AVIATION WEEK
AUG. 10, 1953
A McGRAW-HILL PUBLICATION
50 CENTS

THEY FLY FROM MACH TO KNOTS . . .

EACH GRUMMAN project has a crew of test pilots. Yet any one crew may fly all projects in one day.

They'll push Cougars beyond the speed of sound, where speed is measured in Mach numbers. From turbo-jet fighters, they may test the piston-powered S2F-1 at speeds measured in knots. Next the Albatross Triphibian. With her, they may shoot landings on snow and ice, or sea, or land.

And they'll test fly the revolutionary new Grumman fighter at speeds that would amaze you.

Be one of the men who fly these Grumman aircraft. Enlist in the U. S. Navy, Air Force, or Coast Guard.

Grumman

GRUMMAN AIRCRAFT ENGINEERING CORPORATION · BETHPAGE · LONG ISLAND · NEW YORK

Aviation Week

Volume 59 — August 10, 1953 — Number 6

Editorial Offices: 330 W. 42nd St., New York 36. Tel. Longacre 4-3000
National Press Bldg., Washington 4, D. C. Tel. National 8-3414

Table of Contents on Page 8 — 47,567 copies of this issue printed

Robert W. Martin, Jr. ..... *Publisher*

Robert H. Wood ..... *Editor*

Robert B. Hotz, *Executive Editor* — **Merlin H. Mickel**, *Managing Editor*

Albert W. Bentz ..... **News Editor**
Alexander McSurely ..... **Aviation Safety**
David A. Anderton ..... **Engineering**
Irving Stone ..... **Technical**
G. L. Christian .. **Equipment, Maintenance**
Katherine Johnsen ..... **Congress**
Lee Moore ..... **Transport**
Philip Klass ..... **Avionics**
Scott Reiniger ..... **New Products**
Erwin J. Bulban ..... **Special Assignments**
Richard Balentine ..... **Federal Agencies**
William J. Coughlin ..... **West Coast**
Henry Lefer ..... **News Desk**
Gordon C. Conley ..... **News Desk**
Victoria Giaculli ..... **Editorial Makeup**
Leo T. Tarpey .... **Printing & Production**

DOMESTIC NEWS BUREAUS

Atlanta 3 ....1321 Rhodes-Haverty Bldg.
Chicago 11 .....520 N. Michigan Ave.
Cleveland 15 .....1510 Hanna Bldg.
Detroit 26 .....856 Penobscot Bldg.
Houston 25 .....1303 Prudential Bldg.
Los Angeles 17 .....1111 Wilshire Blvd.
San Francisco 4 .....68 Post St.
Washington 4 ..1189 National Press Bldg.

FOREIGN NEWS SERVICE

Editor .....Joseph K. Van Denburg, Jr.
London .....Nathaniel McKitterick
Paris .....Ross Hazeltine
Frankfurt .....Gerald W. Schroder
Manila .....Herbert Leopold
Mexico City .....John Wilhelm
Sao Paulo .....Lionel J. Holmes
Tokyo .....Alpheus W. Jessup

Aviation Week is served by PRESS ASSOCIATION, INC., a subsidiary of Associated Press.

J. G. Johnson ..... *Business Manager*

Sales Representatives: J. C. Anthony, **New York**; H. P. Johnson, **Cleveland**; L. J. Biel and D. T. Brennan, **Chicago**; W. E. Donnell, **St. Louis**; E. P. Blanchard, Jr., **Boston**; James Cash, **Dallas**; Robert H. Sidur, **Atlanta**; R. E. Dorland, **San Francisco**; C. F. McReynolds, **Los Angeles**; W. S. Hessey, **Philadelphia**. Other sales offices in **Pittsburgh, Detroit, London**. *Research and Marketing:* Catherine Miner.

ABP — AVIATION WEEK • August 10, 1953 • Vol. 59—No. 6 — ABC
Member ABP and ABC

Published weekly by McGraw-Hill Publishing Company, Inc., James H. McGraw (1860-1948), Founder. Publication Office: 99-129 North Broadway, Albany 1, N. Y.
Executive, Editorial and Advertising Offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y. Curtis W. McGraw, President; Willard Chevalier, Executive Vice-President; Joseph A. Gerardi, Vice-President and Treasurer; John J. Cooke, Secretary; Paul Montgomery, Senior Vice-President, Publications Division; Ralph B. Smith, Vice-President and Editorial Director; Nelson Bond, Vice-President and Director of Advertising; J. E. Blackburn, Jr., Vice-President and Director of Circulation.
Subscriptions: Address correspondence to AVIATION WEEK—Subscription Service, 99-129 North Broadway, Albany 1, N. Y., or 330 W. 42nd St., New York 36, N. Y. Allow ten days for change of address.
Subscriptions are solicited only from persons having a commercial or professional interest in aviation. Position and company connection must be indicated on subscription orders.
Single copies 50¢. Subscription rates—United States and possessions, $6 a year; $9 for two years; $12 for three years. Canada $8 a year; $12 for two years; $16 for three years, payable in Canadian currency at par; other Western Hemisphere, $10 a 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 16, 1947, at the Post Office at Albany, N. Y., under Act of Mar. 3, 1879. Printed in U. S. A.

NEWS DIGEST

Domestic

Combat plane production will continue at its present high level through the early months of 1954 (AVIATION WEEK Aug. 3, p. 13), Adm. DeWitt C. Ramsey, president of Aircraft Industries Assn., forecasts. But he says the picture is subject to change by a study of the Joint Chiefs of Staff.

Flying Tiger Lines has leased four DC-6s to Northwest Orient at a rental cost of $26,000 a month per plane and has sold delivery rights of two other DC-6s to Japan Air Lines for $1.2 million plus $250,000 to make up for deposits already paid on the transports. NWA's DC-6s are being converted by Douglas Aircraft Co. from cargo to passenger configuration at Tigers' expense. The first three are scheduled for delivery this fall, the fourth next spring.

USAF B-47 that holds the trans-Atlantic speed record last week set a nonstop long-distance mark for jet aircraft, flying 4,450 mi. from Fairford, England, to McDill AFB at Tampa, Fla., in 9 hr. 53 min.

Brig. Gen. L. W. Miller, World War II and chief of USAF's Budget and Fiscal Div., has submitted his resignation as vice president-finance of Consolidated Vultee Aircraft Corp., San Diego. If accepted by Convair's board of directors, Miller's resignation will become effective Nov. 30. For the present, his duties will be assumed by G. T. Bovee, treasurer, and D. T. Fisher, controller.

Russian MiG-15s shot down a USAF B-50 July 29 approximately 40 mi. off the coast of Siberia, the third U. S. plane destroyed by Soviet fighters in the Far East during the past nine months. Only one member of the 16-man crew was rescued. Russia last week rejected U. S. protests of the attack, claimed the B-50 was intercepted over Siberia.

American and Northwest Orient Airlines have signed new agreements with Air Line Pilots Assn. that provide wage increases. The AA contract expires Jan. 31, 1955; NWA's agreement runs to Jan. 1, 1955.

U. S. District Court in Washington, D. C., has rejected North American Airlines' plea for an order restraining CAB from holding hearings on charges that the nonsked air carrier group violated regulations by operating scheduled flights. But Judge Henry A. Schweinhaut approved a stipulation that will delay the hearing until after the airlines contest the decision in Federal Court of Appeals.

Maj. Gen. W. R. Wolfinbarger, former director of the Joint Tactical Air Support and Joint Air Transport Boards, has retired from the Air Force after 31 years of service. He will join Garner Aviation Corp. as general manager of the Bartow, Fla., operations.

Legislation setting up a 12-member advisory committee on weather control, to make recommendations on regulation of activities modifying the weather, including aerial cloud seeding, is at the White House for Presidential signature.

Scorpion Tests Its Sting

USAF's Northrop F-89D Scorpion is undergoing a special weapons proving program to establish the reliability of its all-rocket armament and fire control system. The craft carries a large number of 2.75-in. folding-fin missiles in each wingtip pod, which are aimed and fired using avionics devices. The trials are being conducted from the Navy's Air Missile Test Center, Pt. Mugu, Calif. The F-89D fires its missiles at various high altitudes at a 6x30-ft. banner towed by a North American B-45 four-jet bomber.

Financial

Eastern Air Lines made a net profit during the first half of this year totaling $2,482,313 or $1 a share, compared with the adjusted net of 63 cents a share for the same period of 1952. Gross revenues were $76,908,474, a 29.5% increase.

Fairchild Engine & Airplane Corp., Hagerstown, Md., reports net earnings for the first six months of 1953 were $2,108,000, an increase of $880,000 over the first half of last year. Sales and other income totaled $84,345,000, ($51,375,000 for the same 1952 period).

Bell Aircraft Corp., Buffalo, N. Y., made $1,891,010 in net income during 1953's first half, 111.5% higher than $894,184 for 1952 period. Sales were $74,932,606, up 28%.

Beech Aircraft Corp. Wichita, announces a net income of $1,040,206 from sales totaling $74,863,680 for the first nine months of the current fiscal year, compared with $66,983,567 in sales during the same period a year ago. Backlog amounted to $110 million.

International

Air France Constellation crash-landed last week on the southwest coast of Turkey after the portside powerplants of the four-engine transport failed on a Paris-Tehran flight. Four of the 41 passengers were killed.

Trans World Airlines has signed a three-year contract to continue operating the government-owned Ethiopian Air Lines.

Orient Airways DC-3 crash-landed on the east coast of the Persian Gulf last week, injuring 12 persons.

India's government took over operation of the nation's nine nationalized airlines Aug. 1, assuming direct responsibility for 154 aircraft on domestic and international routes.

The Aviation Week

August 10, 1953

Headline News

•

Production Engineering

•

Equipment

•

Air Transport

•

Departments

Picture Credits

7—Northrop Aircraft; 13-14—Convair; 18—(left) CAA; 19—Stone; 56—CAA.

Washington Roundup

Renegotiation Status

The renegotiation law under which military contracts are subject to review for excess profits is due to expire Dec. 31, since Congress failed to renew the measure before adjourning. A measure shoving the expiration date to Dec. 31, 1954, passed the House and Senate Finance Committee but was not passed by the Senate. But the Senate is expected to rush it through shortly after reconvening in January.

Mail Rate Board

Stymied by heavy opposition to legislation boosting postage rates, including a one-cent-an-ounce increase in the six-cent airmail rate, several congressmen are set to take another road to their goal next year. Legislation they dropped in the hopper before the adjournment would set up a three-member board appointed by the Postmaster General to set postal rates. The rates would become effective unless vetoed in Congress by a majority vote of both houses within 90 days.

The theory behind the legislation is that it would be far easier to forestall veto action than it would be to shove positive legislation authorizing postage increases through Congress.

Foreign Crop-Dusters

Legislation giving Civil Aeronautics Board authority over non-transport operations by foreign carriers in this country has been sent to the White House for Presidential signature.

In the past, Civil Aeronautics Administration has certificated such operations. But, because of lack of funds to administer the program, CAA decided to give blanket approval. On the ground that this would mean loss of control and policing over foreign operations in this country, CAB requested the authority.

Primarily, the legislation is directed at crop-dusting activities in the Pacific Northwest. Neither the U. S. nor the Canadian area have sufficient specialized aircraft, so planes of both countries go back and forth across the border to meet the requirements.

New CAB Ceiling

Civil Aeronautics Board will get from White House a definite economic policy and budget ceiling this fall for the first time since CAB was created in 1938.

Airline Subsidy Trends

Most current CAB efforts to halt the rising subsidy tide rely on airline cooperation. Main efforts:

- Putting all carriers on final rates (which carrier can reopen, however).
- Encouraging mergers such as Colonial, Northeast with Eastern, National; Pioneer-Central-Trans-Texas; Allegheny-Mohawk; Alaska-Pacific Northern; all Alaska territorials; Hawaiian-TPA. Elimination of weak routes can be mandatory, but the overall trend continues to add routes, not eliminate them.

Separation of airline subsidy from mail pay becomes effective Oct. 1. Airline billings to Post Office for cost of hauling mail and to CAB for subsidy will be separate thereafter.

Latest airline subsidy estimate for fiscal 1954 at CAB totals $79 million, including $4 million for trunklines, $22 million for local service and $53 million for international and territorial.

Although Postmaster General Summerfield has indicated he wants to cut airmail costs of the three helicopter services in New York, Chicago, and Los Angeles, CAB is expected to continue the services, because of their developmental value, by increasing subsidy as needed to make up the difference.

Hinshaw Prototype Bill

Aircraft manufacturers are watching the fate of the bill introduced in closing days of Congress by Rep. Carl Hinshaw for federal participation in design, development and service testing of transport aircraft for local service airlines and other purposes.

The bill is similar to the plan proposed to Congress recently by Donald Nyrop, former CAB chairman and Washington representative of the Conference of Local Airlines. It would authorize the Secretary of Commerce to make loans not exceeding $8 million for any one project to experienced aircraft manufacturers with 1% interest a year, repayable 10 years after the date of loan.

Congressional observers predict that the bill, which has been referred to the House Interstate and Foreign Commerce Committee, has dim prospects when Congress reconvenes, particularly since many of the manufacturers have indicated coolness towards it.

The bill does not exclude the helicopter, which many rotary-wing advocates expect to be the ultimate local service airline vehicle. It provides that CAB will advise the Secretary, and that he will not concern himself with the design, construction or method of manufacture of the aircraft apart from denial of loans for aircraft which the Board advises are economically unsuited.

Admiral McNeil

Wilfred J. McNeil, Assistant Defense Secretary (Comptroller), was confirmed last week by the Senate for permanent rank of rear admiral in the U. S. Naval Reserve. His appointment was made in conjunction with Navy regulations. He has been a rear admiral with temporary rank since June 10, 1945. During World War II he served as a reserve officer in the Navy Supply Corps.

Congress on Presses

Western congressmen are raising a fuss with Air Force over the heavy press program. Originally two of eight heavy forging presses were earmarked for the Pacific Coast. "Even this allocation was not equitable because more than 40% of the aircraft industry is located on the Pacific Coast," Nevada's Sen. Pat McCarran objected.

But when USAF canceled both Pacific Coast installations in the cutback program, McCarran petitioned Air Force Secretary Harold Talbott:

"This is not only unfair to the West and to the industry of the West, but is also extremely short-sighted from the standpoint of national defense. The Pacific Coast must have a heavy forging press installation if its aircraft industry is to apply to production the immediate benefits of heavy press forging. Without any heavy forging press on the Pacific Coast, aircraft development in the West will be retarded while eastern and north-central areas advance."

—Washington Staff

INDUSTRY OBSERVER

► The Convertiplane Committee of the Air Coordinating Committee, headed by Col. William Bunker of the Army, recently made the second in a series of trips to industry plants inspecting convertiplane projects in development. Farthest along are the Bell tilting-rotor Model 200 development and the McDonnell XL-25 with freewheeling rotor, both of which may be ready for flight about year's end. Committee inspected mockups at both plants.

► Cessna Aircraft's boundary layer control studies on helicopter rotors are attracting considerable interest in the industry as a means of making a copter capable of higher speeds than today's machines.

► Crash deceleration data obtained by NACA from actual tests with Cub-type lightplanes indicates that peak loads of as high as 30-35G are experienced for .02 seconds and mean decelerations of 25G for .05 seconds. This corresponds generally with the computations by Hugh De Haven at Crash Injury Research of Cornell University Medical College which indicated 20-30G loads, judging from impact velocities and stopping distances reported for actual accidents.

► Watch for the Boeing B-47C four-jet bomber to come back into the picture, powered with Allison J71 engines. The experimental four-jet virtually has been complete at Wichita for some time, and Boeing engineers are still enthusiastic about its performance potential. There is some indication Air Force may restore the project, previously shelved because of the time factor required to get it into production as compared to the six-jet B-47B now rolling off the Wichita line.

► Douglas XF4D-1 that flew across the country made three stops enroute to Patuxent Naval Air Test Center to stay behind a front, but none was attributed to mechanical difficulties. The experimental airplane was powered with a Westinghouse J40 engine (not the Pratt & Whitney J57 as reported here last week). The J57 is going into production versions of the Skyray. The fighter is expected to start its carrier qualifications as soon as preliminaries on Patuxent runways are completed.

► Recent reports on inflight refueling developments indicate that the probe-drogue method still is gaining ground on the Flying Boom system. Boeing's KB-47 jet tanker which has gone to Eglin Field, Fla., and the new Convair B-36 converted tanker are using probe-drogue. Main advantage appears to be in greater rapidity of making contact.

► Mockup board inspection of the new Cessna twin-jet trainer Model 318 is scheduled for September in Wichita.

► Sen. Edwin Johnson recently disclosed in congressional testimony that the number of Convair B-36 intercontinental bombers completed and still being finished up stands at 346 planes.

► Convair recently has run tests on a wired television arrangement for scanning visually the pusher engines and propellers of the B-36 bomber in flight from a remote monitor tube in the aft cabin. Preliminary tests were so successful that two cameras and a monitor have been ordered for additional study of the installation.

► A new improvement for airport surveillance radar antennas should eliminate largely annoying rain clutter (reflections from raindrops) that obscures aircraft blips during heavy storms. The device enables the operator to switch the radar from its normal vertical (or horizontal) polarization to circular polarization, which doesn't affect airplane echoes but prevents raindrop echoes from getting back into the antenna. The device was developed by Airborne Instruments Lab., Mineola, N. Y., under Air Navigation Development Board contract.

► Recent trend in rotary-wing aircraft toward unloading rotors by addition of stub wings isn't new. It was the original successful approach to the rotary-wing problem used by Juan de la Cierva in his autogyro. Autogyro manufacturers later took off the wing, used direct control wingless gyros.

WHO'S WHERE

In the Front Office

T. G. Preston is vice president and general manager of Stratoflex of Canada, Inc., new company set up in Toronto by Stratoflex, Inc., Ft. Worth. Other officers: **W. R. Cook**, vice president, and **N. E. Barber**, secretary-treasurer. **K. W. Davis** is president of both firms.

A. F. Kitchin has been appointed vice president-administration of Rohr Aircraft Corp., Chula Vista, Calif. Also promoted: **F. E. McCreery**, vice president-engineering; **B. F. Raynes**, vice president-manufacturing; **Charles E. Barnes**, vice president and manager of the Riverside plant; **S. B. Houser**, manager of Chula Vista and Riverside facilities, and **R. M. Ewbank**, production manager.

Dale A. Lichty has become vice president-sales and engineering of Hydro-Aire, Inc., Burbank, Calif.

Brig. Gen. Stanley E. Ridderhof (USMC Ret.) has been promoted to vice president of Rosan, Inc., Newport Beach, Calif.

Norman J. Burke is new vice president of Prewitt Aircraft Co., Clifton Heights, Pa.

Promotions

Josiah Macy, Jr., has been appointed assistant secretary of Pan American World Airways. Other promotions: **Sanford B. Kauffman**, assistant vice president-engineering, and **Wilbur W. Lynch**, assistant vice president-communications.

Robert W. Dunmire has been named acting manager of Goodyear Aircraft Corp.'s Canopy and Laminates Div., Akron, succeeding **Robert S. Ames**, who recently received an A. P. Sloan fellowship for one year of study at Massachusetts Institute of Technology. **O. W. Weyrick** is new manager of materials, and **T. A. Matthews** has been appointed acting manager of planning and control of GAC.

Edwin L. Farmer has been promoted to controller of Convair's Ft. Worth Div., replacing **J. C. Felix**, who resigned to join another firm. Other changes: **Erle G. Hill**, assistant division controller; **D. L. Watters**, budget manager, and **A. S. Cooper**, estimating administrator.

Russell O. Blaisdell has become chief pilot of North Central Airlines, succeeding **Charles W. Nason**, who resigned to return to regular line flying.

Changes

Shelby A. McMillion has joined Jack & Heintz, Inc., Cleveland, as director of advertising and public relations.

Arthur R. Tallardy has become assistant controller of Doman Helicopters, Inc., Danbury, Conn.

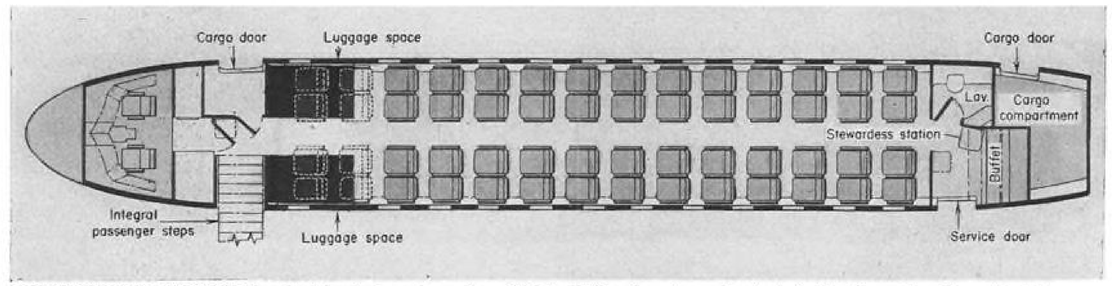
Max Daggett, Jr., is new member of the engineering staff at Temco Aircraft Corp., Dallas.

Sabine L. Baring-Gould has been appointed a staff engineer for special products at Clifton Precision Products Co., Clifton Heights, Pa.

AVIATION WEEK

VOL. 59, NO. 6
AUGUST 10, 1953

CONVAIR 340, like this United Air Lines plane, could be fitted with turboprops to extend life. Increased seating would result in . . .



56-PASSENGER VERSION for short-haul aircoach service. Eight additional seats are located in the forward section of cabin.

U. S. Challenge to British Viscounts:

Convair Will Convert 340 to Turboprop

- **New transport is scheduled to be ready by late 1955; program expected to stretch life of series into 1960s.**
- **T56 kits will be available for conversion of present airline models at less than $350,000 per plane.**

By Robert Hotz

Convair has moved to match the increasing challenge of British jet transports with an intensive technical improvement and sales campaign aimed at extending the life of its Model 340 airliner design well into the era of turbine liner operations.

Sparked by J. G. Zevely, veteran American Airlines executive and now Convair's director of sales and contracts, the 340 campaign is aimed principally at competing with the British Vickers Viscount transport series in the world airline market.

► **Two Phases of Development**—Convair firmly believes there is an overall shortage of medium-range airline equipment. To capture that market it is offering a two-phase technical development program for the basic 340 airframe:

• **First,** an improvement program on the current piston-powered 340s offering a passenger capacity increase ranging from 10 to 27%; a 15-mph. increase in cruising speed, and a marked reduction in cabin noise. These improvements will be available to 340 operators during the next six months.

