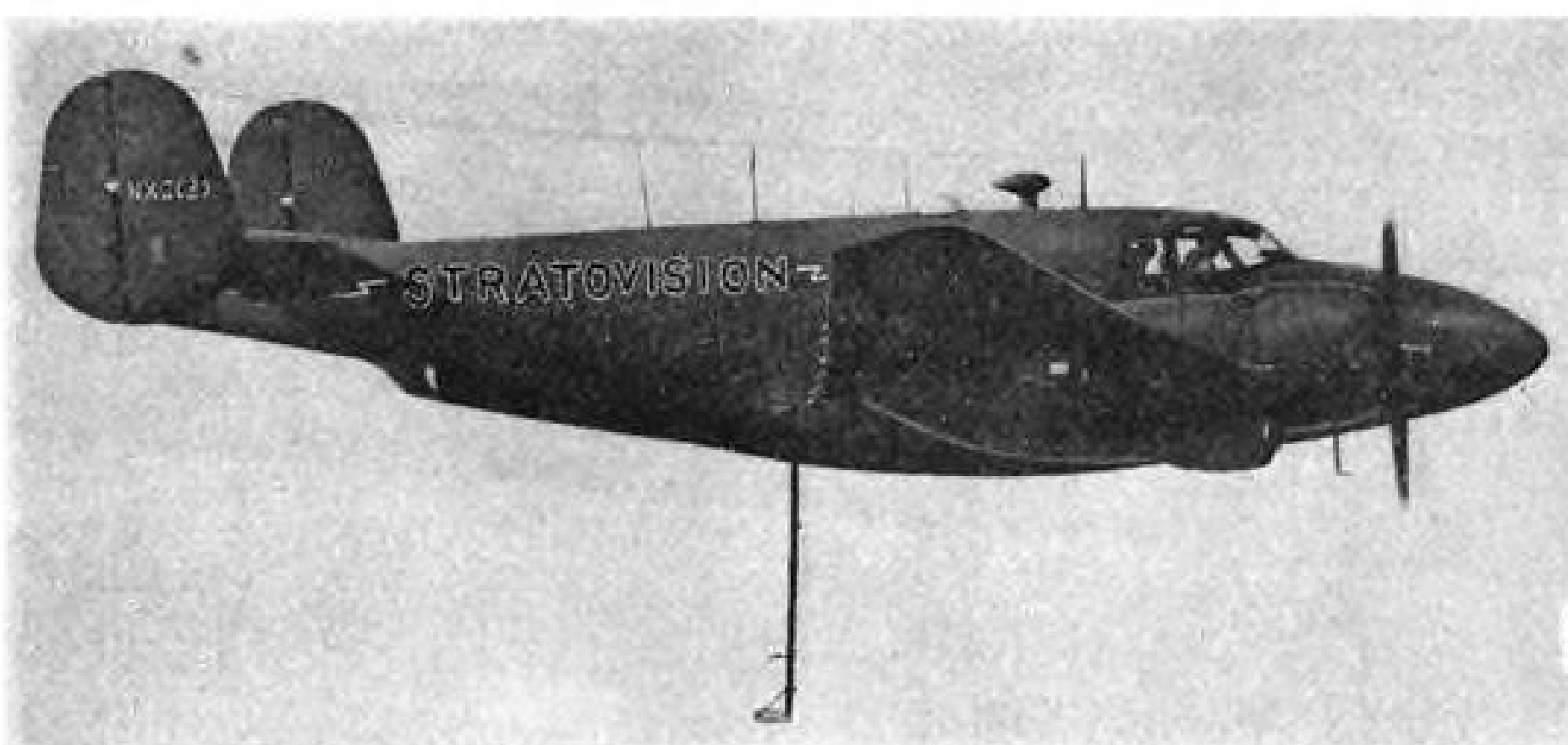
In Ontario, the largest manufacturer is A. V. Roe, operating jointly with the Canadian government the former government-owned Victory Aircraft, Ltd., Toronto. Roe is tooling up to manufacture *Tudor II* transports for North American sale, is designing jet propelled fighter for the Royal Canadian Air Force, is converting *Lancaster* aircraft for use by TCA as trans-Atlantic 10 passenger transports, and is servicing these converted planes after 2,000 miles. Roe also has taken over Canadian government's Turbo Research, Ltd., Toronto, and has a contract for design and development



MAINTENANCE AND SERVICING SIMPLIFIED IN SATURN:

Some of the main selling points of Lockheed's new feeder plane are illustrated in these photos. One salient feature common to almost all maintenance and servicing on the Saturn is the fact that in few instances is a ramp or ladder necessary. The hinged nose swings open

to expose the back of the instrument panel; inspection and checks of engines can be made without a ladder; the underslung fuselage permits loading of cargo without special equipment. The passenger door, only 34 inches above the ground level, has fold-in steps.



STRATOVISION PLANE:

Circling lazily over a fixed course at 30,000 ft. altitude, this Lockheed Ventura, loaned to Westinghouse Electric Corp. by the Navy, is being used to flight test "Stratovision," Westinghouse plane for greatly extending line-of-sight coverage of television and FM radio stations. The plane picks up ground signals and relays them from a transmitter in the plane. The commercial stratovision plane will be a Martin 303, designed for 38,500 lbs. gross weight.

of gas turbine and of jet engines.

De Havilland Aircraft of Canada, Toronto, branch of the British company, is manufacturing the Fox Moth four-place biplane powered with Gypsy Major engine, and a new elementary trainer for civilian and RCAF use, the all-metal Chipmunk low-wing monoplane powered with Gypsy IC engine. Other aircraft for RCAF are understood to be in design at this plant.

Percival Aircraft (Canada) Ltd., has leased space at de Havilland Aircraft, Toronto, but has not yet started manufacture of the Percival Proctor.

Cub Aircraft of Canada, Hamilton, Ont., is producing Piper Cub two-place aircraft at rate of one daily, expects soon to produce Super Cruiser and Skysedan aircraft of the parent American company.

Fleet Aircraft, Ltd., Fort Erie, Ont., has started production of a two-place trainer of Canadian design, the Canuck, a fabric-covered high-wing monoplane, powered with 75 hp. Continental, Lycoming or Franklin engine. Company also plans production of other personal and freight aircraft, having built the Fleet Freighter before the war.

Noury Aircraft, Ltd., Stoney Creek, Ont., a newcomer in the field, has built the prototype of a two-passenger high-wing monoplane, the Noranda, powered with 65 hp. Continental engine. Aircraft is available with wheel, ski or pontoon landing gear.

Northwest Industries, Ltd., Edmonton, only western Canadian air-

craft manufacturer at present, is building Bellanca Skyrocket and Aircruiser under license, for sale in Canada, Alaska and for export.

A number of other companies are converting war surplus aircraft for commercial and private use at Montreal and Toronto. Pratt & Whitney, Canadian Wright and Rolls-Royce have Canadian engine assembly and repair plants at Montreal. Many accessories, formerly imported, are now made in Canada.

Pay Load Factors Influence Design

Factors influencing the decision to make 14 the top passenger capacity of Lockheed Aircraft Corp's Saturn—the first of the true post-war feeder liners—have been revealed in a study of engineering problems of small transport design by Willis M. Hawkins, Jr., Lockheed's chief preliminary design engineer.

Most important is an evaluation of potential profits for airplanes carrying respectively five, 14 and 24 passengers. Surprisingly enough, the Hawkins study shows that the five-passenger plane could never make money, assuming it were to be used in local operation with a typical range of 200 miles and that a constant factor of 80 percent direct operating costs was present.

► **Money Is Factor**—For both the 14-passenger planes, operators could make money at 60 percent load factor, with the larger aircraft, of

course, producing the greater revenue. But the catch, as outlined by Hawkins, is the potential traffic available. The 14-passenger airplane begins making money at seven and one-half "payload units." The larger plane reaches this point at slightly less than 12 units.