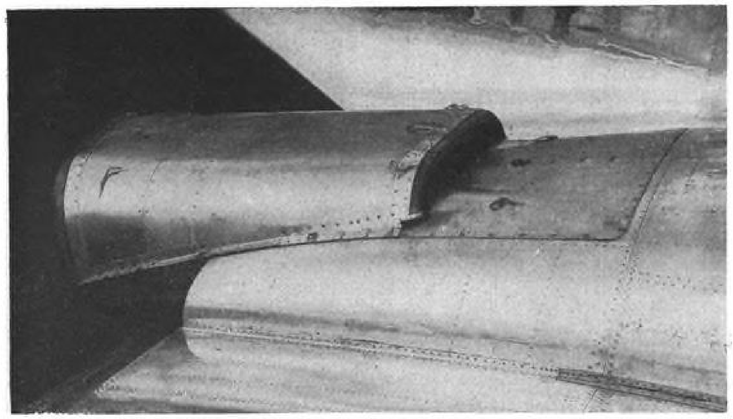
• **Second,** conversion of the basic 340 airframe to turboprop power by late 1955.

Convair officials believe this program will stretch the profitable airline life of the 340 series into the 1960s and provide air carriers with an opportunity for a very low capital writeoff of this equipment over an eight-year period compared to the cost of purchasing new jet transport equipment.

► **Speed Plus Comfort**—Major airline interest is centered on the turboprop conversion program. Many key airline executives—including C. R. Smith, president of American—recently have begun leaning toward turboprop-powered transports as a better solution to airline problems than turbojets.

These airline operators feel the turboprop offers most of the speed and passenger comfort available from gas turbine power with little of the economic disadvantages and operational inflexibility of the turbojet.

► **USAF Boost**—Commercial future of the turboprop also was given a strong boost recently by the USAF decision to finance a series of turboprop trans-



SILENCER fitted to engine exhaust stacks is designed to reduce cabin noise level.

port prototypes, mating existing airframes to new turboprop powerplants.

Air Force will sponsor conversion of two standard 340 airframes to take Allison T56 turboprops, each rated at 3,750 equivalent shaft horsepower.

These T56-powered 340s will be designated YC-135s and are scheduled for delivery to USAF next spring. They will use Aeroproducts propellers. JP-4 fuel and synthetic oil probably will be used in the T56.

▶**380 Mph. Top**—Replacing Pratt & Whitney Aircraft R2800 piston engines now powering the 340 with Allison T56s will boost total power from 5,000 to 7,500 equivalent shaft horsepower.

Cruising speed will increase from 275 to 335 mph. The YC-135 will have a top speed of 380 mph. and a maximum cruising altitude of 30,000 ft. Best cruising altitude will be approximately 20,000 ft., where a cabin pressurization of 8,000 ft. altitude can be maintained.

Gross weight of the turboprop 340 will increase from 47,000 to 53,200 lb. Considerable improvement in takeoff and climb characteristics are expected from the YC-135.

▶**T56 Conversion Kits**—Allison expects to get commercial certification for the T56 by the Civil Aeronautics Administration in the fall of 1955.

Delivery of commercial T56 engines for the Convair production and T56 conversion kits for airline operators is scheduled for the first quarter of 1956. The conversion kits will enable airlines operating 340s to make their own conversion to turboprop power.

Total conversion cost, including labor, is expected to be less than $350,000 for each aircraft. The kits will include powerplants, new nacelles and engine instrument and control systems.

All 340s built by Convair have been stressed to take turboprop power. Consequently no structural modifications will be required for conversion.

Convair plans to use a separate pressurization system and has rejected earlier proposals to bleed air from the turboprop compressors for cabin pressurization.

▶**Increased Power**—The T56 is expected to begin commercial service with an allowable overhaul interval of 400 hours. The engine is a more powerful development of the Allison T38 design, which has been flying experimentally in a Convair 240 airframe for several years.

Both the T38 and T56 use single power sections in contrast to the Allison T40 and T54 developments that gear two power sections to a single propeller shaft. The T56 also is scheduled to power production versions of the Lockheed C-130 military cargo transport ordered by USAF.

▶**Interim Improvements**—With full-scale conversion to turboprop power both in the field and on the Convair production line scheduled for early 1956, an interim improvement program is being offered the 21 airlines that are operating or have ordered piston-powered 340s. It involves:

J. G. ZEVELY heads CV-340 campaign.

• **Reduction of cabin noise** by installation of engine exhaust silencers. Convair expects to begin deliveries of CAA certificated silencer kits in the fall. The company has experimented with silencers built by Maxim and the Industrial Sound Control Corp., both of Hartford, Conn., but plans to market the ISC equipment. Convair reports the silencers cut 340 cabin noise to the level of a DC-6 interior.

Initial airline experiments were conducted on 340s operated by Braniff Airways and United Air Lines. Questionnaires were distributed to passengers on a silencer-equipped Braniff 340 operating out of Dallas for four days. They were asked:

Have you ever ridden on a 340 before?

If so, do you notice any difference in this one?

Of the 115 passengers who had ridden 340s before, 107 wrote that they noticed the Braniff plane was much quieter.

Cost of the silencer kits is expected to be less than $2,000 per aircraft, including labor. The silencers consist of a canopy filled with sound absorbent material surrounding the exhaust stacks. They reduce noise level of the stacks and deflect the remainder away from the cabin.

• **Design refinement** to add 15 mph. cruising speed by reducing airframe drag. The drag reduction program is in study and, when complete, will be available in the form of modification kits. Among modifications already indicated are replacement of the engine air scoop with air intake slots in the leading edge of the wing and a redesign of the wing fillet.

• **Increase gross weight** to 48,200 lb. from its current 47,000 lb. Initial 340 certification tests were made at the higher gross weight, but the aircraft actually was certificated only for 47,000 lb. because that met operational requirements then planned. Revalidation of the earlier 48,200-lb. gross tests will be necessary to use the higher gross, but no changes in the aircraft will be required.

• **Increase seating capacity** from 10 to 27% by implementing Convair's earlier plan to install seat tracks and removable seats (AVIATION WEEK Apr. 7, 1952, p. 67). This arrangement offers versions of the 340 increasing present 44-passenger capacity to a maximum of 56 for shorthaul aircoach service. Four additional seats with intervals of 38 in. can be added without any structural modification. For a 56-seat version with 34-in. intervals, the forward bulkhead is advanced by reducing the luggage and forward cargo compartments.

The first 340 with seat tracks is due off the Convair line late this year for delivery to KLM Royal Dutch Airlines.

▶**Quick Conversion**—The seat tracks offer quick conversion to high or low passenger capacity and to combinations of passenger and cargo space to meet individual airline requirements. Cost of the seat track modifications are estimated to total $6,500 per aircraft, including labor.

Tracks are built by Brown-Line Corp. of Beverly Hills, Calif., and the seats by Hardman Tool and Engineering Co. of Los Angeles.

Convair has sold 208 Model 340s to 21 airlines and has an option for seven more. More than 100 of the planned production of 239 planes already have been delivered.

▶**Sales Gamble**—The company scheduled production of 63 Model 340s without any firm airline orders in anticipation of the continued demand for medium-haul transports to replace DC-3 and DC-4 equipment. It has sold 40 of this quantity, with 23 still available. Present production schedules call for 340 output until the end of 1954.

In view of its success in anticipating airline demand on its earlier speculative production, it would not be surprising if Convair decided to gamble on further sales and keep the 340 line operating until it can phase into turboprop production late in 1955.

Viscounts for U.S.

Vickers-Armstrong says its turboprop Viscount can operate in the U. S. aircoach market at a direct cost of one cent per seat-mile, using kerosene fuel at 12.5 cents a gallon.

A Vickers brochure, aimed at selling the transport to U. S. trunk lines, quotes costs per available passenger-mile for luxury 42-seat, medium-density 48-seat and high-density 62-seat versions. Seat-mile direct operating costs range respectively: 42-seat, 1.5 to 1.3 cents; 48-seat, 1.3 to 1.0 cents; and 62-seater 1.0 to 0.8 cent, depending on stage length.

Three routes appraised by the British airframe maker for the medium-density, 48 seat turboprop:

• **New York-Washington,** 217 mi., block time .83 hr., payload 13,156 lb., cost 1.18 cents per seat-mile.

• **Albuquerque-Kansas City,** 733 mi., block time 2.62 hr., payload 13,156 lb., cost 1.04 cents per seat-mile.

• **Minneapolis-Spokane,** 1,178 mi., block time 4.23 hr., payload 10,766 lb., cost 1.04 cents per seat-mile.

Small Firms May Break With AIA

Subcontractors charge association gives no protection from USAF cutbacks; new organization is considered.

By William J. Coughlin

Los Angeles—Subcontractors may break with Aircraft Industries Assn. to form their own national organization if plans now being discussed by a group of West Coast parts, accessories and components manufacturers are carried through.

The group is considering formation of a national association that could protect the interest of small industries during threatened Air Force cutbacks, AVIATION WEEK has learned.

▶**Not Satisfied**—Dissatisfied with AIA's representation of small manufacturers, the group also is alarmed over the part the subcontractor will play under USAF's new concept of air weapons system responsibility.

"When a cutback comes, the airframe manufacturers who hold air weapons systems contracts will pull much of the business now subcontracted back into their own plants," said the representative of one firm. "We have no protection. It certainly doesn't result in a stable industrial base."

More than 15 firms taking part in tentative discussions have included Hydro-Aire, Harvey Aluminum, Hoffman Radio, Bendix-Pacific, Menasco Mfg., Weber Aircraft, Whittaker Co., AiResearch and others.

▶**Cautious Interest**—Approach of most of these manufacturers, some of them AIA members, to the proposed organization has been cautious. "We are definitely interested in attending future meetings to discuss this," Henry Nelson, president of Menasco, said. "But we have not committed ourselves in any way."

"I think if correctly done, it could be a very effective group," said Reagan Stunkel, vice president of Hydro-Aire. "But it should be approached with care. That is the attitude of our company."

The group has worked quietly at top executive levels, not seeking publicity. The fact that prime manufacturers in the area, who are AIA members, also are customers of the subcontractors involved has made some of those taking part reluctant to discuss the situation. One executive asked that his firm's name be withheld and that all comment be off the record.

▶**National Scope?**—Attitude of those surveyed by AVIATION WEEK is that the new organization should operate on an equal level with AIA, supplementing the work of the older association and meeting with it to discuss common problems.

"AIA primarily is a representative of the airframe manufacturers," said a spokesman for one of the small companies. "We have to organize to protect ourselves."

Those attending the meetings have been divided in their feelings about the purpose of such a group, according to reports. Some have argued it should be held to its present size to discuss common problems on an informal basis, while others—apparently a majority—want to expand it to national scope.

"The question is whether it would be national or merely West Coast," Stunkel said. "I don't think a little group of West Coast manufacturers could do any good. It would have to be national."

Support for the move will be sought from small manufacturers in other parts of the nation and also from USAF, according to one source.

▶**Goals**—Those questioned said such an association of parts, accessories and components manufacturers might work for:

• **Restudy** of the concept of air weapons system responsibility, with regard to the part of the subcontractor.

• **Review** of the industrial mobilization concept to include the sub as well as the prime contractor.

• **Increased stature** of subcontractors with the Air Force—"which we do not now have."

• **Recognition** of the efficiency of small industry.

• **Cutting** of red tape in government procurement.

• **Education** of small manufacturers in such fields as renegotiation, military security, relations with the government and major contractors, and proper bidding procedures.

▶**Healthier Industry**—Harry N. Bailey, manufacturing representative of several small firms in the Southern California area, has been one of those most active in promoting the movement. Bailey, former director of procurement and industrial planning in the Western Air Procurement District of Air Materiel Command, also served as Air Force plant representative at several major airframe companies.

Expressing concern over the air weapons system concept, Bailey said: "The way I get the picture, Secretary of Defense Wilson is turning procurement of present GFE (government furnished equipment) over to the prime contractors. The services then will hold the prime manufacturer responsible. I can't see that you've saved anything

after the prime manufacturer loads his heavy overhead onto the price.

"It is my opinion on the basis of my experience as a plant representative at some of the major companies, that they have terrific inefficiencies," Bailey declared.

"Independent small business organizations should be given as much of a break as possible because of the efficient way they operate and because of the healthier climate it will create in the industry."

► **Improved Position**—A number of small manufacturers who have expressed interest in the group will be invited to attend future meetings, according to Bailey.

Those who attended report that talks thus far have been informal with no decisions reached.

Next session is scheduled to be held this month.

"The meetings have been productive of nothing but a lot of discussion," said one manufacturer. "Plans should be firmed up."

The spokesman for an accessory manufacturer expressed the belief that the association should be limited to subcontractors who design their own products, eliminating those who merely do shop and assembly work for the airframe companies.

"The others have no place in this," he said.

His attitude is indicative of the controversy within the group itself. But there was no controversy over its major aim: to improve the position of the subcontractor within the aircraft industry.

Gyron Confirmed

Existence of the new de Havilland Gyron axial-flow turbojet has been officially acknowledged by the British aviation firm. Details of the Gyron were initially carried in AVIATION WEEK June 29, p. 11.

De Havilland does not mention the Gyron's thrust but states that it has been producing "greater thrust than announced for any other jet engine" for a substantial period during tests. AVIATION WEEK reported that the new powerplant is in the 15,000-lb.-thrust class.

First application of the DH Gyron is seen in supersonic fighters, the company says, but it also points out that the engine's high power, low specific fuel consumption and weight with small diameter and "emphasis on simplicity" also make it an obvious choice for bombers and transports.

Air Power Funds for Fiscal 1954

New funds for Air Force and Naval Aviation for fiscal 1954 as finally approved by Congress total $13.4 billion, or $6 billion less than recommended by former President Truman and $200 million under President Eisenhower's estimates.

(Figures in billions of dollars)

AIR FORCE

	1953 fiscal year	Truman budget recommendation	Eisenhower recommendation	Appropriated by Congress for 1954 fiscal year
Aircraft and related procurement	$12.7	$ 6.7	$ 3.5	$ 3.5
Major procurement other than aircraft	.900	.900	.625	.600
Maintenance & operations	3.60	4.23	3.20	3.15
Military personnel	3.20	3.56	3.30	3.28
Research & development	.525	537	.475	.440
Reserve personnel	.026	.023	.015	.015
Air National Guard	.106	.128	.147	.147
Contingencies	.031	.031	.031	.031
Total	**$21.0**	**$16.1**	**$11.2**	**$11.1**

NAVAL AVIATION

Aircraft and related procurement	$ 3.45	$ 2.23	$ 1.40	$ 1.38
Aviation operations (For research and development, this includes)	.963 ($ .175)	1.05 ($ .199)	.970 ($ .175)	.943 ($ .157)
Total	**$ 4.41**	**$ 3.28**	**$ 2.37**	**$ 2.32**
Total for Air Force and Naval Aviation	**$25.4**	**$19.4**	**$13.6**	**$13.4**

Final Air Budget: $34.4 Billion

The flow of orders that has been building up the aircraft industry's backlog since the start of the Korean war will slow down under the $34.4-billion defense budget for fiscal 1954, but the flow of money—for deliveries—will increase slightly.

• **The $4.9 billion** provided for aircraft and related procurement by Air Force and Navy for the current fiscal year is less than a third of the $16.1 billion provided for fiscal 1953, which ended June 30. The $4.9-billion total is divided: USAF, $3.5 billion; Navy, $1.38 billion. This is $9 billion less than USAF had in '53; $2 billion less than Navy had.

• **But USAF and Navy spending** for aircraft and related procurement is expected to stay at a $2.1-billion-a-month rate through December, then taper to a $2-billion-a-month level in the last six months of the fiscal year. The present expenditure rate of $2.1 billion a month rose from a $1.6-billion-a-month level of a year ago.

► **Three Slices**—This is how the money is divided among the services in the defense budget, including funds in all categories, as finally approved by Congress:

• **Navy, $9.5 billion.**

• **Air Force, $11 billion.**

• **Army, $13 billion.**

Administration and congressional defense economizing hit USAF hardest, by far: Its allocation for this year is $10 billion below last year's $21 billion. Navy's allocation is $3.3 billion below last year's $12.8 billion. Army's $13 billion is slightly more than last year's $12.8 billion, to take care of Korean war costs.

► **Final Decisions**—This was the outcome on controversial issues in the defense budget:

• **$250 million** was provided for building up a reserve of machine tools and production items, instead of the $500 million requested by the Administration and approved by the House.

• **A maximum of 100 hr. a year** was set for flight time for desk officers to cut down aircraft operating expense. Officers with 20 years' aeronautical ratings will receive flight pay without putting in flight time. The House set a 48-hr. ceiling, which was vigorously protested by the services as inadequate to keep up proficiency.

• **A ban was clamped** on preferential prices on defense contracts in labor surplus or economic distress areas. Advocates objected, however, that the watered-down wording finally accepted still permits distress area contractors to meet low bids in order to channel work into their plants.

• **A $35-million cut** in USAF's research and development funds stood. House made the cut in Wilson's $475-million budget recommendation, and Senate attempts to have it restored failed.

• **An $18-million cut** in the $175 million recommended by Wilson for research and development of Naval Aviation was also made by Congress.

Kaiser Aluminum Gets Heavy Press Aid

Kaiser Aluminum & Chemical Div. became firmly entrenched in the Air Force heavy press program last week. USAF promised further financing for the addition to Kaiser's Halethorpe, Md., plant in order to house the remaining 8,000-ton extrusion press which Kaiser had left after the Air Force press program was cut from 17 to 10 presses June 18.

With the cutback, Air Force announced that firms slated for extruders must provide housing for the presses in order to keep them. Affected were Kaiser Aluminum, Reynolds Metals Co., and Harvey Machine Co.

► **New Homes**—Since June, USAF has been negotiating with the firms concerned to determine if they could afford to finance housing themselves and thus keep their presses. Otherwise, Air Force was reported trying to find new homes for the presses.

Talks still are underway, and Kaiser is the first firm to receive definite word on its press future. The Halethorpe, Md., plant addition for housing an 8,000-ton extruder is about 35% completed, company officials report. Air Force already has spent $4 million on the Kaiser addition. When completed it is expected to cost $12 million.

Reynolds Metals is known to look with disfavor on spending its own funds for housing an Air Force project. Reynolds is scheduled for two extruders, an 8,000- and a 12,000-ton press, originally scheduled for Phoenix, Ariz. Last week it looked as if Reynolds would lose its two presses and they would go to Kaiser and to Harvey's Torrance, Calif., plant.

► **Harvey Plans**—Harvey reportedly favors a deal to house its scheduled 8,000-ton extruder, provided Air Force will return one of Harvey's two forging presses which were cut from the original program. Harvey originally was slated for a 35,000- and a 25,000-ton forge press.

Aside from the Kaiser Aluminum decision, however, the status of the other three extruders still is questionable pending decisions by Assistant Air Force Secretary Roger Lewis. Lewis reportedly intends to keep the heavy press program at 10 presses.

No 'VJ-Day' Type Slashes, Says McNeil

Assistant Defense Secretary Wilfred J. McNeil predicts there will be "no VJ-day type" of wholesale cancelations of aircraft contracts this fiscal year.

At a press conference last week, McNeil, Defense Department Comptroller, elaborated on an earlier statement which was made by Defense Secretary Charles E. Wilson (AVIATION WEEK Aug. 3, p. 13).

Peering into his crystal ball, McNeil says he sees nothing to change the present schedules of combat aircraft production in the coming year either for Air Force or Navy. McNeil says he knows of no support aircraft which will be affected by the truce or for "any other reason" this year.

The veteran defense budgeter indicates that the new Defense Department, though wearied from its first budget ordeal in Congress, is reasonably happy with its trimmed-down $34.4-billion fiscal 1954 budget.

► **Defense Money**—Biggest single reduction in the entire Administration budget, from which Congress carved $1.6 billion, he pointed out, was the 50% cut in the $500 million slated for reserve tools and facilities. Since that item was based on guesswork and no specifics were involved, the cut would not be felt, he maintained. McNeil adds he doesn't know specifically how the $250 million will be spent, "but it probably will be sufficient this year."

As to the effect of the Korean truce, McNeil says, "No one in this building (Pentagon) today really knows what the truce will mean" as far as defense spending is concerned. He seems to share the widespread opinion that the truce signing did not necessarily eliminate the possibility of renewed warfare.

► **Truce Savings**—Permanent cessation of hostilities this fiscal year, however, would mean a possible $1-billion saving in spare parts, combat pay, fuel, transportation and clothing.

Ammunition—$100 million a month in Korea—obviously also will be saved, McNeil says. However, ammunition production will not be curtailed altogether or suddenly because stocks must be built up for preparedness reasons.

► **Electronics**—In the field of electronics, no production change is expected where products are "good technically." In a few cases, some of the industry might drop a shift or two in order to slow down production in that field slightly.

"Wilson (Defense Secretary Charles E.) wants to maintain the Defense Department machinery without suddenly throwing sand into the gears," he explains.

OTTERS IN FORMATION

A formation view of four de Havilland-Canada Otter light transports that have been delivered to the Royal Canadian Air Force. The Otter is a larger successor to the DH Beaver and is powered by a 600-hp. P&WA R1340 Wasp. It has a gross weight of 7,600 lb. and weighs 4,345 lb. empty when used as a cargo carrier. Top speed is 160 mph.

Al Koch

Ernest Hensley

Hensley Out, Koch in Safety Post

By Alexander McSurely

Two months after Civil Aeronautics Administrator Fred B. Lee denied to AVIATION WEEK that he was replacing Aviation Safety Director Ernest Hensley with his 60-year-old former chief, Al Koch, Lee reversed himself and announced the switch effective Sept. 1.

Last week's reshuffling of the often-criticized Office of Aviation Safety is the forerunner of a CAA resurvey of Aviation Safety functions that is expected to lead to further changes.

Meanwhile, observers feel that Commerce Undersecretary for Transportation Robert Murray is the dominant figure in CAA. While the administrator is expected to continue to hold his post, the real policy decisions are being handed down by Murray to Lee for announcement.

▶**Last Laugh**—Koch's assignment to his old post was viewed as a "he who laughs last" situation by CAA observers, who recalled that Hensley outmaneuvered Koch in 1949 during the Rentzel administration to get the post when it was "up for grabs" in an earlier reshuffle.

Replacing Koch as administrator of the International Region is his deputy, Frank C. Stone, 54, one-time Trans World Airlines pilot and foreign trade graduate of the University of California. Stone was a Randolph Field Air Corps pilot graduate of 1934 and has been with CAA since 1940, principally in international work—except for three years of Air Force active duty in World War II.

He has been deputy of the International Region four years, had an active role in setting up CAA field offices in various parts of the world.

▶**Hot Seat**—Informed CAA sources say Hensley had been squirming under the criticism of his office and had been asking for his new assignment as deputy administrator of the Sixth CAA Region in Honolulu since early in the spring, before Lee's confirmation to succeed adminstrator Charles Horne.

These sources say that Koch had been watching Hensley's discomfort while enjoying the comparative quiet of the International Region. It is understood that he is returning to the Aviation Safety "hot seat" at Lee's specific direction, and with less than wholehearted enthusiasm.

CAA Reshuffle

CAA Administrator Fred Lee last week officially amended the CAA organization in a restatement of responsibilities and functions.

Changes included: eliminating the Regional Planning and Evaluation Div., consolidating the facilities engineering branch and the facilities construction branch into a facilities establishment branch; eliminating regional aviation medical activities in the four continental regions but continuing them in Regions 5 and 6 (Alaska and Hawaii); eliminating the Plans and Performance Standards Div. of the international region; discontinuing aviation medical research at the Aeronautical Center, Oklahoma City; consolidating the Establishment Engineering Div. and the Maintenance Engineering Div. of the office of Federal Airways into an Airways Engineering Div.

▶**Industry View**—Washington aviation industry representatives received the news of Hensley's transfer more favorably than the announcement of his successor. Koch's several previous tours of duty in the same Aviation Safety spot mostly have been brief interludes between other assignments. Forecasts are that he will not stay in Aviation Safety very long this time, either.

With the deputy post in the Office of Aviation Safety still unfilled, this will be the appointment to watch. The spot appears the stepping stone for whoever is tapped to be Koch's successor, after Koch handles the Aviation Safety resurvey and reassignment of functions.

▶**More Delegation**—Administrator Lee says Koch had a large share in planning for more delegation of responsibility to industry in the International Region and expects him to follow the same line in reassigning Aviation Safety functions.

Koch's experience with aviation inspection (which in CAA terminology is regarded as synonymous with aviation safety) goes back to 1931, when he became an aeronautical inspector for the Department of Commerce. In 1938, he was chief of general inspection and three years later became director of safety regulation. After two years' service in the Air Force in World War II, he returned to CAA for assignments in foreign aviation and field operations before becoming Assistant Administrator for Aviation Safety in January 1947.

A year later Koch was transferred to head a short-lived Office of Program Planning and Evaluation, but was slated to return to the Aviation Safety post. Instead, administrator D. W. Rentzel moved Hensley from deputy to the top post. Koch was reassigned to head the International Region. Koch was a World War I flyer. He had been vice president of Mohawk Aircraft and a district sales manager for Stinson Aircraft before his Commerce appointment.

▶**Third to Go**—Transfer of Hensley will mark the third high-ranking Aviation Safety man to be transferred out of the Washington office since administrator Lee took over. Previously, Hensley's deputy, William Davis, and his Acting Chief of Aviation Engineering, Omer Welling, were reassigned to the Kansas City regional office.

William H. Weeks, new aircraft engineering chief reassigned from Kansas City, is due in Washington shortly, and a new deputy aircraft engineering head, Waldemar A. Klikoff, former head of CAA Aviation Safety Division in the Los Angeles Region and recognized as one of the best qualified transport aircraft engineers in CAA, already has reported to assume his new duties.

While details of the readjustments in Aviation Safety will not be firm until Koch takes over, it is understood they will involve, in general: curtailment of present operations in many respects, achieving at the same time economy cuts necessary to stay within the CAA curtailed budget; eliminating considerable detailed work now done in Aviation Safety in favor of a sampling and spot checking system to keep tab on airline and manufacturers' methods of complying with the existing CAA regulations.

Frank C. Stone

Jet Fuel Pipeline

(McGraw-Hill World News)

Paris—The U. S. and French have agreed on plans for construction of a 400-mi. pipeline to carry jet-plane fuel from the French Atlantic coast to within 40 mi. of the Franco-German border.

The pipeline will be operated by a French non-profit concern, Trapil, working under the direction of the French Ministry of Industry and Commerce and with the cooperation of U. S. military authorities.

The U. S. will pay for pipeline construction costs and the French will purchase the necessary land. France and other North Atlantic Treaty Organization countries will pay a toll charge for any fuel transported through the pipe that they use.

CAB Hits Safety Procedures

Civil Aeronautics Board criticism of Civil Aeronautics Administration's aviation safety procedure marked the official report of a CAB investigation of an emergency crash landing made by a TWA 1049 Super Constellation at Fallon Naval Air Station, Nev., last Dec. 7.

The Board found that No. 3 and No. 4 engines (Wright R3350s) of the airplane failed due to failures of front cam gears of both engines. Although there had been a failure of the cam gear in the type certification test of the same model engine, it was certificated without any further penalty tests because of evidence shown by the manufacturer of satisfactory runs of identical gears installed in other engines of different model.

▶**Modification**—The manufacturer now has a modification program to incorporate a four-pinion drive instead of the original two-pinion drive to lessen the stress on individual gears. The Board ruled that the CAA type certification was "following inadequate proof-testing of the failed cam drive."

At the controls of the plane was Capt. I. S. Kravitz, with 14,969 hr. as a pilot, but only 94 hr. in the new 1049 at the time of the accident. The Board complimented his creditable performance in putting the airplane on the runway as short as he did, but found that emergency braking, although available, was not used, and that TWA had not trained the captain adequately in transition to this airplane from earlier model Constellations.

▶**Brakes Differ**—The criticism stemmed from the fact that the emergency braking system is different on the 1049 than on earlier model Constellations. Secondary hydraulic system was knocked out with the feathering of propellers 3 and 4. Emergency pressure was available from an accumulator system by moving a brake selector valve from a normal to emergency setting.

This, however, was not used. Instead, a hand pump was used in an effort to get brake pressure, and No. 1 and No. 2 propellers were reversed. The airplane swung left off the runway, the right wing was torn off and the plane stopped, resting on nosewheel, left main gear and aft part of fuselage in a modified "three-point" attitude.

Navy fire trucks prevented a possible fire, and most passengers climbed out the main cabin door, while others left through the forward door by way of an evacuation chute. Work of the crew in handling the evacuation so that no injuries resulted was commended in the Board's report.

Chase Reported Sold To Kaiser Interests

New York and Washington sources last week said the Kaiser Motor Corp. was completing purchase of Chase Aircraft Corp. from Michael Stroukoff of Trenton, N. J., founder of the company.

A Kaiser public relations man admitted that the transaction was under discussion, but insisted no agreement had been completed.

Primarily involved is the Chase C-123B assault transport design and its manufacturing rights. The airplane was developed at the Chase-Trenton facility, but was being tooled for line production at the Kaiser Willow Run plant, with at least one plane nearly completed there and 15 to 20 others in assembly.

▶**Price in Doubt**—Amount to be received by Stroukoff for his controlling interest in the company has not been disclosed, but it is believed comparable to the first installment of $2.5 million which was his price for 49% of the Chase stock to Kaiser in May 1951. At that time Stroukoff retained 51% of the stock.

When the 1951 purchase was made, Stroukoff became vice-president and chief engineer of the company, while Edgar Kaiser became president. Later, Clay Bedford, a Kaiser designee, succeeded Edgar Kaiser as president of the firm.

While the Air Force has ordered the Kaiser Willow Run C-123B contract terminated, the project is reported still alive and several other manufacturers including the Chase Trenton facility, have been seeking to have the plane orders transferred to their plants. Among other companies mentioned as contenders are Convair-Ft. Worth, Fairchild and Beech.

The original C-123B program called for 254 airplanes but was trimmed to 160 before the Willow Run termination was ordered.

▶**AF Interest**—Speculation in Washington is that Kaiser is seeking to reactivate the Willow Run C-123B contract, with the argument that moving the tooling and special equipment involved in production to any other plant would run up production costs excessively.

However, another Washington report is that the Kaiser purchase of the Stroukoff interests had been brought about at the urging of the Air Force, in order to facilitate contract termination proceedings.

New York sources say Stroukoff plans to organize another engineering company of his own, retaining some development contracts which Chase had, and retaining his Trenton staff and offices. However, the Trenton facilities are Navy-owned and might not be available to the new company.

Brazil Crash

- **CAB says PAA jungle accident still a mystery.**
- **But engine is known to have fallen off in flight.**

Mystery still surrounds cause of the crash Apr. 29, 1952, of a Pan American World Airways Boeing Stratocruiser transport in the jungles of Brazil, a Civil Aeronautics Board accident investigation report disclosed last week.

The Board attributed the crash to separation of No. 2 engine and propeller from the aircraft in flight because of "highly unbalanced forces followed by uncontrollability and disintegration of aircraft for reasons undetermined." The plane was flying at 14,500 ft.

► **Jungle Problems**—A 36-page summary of the accident in which 50 persons lost their lives, details the hardships of investigating teams in the jungle, the inability to find the No. 2 engine and propeller which fell away from the principal wreckage, and the damage to the wreckage caused by fire which melted many of the parts.

Analysis of the probable sequence of structural failure indicates that the emergency started in either the No. 2 propeller or engine. Shortly after, the left wing failed just outboard of No. 2 nacelle. Almost simultaneously, and presumably as a result of violent pitching of the aircraft during the wing separation, the entire tail group broke from the fuselage at a point just aft of the dorsal fin.

► **Explosion Discounted**—The analysis discounts the possibility of explosion or sabotage, and the investigation showed no evidence of fatigue failure of the airframe structure. Other theories ruled out as unlikely: collision with foreign object, malfunctioning of the rudder boost system, excessive loads from the autopilot, structure weakened by fire in flight.

Possibility of buffeting and/or flutter is discussed at considerable length in the report, comparing this accident to other Boeing 377 accidents but pointing out significant differences in the Brazil accident.

"It appears probable that severe buffeting set up by No. 2 nacelle after the engine separated from the airplane was more severe on the left stabilizer than on the right and caused a partial failure of the left stabilizer at about its midspan. . . . While the outer portion was still hanging on and oscillating up and down, it may have disturbed the hinge line in such a manner as to snap the elevators upward, causing a very high down-load on the horizontal tail surfaces, sufficient to cause a great increase in lift on the wing and upward failure of the left wing," the report says.

► **Propeller Discussion**—The report also discusses the fatigue failure possibility of the propeller blades on No. 2 engine. Examination of the mount for No. 2 engine, which remained with the aircraft, indicated that the separation resulted from forces greater than that for which it was designed. Other cases of engines lost from Boeing 377 airplanes in flight, in which the engine and propeller were recovered, indicated a blade failure and a destructive load resulting from propeller unbalance had caused the separation.

Summarizing the Board's report, investigators see some indication that the failure of a propeller blade may have started the chain of events which led to disintegration of the plane in flight.

Navy Buys 65-Knot, Twin-Engine Blimp

A 65-knot, twin-engine Navy airship for detecting and tracking submarines is under construction at Goodyear Aircraft Corp., Akron, Ohio.

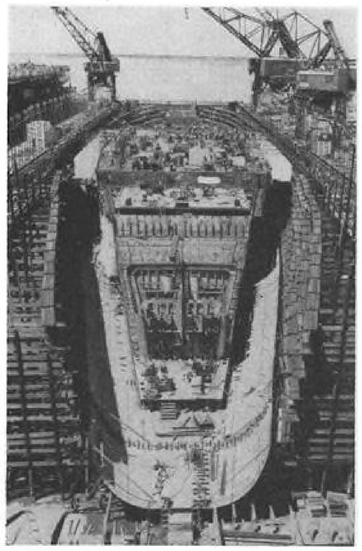
Known as the ZP4K, the non-rigid blimp is a streamlined version of the intermediate-range "K"-type airship used for antisubmarine warfare during World War II. The blimp is powered by twin Pratt & Whitney R1340 radial engines mounted on outriggers, uses two Hamilton Standard 11-ft., 6-in. three-blade reversible pitch propellers.

ZP4K can hover practically motionless or maintain low speeds to track both surface and undersurface craft.

Test flights will be conducted at Goodyear's Wingfoot Lake airship base.

The ZP4K's envelope is made of neoprene-coated cotton and has a capacity of 527,000 cubic feet of helium gas. Original K-type ships carried 456,000 cubic feet of gas. During World War II, 130 latter type were built.

Eight officers and men will man each of the enlarged blimps. The craft lands on a single fully retractable, main wheel. Four stabilizers and control surfaces on the ship's stern are mounted in conventional 90-deg. configuration.



FORRESTAL TAKES SHAPE

Considerable progress has been made in construction of the Navy's largest carrier, the USS Forrestal (CVA 59), which is being built at Newport News, Va. Slated to gross more than 70,000 tons fully loaded, the Forrestal is designed to handle new Navy multi-jet bombers—such as the Douglas A3D-1. The carrier will feature flush decks and have a retractable bridge. It will be more than 1,000 ft. long.

Tri-Motor Gyro

A single-engine autogyro used by Eastern Air Lines in 1939 in the world's first regularly scheduled autogyro airmail service has been converted at Camden, N. J., into a tri-motor flying test bed for investigating flight of a partially loaded rotor system.

Navy has awarded a contract to Kellett Aircraft Corp. to provide reliable data on the performance characteristics of a compound helicopter-type convertiplane.

Converted for Navy use, the unconventional plane uses three engines—two Lycomings and one Continental—together with a topside rotor and a stub wing. The tandem tail of the old model remains unchanged.

Weapons Study Completed

McGraw-Hill Publishing Co. announces it has completed a contract with the Air Research & Development Command of the U. S. Air Force for a study project.

An official message sent to publishing company executives by ARDC headquarters expressed "appreciation of this command for the very superior job done. We feel that the effort and cooperation of McGraw-Hill Publishing Co. has been of great mutual benefit to our respective organizations and we have great admiration and confidence in the people who were assigned to this project."

William Kroger, formerly assistant managing editor of Aviation Week was executive editor of the study project. He will join Business Week magazine as manager of its Great Lakes news bureau in Detroit, succeeding Stanley Brams. Several other staff members of the weapons project have been employed by McGraw-Hill magazines.

Crash Barriers

- **USAF tests Navy device on land-based jet fighters.**
- **Barricades save 180 carrier planes a year.**

Since Air Force first approached Navy for advice in stopping fast-landing jets at combat air fields last September, Navy has supplied the Air Force with 688 crash barrier webbing assemblies.

Air Force is testing crash barriers at Korean airfields (AVIATION WEEK July 13, p. 21) to determine if the Navy's answer to successful carrier landings can be applied to land-based aircraft.

Indications are that the barrier idea may be the answer to Air Force's problem. Navy has asked USAF to estimate what its barrier needs will be for 1954. Air Force builds its own stanchions, Navy supplies the barrier webbing, hardware, tensioning devices and chain.

► **First Used in 1948**—Chief difference between carrier and ground barriers is the anchor chain attached to the impact cable. When the cable is struck by the landing aircraft, the chain is engaged and the plane is slowed as it drags the heavy chain along the runway. This idea was first used at the Naval Air Test Center, Patuxent River, Md. in September 1948.

The anchor chain energy absorber is now installed at all major Naval air stations until more suitable inexpensive equipment is available.

Photographs at right just released by Navy show F9F-2 Panther landing on the USS Roosevelt with crash barriers extended. Nylon barriers were developed in 1944 when tricycle landing gear first came into prominence. First successful barrier was produced in September 1945 and installed in the USS Shangri-La. Since then barrier installations have been made in all aircraft carriers operating tricycle type aircraft.

Navy estimates it saves 180 aircraft a year by use of its latest crash barriers on carriers. Most recent type of aircraft arrestor employed aboard a carrier is the barricade, a 12-ft.-high nylon webbing installed in front of the deck parking area. A plane not stopped by the arresting cable or smaller net barrier plummets into the barricade.

► **5,000 Landings**—In the canted-deck carriers, such as the USS Antietam, the problem of aircraft crashing into parked planes is eliminated since the landing pattern is on the canted portion of the deck heading away from the parking area on the forward deck.

More than 5,000 landings have been made on the Antietam's canted deck since it was converted.

F9F-2 Grumman Panther jet fighter, tires smoking, passes over raised arresting cables on deck of USS Franklin D. Roosevelt and heads for raised crash barriers.

CONTACT with first of three nylon barriers is made by Panther's nose gear, but no slowing of jet's run is yet evident. Now look at last photo, below.

HALTED by all three barriers clutching at tricycle landing gear, F9F's tail lurches into air. Shoulder harness protects pilot from effects of sudden stop.

North Sweden Gets Helicopter Service

Helicopter service in the wilderness of north Sweden is assured with government approval of Ostermans Aeroaktiebolag proposal to serve Stockholm-Ostersund-Boden.

Ostermans will buy three Sikorsky S-55s to fly its new route since the Swedish airframe manufacturer, Svenska Aeroplan Ab (Saab), has no plans for building helicopters at this time.

In a part of Sweden where dense forests preclude regular air service, the airline plans to use helicopters for ambulance and rescue work as well as for air surveying and reconnaissance and some agricultural dusting and spraying. The firm also expects to introduce airmail service and to carry out special military assignments.

A State Department report, released by Transportation, Communications and Utilities Division of Commerce Department, comments: The service "holds great promise with its wide range of useful applications."

Viscounts Worry PAA

Pan American World Airways is concerned over competition from British European Airways, new turboprop service on the London-Copenhagen-Stockholm run.

BEA is flying Vickers Viscounts on the route on one-flight-a-day basis at tourist rates, Pan American provides twice-weekly DC-4 service and is the only major airline now flying into Scandinavia with no aircoach service.

With Viscounts, BEA has cut the travel time between London and Copenhagen to 2 hr., 45 min. Pan American makes the trip in 3 hr., 20 min.

PAL Gets Approval To Fly Over Burma

Philippine Air Lines has been added to the list of carriers authorized to fly over Burmese territory at night, U.S. Department of Commerce reports.

Under regulations set up by the Civil Aviation Branch, Ministry of Transport and Communications, of the Union of Burma, only authorized airlines may fly over Burmese territory at night. Unauthorized planes will be shot down, the ministry explains.

In flying over Burma at night such authorized lines as Pan American World Airways, KLM, BOAC, Scandinavian Airlines System, Air France, TWA and Indian National Airways must fly at 5,000 ft. or above within the 25-mi. corridor established by the ministry on the Calcutta-Rangoon and Rangoon-Bangkok route.

FIRST Sikorsky S-55 for Sabena at Antwerp dock prior to opening passenger service.

Sabena Starts S-55 Operations

Brussels—Sabena put its first new Sikorsky S-55 helicopter in scheduled inter-European service Aug. 3 flying from this city to Antwerp and Rotterdam. During the first month the carrier will limit its services to carrying mail and cargo; passengers will be carried beginning next month, thus making Sabena the first operator to offer scheduled international copter service for passengers.

Heliports have already been completed in the heart of Brussels, Liege, Lille, Rotterdam and Cologne. A landing area is ready for use at Antwerp Airport, two miles outside that city.

▶**Three Helicopters**—The carrier expects to have three S-55s in service by the end of this year. They will carry seven passengers each and will cover the following routes: Brussels-Antwerp-Rotterdam, 70 mi., twice daily; Brussels-Arlon-Luxembourg-Sarrebruck, 185 mi.; Brussels-Lille, 65 mi., twice daily and Brussels-Liege-Cologne-Bonn, 130 mi., twice daily. Three-minute stops will be made at Brussels' Melsbroek Airport for transfer of passengers to and from airliners. Normally, the three S-55s will have to cover more than 450 mi. of scheduled helicopter services daily.

▶**Fares**—Sabena will fly passengers at its standard fixed-wing rate of six cents per passenger-kilometer. Representative copter fares on some of the services will be: Brussels-Antwerp, $2.20; Brussels-Rotterdam, $6.90. These are one-way charges. The price for a roundtrip ticket on the Brussels-Rotterdam service is to be $13.20.

Comparative railway fares to Rotterdam from Antwerp are $4.80 (second class) and $2.75 third class.

Although Sabena reportedly may suffer some loss on its helicopter operations, this service is expected to increase the load factors on its fixed-wing services. Numerous businessmen reside in northern France, Luxembourg, the Saar and South Holland, in areas distant from normal airports. The helicopter is expected to appeal to these persons as a means of quickly getting to terminals where they can connect with major European trunklines and trans-Atlantic carriers.

CAL Streamlines Ground Organization

Recent consolidation of maintenance, engineering and operations divisions by Continental Air Lines has resulted in speeding decisions and improving employe morale, the carrier reports.

In the unification O. R. (Ted) Haueter, CAL vice president-operations, has been given control of maintenance and engineering; Don Wilson was named his assistant, and Wayne Lydon was promoted to a new position of engineering and maintenance. Formerly the carrier also had a vice president-maintenance and engineering, but this post was vacated by a resignation.

In his new multi-purpose job, Haueter has the sole responsibility for deciding whether a plane is given to maintenance or pilot training personnel. He feels that the new setup has facilitated the airline's advance planning for maintenance and pilot training prior to putting its new Convair 340s in service.

Wilson reports that flight personnel feel that their ideas on maintenance will receive effective consideration under the new setup. This attitude is shared by maintenance employees as regards operations suggestions, Lydon states.

RAAF Flies Obsolete Aircraft

Delays cripple Australian production of Sabres and Canberras; experts want U. S. to set up assembly lines.

By Marcel Grobtuch
(McGraw-Hill World News)

Melbourne—Australian federal government is in for severe criticism of its emphasis on the ability of local aircraft industry to produce modern warplanes quickly, efficiently and economically.

This will be the first result of a failure to produce a modified version of Sabre jet fighters and Canberra medium bombers on schedule.

▶ **Obsolete RAAF**—The first locally built Canberra has been delivered to Royal Australian Air Force and the first Sabre—equipped with a British-made engine—has yet to take off from the newly built Lara jet airfield near Melbourne. Mass production of these planes is in the distant future, and it is not certain that the planes will be up to date when they begin rolling off assembly lines. Even the trainer planes are not coming off the assembly lines as quickly as they should or could.

In the meantime, Royal Australian Air Force with its first-class staff of flying and ground personnel—must rely on obsolete planes of limited flying efficiency. Hopes for getting large numbers of U. S. and British planes still are without foundation.