This means that in the eyes of Hawkins the 14-passenger plane is the better bet for local operators starting a new service in untapped territory. With it, they would have a greater chance of making money during the period necessary to build up traffic.

► **Thoughts on Power**—Hawkins also has some provoking thoughts on the use of surplus highpower engines in an attempt to achieve initial economy. The Saturn will use either Wright 800 hp. or Continental 600 hp. engines. He points out that an economic gain would be possible only if the engines could be operated with long overhaul periods, if their first cost would be far below new engines, and if the added power would increase operating speeds and gross weights.

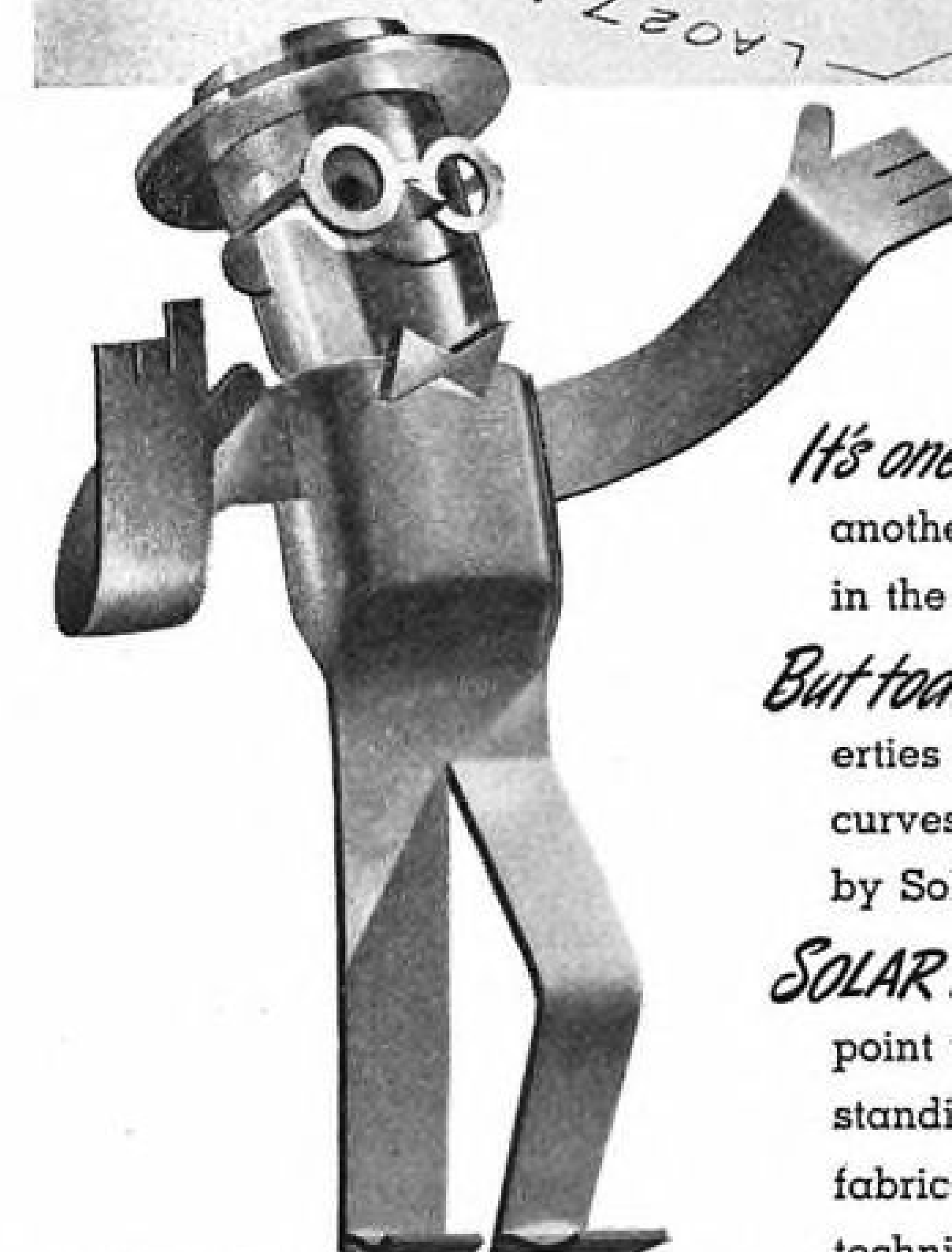
Therefore, he assumed that high-powered surplus engines would cost one-half as much as new lower-powered engines and that the surplus engines could be operated 750 hrs., instead of 500 hrs. between overhauls. On this he based a chart showing the relative direct operating expense of the two types of engines. At less than 400 miles—considered ample for local operation—the new, lower-powered engines are cheaper to operate.

Canopy of Plastic Offers Good Vision

In one form or another, the "Bug-eye" cockpit canopy developed by Douglas Aircraft Company, and exemplified on the C-74 Globe-master shows promise of becoming a must for future transport designs, especially for very large aircraft where good visibility is difficult to obtain.

The plastic bubble, which some pilots and airline engineers have assumed will constitute a mental hazard to crew members subject to claustrophobia, rapidly is winning the confidence of all who have flown the C-74 or who have had mockup demonstrations at Douglas' Santa Monica plant.

► **No Claustrophobia**—For claustrophobes, Ben O. Howard, assistant to the president of Douglas, who flew initial tests of the C-74 has the assurance that pilots actually



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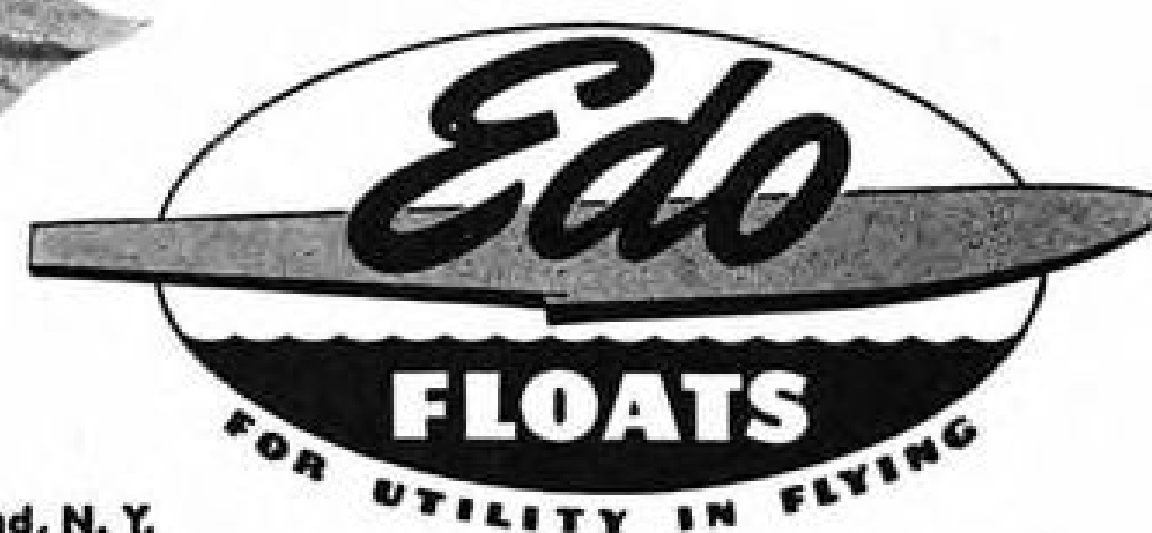
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Bead on 'Bug-Eyes': Radical departure in pilot cockpit canopy design that features the Douglas DC-7 Globemaster is apparent in this head-on view.

experience none of the "cooped up" reaction which may be expected to result from riding with one's head in a bubble.