▶ **Industry Attitude**—Here are convictions apparently held by the three major aircraft producers in Australia:

• **De Havilland Aircraft Ply.** plants in Sydney appear not to have been fully persuaded that large-scale production of war planes is either necessary or desirable.

• **Commonwealth Aircraft Corp.** of Melbourne is not receiving the required degree of Government support.

• **Government Aircraft Factories** are somewhat jealous of their position and would like to reserve for themselves as big a slice of the market as possible.

The free-enterprise government of R. G. Menzies, while de-socializing many fields of industry, seems to have forgotten its aircraft production plants. No one knows, or is likely to know, whether they are operating with full possible efficiency or to what extent the taxpayer is subsidizing the Socialist-created industry.

▶ **Growing Manpower**—All this is even more regrettable, because there are good facilities in Australia for helping the United States and its Allies at a time when supplies of modern warplanes are vitally needed.

Australian engineers have acquired an excellent world-wide reputation. Shortage of manpower, which at one time was crippling Australian industrial effort, has been replaced by mild unemployment sufficient to furnish the aviation industry with most of the required workers.

▶ **U. S. Industry Needed**—A decision now to dispense with Australian-produced planes would be unjustified and too costly to merit consideration. But overseas and more enlightened Australian experts are of the opinion that the general level of aircraft production efficiency, could and should be increased quickly. They also believe more private initiative should be allowed—possibly to include encouraging U. S. firms, which in the past were rumored to be interested in establishing manufacturing branches here.

Such an industry not only could supply planes and spares for the Australian and New Zealand air forces but also could engage in certain exports to South Asian countries, many of which shortly would come to the market for war planes.

The possibilities and opportunities are there but further action depends on the Australian federal government.

SAE Forum Tackles Problems of . . .

How to Machine High-Temperature Alloys

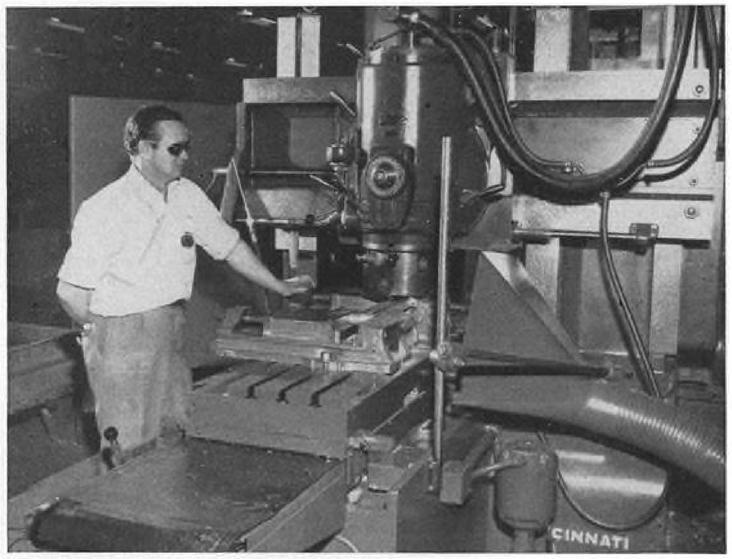
- **Panel cites precautions for thin-section work.**
- **Heat-treating of metals, cutting fluids discussed.**

Machining methods for high-temperature alloys—one of the most difficult assignments confronting production shops in aircraft and engine plants—were discussed at the recent production forum of the Society of Automotive Engineers National Aeronautic Meeting in New York.

The panel of specialists* which met with a large group of engineers also studied:

- Precautions used in producing thin sections.
- Heat-treating materials for improved machinability.
- Lubricants and lubrication methods for metal cutting.

The following information, in question-and-answer form, constitutes a substantial report of the data covered.



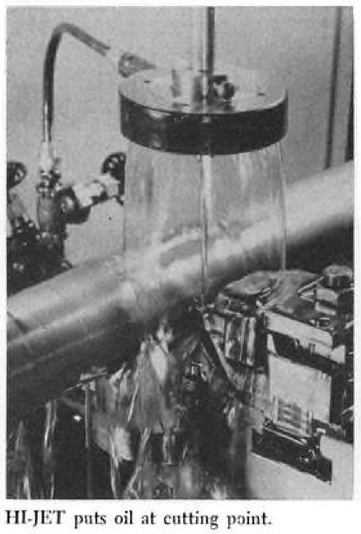
HIGHSPEED MILLER is new tool designed for today's metal-cutting jobs.

Cutting Fluids

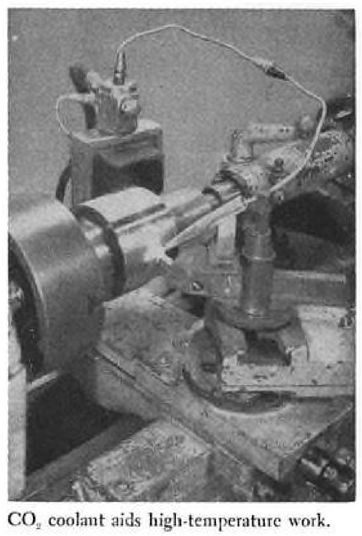
• WHAT provisions are being made properly to deliver and confine cutting fluids on ultra-high-speed machines now becoming available?

Fog-type coolants, which combine compressed air with extremely small volumes of cutting fluids, are being applied. A curtain of cutting fluid also is being used. This not only cools but carries the chips to a central location where the chips and the fluid are separated.

It has been found feasible to conduct the chips to one location and then lift them out. One system proven practicable has been to collect the chips and coolants in a tank. The coolant then is separated from the chips, filtered and returned to the sump. Vacuum chip removal has not been found too satisfactory.



HI-JET puts oil at cutting point.



CO_2 coolant aids high-temperature work.

• HAS CO_2 met expectations as a cutting fluid?

In most applications to date, expectations were not realized since sufficient CO_2 was not available at the work point. Also, cost of CO_2 may be prohibitive. It may be that CO_2 has possibilities in grinding, if only the heat involved is considered.

• WHAT effect does CO_2 have on the tendency of materials, such as those machined for jet engine parts, to work-harden?

Little effect has been shown on the level of work-hardening. This hardening is affected mostly by cutting angles on the tools. It is possible CO_2 might show to advantage with titanium, since it develops considerable heat when being machined.

• CAN material of higher Rockwell be cut when using CO_2?

Naturally, temperatures are somewhat reduced, but, nevertheless, cutting forces remain as high as ever.

• IS edge wear encountered with the application of CO_2?

Not appreciably.

• IS it possible to use CO_2 with a liquid lubricant?

This has been tried, but it is necessary to use a liquid that does not freeze at the temperature involved.

Kerosene is such a material, but tends to pick up water and become slushy. No material has been found satisfactory, but the problem does not seem impossible of solution.

• WHAT progress has been made in milling stainless steel with CO_2 as a coolant?

No lubricity appears to be present when CO_2 is used. The only advantage appears to be in its cooling ability. The consensus indicates little success or benefit has been obtained from CO_2.

• HOW is Hi-Jet applied on milling operations?

This has proved to be a difficult problem. Two methods of application have been offered. The first is to apply Hi-Jet directly behind and below the rotating cutter in conventional milling. The second method adds a shower type application along with the jet.

At present, the problems with Hi-Jet are centered around the smoking which occurs when oil is used as a cutting fluid. The producers of Hi-Jet are now working to develop a soluble oil to avoid this problem.

• ARE radioisotopes being used in the evaluation of cutting fluids?

There is no information indicating this is presently the case, but prior experience in making tool-life tests indicates radioisotopes may have possibilities. Radioactive tools used in tool-life testing have made it possible to accelerate the process of gathering data without making it necessary to run the tools at abnormally high speeds. Therefore, more predictable and uniform results are obtained.

• HOW is the correct cutting fluid for a particular application determined?

A job must be carefully evaluated, since in many cases the difficulty encountered is not due to the cutting fluid, but to other details. It has been found satisfactory to set up a laboratory to test and analyze cutting fluids. Coordination between this lab and the factory is extremely important. The lab group or individual should be assigned to trouble-shooting in the factory.

Hardness Factors

• WHAT hardness level is best for broaching stainless steel?

For 18-8 it is generally preferable to have the material as soft as possible. This may be accomplished by solution heat-treating.

• WHAT difference is there between a high temperature for a short time and a low temperature for a long time, structure-wise, so long as the same hardness level is obtained?

No noticeable difference exists if the same hardness is obtained. Some alloys which tend to retain austenite may need longer periods of time at temperature to avoid hard spots.

• HOW may work hardenability of jet engine alloys be predicted from the composition and the properties?

This is not as yet practical. Generally, it may be said that austenitic materials work-harden more than ferritic magnetic materials—the more magnetic a material is, the less it tends to work-harden.

• ARE there any tests available which indicate the work-hardenability of materials?

The use of Mar numbers gives results when comparison is made from one steel to another, but this comparison fails when a switch is made to include stainless steels or such non-ferrous materials as aluminum or copper. The results obtained are unpredictable and not uniform enough to be usable.

A suggested test consists of drilling a hole and then redrilling with a larger size drill. Relative work-hardenability may be indicated by variation in wear land which appears on the second drill. Another test consists of drilling a blind hole and allowing the drill to ride in the bottom of the hole. Tukon hardness tests are then made on the surface. The measurements have been made on a cross-section of such a hole to within .002 in. on the surface rubbed. Indications on some high-temperature alloys were as high as 600 BHN.

High-Heat Alloys

• WHAT is the status of the electric arc and supersonics for cutting high-temperature alloys?

Considerable application of these methods is being made to the hard and brittle materials such as ceramics and carbides. However, these methods prove to be relatively slow when machining the high-temperature alloys, which tend to be ductile.

• HOW can heat-treat improve the machinability of a 25 Cr, 12 Ni, 3W alloy?

No one has had experience in heat-treating such a material for improved machinability. In general, it has been found that high-temperature alloys machine better if it is possible to break up

* K. W. Stalker, supervisor, manufacturing methods, General Electric Co.'s Aircraft Gas Turbine Div.; E. J. Weller (panel secretary), General Electric Co.; W. D. Averill, Cincinnati Milling Machine Co.; Norman Zlatin, Metcut Research Associates; R. C. Gibbons, chief metallurgist, Bendix Aviation Corp.'s Utica Div.; Ralph C. Morris, Thompson Products, Inc.; Henry Albert, asst. factory superintendent, Republic Aviation Corp.; D. C. Aldrich, sales engineer, G. F. Pierce Co.

the carbides—sometimes accomplished by solution treating. Considerable difficulty is usually encountered when the tools strike areas where there is carbide segregation.

One person reports improved operation can be obtained by using clamped-on carbide tips operating at a cutting speed of 180-220 fpm. with .007-in. feed at .100-in. depth of cut.

• WHAT is the effect of grain size on machinability of high-temperature alloys?

Information indicates that little if any data are available. Most high-temperature alloys are machined either in the solution-treated or solution treated-and-aged condition, since engineering properties require first consideration. When surface finish is considered, fine-grain steels usually machine in such a manner as to give improved finish.

• WHAT cutting tool angles are recommended for interrupted cuts on jet engine alloys?

Negative side rake combined with positive back rake is beneficial, since the major problem is impact, but chip welding is also encountered. The negative side rake adds noticeably to impact resistance, while the positive back rake decreases cutting pressure.

Hot Machining

• WHAT progress has been made in the hot machining of high-temperature alloys?

Little, if any, work has been done. Major problems involved consist of the effect of heat on the tolerance of parts and on the surface finish (scaling) produced.

• WHAT about hot machining of S-816 and steel alloys?

Some preliminary runs have been made where the parts were torch-heated. No appreciable increase in tool life over that obtained at room temperature was found.

• ARE cutting forces reduced in hot machining?

Tests indicate that cutting forces for machining S-816, A-286 and M-252 did not decrease appreciably when the parts were heated. Very small decreases in cutting forces were noted, but the net result did not indicate the effort expended was justified.

Warpage

• HOW may warpage in thin sections be eliminated?

In some cases it has proven advantageous to add material on the side opposite the thin section. This has helped, but will not necessarily correct the difficulty. It is extremely important that parts being machined be backed up rigidly. Most new jobs require their own particular analysis, since each has its special problems.

• HOW is distortion prevented in machining thin aluminum wheels?

Distortion encountered may be caused by either heat treatment or heat which is generated in the machining operation, or from cold-working in machining. Satisfactory results have been obtained in many cases by purchasing material in the wrought condition. The parts are then rough-machined and annealed. Following the annealing cycle, the parts are finish-machined and then stress-relief annealed.

It is important to consider the thickness of parts when setting up heat-treating cycles, since thick parts require longer heating time than thin sections.

Stainless Work

• WHAT progress has been made in the milling of stainless steel?

Proper operator instructions are essential. Selection of cutting fluids for this type of machining is of primary importance.

Carbide cutters are being used by most people for machining stainless steel. Insert-type cutters with carbide tips are used to the greatest extent and are giving the best results. Grades of carbide in more common use are the straight tungsten carbide compositions, such as Kennametal K-6, and Carboloy 44A.

Some use −6 deg. axial rake and −6 deg. radial rake. Others use 0 deg. axial combined with 6 deg. radial rake. It has been found that considerable chipping may occur with high positive rake and wear is the major problem with high negative rake.

Chips welding to the cutting edges have proven to be a major problem. As they are knocked off in cutting, they tend to chip off the carbide tips, too. Chip welding is not as bad in climb cutting as in conventional cutting, because, as the cutter leaves the work in climb cutting, the chip thickness approaches zero. If chip loads in the neighborhood of .001 to .002 in. are used, there may be some tendency to excessive wear, since a major portion of the cutting is being done in a work-hardened area.

Interrupted cuts on lathes, boring mills and similar pieces of equipment often have given difficulty when carbide tools are used, since chipping occurs. In these cases, cast alloy tools operating in the neighborhood of 140 fpm. with a feed of .008 in. have proven satisfactory when using water-type cutting fluids.

In general, feeds of .005 to .008 in. are being used for turning operations.

• WHAT can be done to improve the conditions in drilling stainless steel?

Proper drill grinding is the most important consideration. This includes grinding of the point angles, clearance angles and proper web thinning. Next, correct speeds and feeds for the particular alloy being drilled should be determined. Third, a survey of operating conditions, material and parts should be made to determine correct cutting fluid and to apply this cutting fluid correctly.

• WHAT is the effect of decarburization on finished parts?

The strength of such parts is impaired, because the decarburized layer is usually relatively soft. Also, these parts wear and gall at a more rapid rate than those which do not have this decarburized layer.

Decarburization

• HOW may decarburization be prevented?

One successful method reported involves application of a thin copper flash prior to heat treatment. Following the heat-treating cycle, the copper flash is stripped off. If the flash is kept extremely thin, no difficulty is encountered from hydrogen embrittlement. Nevertheless, information indicates it is preferable to bake parts after plating to drive off hydrogen, thereby preventing the cracks hydrogen might cause.

Some furnaces are now available with controls which maintain a carburizing atmosphere. In all cases where such atmospheres are used it is essential to set up to check dew points and make samples, since each particular furnace has its own peculiarities. When such tests are made, it is extremely important to record the data for future reference.

Wax Use

• WHAT are the results achieved in using waxes for drawing, drilling and tapping operations?

Wax pellets are at present being inserted in holes drilled prior to tapping. Results have been satisfactory, but some objection is made to the time involved in inserting the pellets. In some applications it has proved satisfactory to coat the tap with wax rather than fill the hole.

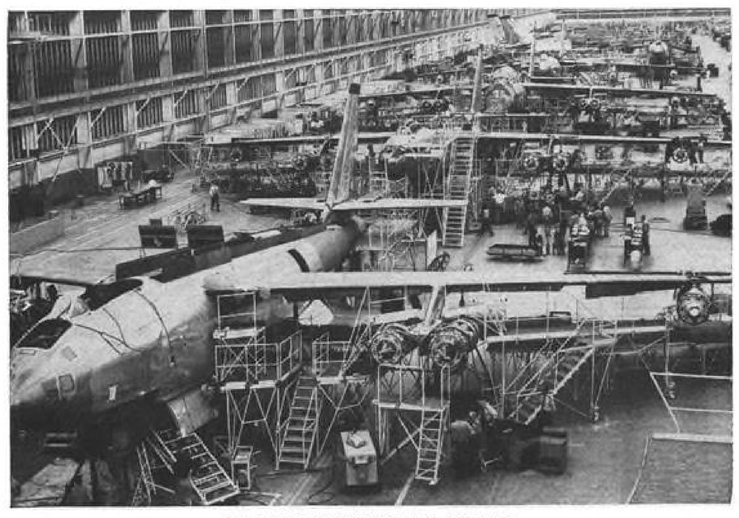
• WHAT troubles have been encountered in removing wax?

In many cases the wax is left on the part, where it provides a somewhat protective coating. When it is necessary to remove the wax, cleaning in a degreaser has been satisfactory.

—Irving Stone

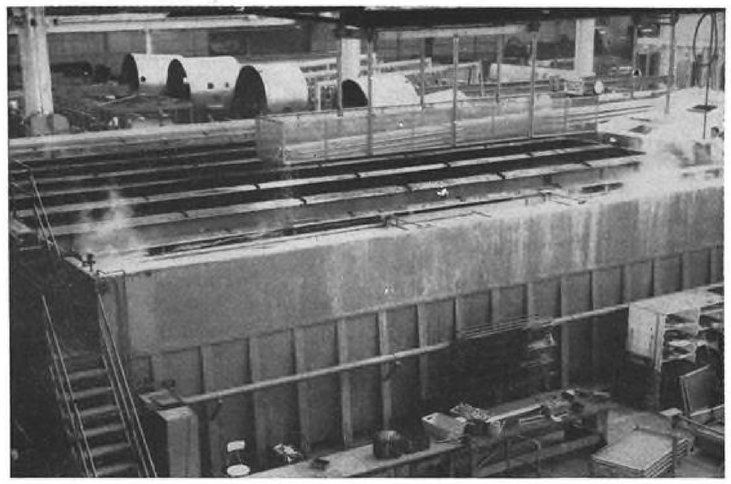
Bell Installs Rolling Mill

Bell Aircraft Corp. has installed a huge Bertsch rolling mill for forming metal stock with a maximum thickness of ¾ in. and 15 ft. long into curved and circular pieces. The machine will be used for taper-ground wing, fin and rudder skins. Its three 15-ft. rolls have a 15-ft. diameter and will roll sheet into a 21-in. circle.



FORTY-SEVENS IN FINAL

Group of Lockheed-built Boeing B-47Bs nears completion on this short final assembly line at the Marietta, Ga., plant. Unusual features of B-47 structural layout shown here include the access doors strung out along the top of the fuselage, the cantilevered suspension of twin GE J47 turbojets in the inboard pod, and the large number of small separate pieces making up the wing leading edge. Numerous cutouts in fuselage for landing gear, cockpits, bomb bays and access doors probably account for departure from semi-monocoque to rugged construction of heavy longerons, thick skin.



Big 'Bathtub' Primes Plane Alloys

A new chemical bath for airframe components, reported to be the largest installation of its kind in the industry, is giving substantial production advantages at Lockheed Aircraft Corp., Burbank, Calif.

The processing tank is a nine-unit facility using the new chromodize-iridite procedure for preparing aluminum alloy prior to painting operations. Lockheed says that the new, centralized equipment has replaced two chromodize-anodize systems formerly used at the plant in different locations and has cut metal processing time in half. Formerly a 1½-hr. operation, an entire job now can be done in 47 min. In the iridate system, immersion in chemicals puts a film on the part, in contrast to the anodize method of oxidizing the aluminum surface through electrolysis.

▶ **Benefits Claimed**—Lockheed engineers report these advantages for the new system:

• **Better base** for paint adhesion is provided. The iridite surface is said to be tough and pliable, in comparison with a hard and brittle anodized surface.

• **Dissimilar-metal parts** can be treated, whereas anodizing requires that no metal other than aluminum be placed in the tank solution.

• **No special racks** and racking procedures are required, such as used to provide positive electrical contact for each individual part in the anodizing method. Part losses, which resulted when poor electrical contacts caused arcing and burning of surfaces, are eliminated by the iridite process.

• **Very little maintenance cost** will be involved for servicing baskets used with iridite.

Individual tanks have an 18,000-gal. capacity. Each is 52 ft. long, 4 ft. wide and 12 ft. deep. The nine tanks provide for hot soap cleansing, acid etch to prepare parts for iridite, iriditing, chromic acid bath for treating Alclad aluminum parts to be painted, spray rinsing (two tanks), dunk rinsing (two tanks) and drying.

Special demineralization apparatus for rinse water can process 15,000 gal. daily.

Lockheed is installing a 4-ton overhead crane, which will be able to handle two 25-ft.-baskets of aluminum alloy parts at once.

Douglas Erecting New Engineering Building

A new $2-million structure, believed to incorporate some of the most modern design features, is under construction at Douglas-El Segundo.

The two-story concrete building will house Douglas engineering activities. Included in the layout are two engineering rooms, each covering about 43,000 sq. ft., plus accommodations for office areas, photography, lithography, blueprinting and electronic computers.

Ceilings of the engineering rooms and office areas will carry illuminated frost plastic for uniform lighting. Vertically louvered shades on the south side of the building will be actuated automatically by the sun's rays to eliminate direct glare. Good acoustics and color harmony will be stressed, and air-conditioning will be provided.

The structure has been designed by Kistner, Wright and Wright, Los Angeles, under the direction of Douglas plant engineer Richard Skelton. Davis, Kuester and Brown are the contractors. Completion is expected early next year.

PRODUCTION BRIEFING

► **Miniature Precision Bearings, Inc.,** Keene, N. H., plans to set up a West Coast manufacturing branch to provide quicker service in that area. Initially the new factory will be provisioned by the home plant and supply bearings to customer specifications. Later it may be used to supplement the company's East Coast production.

► **Pacific Airmotive Corp.,** Burbank, Calif., has signed an agreement to become exclusive U.S. distributor for aircraft equipment of Sir George Godfrey & Partners, Ltd., England, and its subsidiary, Godfrey Engineering Co., Ltd., of Canada. PAC will handle Godfrey's turbo refrigeration equipment, cabin superchargers, fans, water separators, silencers and ground air conditioners.

► **Reynolds Metals Co.** has abandoned plans to build a 460,000-sq. ft. addition to its extrusion plant at Phoenix, Ariz., which was to house a Navy 12,000-ton and an 8,000-ton press.