As used on the C-74, the "Bug-eye" gives the pilot a complete sense of cockpit roominess through excellent vision access to the cabin arrangement and instrument panel. Seated within the "Bug-eye" his eyes are barely above the skinline of the airframe, and a slight downward glance shows the array of instruments and controls.

A novel "Bug-eye" accessory is a fabric "glare shield," which the pilot can attach across beneath the cockpit rim to exclude, as desired during the night, all radiation from instruments and cabin lights.

► **Safety Factor**—Howard feels that the greatest advantage of the bulbous canopy is the safety factor of unusual flight vision accorded the flight crew, pilot and co-pilot. Each can command 360 degrees vision on a forward tilting plane, and excellent vision upward, and also down, in comparison with conventional transport window arrangements.

AAF Experimental Contract Boosts Menasco Backlog

Backlog of the Menasco Manufacturing Co. is now in excess of \$8,400,000, following a new experimental contract with the AAF for \$2,402,700. This contract is for work on gas turbine and jet engines, ex-

panding a related activity that Menasco has been conducting for Lockheed Aircraft Corp.

Menasco's backlog now includes orders amounting to \$3,994,482 for hydraulic landing gear for both military and commercial aircraft; order totaling \$1,661,146 for washing machines; and orders of \$349,351 for hydraulic jacks for industrial, aircraft, and railroad use.

Ryan Metal Products Makes Metal Casket Shells

Broadening of Ryan Aeronautical Co.'s production in non-aviation fields through its Metal Products Division has brought orders for \$350,000 worth of metal shells for casket manufacturers. Ryan will be in volume production on the orders by Fall.

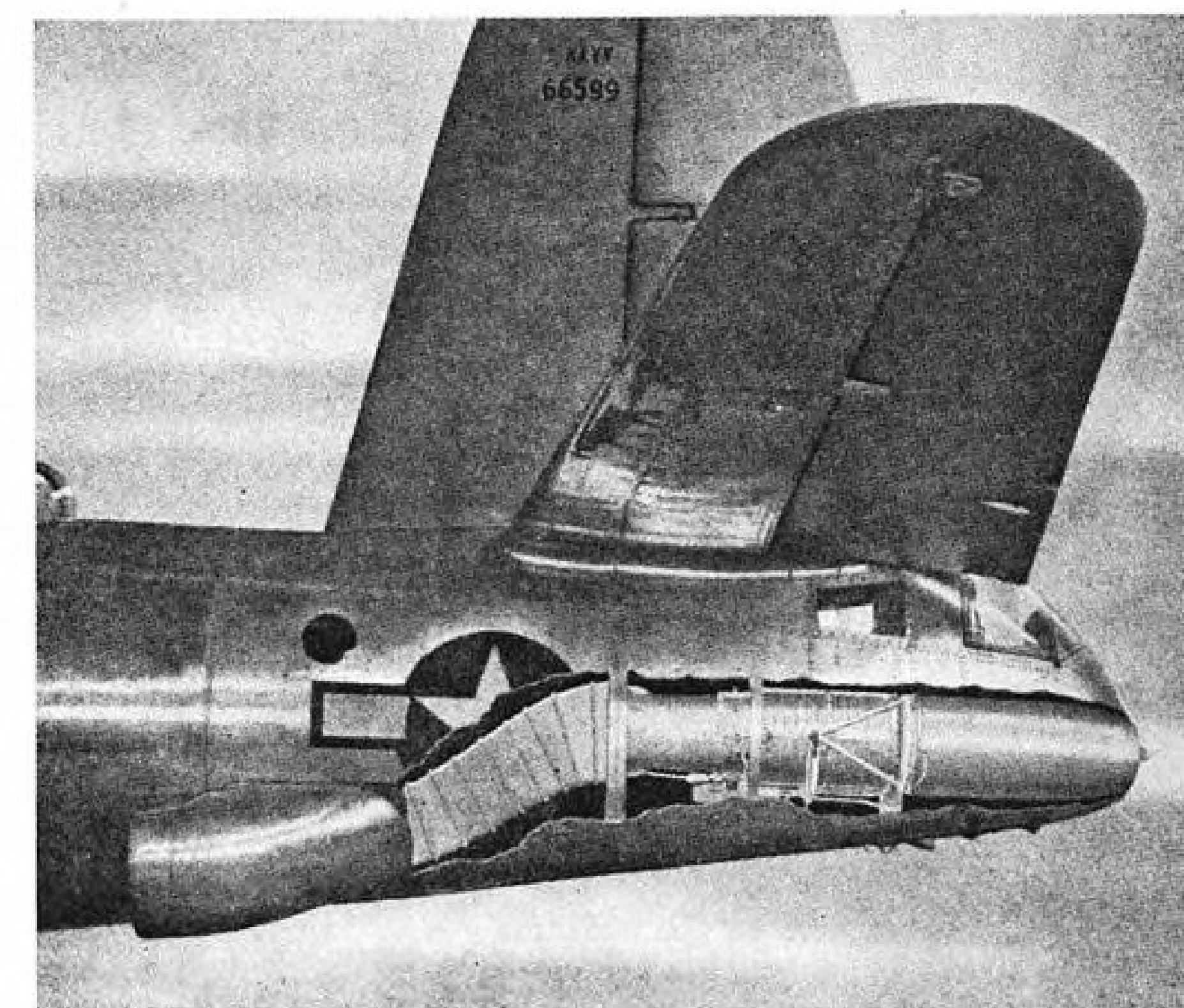
The casket shells, of Ryan's own design, were recently shown to casket industry representatives at Kansas City. The heavy orders followed. Ryan began planning the design early this year, after considerable study of potential non-aviation markets for its metal fabrication facilities.

All of the company's consideration of expanding the field of sales for its metal products has been based on the desire to build a permanent, and not temporary business, president T. Claude Ryan explains. He points out that in this period of consumer goods shortage volume orders can be obtained for a great many products.

Ryan's interest, however, is for the long pull, and consequently the company has been choosy about entering the non-aviation field. In the aviation field, the Metal Products Division has large orders for exhaust manifold systems for several of the transports now in production. It also is working on high temperature alloy parts for jet propulsion engines.

Fairchild License

Fairchild Engine and Airplane Corp. has licensed Britto Pereira and Co., Rio de Janeiro, to manufacture plastic molded bonded plywoods under Duramold patents which Fairchild holds. The contract runs for five years and the Brazilian company will use native materials.



JET TEST ON MARAUDER:

Installation of a Westinghouse 19-B jet engine in the tail of a Marauder bomber has been made by The Glenn L. Martin Co. for experimental purposes. Object is to test jet engines under actual flight conditions. Air intake for the engine is at the side. The plane retains its two conventional engines. The tail turret has been renovated for an observer who keeps watch on the performance of the jet engine through a window installed in the fire-wall.

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Timm Aircraft Subsidiary Making Soft Drink Venders

Timm Industries, Inc., subsidiary of Timm Aircraft Corp., Van Nuys, Calif., has begun deliveries on the first units of a volume order for automatic Coca-Cola vending machines. The machines are being built for Mills Industries, Inc., of Chicago.

A second of Timm's non-aircraft products, a vacuum cleaner of the company's own design, is expected to be put on the market early this Fall. Delay obtaining materials, particularly electric motors, has been holding back production of the cleaners. The motors are now promised within 60 days.

McDonnell Aircraft Corp. Gets Confidential Contract

McDonnell Aircraft Corp. has been granted a Government contract for \$5,300,000 covering a confidential project, President J. S. McDonnell has announced. This is the third contract company has won since the end of the war. Backlog is now \$22,000,000.

Of the total backlog, McDonnell stated, 75 percent consists of fixed-price contracts, with 25 percent covering cost-plus-a-fixed-fee. This contrasts with the wartime situation when all of McDonnell's work was on CPFF. On \$65,000,000 worth of wartime CPFF business, McDonnell declared, the company's profit was less than \$325,000.

Brazilian Competition

RIO DE JANEIRO, Brazil (McGraw-Hill World News)—The Brazilian National Motor Works last month received its first order for plane parts—a call from the Brazilian Air Force for spare parts for U. S. Wright engines.

It was reported that the order was filled in about two weeks, as compared with the four months it would have taken to obtain the parts from the U. S. Quality was stated equivalent to U. S. product.

New VHF Receiver

Aircraft Radio Corp., Boonton, N. J., has developed a new tunable very high frequency receiver for use on omni-directional radio range systems now being installed by CAA. Unit price for experimental installation in small quantities is approximately \$1,000. Company states it is available for airline flight tests on the New York to Chicago range being constructed.

FINANCIAL

Aircraft and Equipment Equities Show Market Declines in 1946

Downward trend continues during first six months of year as air stocks fail to participate in periods of general market strength.

Aircraft and aircraft equipment equities have experienced substantial market declines during the first six months of 1946. This is revealed in an analysis of the market positions of representative aviation common stocks at the mid-year point.

The best 1946 prices were in evidence at the start of the year and continued a declining trend. Aircraft shares started their present downward move during the last few months of 1945. During periods of strength in the general market, aircraft shares failed to participate.

► **Table Reveals Decline**—Declines in market values range from 2.7 to 39.2 percent for the first half. As revealed in the accompanying table, the average drop is around 25 percent. There appears to be no particular distinction between the market action of the frame builders and the equipment manufacturers.

The sharpest drop was experienced by Curtiss-Wright common with a decline of 39.2 percent. This action can be attributed to the passing of the dividend earlier this year on the "A" stock. The most resistant stock appears to be Thompson Products, with a decline of only 2.7 percent. The company's earnings appear to have held up much better than the rest. A successful refinancing of the capital structure was recently completed.

Piper Aircraft with a decline of 35.2 percent reflects the sale of additional stock which proved a depressing influence on the existing equity. Moreover, the company's earnings have proved very disappointing thus far this year.

► **Aviation Corp. Shifts**—The Aviation Corp. common stock declined 22.7 percent during the first half and is closely paralleled by the action of Consolidated Vultee which dropped 27.1 percent. The latter is the main aircraft investment of

the holding company. The Aviation Corp. is now concentrating its interests in non-aviation enterprises and probably has had the greatest readjustment problems. There has been considerable dilution of the common stock by a steady process of additional financing and issue of options to management.

Liquidation of 10,000 shares of Lockheed by the Lehman Corp. during the second quarter of 1946 helped depress the price of that aircraft company. The action of this investment trust highlights the absence of a strong market force to bolster aircraft stock prices.

A number of years ago, investment trusts were heavy holders of aircraft shares. These funds have, by this time, liquidated virtually all of such holdings. The consequence has been the problem of absorption of large blocks of aircraft shares by the general market and the absence of buying support from major investment forces formerly very much in evidence.

MARKET RANGE—FIRST HALF 1946
LEADING AIRCRAFT AND EQUIPMENT COMMON STOCKS

	1946 Range		June 29 Price	% Decline From 1946 High
	High	Low		
Aviation Corp.	14 ³ / ₈	9 ³ / ₈	10 ¹ / ₄	28.7
Beech	30 ⁷ / ₈	14 ⁷ / ₈	22 ¹ / ₂	27.1
Bell	35 ¹ / ₂	25 ¹ / ₂	26	26.8
Bendix	58	45 ¹ / ₄	47 ³ / ₄	17.7
Boeing	35	25 ¹ / ₂	27	22.9
Consol-Vultee	33 ⁵ / ₈	23 ¹ / ₂	24 ¹ / ₂	27.1
Curtiss Wright	12 ¹ / ₂	7	7 ³ / ₈	39.2
Douglas	108 ⁷ / ₈	84 ¹ / ₂	86 ¹ / ₄	20.8
Fairechild Camera	17 ³ / ₈	14 ¹ / ₄	15 ³ / ₈	13.3
Fairechild E & A	8 ³ / ₈	5 ⁵ / ₈	7 ¹ / ₂	11.8
Grumman	52 ¹ / ₂	42	47 ³ / ₄	9.0
Lockheed	45 ¹ / ₄	31 ³ / ₈	32 ³ / ₄	27.6
Martin	45 ¹ / ₂	37 ¹ / ₄	40 ¹ / ₂	11.0
No. American	16 ³ / ₈	12 ³ / ₄	14 ³ / ₈	15.0
Piper	15 ¹ / ₄	7 ⁵ / ₈	9 ⁷ / ₈	35.2
Republic	24 ³ / ₈	15 ³ / ₄	20 ⁷ / ₈	16.1
Snerry	40 ¹ / ₂	29 ³ / ₈	31 ¹ / ₂	22.2
Thompson Products	69 ³ / ₈	49	67 ¹ / ₂	2.7
United Aircraft	37 ³ / ₈	27 ¹ / ₄	27 ³ / ₄	25.8
United Air-Products	29 ¹ / ₂	20 ³ / ₄	21 ¹ / ₂	27.2

► **Cycle Complete**—It is possible, however, that this liquidation cycle may have been completed for the aircraft group. The fact that prices are so deflated from their former best levels encourages the attention of astute investors. Most of the reconversion problems facing the industry are known and a definite pattern appears in evidence as to which companies may be expected to participate in post-war business.

Probably the greatest sustaining influence is present in the healthy financial position of the leading aircraft companies. For example, Boeing Airplane has net quick assets of over \$40 per share and is currently selling around \$28.

► **Accounting Important**—Profits for the industry, as a group, will most likely compare unfavorably to 1946 results. An important factor will be present in the accounting policies followed. If initial development and production costs of new models are charged to current earnings, operating losses are probable. However, if reconversion and development costs are charged to reserves, substantial profits may very well appear. Tax carryback credits and lower tax rates should help.

There is increasing evidence that investment advisory services are beginning to take a more optimistic view of selective aircraft issues at current levels in the light of their severe market deflation.

Recently, Standard & Poor's Corp. favorably regarded the following as having speculative appeal: Boeing, Consolidated Vultee, Fairchild Camera, Grumman, Lockheed, Martin and Republic.

TRANSPORT

Expect CAB Ruling on Mail Pay Will Give 25 Cent Rate to Feeders

New lines will need higher rate to break even; present conditions indicate certificate applications painted too rosy pictures of traffic available.

Although CAB probably will set an initial mail rate of 25 cents a plane mile for the new feederlines certificated in recent area decisions, there is increasing doubt it will be able to hold that line.

A number of factors contribute to this conclusion. Applications for certificates were made in lush times and were based on optimistic analyses of projected maximum traffic potential, rather than initial traffic expectations.

Some lines plan to use larger equipment that has become available since their figures were presented to the Board. Costs of equipment, labor and materials are going up.

► **Smaller Systems Hit**—The smaller the system, the less mileage there is over which operating costs can be spread, and the Board's feederline authorization has been less extensive in each case than was sought by the applicant.

Thus far, none of the seven feederlines certificated for three years in the Rocky Mountain, West Coast, Florida and New England regional cases has applied for a temporary mail rate. None have started operation, and mail pay applications are not expected before service begins.

The pattern was established with Pioneer Airlines (formerly Essair), which operates under a 25 cent mail rate set last February—10 cents a mile below what it requested. Its final rate, when fixed later, will be retroactive to Aug. 1, 1945 when the line started service. The carrier has not objected to the 25 cent rate, preferring to withhold presentation of its case until the Board is ready to set the final figure.