► **Simmonds Aerocessories, Inc.,** Tarrytown, N. Y., is expanding its electronics engineering department to include a communications development project under the direction of Donald S. Kellogg, formerly chief engineer of W. L. Maxson, New York. The company recently dedicated the first of five new plant units at Vergennes, Vt., for precision aircraft equipment.

► **Boeing Airplane Co.** reports employment at its Seattle, Wash., plant reached a high of 33,500 in July.

► **Resdel Engineering Corp.,** Los Angeles, and its subsidiary, Guided Missiles, Inc., are building a 21,000-sq. ft. plant in Glendale, Calif.

► **Universal Metal Products, Inc.,** Alhambra, Calif., has been named exclusive licensee for the Multiple Line interlacing clamp developed by Northrop Aircraft, Inc., for lacing together two or more lines or cables. The clamp was originally designed for the F-89 Scorpion.

► **Aeroquip Corp.,** Jackson, Mich., has acquired the 45,000-sq. ft. plant of Sterling Electric Motors, Inc., at Van Wert, Ohio, to provide additional operating facilities and storage space. Aeroquip is transferring its operations at Cheboygan, Mich., to the Van Wert facility.

► **Teletronics Laboratory, Inc.,** Westbury, L. I., N. Y., has completed a new engineering building adjacent to its Kinkel St. plant.

FAIREY vertical takeoff delta rocket model gets set for test at Woomera missile range.

British Missile Work Expands

Increasing British participation in missiles programs is seen in the growing number of firms using the Guided Weapons Range at Woomera, Australia. More than 100 British companies—including aviation, engineering, chemical, avionic, explosives and plastic manufacturers—are working at Woomera.

Some recent arrivals include:

• **Fairey Aviation Co.** has sent technicians to Woomera to test their model vertical takeoff pilotless rocket powered experimental aircraft (AVIATION WEEK June 8, 1953, p. 9) and more tests are in the works.

• **English Electric Co.,** which is opening workshops in Salisbury, South Australia, for assembly of guided missiles to be tested at Woomera. The manager of the firm's Weapons Division has arrived to set up the new facility. This company has contracts to build a number of missiles and has already fired a two-stage rocket at the Aberporth range on Britain's west coast.

• **Bristol Aeroplane Co.** is beginning a depot at Salisbury to support its work on the Australian range. This firm already has tested several research ramjet test vehicles as part of its missile program.

• **Armstrong Whitworth,** a member of the big Hawker Siddeley aviation combine, announced some time ago that it is putting up its own test base at Salisbury. The company plans to produce rockets and missiles too.

• **General Electric Co.** is erecting a facility for developing missile equipment.

► **Windtunnel**—A windtunnel facility capable of producing 1,900-mph. winds is under construction at this Australian missile center. It is thought to be the only one of its type in the Southern Hemisphere.

The tunnel will be used to study such phenomena as shock waves in connection with long-range highspeed missiles. Photographic exposures of one-millionth of a second are planned in the test program.

Cost of the setup is estimated at $200,000.

Navy Contracts

The following contracts were announced recently by the Navy's Aviation Supply Office, 700 Robbins Ave., Philadelphia 11.

Bendix Aviation Corp., Pioneer Div., Teterboro, N. J., indicators for R6D-1 aircraft, $31,617.

Carbide & Carbon Chemicals Co., Div. of Carbide & Carbon Corp., 30 East 42nd St., New York, 17, acetone, 34,960 gal., $26,220.

Continental Aviation & Eng. Corp., 1500 Algonquin Ave., Detroit 14, maintenance parts for R975-40-52 engine, $222,836.

W. J. Dunn Co., Inc., 524 "C" St., Boston, shackles, anchor screw pin, $38,662.

Glidden Co., 1300 Seventh St., San Francisco 7, aluminum paint, 10,275 gal., $36,-374.

Goodyear Tire & Rubber Co., Inc., 1144 East Market St., Akron 16, wheel and brake assy. for F2H-2,-2P,-3 aircraft, 456 ea., $214,075; brake assy. for FG-1D, F6F-5, F4U-4, -5,-5N,-5P, AU-1 aircraft, 260 ea., $37,921; brake assy. for FJ-2, F2H-2N, -2P,-2,-3,-4,-5, aircraft, 293 ea., $64,460.

Graybar Electric Co., 910 Cherry St., Philadelphia, shackles, anchor screw pin, $44,630.

Merrill Bros., 56-02 Arnold Ave., Maspeth 78, N. Y., shackles, anchor screw pin, 31,400 ea., $26,690.

R. L. F. Tool & Experimental, 731 W. Wilson Ave., Glendale, Calif., cylinder assy. for HSL-1 aircraft 100 ea., $38,159.

Rubbercraft Corp. of America, Inc., 151 Orange Ave., West Haven, Conn., raft, pneumatic, type PK-2, 1,550 ea., $57,815.

Waukesha Motor Co., Waukesha, Wis., maintenance parts used on auxiliary power units, $78,866.

Westinghouse Electric Corp., 3001 Walnut St., Philadelphia 4, actuator for F2H-2,-2B,-2P aircraft, 109 ea., $137,823.

Willis & Geiger, Inc., 51 W. 21 St. New York 10, vest, life preserver, 7,371 ea., $133,710.

Airborne Accessories Corp., 1414 Chestnut Ave., Hillside 5, N. J., boxes and actuators, $58,690; various assys. for F7U-3 aircraft, $222,684; motor for use on F9F-6, -6P aircraft, 349 ea., $137,469.

Bristol Co., Aircraft Equipment Div., Waterbury 20, Conn., controller for use on AD-4B, AD-4N, AD-4W and AD6 aircraft, 177 ea., $93,954.

Chelsea Clock Co., 284 Everett Ave., Chelsea 50, Mass., clock, 970 ea., $49,881.

Douglas Aircraft Co., Inc., El Segundo Div., El Segundo, Calif., panel assemblies, $29,023.

Gladden Products Corp., 635 West Colorado Blvd., Glendale 4, Calif., cylinder assys. for various aircraft, $31,137.

Hewlett-Packard Co., 395 Page Mill Road, Palo Alto, Calif., signal generators, 44 ea., $29,654.

Hub Paint & Varnish Co., Inc., 47-38 Fifth St., L. I. City 1, N. Y., synthetic primer, 20,499 gal., $27,625.

Link Aviation, Inc., Hillcrest, Binghamton, N. Y., transformers, $96,653.

Niles Bement Pond Co., Chandler Evens Div., Charter Oak Blvd., West Hartford, Conn., services & material to repair, overhaul, modify carburetors, 148 ea., $200,028.

Roflan Co., Cor. Rte. 1 & Camp Meeting Rd., Topsfield, Mass., connector assys., electrical, $41,599.

Shultz Tool & Mfg. Co., 425 South Pine St., San Gabriel, Calif., fuel valves, $208,398.

Shielding, Inc., Norman Ave., P. O. Box 217, Riverside, N. J., cell-type screen room, Type 1, 8 ft. high, 10 ft. wide, 10 ft. long, 60 ea., $132,900.

Suprenant Mfg. Co., 199 Washington St., Boston, cable, Type MIL-W-5086 AN000, 44,500 ft., $27,590.

Tech-Tron Corp., 1716 Holmes St., Kansas City, Mo., test racks for AN/AIC4 equipment, $33,518.

Transco Products, Inc., 12210 Nebraska Ave., Los Angeles 25, Calif., relays for use on AD-5N and WV-2 aircraft, 225 ea., $41,771.

Turco Products, Inc., 95 Fairmount Ave., Philadelphia, developer, $38,172.

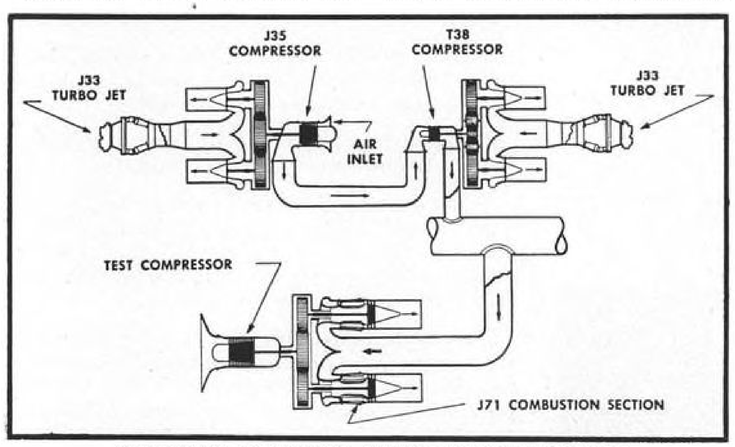
U. S. Electrical Motors, Inc., 200 E. Slauson Ave., Los Angeles, motors and spare parts for use on P5M-1 aircraft, 52 ea., $30,969.

United Aircraft Corp., Pratt & Whitney Aircraft Div., East Hartford 8, Conn., spare parts for support of P&W engines, $58,565; $134,179; P&W R4360 series engine spares, $272,928; spare parts for use on P&W aircraft engines, $254,921; spare parts for P&W engines, $69,712; spare parts for support of J48-P-5 engines, $39,250; spare parts for support of P&W engines, $128,-114; P&W spare parts, $65,562; spare parts for support of P&W engines, 526 ea., $1,181,033; spare parts for P&W R985AN1 and AN3 engines, $63,452; P&W spare parts for overhaul and maintenance, $74,811; spare parts for P&W engines, 3,047 ea., $64,078; $182,313; spare parts for support of P&W engines, $1,532,588; $242,552; spare parts for use on P&W aircraft engines, $304,030.

Weber Aircraft Corp., 2820 Ontario St., Burbank, Calif., aircraft servicing platform, 44 ea., $28,996.

Western Gear Works, Box 192, Lynwood, Calif., actuators for P2V-5, -6 aircraft, 197 ea., $95,018.

Weston Electrical Instrument Corp., c/o Joralemon, Craig & Company, 101 N. 33rd St., Philadelphia 4, indicator, thermometer cylinder head and spare parts, $96 ea., $43,602.



ALLISON'S 40,000-HP. COMPRESSOR TESTER

This drawing shows how Allison Division of General Motors solved the problem of providing enough power to test components of large jet engines like the new J71. Company engineers decided they could utilize parts of various Allison engines and rig a plant to provide the 40,000 hp. needed. As depicted, the set-up begins with a J33 jet engine. This supplies exhaust gases that drive two turbines geared to a J35 turbojet. A second J33 drives a T38 turboprop engine compressor providing a second air compression stage. Four groups of units like this one team up to give sufficient air pressure to satisfy two J71 engine combustion and turbine sections. Each J71 turbine delivers 20,000 hp. By gearing them, the needed 40,000 hp. is furnished.

USAF Contracts

Following is a list of recent USAF contracts announced by Air Materiel Command.

R. C. Allen Business Machines, Inc., 678 Front Ave. N.W., Grand Rapids, Mich., indicators, 283 ea., 15,251 ea., 605 ea., $1,137,760.

Allison Div., General Motors Corp., Indianapolis, spare parts & maintenance tools & training parts, $3,031,602.

Bendix Products Div., Bendix Aviation Corp., South Bend, Ind., wheel assy., 500 ea., $37,345; wheel assys., brake assys., wheel assys., 198 ea., 198 ea., 99 ea., $668,-004.

Brown-Neil Corp., Clarksburg, W. Va., fire extinguishers, $260,411.

Burton-Rodgers, Inc., Blade & Helen Sts., Cincinnati, spare parts for A-6 bomb trainer, $89,048.

Cathedral Films, Inc., 140 N. Hollywood Way, Burbank, Calif., projection prints, 28 ea., 28 ea., 28 ea., $33,143.

De Jur Amsco Corp., 45-01 Northern Blvd., Long Island City, N. Y., exposure meter, 2,001 ea., $33,298.

Dittmore & Friemuth Co., 2517 E. Norwich St., Cudahy, Wis., reflector, radar, 9,413 ea., $39,158.

Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J., indicator, data, 91 ea., set, $52,887; Type L-R regulator, 151 ea., 15 ea., 66 ea., $54,654; generators & spare parts, 2,000 ea., $1,206,575; generator, 6,535 ea., $1,192 ea., 173 ea., $293,540.

Eicor, Inc., 1501 W. Congress St., Chicago, inverter, data, 1,022 ea., $82,569.

Electronic Div., Curtiss-Wright Corp., Carlstadt, N. J., spare parts for C-97A simulator, lot, $183,398.

Fairchild Camera & Instrument Corp., Robbins Lane, L. I., N. Y., spare parts and tech. data for C-1A magazine, component of O-15 radar recording camera system, $89,200.

Fairchild Camera & Instrument Corp., Robbins Lane, Syosset, L. I., N. Y., camera, spare parts, 137 ea., $172,918.

General Electric Co., 1 River Rd., Schenectady, N. Y., generators, 216 ea., 21 ea., 196 ea., $205,336; brush assys., 46,020 ea., $50,668.

B. F. Goodrich Co., 803-4 Winters Bank Bldg., Dayton, wheel assy., 61 ea., 73 ea., 73 ea., $33,885; wheel assys., 400 ea., 400 ea., $1,434,728.

Goodyear Tire & Rubber Co., Inc., 1144 E. Market St., Akron, wheel assys., brake assys., brake assys., 73 ea., 188 ea., 76 ea., $421,456; wheels assy., 500 ea., 750 ea., 250 ea., $539,471; retaining ring, $32,929; brake assy., wheel assy., brake assy., 48 ea., 36 ea., 36 ea., $51,665; wheel assys., brake assys., brake assys., 138 ea., 145 ea., 50 ea., $1,360,995.

Graybar Electric Co., Inc., 552-42 W. Monument Ave., Dayton, light assy., 8,730 ea., 150 ea., 7,104 ea., $44,117.

Grimes Mfg. Co., Urbana, Ohio, light assy., light panel, 4,198 ea., 31 ea., $29,443.

Handley Brown Heater Co., 2501 Brooklyn Rd., Jackson, Mich., rack-bomb, aircraft, 2 ea., 10 ea., engineering design & data, 1 set, $25,387.

James Heddon's Sons, West St., Dowagiac, Mich., Kite, 2,257 ea., $33,967.

Jack & Heintz, Inc., Cleveland, panel, control generator, 1,240 ea., 274 ea., 1,682 ea., $774,597; generators, 2,480 ea., 255 ea., 1,195 ea., $1,582,537; generators, 240 ea., 2 ea., 24 ea., $206,449; generators, 510 ea., 107 ea., 506 ea., $480,073.

Johnson Fare Box Co., 4619 Ravenswood Ave., Chicago, spare parts for charger, 20 mm, $158,332.

Kollsman Instrument Corp., Elmhurst, L. I., N. Y., indicator, 1,101 ea., 56 ea., 386 ea., $76,577.

Lear, Inc., 110 Ionia Ave., N. W., Grand Rapids, Mich., flexible shafts, actuators, siren jacks, $174,206.

Master Vibrator Co., 108 Davis Ave., Dayton, trailer-mounted generators, spare parts, 54 ea., 1 lot, $119,556.

Lewis Engineering Co., 339 Church St., Naugatuck, Conn., temperature indicator, 1,310 ea., $52,286.

Lockheed Aircraft Service, Inc., PO Box 48, 4207 Empire Ave., Burbank, Calif., installation of ejection seats in T-33 aircraft, 205 ea., $1,230,000.

Lion Uniform Co., 44 Webb St., Dayton, suit, flying, 22,360 each, $263,320.

Weber Sportswear, Inc., 58-64 Renwick St., Newburgh, N. Y., jacket, 11,638 each, $219,260.

Wollensak Optical Co., 850 Hudson Ave., Rochester 21, N. Y., lens assys., $36,094.

North American Philips Co., Inc., 100 E. 42nd St., New York, remote tuning assy., includes spare parts, 232 ea., $62,360.

Radioplane Co., 8000 Woodley Ave., Van Nuys, Calif., spare parts for aerial target, starter and launcher, $28,022.

Reading Batteries, Inc., Reading, Pa., battery, aircraft storage, 360 ea., 207 ea., $29,097.

Recordak Corp., 4444 Madison Ave., New York, camera, microfile, 20 ea., 31 ea., $97,706.

Republic Aviation Corp., Farmingdale, L. I., N. Y., special tools & ground handling equipment, $298,400.

Scintilla Magneto Div., Bendix Aviation Corp., Sidney, N. Y., ignition, magneto, $29,381.

Scott Aviation Corp., Lancaster, N. Y., oxygen regulator, maintenance data, 1,000 ea., 2,100 ea., 1 ea., $304,548.

Northrop's Schmued: We'll Take Jet Lead

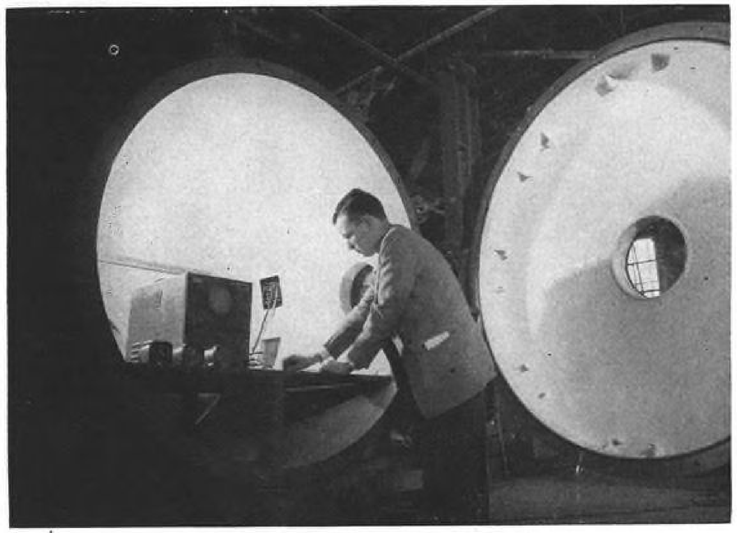
A top U.S. aircraft engineer believes that the high cost of operating present-day jets will require an increase in fares that will be resisted by businessmen who do their traveling by air for their companies.

For this reason Edgar Schmued, vice president-engineering of Northrop Aircraft, Inc., doesn't expect to see jet liners flying the U.S. on regular schedules until operating costs have been reduced.

He notes that a modern turbojet airliner carrying a practical payload must make two stops on coast-to-coast runs. Piston-engine transports can make the hop with only one stop. Thus the jet's flight speed advantage is cut to only an hour or two over the conventional plane, he says.

Schmued is optimistic about America's chances of catching up with the British in jet transports and eventually overtaking them.

"Anytime U.S. manufacturers are called upon to build jet-powered transports, they will be able to build better ones than the British have produced. U.S. experience in building jet fighters and bombers has provided a backlog of experience that will enable this country rapidly to overcome any lead built up overseas," he believes.



MARTIN TORTURE CHAMBER

This high-altitude test chamber is only part of the picture of Glenn L. Martin's extensive environmental test setup installed primarily by Bowser Technical Refrigeration, Terryville, Conn. The laboratory is designed to pace components through a rugged proving course of jolting extremes. Equipment is subjected to the effects of ice and snow, altitudes to 100,000 ft., temperatures from —100F. to 160F with simulated desert sand and duststorms, or tropical rains and 95% humidity and attack by fungi, or the sea and corroding salt spray, plus a good shaking in the vibration machine. In this picture an oscilloscope is readied for "ascent" to 20-mile altitude.

WHAT'S NEW

New Books

The Aviation Week Airport Directory, 1953, 21st edition. Published by McGraw-Hill Publishing Co., Inc., 330 W. 42nd St., New York 36, N. Y., 258 pages plus aeronautical planning chart of the U. S.; price $3 in U. S. and Possessions, $6 elsewhere.

Latest version of this 5½ x 8½-in. detailed guide to U. S. airport and seaplane facilities contains in addition numerous bits of flying information for the private or business pilot, including names of state aviation officials, international aviation vocabulary, state taxes levied on avgas, refunds and exemptions, and ground-to-air emergency code distress signals.

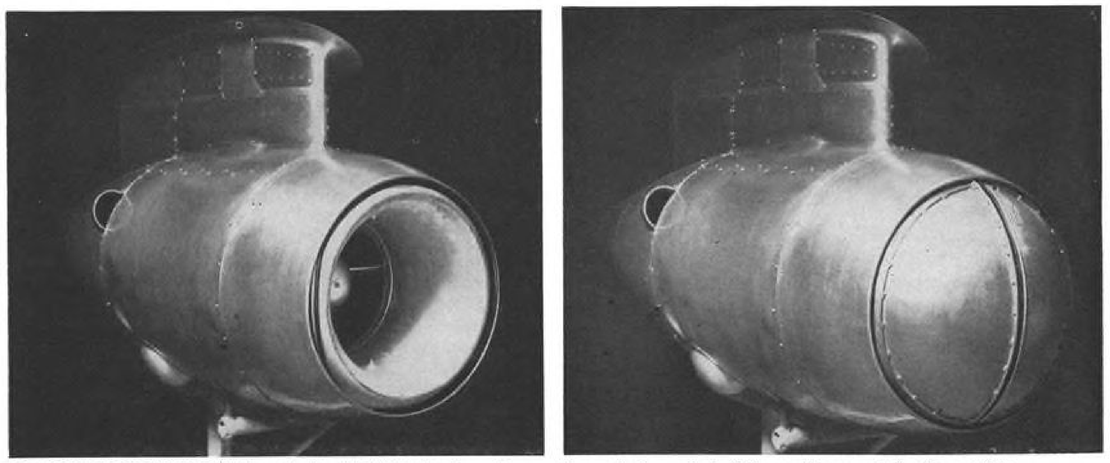
The decline of airports is indicated by the number of listings in successive volumes: The 1953 edition contains a total of 6,486 facilities; the 1952 volume carried 6,543; in 1951 there were 6,794 entries, and in 1950 there were 7,124.—EJB.

Telling the Market

Pneumatic temperature control Model 107614 for aircraft (operates around preselected values) is described and performance data is given in Bulletin 2-6-1 obtainable from AiResearch Mfg. Co., Los Angeles, Calif. . . . **Gear motors** rated from 1/6th to 200 hp. are described with cutaway photos in 16-page Bulletin GEA-1437H being distributed by General Electric Co., Schenectady 5, N. Y. Data on **industrial soldering irons and tips** are contained in Bulletin GEA-4519 available from the same firm. . . . **Standard and special types of tools**, including sensory torque wrenches, spring testers and reamers, are described in 128-page catalog available from Cornwell Quality Tools Co., 1007 Cleveland Ave., Mogadore, Ohio.