► **Pioneer Needs 45 Cents**—But its records for the first five months of this year show it will need 45 cents a mile mail pay to break even. This is in significant contrast with the seven carriers not yet operating, whose estimates of mail pay need

vary from 2.09 cents a mile to 34, and average 19.28 (see accompanying table). The significance lies in the fact that Pioneer's figure comes from actual operation; the others necessarily are speculative.

It is a virtual certainty that the new feeders will ask CAB for concessions after operations start. A request for higher mail pay appears inevitable. Delay probably will be sought in the effective starting date of the three-year test period for which each is certificated.

Such a request already has come from Pioneer, which asks either a three- or five-year extension, blaming court action by Braniff Airways and wartime difficulties for its delay from September, 1943, to August, 1945, in starting operations. Otherwise, Pioneer's certificate will expire Dec. 31, 1946. Examiner F. Merritt Ruhlen has recommended that the extension be granted for at least three years after Aug. 1, 1945. The carrier also seeks authorization to supplement through flights with shuttle service on heavier-traveled portions of its AM 64, all of which lies within Texas.)

► **Pioneer Reports** — All American Aviation operated about 18 months before its mail rate was established, but it is doubtful that new operators will wish to stand the interim expense such a delay entails. Pioneer,

then Essair, filed its mail pay application after about a month of operation.

For the year to June 1, Pioneer reports total operating revenues of \$177,539, or 49.51 cents per revenue mile, of which \$86,746, or 24.20 cents per mile was passenger and \$88,917, or 24.80 cents per mile, was mail revenue. Total expenses for the period of \$250,543, or 69.87 cents a revenue mile, left an operating loss of \$73,004, or 20.36 cents a mile.

The Texas line, which admits it is a "need" carrier, has 683 route miles. A CAB examiner has recommended 1,507 more. Data compiled by Pioneer shows its present operations as too small to permit maintenance and operation of a minimum amount of equipment without a high rate of mail pay. "We have to have a minimum operation," Pioneer says, "and this one is too small."

► **Concern at CAB** — The whole feederline mail pay question is causing considerable concern at CAB. In its local feeder and pickup decision two years ago, the Board promised to keep a tight rein on mail pay for new carriers, although it declined to go along with an examiners' recommendation that 25 cents be the top limit. Such an arbitrary restriction, CAB said, was more in the province of Congress. But Board sources have made it clear since the decision that the implication was intended that 25 cents was the top for temporary mail pay.

While the Texas-Oklahoma area case was being argued recently, member Josh Lee again demonstrated his feeling that the Board should be liberal in supporting new feederlines. Member Harlee Branch was conservative, and seemed especially concerned about Pioneer's losing money with a 25 cent temporary mail rate. It indicated, he said, that cost estimates are low. Public counsel thought

Feeder Mail Pay Requirements
(Based on Carriers' Own Estimates to CAB)

Feeder	Equipment Proposed	Non-Mail Revenue Per Plane Mile	Expenses Per Plane Mile	Mail Pay Needed to Break Even
Pioneer*	Lockheed Electra	24.71	69.87	45.16
Wiggins	Beech 18S	18.00	52.00	34.00
Monarch	Beech 18S	10.44	44.28	33.84
West Coast	Beech 18S	18.50	44.91	26.41
Summit	Beech 18S	14.10	37.20	23.10
Empire	Boeing 247	41.30	49.10	7.80
Southwest	DC-3	40.17	47.88	7.71
Florida	Beech 18S	36.37	38.46	2.09

*Only feeder operating. Figures based on first five months of 1946.

Note: Several carriers, including Monarch, will use larger equipment than proposed to CAB.

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new Texas-Oklahoma area feeders might need at least 40 to 45 cents a plane mile in mail pay.

An observation by Branch during the presentation sums up the question. "If you are a route nearly 700 miles long with six cities admirably spaced," he told Pioneer's attorney, "and they are all good-sized cities with good travel potentiality—if you are losing money there, I am just wondering what is going to happen to some of these other proposed routes, maybe to some of them we have granted.

"I think the experience so far ought to serve as a pretty good caution to the Board in all these cases," he said.

PAA Begins Daily Run to Buenos Aires

38 hours service offered from New York for \$547 with DC-4's.

Pan American Airways last week began daily 38-hour service between New York and Buenos Aires with 40-passenger DC-4's as another step in an expansion program expected to swell Latin American services 500 percent this year. Intermediate stops on the 5,295-mile route are at San Juan, P. R.; Port of Spain, Trinidad; Belem, Brazil; Rio de Janeiro and Montevideo.

Initial fares are \$547 from New York to Buenos Aires and \$472 to Rio de Janeiro, but PAA indicates reduction of rates along with additional flights by the end of the year.

The new South American run speeds an overall route development

program which saw PAA complete extensions totaling 14,784 miles in both the Atlantic and Pacific in May alone. At that time the carrier opened its California-New Zealand and Rio de Janeiro-Africa-London operations. Other new services:

► **American Overseas**—Hopes to increase its present schedule of 11 trans-Atlantic round-trips weekly to 14 by the end of the month. Addition of the new schedules was originally set for July 15.

► **Eastern**—Plans to inaugurate service to Providence, R. I. by Sept. 1 with a minimum of two or three round-trips daily. City was included as an intermediate point on EAL's AM 5 and 6 in CAB's recent New England area decision.

► **PCA**—Recently extended its Northern Michigan route to Sault Ste. Marie.

► **Lineas Aereas Mexicanas**—Has increased schedules to U. S. border points and is now operating DC-3's exclusively on all routes. Line recently contracted to sell its Boeing 247's to another Mexican carrier.

► **Western**—Inaugurated a special daily shuttle flight between Casper, Wyo., and Denver recently.

► **Sabena**—Hopes to begin regular operations between Brussels and New York late in the fall with DC-4's. The Belgian carrier may, however, defer start of services until February when it expects to have DC-6's.

CAB Economic Report

First postwar report published by the analyses division of CAB's Economic Bureau is on economic characteristics of urban points not certificated for air service as of April 1, 1945. Last similar report was based on the 1930 census; 1940 census figures are used in the one recently issued. The material is of interest to attorneys preparing airline briefs and applications. Much of it has been used, but the division believes this is the first time it has been assembled in one cover.

Mulligan Gets Post As CAB Secretary

CAB moved to increase its peacetime operating tempo last week by broadening the duties of its secretary to include administrative functions hitherto exercised largely by the Board itself.

New Board secretary is Minot Coolidge Mulligan, who at 36 has a background of RFC secretaryships. Fred A. Toombs, CAB secretary since 1943, remains as assistant secretary, where he will continue to exercise many of the routine duties previously assigned to the office.

Among new duties for the secretary are supervision of budget and personnel matters, space requirements, and general management control. In effect, he will be an overall executive director.

Mulligan had been with RFC since it was organized in 1932. In 1941, he became assistant secretary of the corporation. He was secretary of the Metals Reserve Co., Rubber Reserve Co., and Disaster Loan Corp., RFC subsidiaries. Last fall after his discharge from the Army, he returned to RFC as secretary of the War Assets Corp., where he remained as long as it was a subsidiary of Reconstruction Finance Corp.

Landis has appointed as his executive assistant Stanley Gewirtz, who studied law under the chairman at Harvard Law School, and was with him at the Office of

Civilian Defense as Landis' assistant and general counsel. Gewirtz also was with the ATC during the war, in headquarters and the European Division. He was in the office of Undersecretary of War immediately after law school. The chairman's confidential secretary is Mrs. Dorothy P. Brown, who was with Landis at the law school and OCD.

C&S Flight Panels Informs Passengers

Proof that the American public likes to know where it is when flying has come to Chicago and Southern Air Lines in a flood of favorable comment on the new flight information panels it is installing on its converted DC-4's newly in service.

C&S borrowed an idea from the destination panels on streetcars and buses for a movable illuminated sign at the front of its cabins. Visible from all seats in the 50-passenger planes, the cloth roll that passes in front of the lights at a turn of a crank by a stewardess contains 27 messages, and the rolls may be changed according to routes. Information gives location or calls attention to points of interest.

A loud speaker system is being put in to supplement the signs, and head cushions in the seats will be equipped with individual radio speakers when equipment is available.

The information panel, C&S says, has aroused the most comment of any of several features in its DC-4's. Among the others is a seating arrangement whereby parties of three or four can reserve any of three special groups of four seats each. Two sets of facing seats are midway in the cabin. A larger group, at the rear on the left side, can be closed off from the rest of the cabin with a Pullman type curtain, for families or invalids.

A large rack by the door will hold the bags of passengers who prefer to carry their own. On over-water flights to Havana and Caracas, authorized recently by CAB, the rack will hold safety equipment. The plane buffet is forward, out of sight of passengers. The company has reduced six and seven hour engine change jobs to about two hours by improved engine mounts and maintenance methods.

Harvey L. Williams, new executive vice president, says C&S will make every effort to offer the public

increased efficiency and economy in operations while offering the public

the fastest and most luxurious service. Williams joined the company some weeks ago, leaving his own industrial management firm. He was president and general manager of Air Investors

from 1927 to 1931, and was one of the organizers in 1929 of Aviation Corp. and American Airlines.

Airlines Use Option To Buy 128 Transports

Fifteen scheduled airlines have exercised options to buy 128 leased aircraft since May 1, when War Assets Administration terminated its policy of leasing surplus planes. Largest number was taken by American. Pan American is second and United third. Purchases were as follows:

All American Aviation, one C-47; American, 25 C-54A's and 20 C-54B's; American Overseas, four C-54E's; Braniff, four C-47's and one C-47A; Chicago and Southern, three C-54B's; Colonial, one C-47A; Delta, one C-53; National, one C-53D and one C-47A; Pan American, two C-47A's, 21 C-54B's, three C-54E's, five C-47's and one C-67; Panagra, one C-47, one C-53, and two C-54B's; PCA, five C-54 Basics and five R5D-1's; TACA, five C-

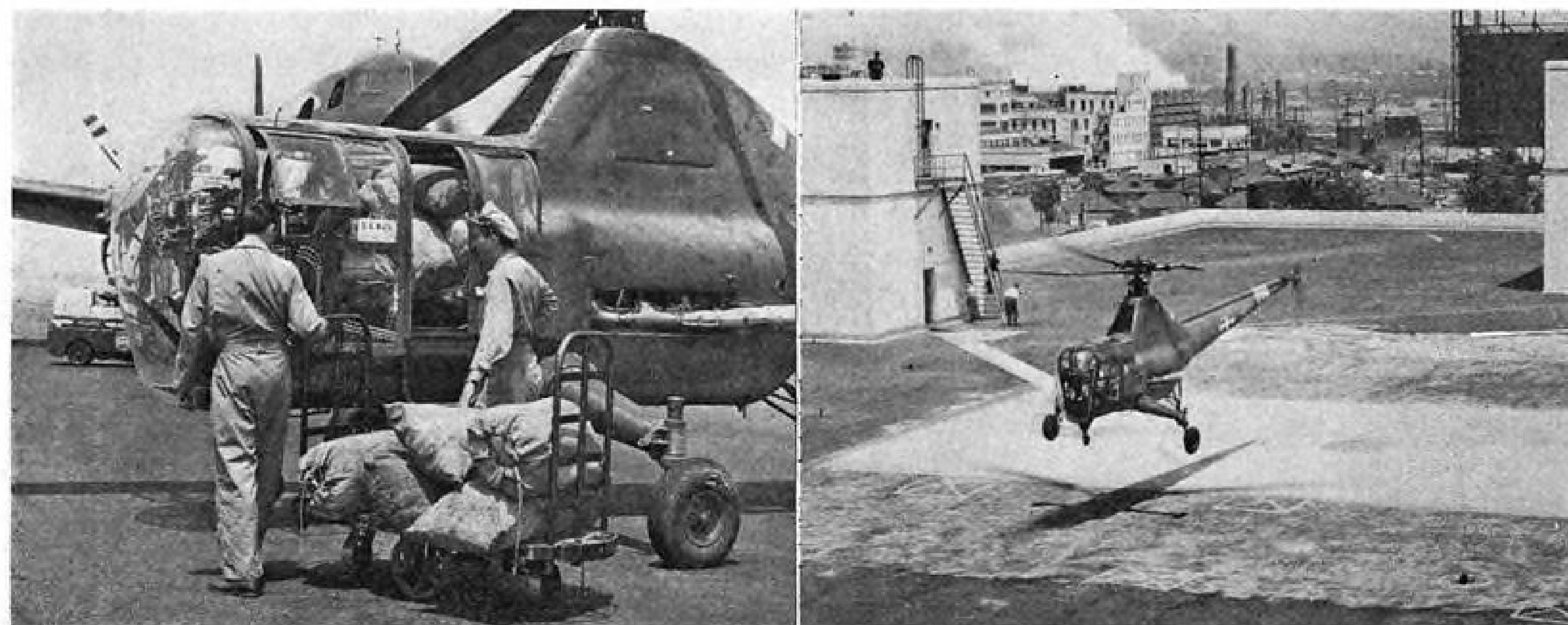


For Baggage: Notable feature of this passenger doorway on a C&S DC-4 is the full-height baggage rack (at left) to accommodate luggage of passengers who prefer not to wait for it to be unloaded at destination. Picture also shows stewardess seat and telephone permitting communication from the rear of the plane with other members of the crew.

47A's; TWA, two C-54B's and two C-54E's; United, nine C-54B's and two C-54A's.

Thirty aircraft were taken by Dan W. Fowlie's Executive Transport Corp. of Dallas, which is understood to be setting up a conversion line. These include 10 C-54A's, all purchased recently, 17 C-47's, and three UC78's.

War Assets sources say virtually all of the remaining surplus transports will go to veterans.



FIRST FLIGHT IN HELICOPTER MAIL TESTS:

These pictures of the first flight to carry air mail from Lockheed air terminal to the roof of the Terminal Annex Post office building in downtown Los Angeles show at left a crew inspecting the load just before takeoff

and at right the Sikorsky R-5 settling down on the Annex roof. The Post Office Department, with Army cooperation, is running a 30-day test of the service over two suburban Los Angeles routes. (Schmidt photos)



Telling the Passenger: So Chicago and Southern passengers may know their whereabouts, flight information signs like that shown here have been installed in newly converted C&S DC-4's. Picture of cabin's front bulkhead shows (left) door leading to galley, through which pilot compartment is reached.

Decision on Pilot Pay Findings Up to ALPA

Decision to accept or reject the White House emergency board's adverse recommendation on 4-engine pilot pay is now up to the Air Line Pilots' Association.

After a meeting of the airline wage committee in New York, spokesmen said the group regards the board's proposal as a working basis for settlement of the months-old controversy, and the next move was up to ALPA.

In a statement to AVIATION NEWS, David L. Behncke, ALPA president, said the TWA pilots master executive council is considering the question whether to accept or reject the Board's recommendation. When a conclusion has been reached, the matter will be referred to ALPA's master executive council for further advisement.

Though Behncke does not mention another pilot vote, industry sources say he plans to submit the question of acceptance or rejection to a poll of TWA pilots. They add that ALPA could put off the vote, and announcement of the result, till shortly before expiration on August

8 of the 30-day "status quo" period provided by the Railway Labor Act.