Press brakes are described in catalog B-4 obtainable from Cincinnati Shaper Co., Cincinnati 25, Ohio. . . . **Stainless steel electrodes** of two types (lime-coated for all-position welding with d.c. reverse-polarity, and for welding chrome-nickel steels with all types of a.c. or d.c. welding equipment) are described in Bulletin AR53-16 put out by Alloy Rods Co., York, Pa. . . . **Rubberized abrasives** for burring, smoothing and polishing operations are covered in Catalog 30 being distributed by Cratex Mfg. Co., 81 Natoma St., San Francisco 5, Calif. Included in the catalog are wheel, point, block, stick and cone types.

EQUIPMENT



EL AL'S AUXILIARY JET closes its "eyelid" (right) to keep inoperative unit from windmilling and keep out foreign matter.

Jet Units May Raise C-46 Profitability

- **El Al expects twin Marbore 2s to raise weight limit of its five Commandos to 54,000 lb., boosting payload.**
- **Auxiliary engines also should improve takeoff safety; carrier will make installation available to others.**

By George L. Christian

El Al Israel Airlines expects to boost both the takeoff safety and payload of its five C-46s by installation of an auxiliary twin-jet powerplant on the belly of the planes (AVIATION WEEK July 27, p. 56).

The engines—Turbomeca Marbore 2 turbines—will enable operators to boost C-46 takeoff weight by about 10,000 lb. to the craft's maximum structural weight of 54,000 lb., El Al officials believe. This will transform the Commando from a marginal money-maker into a very profitable aircraft, they say.

▶ **Advantages**—Among the benefits the auxiliary powerplant can provide:

- **Safer takeoffs with heavy loads** from hot or high fields, especially in case of main engine failure.
- **Shorter takeoff runs.**
- **Faster rates of climb.**
- **Higher possible cruising speeds.**
- **Greater power** in case of severe icing condition.

The Marbores will be mounted side-by-side under the belly cargo compartment in individual streamlined pods. In previous installations, a different arrangement was used. Varig, the Brazilian airline, mounted its two jets well outboard of the engine nacelles; Flying Tigers used a single unit slung under the belly.

The only penalties imposed by the jet power boosters are a speed reduction of approximately 2 mph. and a weight penalty of 425 lb. per pod, El Al says.

▶ **Tests in France**—The prototype jet power boost was recently shipped from El Al's engine buildup shop, near New York International Airport, where it was assembled, to Turbomeca's plant in Bordes, France. There it will undergo windtunnel tests to check its icing characteristics and other phenomena. The Turbomeca tests should take 2 to 3 weeks, after which the unit will be sent to Israel to be installed on a C-46 and put through a series of flight tests.

▶ **Outside Market**—Currently, El Al is assembling ten power pods for its fleet of five aircraft. If flight tests prove that units are as efficient as current calculations indicate, El Al officials say they will make the installation available to civilian and military operators alike.

The pods will be completely interchangeable and will be adaptable to almost any type of plane. Rough price estimate of one pod, complete and ready to install is $25,000.

El Al says that Ethiopian Airlines has already expressed interest in the installation. Addis Ababa is 8,000 ft. high.

▶ **Why the Marbore**—El Al gave these reasons for selecting the Marbore 2: simplicity of design, excellent performance characteristics, and long overhaul period—about 600 hr.

Marbore 2 statistics: dry weight—290 lb.; specific fuel consumption—170 gpm. at takeoff power, 133 gpm. at maximum continuous power; and static trust—880 lb.

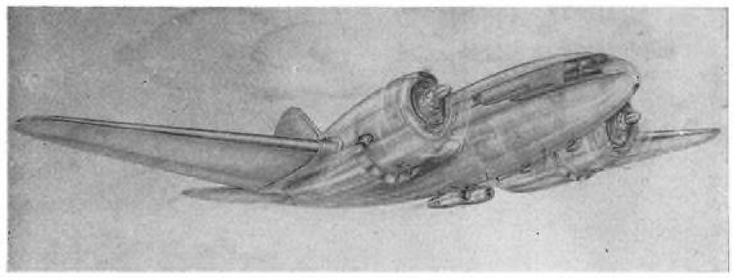
Continental Aviation & Engineering Corp., which builds the Marbore under license from the French firm, Societe Turbomeca, has gotten more than 1,000-lb. thrust out of the Marbore 2, company officials have told AVIATION WEEK.

An afterburner is available which will increase the engine's thrust to 1,375 lb.

▶ **Design Features**—The entire pod and installation design of the El Al unit was done by Erich Schatzki, aeronautical mechanical design and development consultant. Schatzki claims considerable aeronautic experience. He flew for and later became chief engineer of Deutsche Lufthansa, the German airline; he was at one time chief engineer of Fokker Aircraft Corp., and later, design and development engineer for Republic Aviation Corp.

In designing the El Al installation, Schatzki and his associates aimed at accessibility, ease of maintenance and inspection, interchangeability and mass production. They appear to have succeeded.

The pod's cowling is made up of large pieces, to make the jet engine as accessible as possible. Airloc fasteners



HERE'S HOW El Al's C-46s will look when auxiliary twin jet pods are added.

facilitate quick removal and installation.

Two louvers on either side of the after-cowling serve to draw in air to cool the tailpipe.

▶ **Attachment Details**—The pod is held to the C-46 wing through a sturdy aluminum engine support that is attched by drilling out existing rivets from the plane's wing and replacing them with bolts. The supports may be installed through existing access doors, thus eliminating the cutting of access panels.

The support and the upper part of its streamlined housing are permanently attached to the aircraft. The jet engine, with its pod and the lower part of the streamlined housing or pylon, is joined to the support with two suspension points and a tie rod. Three electrical connections and three fluid connections (fuel, anti-icing and CO_2 fire extinguisher) complete the installation. Schatzki says with this arrangement, engine change time is ten minutes.

Engines were mounted near the center of gravity of the aircraft and close to its centerline to eliminate any yawing effects should one engine fail.

▶ **Eyelids and Interlocks**—Hemispherical, electrically operated "eyelids" are mounted at the pod's air intake. They remain closed whenever the jet is inoperative to prevent it from windmilling and to keep out foreign matter.

An electrical interlock is used to:

- **Prevent engine from being started** when eyelids are closed.
- **Prevent eyelids from being closed** when engine is operating (otherwise eyelids would probably be sucked into the engine).

Eyelids take 2½ seconds to open or close and are stopped in the extreme positions by Microswitches. Drive is a surplus B-24 cowl flap motor and screwjack. This actuator was used because it was immediately available and cost was low.

The eyelids are provided with deicing lines (tied in to the prop de-icing system) running around their periphery. El Al is studying possibility of using Goodyear heated rubber de-icer boots.

Schatzki has an interesting three-in-one combination on the nose of his pod. The jet engine's air intake duct serves also as oil tank and oil cooler. The annular component has a filler neck at one side.

Total capacity is seven U. S. gallons, of which 3½ are for oil, the rest for foaming space.

▶ **Engine Controls**—The jet engine is started electrically by pushing a button in the cockpit. Starting time is about 20 sec. A new tailpipe temperature control automatically reduces fuel flow to the engine if tailpipe temperatures becomes excessive. Normal operating temperature is 1,200 F.

System controls include two fuel shutoff devices, electrical and manual; a fire extinguishing system which is independent of the aircraft's system; and eyelid opening and closing controls.

▶ **How Project Started**—Schatzki was given the assignment to develop and design the pod as a result of an investigation by El Al's deputy managing director, Yoel Palgi who was investigating the best way to increase the C-46's payload and make the aircraft safer in case of engine failure at takeoff.

Starting last January, Schatzki had the unit completed in June. Much of the metal work was subcontracted to three Long Islands firms. Aero Trades in Mineola, Schneider Hechtl in Garden City and Ledcote in Long Island City.

Schatzki also developed a stand that allows the jet engine to be wheeled under the aircraft, attached, and the stand removed without having to button up any of the pod's cowling. Stand may be raised or lowered hydraulically to position pod.

Stratocruiser Engine Conversion Pays Off

Flight experience so far shows that the R4360 engine conversion program at Northwest Orient Airlines has paid off in improved powerplant reliability, NWA reports.

In June 1952, the airline began converting Model B-3 engines in its 10 Stratocruisers to the B-6 version, with heavier power section, stronger reduction gearing and low-tension ignition system. All the conversions have been made and, with the first of the B-6s in operation a little more than a year, NWA says evidence in favor of the B-6 is convincing.

Several months will be required for a complete, analytical comparison of the two engines, but Northwest's first report on the converted powerplant claims that operating hours per engine failure have increased 101%. Engine operating hours per premature removal have increased 70.5%, it is said.

The low-tension ignition system in the B-6 has boosted sparkplug performance so that NWA now operates 550 hr. between plug changes. With the old high-tension system of the B-3, the carrier reports it was obliged to schedule sparkplug changes every 200 hr. At times, it says, the scheduled changes were as frequent as every 100 hr.

Power limitations are the same on the B-6 an B-3 so far as takeoff, METO power and maximum cruise horsepower are concerned.

Cost of converting 63 B-3s was $460,000—covering labor, ignition systems and other components; $1.8 million worth of engine parts were furnished by Pratt & Whitney.

OFF THE LINE

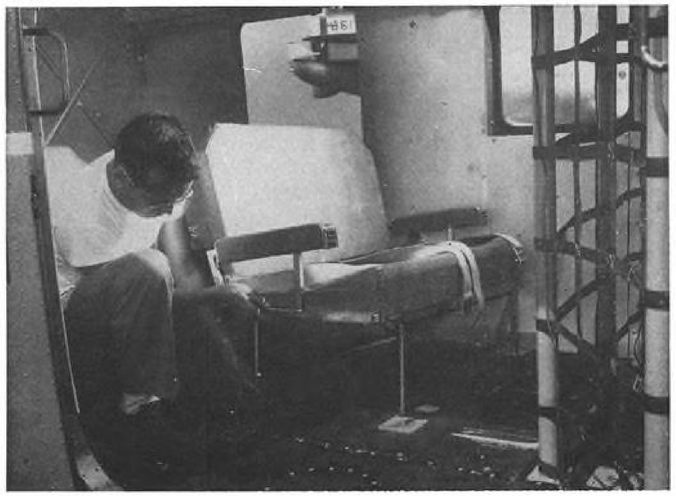
Queen Charlotte Airlines sold 5½ Avro Anson Mark Vs to Aerovias Ecuatorians (the one-half was an unserviceable plane destined for cannibalization).

American Airlines will install dual VOR navigational equipment in its entire fleet of DC-6s and Convairs. Manufactured by Collins Radio Co., Cedar Rapids, the VHF equipment bought by American includes the 51R VOR receiver, 51V glide slope receivers and instrumentation systems. AA has also ordered a number of 17M-1 (360-channel) VHF transmitters and 37-1 airborne VHF antennas to replace all ARC-1 communications sets in its fleet, according to Collins.

Two new military contracts to retread aircraft tires have been received by Thompson Aircraft Tire Co., the San Francisco firm reports. One is from USAF, the other, from the Royal Canadian Air Force.

Flight Equipment & Engineering Corp. reports it has been awarded a contract for 1,500-2,000 aircraft seats to go in Boeing C-97s being modified by Temco Aircraft Co. The seats may be folded upward against the cabin walls for quick conversion of any part of the

Aviation Week Picture Brief



NYA Makes Room for People

New York Airways' five Sikorsky S-55 helicopters were converted from freight to passenger-freight craft recently by Lockheed Aircraft Service-International in its shops at New York International Airport. It took 550 man-hours and about $7,000 per machine. Above, LASI mechanic clamps seat (made by Flight Equipment and Engineering Co.) into floor fitting. Right, mechanic sets cargo gate posts in position. Below, boarding converted copter for first scheduled passenger flight in New York area: (l to r.) Robert L. Cummings, president of NYA; Robert B. Murray, Jr., U. S. Undersecretary of Commerce; Charles E. Rosendahl, USN (Ret.), lighter-than-air expert and executive director of National Air Transport Coordination Committee; Robert Moses, N. Y. park commissioner.

aircraft from passenger to cargo use. New Navy contracts bring Flight Equipment's military backlog to well over $800,000 the Miami, Fla., company reports.

Navy's Bureau of Aeronautics has purchased a Fairchild Analyzer Camera (described in AVIATION WEEK June 8, p. 55).

Civil Aeronautics Administration has approved Arnold Greene & Co. as a certified magnetic (Magnaflux), fluorescent penetrant (Zyglo), and X-ray inspection depot for aircraft and aircraft engine parts, according to the company. Firm says it is the first to be so approved in the New England area. Address: 164 Hampshire Street, Cambridge, Mass.

Hardman Tool and Engineering Co. reports its Siesta seats will be standard equipment on the 10 DC-7s purchased by Delta-C&S Airlines. Seats are stressed to take unusually high loads.

Goodyear Nylon Pliocel fuel bags have been installed in a Lockheed Lodestar by AiResearch Aviation Service Co., Los Angeles. The installation, in one of Goodyear's own Lodestars, is expected to cut maintenance costs and reduce fire hazards from leaks that usually occur with integral wing tanks. Replacing the integral tanks with the Nylon Pliocel bags and adding an extra bag in the outer wing panel increases the Lodestar's fuel capacity to 670 gal. An additional 850 gal. may be had by installing three more bags in outer wing panels, AiResearch says.

Australian Carrier Plans Fleet Expansion

(McGraw-Hill World News)

Melbourne—Australian National Airways—this country's pioneer and largest air carrier—is planning to replace its DC-3 passenger transports and expand air cargo operations in an effort to compete effectively with the government-owned Trans-Australia Airlines.

The expansion plans indicate ANA is recovering from the burden of competition it had suffered from Trans-Australia.

The order from the government to TAA last year to operate on a more business-like basis and its move to equalize conditions between the carriers came at a time when Australia National was beginning to find its rival's competition painful.

▶ **Hermes Possibility**—ANA sources report the carrier may purchase six of British Overseas Airways Corp.'s four-engine Handley Page Hermes 4s, strip the 40-seat transports of luxury fittings and increase their passenger capacity for domestic routes.

ANA has been interested in Bristol Britannias, but Australian experts say the turboprop transport may prove to be uneconomical on domestic routes. Officials of the airline express doubts that the cargo potential of Britannias is adequate for Australian needs.

There is a tendency within ANA, the sources say, to wait for Bristol to produce another version of the Britannia and to operate until then with Hermes 4s, DC-4s and Bristol 170 Freighters.

But Australian National still has not placed any definite orders, despite sales of three of its DC-3s in recent weeks.

Observers report that the carrier will be forced to make definite decisions in the near future, pushed by the fear that TAA will be able to take delivery next year of six turboprop Vickers Viscounts.

▶ **Air Ceylon DC-4s**—Australian National's fleet problem may be solved to some degree at the end of September, when ANA-operated Air Ceylon is scheduled to cease operations because of financial losses which it has incurred in flying international routes to London.

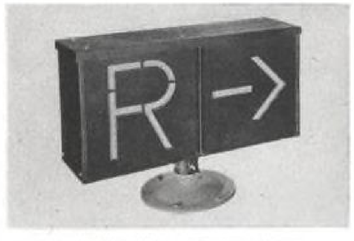
The parent airline is expected to take over Air Ceylon's DC-4s for freight and passenger flights on intra-Australian routes.

New African Terminal

(McGraw-Hill World News)

Geneva—A large new international airport capable of handling planes up to 40 tons is slated for completion before the end of this year at Luanda, Angola, Portuguese Africa. Its main runway will be approximately 7,000 ft. long and 200 ft. wide.

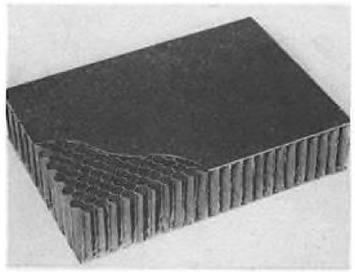
Installation of the latest equipment is planned.



TAXIWAY SIGNPOST

Crouse-Hinds Co., Syracuse, N. Y., has devised a system of airport signposts to direct aircraft from taxiways and intersections to hangars, ramps and loading gates. The 20-in.-high signs are built to breakoff at the slightest contact with an aircraft. Installation costs are low, because the aluminum units are designed for mounting on standard C-H taxi light bases (Type ERL).

NEW AVIATION PRODUCTS



Douglas Puts Honeycomb Panels on Open Market

Douglas Aircraft Co. has entered a new market—manufacture and sale of Aircomb honeycomb core panels for use by construction and other industries.

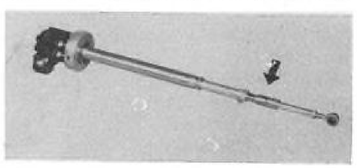
Douglas is producing Aircomb at a separate plant (65,000 sq. ft.) at Bell, Calif. Current output of 500,000 board feet is expected to reach 2 million feet within a year, with employment rising from 100 to 500 workers.

Aircomb is a resin-impregnated kraft paper honeycomb that sandwiches between metal, wood or plastic facings, providing a structure with a high strength-weight ratio, Douglas claims.

The product was developed in 1946 but until now was used almost exclusively by Douglas for its own manufacturing needs. The company plans to sell the panels in bulk wholesale lots to industries not related to aviation but intends to retain manufacture of aircraft end items employing the panels.

The company has used them in construction of guided missile fins, wings, cargo containers, pallets, floors, baggage racks and ceilings.

A piece of steel of equal rigidity would weigh 16 times as much, aluminum 10 times more, Douglas says. In addition to high strength-weight characteristics, Aircomb panels are durable, fire and pest resistant and are said to have excellent insulation and soundproofing qualities.



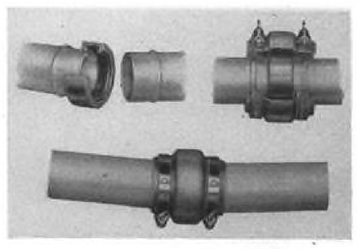
Disconnect Detaches With Pull and Twist

Durham Aircraft Service is marketing a quick-disconnect for actuator rods that can be detached with a pull and twist.

The stainless steel device is used on screwjack rods made by Lear, Inc. It eliminates dismantling rod ends and enables them to be reconnected without adjustment. The unit is installed on the cowl flap actuators of Fairchild C-119 Packets.

The device simplifies work in crowded installations and has been approved by Air Force and Civil Aeronautics Administration, Durham says.

Durham Aircraft Service, Inc., 56-17 Northern Blvd., Woodside 77, N. Y.



Flexible Connectors Permit Tubing Misalignment

Flexible fluid line connectors for aircraft tubing that permit a 4-deg. misalignment are being produced under license from Northrop Aircraft by Rubber Teck, Inc.

The design is said to reduce coupling weight by 75%, and permits quick disassembly and assembly. The connectors can be used with tubing from 1 to 4½ in. o.d.

The connectors are said to meet or surpass all requirements of NAS512 specifications, including fuel resistance, temperatures from −65 to 160F, and pressures from 160 psig. to 28½ in. Hg vacuum.

The beaded tube ends of the connectors are joined with a seal assembly molded from special Rubber Teck compound, applied to one end of the tube. The connection is secured by a clamp assembly with two hose clamps riveted to the body.

Rubber Teck Inc., Gardena, Calif.

New Variable Scale Gives Engineers Fast Answers

Faster answers and many new and valuable shortcuts in reducing the mass of graphical-numerical data involved in aviation research, development and test activities are claimed possible with Gerber Scientific Co.'s engineering aid, the GraphAnalogue.

This timesaver is described as a greatly improved version of the company's earlier Model A Variable Scale (AVIATION WEEK June 16, 1952, p. 38).

Like the Model A, the new computer performs calculations directly on graphs, curves, recordings and other numerical presentations. It has the same coil-spring expanding scale whose coils can be extended to any increment spacing desired and moved over the chart for direct reading, measuring and graphic plotting.

The GraphAnalogue has 18 scales (compared to two for the Model A) permanently inscribed on its face for use in conjunction with the expandable scale, including those for logarithmic, probability, trigonometric, power, linear and reciprocal computations.

► **Direct Non-Linear Answers**—The new device handles non-linear functions directly, something never done before in a tool of this kind, according to H. J. Gerber, developer of the variable-scale device.

Special graph paper inserts, supplied in pads, can be placed on the face of the instrument and odd data superimposed, allowing the user to work with virtually any arbitrary function. This makes it useful in reading oscillogram or telemetering curves where a non-linear calibration is necessary, Gerber notes. Nomograms can be plotted quickly and families of curves following any irregular pattern can be interpolated, Gerber says.

Gerber Scientific Instrument Co., Hartford 3, Conn.

One-Hand Gage Checks Wide Range of Tensions

A one-hand gage that checks spring tensions or resistive forces from 4 to 2,500 grams has been developed by General Electric Co., Ltd., England.

The gage is preset to the required tension by means of a knurled micrometer screw. End of the gage operating strip is applied to the point where opposing force is to be checked. Deflection of the operating strip in conjunction with movement of the resisting element indicates the opposing force is equal to the gage setting.

The calibrated gages have zero correction. Knife-edge bearings provide negligible friction, and gravitational effects are counter-balanced, the maker notes.

There are six gage models available covering the following ranges in grams: 4-24, 10-80, 50-250, 100-500, 200-1,600 and 500-2,500.

Imtra Corp., 58 Charles St., Cambridge, Mass.

ALSO ON THE MARKET

Redesigned variable speed changers can be remotely actuated to vary speed of output shaft from 1/5 to 5 times that of the input shaft by means of spur, miter or worm gear controls, or by directly connecting speed control on unit to flexible or extended shaft. Speed changers weigh 6 oz., can be used in recording, regulating, flow control, scanning systems and the like.—Metron Instrument Co., 432 Lincoln St., Denver 3.

Space-saving relay, DPDT type built to operate under 70G accelerations and continuous vibration from 10 to 600 cps., exceeds requirements of MIL-R-5757B. Unit passes 100,000-c. life tests with contacts operating under rated load (2 amp. with 26.5-v. d.c. resistance load) at 12 cycles/min., maker says. The unit is available with coil resistance up to 25,000 ohms; input coil power required for regular operation is less than 0.325 watts.—Deltronic Corp., 9010 Bellanca Ave., Los Angeles 45, Calif.

Self-propelled sweeper has replaced entire broom crew at Pittsburgh's Municipal Airport. New automatic unit vacuums, cuts up and bags debris on airport ramps and grounds.—Atwater Strong Co., Atwater, Ohio.