Outside observers expressed opinion the TWA pilots would accept the White House proposal, because of unfavorable public opinion that might follow rejection.

Airlines Service Only Six Of CAB Requested Cities

The domestic airlines have been able to provide service to only six of the 65 certificated points to which CAB had requested the earliest possible inauguration or restoration of operations two months ago (AVIATION NEWS, May 20).

The six cities placed on regularly scheduled flights following the Board's directive are Niagara Falls, N. Y., (American); Ponca City, Okla., (Braniff); Lewiston-Auburn and Waterville, Me., (Northeast); West Yellowstone, Mont., (Western); and Muskogee, Okla., (Braniff and Mid-Continent).

United expected to begin service to Modesto, Merced and Salinas, Cal., and Klamath Falls, Ore., last week, the first two cities being among the 65 named by CAB. Salinas and Klamath Falls were granted UAL in the West Coast decision.

Restoration or inauguration of service to most of the other 57 points still is being prevented by inadequate airports, the carriers have reported to the Board.

Alaskan Ruling

Alaskan air carriers last week were authorized by CAB to engage in charter and non-scheduled operations within the Territory and to points in the U. S. The Board's action places Alaskan airlines on a parity with U. S. carriers with regard to special services.

CAB SCHEDULE

- July 22. Exchange of rebuttal exhibits in Arizona-New Mexico area case. Extended from July 5. (Docket 968 et al.)
- July 22. Written comment due on proposed amendment of section 292.1 of economic regulation, affecting non-scheduled air carriers.
- July 26. Prehearing conference on Board's investigation of Railway Express Agency-Northwest Airlines cargo tariff agreement. (Docket 2340.)
- July 29. Briefs due in Southeastern States area case. Extended from July 16. (Docket 501 et al.)
- July 29. Prehearing conference on KLM Royal Dutch Air Lines' application for foreign air carrier permit to operate between Amsterdam and Curacao, N. W. I., via New York and other points. (Docket 2324.)
- July 31. Prehearing conference on Continental Air Lines' petition to make permanent that part of its AM 29 certificate authorizing service between Hobbs, N. Mex., and San Antonio.
- Aug. 1. Briefs due in route consolidation cases of Braniff Airways and Chicago and Southern Air Lines. Extended from July 19. (Docket 1154 et al.)
- Aug. 12. Briefs due in route consolidation applications of Eastern Air Lines and Delta Air Lines. (Docket 1971 et al.)
- Aug. 12. Hearing in Arizona-New Mexico area case. Postponed from July 22. (Docket 968 et al.)
- Aug. 26. Briefs due in Boston-New York-Atlanta-New Orleans route case. (Docket 730 et al.)
- Aug. 30. Exchange of exhibits in air freight case. (Docket 810 et al.)
- Sept. 1. Exchange of exhibits in Detroit-Washington route case. (Docket 679 et al.)
- Sept. 9. Hearing in Los Angeles helicopter service case. Postponed from July 10. (Dockets 896 and 1821.)
- Sept. 10. Exchange of exhibits in Pan American Airways' domestic route case. (Docket 1803.)
- Sept. 15. Exchange of rebuttal exhibits in Detroit-Washington route case. (Docket 679 et al.)
- Sept. 23. Hearing in Detroit-Washington route case. (Docket 679 et al.)
- Sept. 28. Exchange of rebuttal exhibits in air freight case. (Docket 810 et al.)
- Oct. 14. Exchange of rebuttal exhibits in Pan American Airways' domestic route case. (Docket 1803.)
- Oct. 14. Hearing in air freight case. (Docket 810 et al.)
- Oct. 29. Hearing in Pan American Airways' domestic route case. (Docket 1803.)

CAB ACTION

- The Civil Aeronautics Board:
- Permitted inauguration of non-stop service by Braniff between Amarillo, Tex., and Denver on AM 15; by PCA between Traverse City, Mich., and Detroit on AM 41; and by American between Nashville and Little Rock on AM 23.
- Permitted Pan American Airways to start non-stop service between Rio de Janeiro and Montevideo.
- Denied Pacific Air Lines' motion for immediate hearing on its route applications (Dockets 2267 and 2268).
- Approved interline ticketing arrangement between Continental Air Lines and Lineas Aereas Mexicanas.
- Permitted National Airlines to serve Savannah through Hunter Field.

SHORTLINES

▶ **American** recently sent two planes with UNRRA medical supplies (to combat cholera) from Toledo, Ohio, to Shanghai . . . The carriers new training center at Ardmore, Okla., opened in mid-June, has two DC-4's, three DC-3's and three single-engine BT-13's the last for instrument training. American occupies 36 buildings at the former Ardmore air base.

▶ **American Overseas** sent five experts to the international technical aviation conference at Stockholm under IATA sponsorship.

▶ **Chicago and Southern** carried 151,530 revenue passengers for the first six months of 1946, an increase of 102 percent over the same period last year. Revenue passenger miles were up 81 percent to 62,160,000.

▶ **Eastern** has reduced its freight rate between New York and Houston, Texas, to \$16.30 per 100 lbs. on general commodities in 3,000-lb. lots . . . A special Eastern plane carried 18 representatives of a New York firm controlling activities of three cotton fabricating plants on a three-day inspection of southern mills. A group from the mills flew north later on a similar trip.

▶ **National** has leased 5,000 sq. ft. of space in a consolidated ticket office building to be built at Collins Ave. and Lincoln Road, Miami Beach. Negotiations for disposal of the remaining 23,000 sq. ft. in the building, which will augment present ticketing facilities in Miami, are being conducted with other airlines.

▶ **Northeast** carried 48,010 passengers in June, 169 percent over the same month last year, for a new high. Additions to the airline's fleet and new service from Boston and New York to Cape Cod contributed to the increase.

▶ **Pan American** has spent nearly \$200,000 to set up new radio transmitters and homing stations at 16 widely separated points along the east coast of South America and in Brazil's interior.

▶ **PCA** is out to break its communications bottleneck in Chicago by establishment of new reservations offices, now occupying the entire second floor of the Washington-Dearborn building, 33 W. Washington St. New-type telephone equipment has been installed and additional personnel employed.

▶ **TWA** is leasing 12 buildings, including two large hangars, at New Castle Airport at Wilmington, Delaware, to which its international maintenance and repair base is being moved from Newark Airport. More than the 700 persons employed at Newark will work at New Castle as international service is expanded.

▶ **United** has awarded scholarships in the University of Denver education workshop for 11 Denver school teachers who have taken the lead in making their pupils aviation-minded. The scholarship agenda includes theory of flight, navigation, meteorology, safety in flying, global geography, and aviation's social and economic aspects.