Flexoid Silentbloc couplings permit maximum angular and parallel misalignment and reduce shaft pressure on support bearings in vertically mounted motor installations through "unusual" arrangement of rubber bushings in coupling. Motor can be lifted out vertically without removal of nuts and bolts. Designed to insure quiet operation.—Smith Power Transmission Co., 1545 E. 23 St., Cleveland 14, Ohio.

Ball and disk integrater—a computer element—can be used as closed loop servo element, as accurate variable speed drive or precision integrating mechanism for totalizing rate determination and differential analyzing. Low weight and high accuracy are claimed for the unit. It is enclosed in aluminum alloy case.—Librascope, Inc., 1607 Flower St., Glendale, Calif.

Self-aligning airframe control bearings allow 20-deg. misalignment with positive stops at extremes. Simply constructed, they are designed to give longer life and eliminate inaccuracies and deflections of built-up members.—Fafnir Bearing Co., New Britain, Conn.

Airflex 6904, clear plastic wire harness sheathing for avionic equipment and other uses in aircraft and guided missiles, provides high fungus- and abrasion-resistance and is designed to remain flexible at extremely low temperatures. Meets USAF Specification MIL-I-7444A.—Fibron Div., Irvington Varnish and Insulator Co., Irvington, N. Y.

CLASSIFIED SEARCHLIGHT SECTION ADVERTISING

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE
$1.50 a line, minimum 3 lines. To figure advance payment count 5 average words as a line.
POSITION WANTED & INDIVIDUAL SELLING OPPORTUNITY WANTED undisplayed advertising rate is one-half of above rate, payable in advance.

INFORMATION
BOX NUMBERS count 1 line additional in undisplayed ads.
DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

DISPLAYED RATE
The advertising rate is $15.65 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches to a page.

NEW ADVERTISEMENTS: Address 330 W. 42 St., N. Y. 36, N. Y., August 24th issue closing Aug. 13th A. W.

SKILLED
PILOTS
AVAILABLE
No Fee to Employers
PILOTS EMPLOYMENT AGENCY
Teterboro (N. J.) Airport
Hasbrouck Heights - 8-1091

PILOT POSITION WANTED
CAA ATR DC-6 DC-4 SINGLE MULTI-ENG LAND FLIGHT INSTRUCTOR Ratings. 14 yrs. flying experience—11 in Navy, 5000 hrs. Naval Air Transport on Pacific, Far East and Domestic routes in DC-3, DC-4, DC-6. 1200 hrs. Instrument Instructor in DC-4. 1500 hrs. Primary and Secondary Flight Instructor. Total—8500 hrs. Desires position as Company or Executive Pilot.
PW-8639, Aviation Week
68 Post St., San Francisco 4, Calif.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS WANTED

A and E Mechanic—Desires position with Corporation—Recent experience on Executive Aircraft—13 years in aviation including Airline, all Phases conversion and maintenance. Age 33—Married—Three children—Willing to relocate—Available now. PW-8575, Aviation Week.

SUPERINTENDENT OF Aviation Maintenance desires position. 25 years experience in commercial and military aircraft. Will go anywhere. Presently employed. PW-8662, Aviation Week.

PURCHASING AGENT, Experience with jobbers on Airframe and Power Plant, extensive Sources of Supply. Age 30, Married. PW-8603, Aviation Week.

EXPERIENCED EXECUTIVE Co-pilot, commercial and Instrument, land and sea, single, and multi-eng. A&E, 14 yrs. experience. Over 3,600 hrs, also DC-3 rating. PW-8705, Aviation Week.

SELLING OPPORTUNITIES WANTED

MFR'S REPR (Graduate Engineer) Will render sales & engineering. Liaison with Acft & Missile Manufacturers in Southern California vicinity, R&D experience. RA-8592, Aviation Week.

WILL REPRESENT exclusively, screw machine plant interested in large & small subcontracts from New York, Long Island, & Jersey's top aircraft & electronic manufacturers. Have extensive & loyal following. Now employed but seek expanded operation. Will only consider a sizeable firm of highest repute. RA-8772, Aviation Week.

FOR SALE

Twin Beech Model D18S. Serial #A-352 with hydromatics. 95 hours since engine, airframe, and prop instrumentation with Sperry C-2 Gyrosyn compass and H-3 electric horizon Dual Bendix ADF's, ARC-3 24 channel transceiver, ARC-5 omni and ILS, R89B Glide slope receiver, ARC-T11 VHF transmitter, command receiver, master radio panel, oxygen, hose tank, anti icers, aeroquipped, chrome slide tubes, nose light, super soundproofing, double cabin windows, cabin heat thermostatically controlled, thermos installation, clock and altimeter in cabin, 3 chairs, couch, cabin table. Always in our heated hangar, complete records available. Ohio Aviation Company (Beech Distributor) Dayton Municipal Airport, Vandalia, Ohio. Telephone: MO4-4646.

WANTED

Will Pay Cash for one or two F4U Corsair type Aircraft for Airshow work. Reply price and condition to W-8790, Aviation Week.

EMCO AIRCRAFT CORPORATION

Dallas, Texas *OFFERS*

ENGINEERS

and OTHER TECHNICAL PERSONNEL

GOOD POSITIONS IN

AERODYNAMICS
ARMAMENT
LOFTING
CONTROLS
STRUCTURES
FLIGHT TEST
ELECTRICAL INSTALLATION
POWER PLANT INSTALLATION
FLUTTER & VIBRATION
ANALOGUE & DIGITAL COMPUTERS
ENGINEERING PROCEDURES & PLANNING

EXCELLENT OPPORTUNITIES
HOUSING READILY AVAILABLE

ATTENTION ENGINEERING PERSONNEL

BOX 6191, DALLAS, TEXAS

Aviation Sales Executive

An established aircraft instrument and accessory manufacturer seeks a merchandising expert to market a new flight instrument of wide application in the airline executive transport and military markets. The man we are thinking of should be of high caliber with a thorough knowledge of aviation national distribution and military procurement. He should be able to point to a successful record in a similar line. Answer fully including salary requirements. Replies held strictly confidential.

SW-8403, Aviation Week
330 W. 42 St., New York 36, N. Y.

TOOL DESIGN
SUPERVISOR
Man capable of assuming complete charge of Tool Design Dept. and development of designers in lower classifications.

MECHANICAL ENGINEERS
Graduate or equivalent experience.

MANUFACTURING ENGINEERS
Fabrication & machining experience.

These are permanent openings with one of America's oldest and largest Mfg. Concerns. Salaries open. Give complete record of experience, education, age and salary requirements in first letter. Address G. R. Carmack, Supervisor of Employment

WESTINGHOUSE ELECTRIC CORPORATION
Box 288 Kansas City, Missouri

ENGINEERS DESIGNERS

ELECTRONIC SERVO

ELECTRO-MECHANICAL

AC QUALITY PRODUCTS

"AC" OFFERS
A Challenge to Men of Resourcefulness

FIELD ENGINEERS

● For recent college graduates, here are positions with a challenge —

ASSIGNMENT — you will assist in the installation, operation, and maintenance of our equipment at aircraft plants and Air Force bases. The work will include liaison between AC and the customer, training of customer personnel, analysis of problems, and recommendations for improvements. Many of these outstanding openings are one-year overseas assignments.

YOUR BACKGROUND — your educational background can be in any of the fields of AE, EE, ME, Physics, or equivalent. To be successful in these positions you should have a definite interest in people as individuals and be willing to relocate to field assignments. Single men given preference.

TRAINING — our theoretical and applied in-plant training (here in Milwaukee) will prepare you for these assignments. In addition to your salary, you will receive a field allowance—and a substantial bonus if selected for overseas assignment . . . if you're looking for an opportunity with a "present" and a *future* write us for further facts.

We need men of high caliber, experienced in the field of airborne automatic electro-mechanical control equipment. You will be engaged in the manufacture and development of highly complex equipment of the most advanced type in a steadily expanding division of our company—a division with 20 years of successful operation in the precision instrument field. We offer many advantages to those who join our organization—
SALARY increases are based on merit and initiative . . . two weeks VACATION with pay . . . HOSPITALIZATION BENEFITS . . . LIVING and RECREATIONAL FACILITIES are among the best anywhere along Lake Michigan . . . POSITIONS ARE PERMANENT due to long-range manufacturing and development programs . . . in short—here at our "AC" Milwaukee plant you get small company advancement opportunities with large company employe benefits . . . EXPENSES incident to interviews are all absorbed by us.
For less experienced engineering graduates, we have a Junior Engineer Training Program which makes it possible for you to become acquainted with all phases of our company . . . you can also take advantage of educational opportunities for advanced degrees at Marquette University and the University of Wisconsin.
We answer ALL inquiries . . . write or apply

AC SPARK PLUG DIVISION
GENERAL MOTORS CORPORATION
1925 E. KENILWORTH PLACE • MILWAUKEE 2, WISCONSIN

OPPORTUNITIES
FOR
AIRCRAFT ENGINEERS
AT
TULSA, OKLAHOMA

Air Conditioning	Liaison
Armament	Power Plant
Controls	Strength
Electronics	Structures
Hydraulics	Weights

Salary Dependent Upon Experience and Ability

Direct Inquiry to

J. L. JOHNSON
Engineering Personnel Manager

DOUGLAS

DOUGLAS AIRCRAFT COMPANY
Tulsa Division
TULSA, OKLAHOMA

ENGINEERS!

ADVANCED PROJECTS OPEN NEW CAREERS AT RYAN

★ Airframe Designers
★ Stress Analysts
★ Power Plant Engineers
★ Aerodynamicists
★ Electronic Engineers
★ Draftsmen and Loftsmen

Replies to Director of Engineering will be held in strict confidence

RYAN
AERONAUTICAL COMPANY
San Diego 12, California

SALES REPRESENTATIVE

Expanding aircraft instrument manufacturer has opening for an energetic salesman with a good working knowledge of aircraft distribution. Permanent position. Salary commensurate with ability and experience.

SW-8407, Aviation Week
330 W. 42 St., New York 36, N. Y.

Your Inquiries to Advertisers Will Have Special Value...

—for you—the advertiser—and the publisher, if you mention this publication. Advertisers value highly this evidence of the publication you read. Satisfied advertisers enable the publisher to secure more advertisers and—more advertisers mean more information on more products or better service—more value—to YOU.

DESIGN RESEARCH DEVELOPMENT

key words to your employment opportunities at GOODYEAR AIRCRAFT . . . pioneer and leader in lighter-than-air craft . . . an established and growing company building an outstanding technical reputation

DESIGN ENGINEERING opportunities exist in the fields of airships, airplanes, and components, airframes, power-plant installations, controls, hydraulics, electronics systems, fuel cells, canopies, and wheels and brakes

DEVELOPMENT of missiles, jet aircraft, and helicopters, electric and electronics system, servomechanisms, fiber resin laminates, and many other projects present an urgent need for capable engineers

WELDING ENGINEERS, civil engineers, mechanical engineers with ability in metals fabrication, and industrial engineers experienced in time study are needed. Job opportunities also exist for technical editors and illustrators

POSITIONS are open at several levels, and inquiries are also invited from recent graduates. Salaries are based on education, ability, and experience

PAID VACATIONS, free group life insurance, a good hospitalization plan, paid sick leave, company-sponsored pension plan, planned recreation, and free parking are among the facilities at the plant

A FRIENDLY CITY, Akron, Ohio, is located in the center of the midwestern industrial region

IF YOU ARE INTERESTED in a secure future, write, giving details, or request an application from

C. G. Jones, Salary Personnel Department

GOODYEAR AIRCRAFT CORPORATION, 1210 Massillon Road, Akron 15, Ohio

• For Sale •
OPTICAL INSTRUMENT PLANT

UNUSUAL OPPORTUNITY for ELECTRONIC or INSTRUMENT MANUFACTURER to EXPAND OPERATIONS and PROFITS

Presently manufacturing optical and metal components on Government Prime and AAAA sub-contracts. Present production $2,000,000 per year. Profits over 10%. Contains $200,000 worth of government equipment on lease. Fixed assets can be purchased for $100,000. Capable management and help will continue. First time offered.

BO-8675, Aviation Week
520 N. Michigan Ave., Chicago 11, Ill.

For Sale

500 US Stwart Warner Aircraft Super-Heaters 24V cased and new, ex USAF Nos. 780, 781, 789.

100 US Automatic Pilot Gyro Control Instruments, Bank and Climb and Directional, made by G.E.
100,000 US Glass and Metal Fuses (Little, Bussman, etc.)
100,000 US Aircraft Lamps (G.E. and Westinghouse Mazda)
Relays, Propeller Gauges and other Accessories.

SUPLEX LAMPS LTD.
239, High Holborn, London, W.C.1.
Cable: Suplexlamp London.

FOR SALE (by owner)
LOCKHEED LODESTAR

Check these features ! !

√ Flush Rivited
√ Large Door
√ 24 Volt System
√ Dual Fuel System
√ Down Locks
√ New De-Icer Boots Installed
√ Tanks Excellent Condition
√ Plushed Interior
√ No Corrosion

ENGINES R-1820-65
PRICE: *MAKE OFFER* (It must be sold)
DEAL DIRECT WITH THE OWNER
Phone Wire Write
WESTAIR, INC.
WHITE PLAINS, NEW YORK

EXECUTIVE AIRCRAFT
Complete Services
DOUGLAS BEECHCRAFT
Radios Engines Interiors
Conversion Sales Maintenance Parts
Lambert Field St. Louis, Mo.
REMMERT-WERNER, Inc.

IS YOUR PROBLEM RADIOGRAPHY?

We Sell Responsibility

X-Ray Inc. offers a complete certified radiographic laboratory service available at your location and on your premises or at our extensive laboratories, for handling the entire responsibility of x-ray inspection and control. Your inquiries will receive immediate attention.

X-RAY INCORPORATED
13931 OAKLAND, DEPT. 19
DETROIT 3, MICHIGAN
***Telephone* TOwnsend 9-5400**

CERAMIC COATINGS

APPLIED TO METAL ALLOYS FOR SPECIFIC QUALITIES

- HEAT RESISTANCE
- CORROSION RESISTANCE
- ABRASION RESISTANCE
- CHEMICAL RESISTANCE
- ELECTRICAL RESISTANCE
- STREAMLINE FLOW
- CLEANABILITY

For Development And Production Write To
BULWARK COMPANY
EL CAJON CALIFORNIA

FOR SALE
BEECHCRAFT C18S

Total Airframe Time: 1470 hours

Total Engine Time Since New Overhaul: L. H. 240 hours, R. H. 170 hours

Bendix ADF; ARC Omni and ILS; ARC VHF Communications Receiver; Two ARC T11A VHF Transmitters; Bendix HF Transmitter; Bendix Marker Receiver.

This aircraft has a new interior and is in oustanding condition throughout.

FS-8504, Aviation Week
330 W 42 St., New York 36, N. Y.

FOR SALE
NEW 1820-97 ENGINES CONVERTED TO 202A

Write for prices
NATIONAL SURPLUS SALES CO.
1810 Charlotte K. C. Mo.

FOR SALE
LOCKHEED 12-A

Excellent condition: low time engines; hydromatic propellers; A-3 Auto Pilot; good radio equipment and interior. Reasonable price, includes spare engine and parts. For full information write:
BAKER OIL TOOLS, INC.
P. O. Box 3048, Houston 1, Texas

- Center Section for C-47B Repairable
- Right Horizontal Stabilizer for C-47
- 1—C-47 Fuselage—Repairable

METEOR AIR TRANSPORT INC.
Teterboro Air Terminal, Teterboro, N. J.
Hasbrooks Hgts. 8-1755

Now Available . . . **LATEST ISSUE**
AN : AND : MS : NAF : NAS
Standard Parts Books
In 4 volumes—Each volume complete
Write for price and discount list
JOHNSON RESEARCH CORP.
Dept. 83, Bethpage, New York Hicksville 3-2210

At Your Service

—for bringing business needs or "opportunities" to the attention of men associated in executive, management, sales and responsible technical, engineering and operating capacities with the industries served by the following McGraw-Hill publications:

The SEARCHLIGHT SECTIONS of

(Classified Advertising)

American Machinist
Aviation Week
Business Week
Bus Transportation
Chemical Engineering
Chemical Week
Coal Age
Construction Methods & Equipment
Electrical Construction & Maintenance
Electrical Merchandising
Electrical World
Electronics
Engineering and Mining Journal
E. & M. J. Metals & Mineral Markets
Engineering News-Record
Factory Management and Maintenance
Fleet Owner
Food Engineering
Nucleonics
Power
Product Engineering
Textile World
Welding Engineer

For advertising rates or other information address the
Classified Advertising Division
McGRAW-HILL PUBLISHING CO., Inc.
330 West 42nd Street
New York 36, N. Y.

IMMEDIATE SALE
3 C-46's

(1) Completely sound - proofed plush interior with provision for 46 payloader seats. Galley and Toilet. Complete airline radio, VHF and Sperry automatic pilot.
Airframe T.T. — 1041:11
S.O. — 78:04
R2800-75 S.O. — 78:04

• •

(2) Cargo — T.T. 3052:09
S.O. 1849:09
Radio same as above and Engines
T.S.O. — 413:44

• •

(3) Cargo — T.T. 8773:40
S.O. 773:40
Rt.Eng.T.S.O. 297:49
Lt.Eng.T.S.O. 191:19
Radio same as above

• •

Immediately Available
Inspection invited.

GORDON SMITH & CO., INC.
51 East 42nd Street
New York 17, New York
MUrray Hill 2-9070

INSTRUMENTS

Authorized Factory Sales for and Service
*** Eclipse–Pioneer**
*** Kollsman**
*** U. S. Gauge**

C.A.A. Approved Repair Station #3564
Contractors to U. S. Air Force
Our stock of instruments is one of the largest in the East.
IMMEDIATE DELIVERY
CALL • WIRE • WRITE
INSTRUMENT ASSOCIATES
Telephone: Great Neck 4-1147
351 Great Neck Road, Great Neck, N. Y.
Telegraph: WUX Great Neck, N. Y.

For Sale
DC-4's—C-47's—Lodestars
Convair 240—Constellation
WESTAIR, Inc.
White Plains, N. Y.

R-2800's 31's-51's-75's

$3500.00 exchange

These engines are 00:00 time since C.A.A. approved overhaul and have had ACES C.A.A. approved outside in lubrication system blower to thrust plates incorporated. They have also been block tested in our modern test cells and have been prepared for long term storage

C.A.A. APPROVED OVERHAULS

- R-1830-92 ..... $3000.00 exchange
- R-985-ANI-3 ..... $1950.00 exchange

ALL WORK AND ENGINE SALES CARRY OUR 100 hr. WARRANTY

AIR CARRIER ENGINE SERVICE Inc.
C.A.A. Approved Repair Station No. 3604 Intl. Airport Branch P.O. Box 236, Miami 48, Florida
Cable "ACENGSER"

ACES AIR CARRIER ENGINE SERVICE, INC.

D-18-S TWIN BEECH

N-5869C, Serial # A-570

Total Airframe Time: 1295:00
Engines: Left 780:30 TSO—Right 277:25 TSO
Propellers: Hamilton Standard Full Feathering Hydromatic—Left 277:25—Right 277:25
Special Equipment: Anti-icing and de-icing equipment—Auxiliary Tank (80 gallon)—Windshield Wipers—Flares—"No Smoking"—Fasten Seat Belt" signs—Special factory paint—Pearl Grey and yellow with white stripe.—Heavy duty tail wheel tire & tubes—Two spare zero time engines
Aircraft Interior: 3 chairs and lounge—1 card table—Grey ladder-weave with solid green headliner—2 Thermoses
Radio Equipment: Lear Auto Pilot—Bendix ADF—Bendix MN-85 Omni Receiver and 280 Channels Crystal control—ARC-1 20 Channels Transceiver—Glide Path Receiver—Western Electric 3-light visual and audio marker receiver—ARC 5 Channel Transmitter—Isolation Amplifier—Custom RAS Overhead Control Panel—ARC Command Receiver—Dual Gyro Panel
Aircraft Exceptionally Well-Maintained:—One Corporation Owner.—Reason for Selling: Replacing with De Haviland "Dove"

AVAILABLE AFTER SEPTEMBER 1, 1953.
ASKING PRICE: $75,000

D-18-S TWIN BEECH

N-48Y, Serial # A-173

Total Airframe Time: 2900:00

Engines: P & W R-985—Left 600:00 TSOH—Right 235:00 TSOH—One spare zero time engine

Propellers: Hamilton Standard Full Feathering

Interior: 5 chairs (all reversible)—1 card table—Completely sound insulated—Green interior fabric including crew compartment—Curtains

Special Equipment: Windshield wipers—Control locks—Liquid dispenser—"No Smoking" sign—30 gallon Nose Tank

Radio Equipment: ARC-15 Omni—Low Freq. Transmitter & Receiver—3105 Command Transmitter—VHF Transmitter (ARC)

Airplane Exterior: Painted light green with dark green trim, white piping, white cabin top.

AIR CRAFT EXCEPTIONALLY WELL-MAINTAINED, ONE CORPORATION OWNER.

..ASKING PRICE:.$47,000..

Reading Aviation Service, Inc., P. O. Box 1201, Phone: 3-5255, Reading, Penn.

NAVCO, Inc., HAS in STOCK

FOR EXECUTIVE AIRCRAFT
New, Factory Fresh

A.R.C. 15D Omnis, F-11A Isolation Amplifiers
17R VHF Tuneable Receivers
Bendix MN53B Marker Receivers
Collins 51R2 (used), 51R3 VHF 280 channel crystal controlled receivers
Collins 51V1 Glide Slopes, 20 channel, UHF
18S4 Transceiver, 20 channel, MHF
Collins 17E2 (used) HF, 17K1 (used) VHF
17L3 VHF 180 channel Transmitter
17M VHF 360 channel Transmitter
Flite-Tronics MB-3 marker, 3 light
Lear ADF-12, ADF-14, 2200 marker
Lear L-2 Autopilot

Lambert Field St. Louis, 21, Mo.

BEECHCRAFT D-18S

Hydromatic propellors, recent 1000 hr. inspection. Engines overhauled by the Pratt & Whitney factory. Price very attractive.