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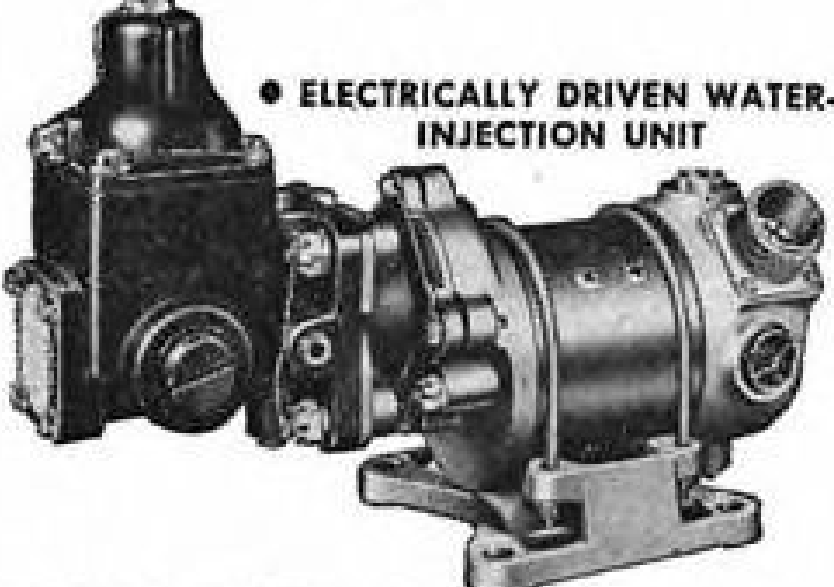
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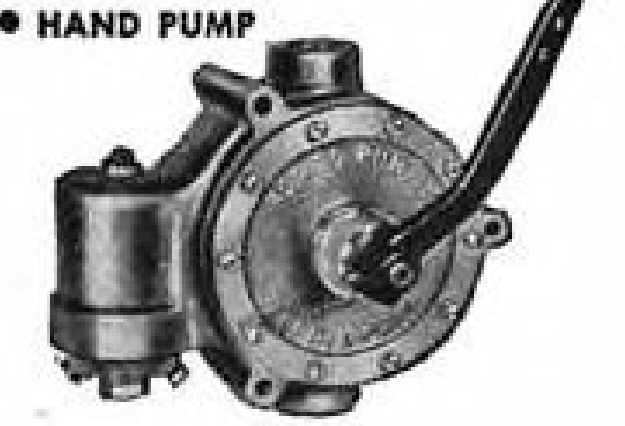
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P-202, AVIATION NEWS
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Continental Air Lines Serves Sears, Roebuck

Continental Air Lines completes the payload of every one of its six flights daily from Kansas City to Denver with freight for Sears, Roebuck customers in Denver, Colorado Springs and Pueblo. This air freight business already has grown to such proportions that Continental is preparing a C-47 to fly a shuttle freight run between Kansas City and Denver.

The arrangement gives Sears customers in the three Colorado cities a service not more than 24 hrs. and usually not more than 12 between the company's Kansas City Warehouse and their homes. The five days to two weeks previously required handicapped the shipper in its competition with Montgomery Ward, which has a big retail store and warehouse for mail orders in Denver.

Orders taken by Sears in the three Colorado cities up to 2 p.m. each day are teletyped to Kansas City and the goods rushed to the air field for loading as cargo space is available, usually up to 1,000 lbs. a ship. At Denver, the shipments are distributed to customers' homes by Sears trucks directly from the airfield, those for Colorado Springs and Pueblo leaving on the next flight south. Biggest item hauled so far was a stoneware wash-basin weighing 385 lbs.



For "Catalog" Buyers: Colorado patrons of Sears, Roebuck are receiving overnight delivery on shipments from the company's Kansas City warehouse via Continental Air Lines. Picture shows a group of officials loading 1,200 lbs. of "catalog" purchases on a CAL plane at Kansas City to start the service.

The shipments are handled by Continental on its new tariff which begins at 26.5 cents a ton-mile and scales down to 20.5 cents for 3,000 lbs. or more. Sears charges the customer a delivery charge of 15 cents for 5 lbs., up to 90 cents per 100 lbs. The cost is more than parcel post by which most Sears items formerly were delivered from Kansas City, and the delivery charge does not quite cover cost of the service to Sears, but the mail order house thinks customer satisfaction makes up for the difference.

Continental figures it can extend the service to other and more remote mountain communities as soon as they are connected by air with Denver through feederlines now being made ready. John A. Smith, the carrier's cargo sales manager, and James E. Peri, Sears' manager of sale promotion in Denver, worked out the arrangement, which Sears calls its "airborne telethrift shopping service."

Pogue Has Office

Office space in the Carlton hotel, Washington, has been taken by L. Welch Pogue, former chairman of CAB, and George Neal, formerly the Board's general counsel. Neal left the Board July 1 and Pogue 19 days later after his successor, James M. Landis, was sworn in. Pogue and Neal resigned to enter private law practice, but under CAB rules, neither may appear before the Board in connection with any proceeding that was under Board consideration while he was at CAB.

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Feeder Line Expansion and FAA

RECENT CERTIFICATION by CAB of 7,000 miles of feeder airline routes for seven new carriers, with other favorable decisions pending, points up the annual meeting of Feeder Airlines Association, scheduled for Aug. 5 in Washington, as the group's most important conference. The executive committee of FAA has outlined an active program for the next year, which will be approved by the membership next month.

The primary problem of the Association is its transition from an organization of applicants to one of operators. Presently, FAA has 18 strong members. Four have already been certificated as carriers. Four more have been recommended by examiners, and several others will undoubtedly receive federal approval. Other new memberships in the Association are imminent.

FAA was organized only two years ago by a progressive group of CAB applicants as a medium of collective expression and action. Top priority was assigned to arousing interest in Washington in establishing a secondary short-haul air transport system which would supplement existing trunk airlines.

Immediately after its formation, the Association appointed a technical committee which drew up specifications for an aircraft which would meet the requirements and special conditions encountered in short-haul small field operation.

Three major manufacturers have designed feeder craft following the committee's general specifications as closely as possible, FAA executives point out, and there is a possibility that two others will enter the field with models for which plans are already completed, although no work on mock-up or prototype has been completed.

In its early history, restricted mainly to promotional activities, the Association otherwise has concentrated wisely on the necessarily intangible problems of information and education in Washington, a field which the senior and larger trunk airlines ignored for so many years, yet were per-

plexed at the lack of understanding of their problems.

To date, the Association has been financed mainly by the support of its united membership. No individual company derives any direct benefit. Yet the Association's program has been carried on in the interest of all independent applicants, members or not.

The annual meeting is expected to attract CAB Chairman Landis and other CAB representatives, officials of the Aircraft Industries Association, spokesmen for CAA, the Post Office Department, radio specialists from the industry and Aeronautical Radio, Inc., and at least four manufacturers—Beech, Boeing, Consolidated, and Lockheed. Discussions will include Parts 40 and 61 of the Civil Air Regulation and their application to short-haul airlines, possibility of simplifying and setting up new regulations for feeder operations, airmail problems and procedure, radio technicalities, and the vital subject of the Association's future program.

The next several years will bring discouraging problems. Some even now appear insuperable. There are skeptics preaching the economic and operational impracticability of a self-supporting feeder airline system. Nevertheless, CAB will continue to grant new certificates in coming months. AVIATION NEWS has already forecast a 25,000-route-mile network after the last decision of the eleven regional cases has been handed down. That's nearly four times the mileage which has already been granted, although none is yet in operation. The FAA is worthy of the closest support and cooperation from all aviation interests in the trying period ahead. The present American airline network was not built by skepticism and doubt, but the early trunklines wasted several important and costly years lacking the unity and cooperation of an organized industry. The feeder carriers have the opportunity to start as a strong organization to meet common problems together.

ROBERT H. WOOD

AVIATION NEWS • July 22, 1946



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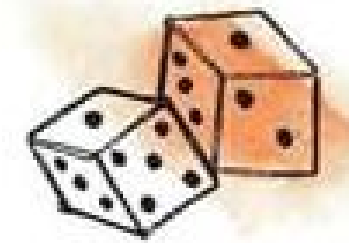
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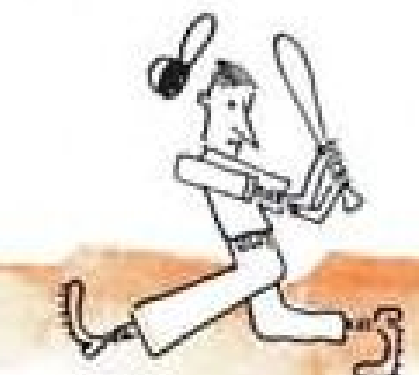
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