PAGE AIRWAYS, INC.
ROCHESTER, NEW YORK
Rochester Airport Genesee 7301

SPECIAL OFFERING!
Stationary & Rotating Governors for
INVERTER 149F
PART #36022 & 36021
CLARENCE CARRUTHERS
79 Wall Street New York 5, N. Y.
Ha 2-5934-35

TWIN BEECHCRAFTS

C18S and D18S Transports—Excellent Condition fully equipped from $25,000
LODESTAR EXECUTIVES
Why take less for your money?
Ready to go complete from $55,000
We Invite Inquiries For Any Types
WINGS, INC., AMBLER, PA.

CAA Plans to Increase Airways Service

- **Murray sets up program boosting traffic personnel.**
- **Slashed budget eliminates new construction money.**

By Lee Moore

Civil aviation policies now jelling at the White House and Commerce Department call for considerably more agency changes than the preliminary policy and budget shakeup at Civil Aeronautics Administration.

Commerce Undersecretary Robert Murray will continue to call most of the shots (AVIATION WEEK Apr. 20, p. 13, June 1, p. 18).

▶ **CAA Budget Cut**—Senate last week went along with the House and Commerce Department and eliminated all new construction money for federal aid to state and local airports before Congress adjourned. Murray said the program had been "badly mismanaged" and may be of questionable value anyway.

Total CAA 1954 appropriation of $139 million is 7% less than actual 1953, 31% less than the Truman request ($200 million) and 1% under the Eisenhower request. Impact of the 7% cut below last year is greater than it looks because airways traffic congestion keeps gaining, and CAA must man the new facilities as they are built.

▶ **Policy Changes**—Murray revealed to AVIATION WEEK some new programs in preparation and some already underway. He said there will be "a lot more news by October and December."

Adjustments of civil aviation economic policy, budget, personnel and safety policy to the new Administration's viewpoint are in the works. Prime aim is to get the government out of all activities that can be handled satisfactorily by private business and/or local and state governments. But the program is not wholly negative.

▶ **Positive Program**—Murray told AVIATION WEEK he plans to make substantial increases in services considered properly federal in scope. Here are some indications of the positive program Murray is preparing:

• **More airways personnel.** The new budget calls for more personnel manning federal airways this year than last. These electronic interstate air highways are CAA's primary service responsibility. Many big-city control areas are seriously overcrowded, and traffic continues growing nearly 25% per year.

• **Relief for busy towers.** Controllers and radarmen now work eight-hour shifts, but strain of airway and airport control under instrument conditions can cause serious decline in worker efficiency after four hours. Murray and CAA administrator Fred Lee are wrestling with Civil Service rules to find a plan for four-hour shifts in bad periods, with the extra personnel on standby duty in good weather.

• **Better weather reports.** A new program now in its initial stage promises considerable improvement in airways weather reporting, especially to non-airline users.

• **Local airport finance.** Murray asked Congress to eliminate all new money from the federal-aid airport program this fiscal year. Pork barrel implications of this caused substantial House-Senate conference differences, still unresolved as Congress' recess deadline passed. The Administration may try to eliminate federal aid to airports for good. A special advisory panel set up by Murray is studying the question now.

Tentative Administration thinking is that removal of federal red tape, delay, overhead and interference will free local capital, initiative and superior knowledge of local problems, eventually resulting in more and better airport construction where it is really needed.

• **New Washington airport.** Commerce Department recently won Air Force agreement to share Andrews Field with CAA for overflow airline traffic from glutted Washington National. The $10-30-million previously proposed Burke Airport plan is shelved. CAA planners were so enthusiastic over the potential of Andrews for civil traffic that they drew up a blueprint of what an all-civil Andrews could do for Washington by 1975. This nearly caused USAF to withdraw its sharing offer, but Murray restored confidence at Cabinet level.

• **Consolidate regions.** CAA regional administrations recently were consolidated from seven to four in continental U. S. to reduce excessive overhead, contradictory policies and "empire building."

• **Support industry.** Commerce often has failed to press for inter-government and inter-agency agreement on some equipments that had unanimous support among civil U. S. users.

This has changed. Example: Murray proposes aggressive support of the

Commerce Chain of Command

Chain of command in Administration's civil aviation policy:

The President and his Cabinet, including Secretary of Commerce Sinclair Weeks, are in driver's seat.

Robert Murray, Commerce Undersecretary for Transportation, comes next. He coordinates overall U. S. transport policy, has direct responsibility for operation of Civil Aeronautics Administration, Maritime Administration, Bureau of Public Roads, Weather Bureau, Coast & Geodetic Survey. Murray also is chairman of the civil-military-State Department Air Coordinating Committee for inter-agency aviation policy.

Charles L. Dearing, newly appointed by Murray as Deputy Commerce Undersecretary for Transportation, will "have direct supervision over . . . studies leading to the formulation of government-wide transportation policies and programs," according to Murray. Dearing was a top Brookings Institution staff member concentrating on transportation, and has been consultant to Murray since March.

Civil Aeronautics Board independently adjudicates airline and safety cases. Its overall economic, budget and safety policies are subject to Administration guidance. Oswald Ryan is chairman; Harmar Denny is the first Eisenhower appointee on the five-man Board; the third Republican member, Chan Gurney, was reappointed by Eisenhower at the same time.

Fred B. Lee, Civil Aeronautics Administrator, applies safety standards set by CAB, builds and operates the airways, and administers civil aviation safety and development policy set by Commerce Department.

Fiscal 1954 Funds for Civil Aviation

Civil Aeronautics Administration

	Fiscal 1953 appropriation	Truman budget recommendation	Eisenhower recommendation	Appropriated by Congress
Salaries and expenses	$105,594,000	$110,300,000	$105,500,000	$105,000,000
Establishment of air navigation facilities	13,591,499	20,000,000	7,000,000	7,000,000
Technical development	1,162,972	1,163,000	1,115,000	750,000
Washington National Airport				
(A) Operation	1,350,000	1,350,000	1,350,000	1,350,000
(B) Construction	28,000	455,000	455,000	400,000
New Washington Airport	.....	1,660,000	.....	.....
Federal-aid airport program (for new projects)	14,321,154	30,000,000	.....	.....
Federal-aid airport program (for liquidation of existing contracts)	9,000,000	30,200,000	22,700,000	22,700,000
Alaska Airports, operation	433,594	1,100,000	1,077,000	500,000
Air Navigation Development	1,750,000	4,000,000	1,750,000	1,085,000
Airport claims for damage by military services	1,821,423	.....	.....	.....
Total	**$149,052,642**	**$200,228,000**	**$140,947,000**	**$138,785,000**

Civil Aeronautics Board

Salaries and expenses	$3,800,000	$3,950,000	$3,800,000	$3,750,000

airlines' plea for more "Consol" type long-range navigation stations around the Atlantic (Nova Scotia, Iceland and Azores). "Loran" type is favored by the military, so the civil-military Air Coordinating Committee recently took a weak initial position that it would "not oppose" the Consol. Commerce now proposes an aggressive U. S. stand at International Civil Aviation Organization in support of Consol.

• **Safety inspectors.** Murray and Lee are now trying to fix central responsibility for safety inspection on airlines and other operators. Previously two or more CAA regions generally shared responsibility, because most big airlines have a maintenance base in one region, home office in another.

• **Joint airport use.** Until now, squabbles between military and civil over joint use of airports have been fought by junior officers on each individual airport and issue.

Murray now has won agreement that Air Coordinating Committee's top officers on the formerly token "joint use panel" lay down rules for joint use —then stick to the rules on individual cases.

This may enable civil users to plan with more confidence.

▶ **CAA's New Budget**—Here are highlights of the fiscal 1954 budget finalized by Congress last week:

• **Salary & expense** is virtually the same as last year—with more for airways operation, less for "education," "advice" and central offices.

• **Airways facilities construction money** will be half last year's. Main cuts from the Truman program are airport surveillance radar $3.5 million; housing and utilities for CAA and Weather Bureau men (mostly in Alaska) $2.2 million; relocation of communications stations $0.7 million; and repair of Alaska intermediate landing fields $0.3 million.

• **Technical development center** at Indianapolis is cut one-third from last year.

• **Federal aid for local airports** has $22.7 million to liquidate prior commitments of the old administration but nothing for new construction.

• **Airways research program** of the civil-military Air Navigation Development Board is slowed down again—this time from last year's $1,750,000 to $1,085,000 for fiscal 1954. ANDB says it will slow down the various projects rather than cut any out, because they are interdependent.

Mexico Plans New Military Air Bases

(McGraw-Hill World News)

Mexico City—All of Mexico's military airports except the new Santa Lucia Air Base near here and Zapopan Field near Guadalajara are in extremely poor condition, Mexican Department of Defense reports.

The department says work will begin immediately on military air installations at Ixtepec in Southern Mexico; Ensenada, Lower California; Hermosilla and Mazatlan Fields on the Pacific Coast and Cozumel Field on the Yucatan peninsula.

Work is being rushed to complete the new Santa Lucia Air Base, which will be the country's principal military airport.

A two-mile runway and taxi strips have been completed.

PAL Leases DC-3s, Resumes Service

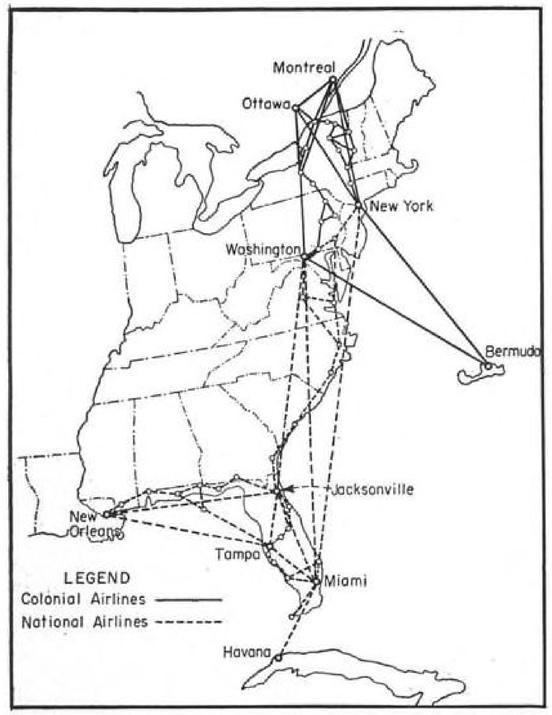
Pioneer Air Lines resumed 21-passenger DC-3 service Aug. 1 in the initial phases of a program to replace completely its 36-passenger Martin 2-0-2s by November.

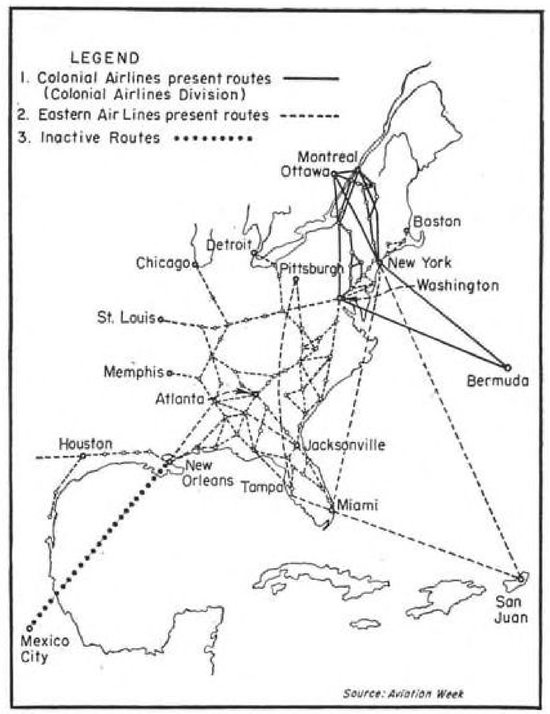
The carrier initially began DC-3 service in 1946 and converted to the 2-0-2s in June 1952. Prior to inauguration of 2-0-2 service, Pioneer filed for additional mail pay to support operation of the more expensive equipment, but Civil Aeronautics Board denied the request.

Following CAB's action, the airline cut back schedules to two-thirds and, according to president Robert J. Smith, lost $3,000 daily. With its newly obtained DC-3s, PAL is immediately restoring six daily flights totaling 1,586 mi.

By Aug. 10 it will be flying approximately 90% of its former mileage.

Pioneer is offering the 2-0-2s for sale and leasing DC-3s from Leeward Aeronautical Services, Inc., Ft. Wayne, Ind. It has obtained three former Eastern Air Lines' transports powered with Wright R1820 engines, but plans eventually to get nine former United Air Lines' DC-3s with Pratt & Whitney R1830 engines.





COLONIAL-NATIONAL route integration would look like this. COLONIAL-EASTERN deal would result in this route structure.

Merger of Major Airlines Up to President

Washington guessing is about even on whether Eastern or National Airlines will win Presidential approval to buy Colonial. But most observers believe Eastern will win, although they won't bet on it.

The question before the government is loaded in Eastern's favor: Shall the existing Eastern-Colonial merger agreement be approved?

However, if the President and Civil Aeronautics Board vote "yes," the Administration will receive considerable adverse publicity because the CAB examiner recently found that Eastern won its advantage illegally (Aviation Week June 22, p. 94). Critics would say that Eastern not only forced National out of the picture by superior financial might, but illegally acquired "effective" control of Colonial and then won administrative approval by superior lobbying power.

▶ **Toss-up Decision**—Here is how observers size up the relative advantages of Eastern vs. National in this political-financial battle for Colonial's New York, Bermuda and Montreal routes.

• **Eastern advantages.** Eastern's contract requires only the signature of the President to relieve the government of about $1-million subsidy per year—immediately.

Merger of Colonial with either Eastern or National would achieve the same ends—improve the buyer's route structure and end subsidy without directly harming the other carrier.

Denial of the Eastern merger might postpone any Colonial merger indefinitely.

National, though smaller than Eastern, has one of the most lucrative route systems in the nation. If Eastern gets Colonial, National will continue to make one of the highest profit returns in the industry.

National can buy Northeast Airlines if it wants to expand north of New York.

Eastern was high bidder for Colonial merger in the public offering made by Colonial after its stockholders defeated the National agreement. It was a square deal, Eastern says.

For the government to "interfere" in normal business dealings merely to help a "smaller" business is contrary to the new Administration policy, Eastern argues.

CAB examiner on this case already has found that even if there was a technical violation by Eastern, the punishment prescribed by law does not include denial of the contract involved.

• **National advantages.** National signed the original merger agreement with Colonial.

National says there is no apparent reason why CAB should reverse its previous preference for NAL-Colonial merger.

National testified that it will pay any price CAB may prescribe for speedy acquisition of Colonial. If the President and CAB deny the Eastern deal, Colonial stockholders would probably accept National at the government-approved price.

National alleges that Eastern defied the government and deprived the public of subsidy relief a year ago by illegally acquiring effective control of Colonial, defeating the original merger contract, and swinging the company into accepting Eastern's offer. Government sanction of such an action is inconceivable, National alleges.

National needs markets north of New York. Eastern already has the great city of Boston, plus some other New England cities.

National and Eastern are both north-south carriers, with Miami their chief terminal. Eastern has the same New York-Florida route that National has plus Boston, Chicago, St. Louis and many others.

Since route franchises are actually government hand-outs, proper government procedure would be to spread the new grants around.

Senators Want Lusty Nonskeds

Small Business Committee recommends five-point program that includes 14 roundtrip flights a month.

By Katherine Johnsen

Senate Small Business Committee, charging that Civil Aeronautics Board investigates the role of nonskeds in air transportation with one hand while its other hand is engaged in piecemeal elimination of the industry, has laid down a five-point program to keep the irregulars alive and lusty.

The committee, headed by Minnesota's Sen. Edward Thye, debunked the complaint of the scheduled lines that air traffic is a "fixed pie" and that the nonskeds are eating into their slice. "The question is no longer what portion of a fixed pie any company will get, but rather how much the entire pie can grow," the group declared.

▶ **History**—Although the 1938 Civil Aeronautics Act was aimed at protecting a young industry from competition until it became strong and then opening the door to new companies to expand the field, the committee said, this is what has happened over the past 15 years:

• The volume of traffic over trunk routes has increased 20-fold. The trunklines' financial position has strengthened until in 1952 four of the six common carriers with the highest passenger revenues were airlines: American Airlines, $158 million; United Air Lines, $126 million; Eastern Air Lines, $105 million; Trans World Airlines, $100 million. Pennsylvania Railroad's $156 million rated second and New York Central Railroad's $124 million rated fourth.

• Yet, the Board has refused to certificate any new carriers to perform common carriage of passengers on the trunk system. Instead, the number of carriers has been reduced from 18 when the act was under consideration to a probable 12 by the end of 1953.

▶ **Recommendations**—These are the five recommendations the committee made to CAB:

• **Issue a temporary regulation** permitting nonskeds to fly 14 roundtrips a month between any two points. The Board should permit these flights to be pooled over a year's period so the carriers could handle traffic demand in peak months. The carriers, without limitation on frequency or regularity of service, should be permitted to move military personnel and mail (without subsidy) under government contract.

• **Grant temporary exemptions** to four or five nonskeds to engage in rigidly restricted route-type service, limited to three years. Possible route segments would include New York-Burbank and New York-Oakland, where existing coach service is inadequate, or Boston-New York-Washington, where scheduled carriers have refused to offer service. Estimated New York-Washington coach fare of $9 compares with present regular fare on this route of $14.40.

• **Expedite the trans-Atlantic cargo case.** The same doctrine should be used in measuring the merits of the irregulars as in judging the certificated carriers.

• **Speed up the large irregular case,** instituted by CAB to determine the role of nonskeds in the air transport system, which already has been in progress two years. Unless stepped up, it is estimated it will be another two years before a decision is made.

• **Authorize organizations** to serve as air clearing houses or air exchanges for the irregular carriers in providing charter service and common carriage. This will enable the carriers to pool their services for the maximum benefit of the public.

In addition to Thye, the subcommittee that worked on the report, based on lengthy hearings held earlier this year, included Sens. Robert Hendrickson, Lester Hunt, George Smathers and the late Charles Tobey. The report, however, was issued by the full 13-member committee.

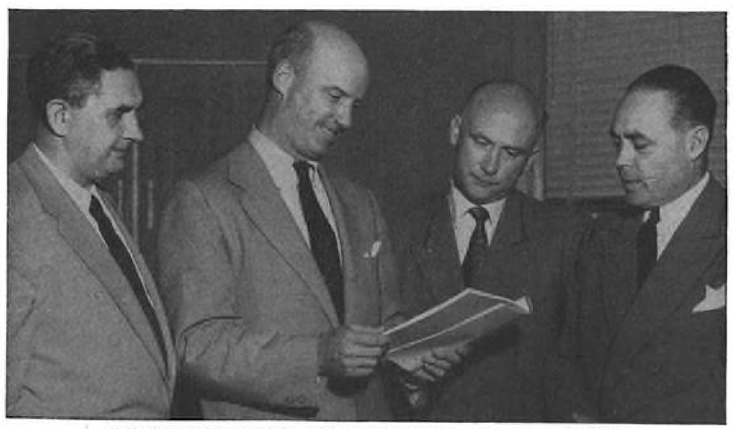
▶ **ACTA Approval**—In Los Angeles, former Sen. Claude Pepper, general counsel of the Air Coach Transport Assn., declared that the irregular carriers definitely approved of the committee's proposal that nonskeds be permitted to schedule 14 roundtrips a month between any two terminals.

"We could live under that," he told AVIATION WEEK.

Pepper asserted that the nonskeds are not attempting to displace or discredit the certificated carriers but are "little fellows trying to get a legitimate place in the business." The Senate committee's suggestion of 14 roundtrips a month would not take business away from certificated carriers, he said, but would help encourage new passengers by putting the nonskeds on a firm basis.

Irregular carriers, said the former Florida senator, are attempting to create new trade for the industry. "The man who rides the bus on the highway still feels the airplane is for the rich man. We are trying to correct that impression," he said.

▶ **New Subcommittee**—Declaring that keeping the door open for an expanding commercial air transportation system is "in the public interest no less than the interest of the small business segment of aviation," the committee pinned its hopes on the newly appointed Commerce subcommittee, headed by Sen. John Cooper, "to make a real contribution by reviewing the administration of the CAA act by the Board, with particular emphasis on the problem of the entry of new operators into air transportation and the need for a positive economic policy on the part of the Board."



GERMANS HERE TO STUDY U. S. AVIATION

In the U. S. to study Civil Aeronautics Administration facilities, methods and equipment that might be applied in modernizing their country's airways, German officials are seen conferring with CAA administrator Fred B. Lee. From left to right: F. Hentschel, director of air navigation services of the German Federal Transport Ministry; Lee; Karl Mueller, consultant for a German electronics firm, and O. T. Heer, director of federal airways of the Transport Ministry. On the agenda was a trip to CAA's technical development and evaluation center at Indianapolis.

Mild-worded in its criticism of CAB, compared with previous small business reports made under the chairmanship of Sen. John Sparkman, the report's findings on issues raised at hearings were:

• **The certificated carriers** are the "backbone" of the air transport system and their economic stability should not be jeopardized, but the irregular carriers are a "valuable asset" and should be preserved.

• **The nonskeds** were the first to offer low-cost coach service and stimulated the entry of certificated carriers into the field. The innovators have a right to a share in the success of aircoach, destined to become the standard type of air travel.

• **The unsubsidized nonskeds** serve as a valuable "yardstick" of airline costs.

• **Nonskeds have not caused** a diversion of traffic from the certificated carriers. "While there is a duplication of routes, there is relatively little duplication of markets. . . . Their pioneering, which has been along economic rather than geographic lines, has shattered the concept of a fixed, limited market for civil aviation."

• **The Berlin and Korean airlifts** demonstrated the importance of nonskeds to national defense.

• **Traffic** has been diverted to foreign carriers because of CAB's refusal to certify any nonskeds for international airfreight operations.

• **CAB's enforcement proceedings** against 10 nonskeds, if successful, would put out of business "the economically significant elements" of the industry in a short time.

• **CAB has failed** to exercise "sufficient ingenuity" in devising ways to integrate nonskeds into the system.

Nonsked Woes Pinned On Ticket Brokers

Los Angeles—Civil Aeronautics Board moved its investigation of nonsked air carriers to the West Coast last week for what promised to be another dragged-out phase of the lengthy hearings.

Testimony previously has been taken in Miami and Washington, D. C.

First witness to appear before CAB examiners Ralph L. Wiser and Richard A. Walsh after they set up shop in the Federal Building was president of the Los Angeles Better Business Bureau, Robert J. Bauer.

▶ **Hunting Licenses**—Irregular carriers and ticket agencies, Bauer testified, have at times been responsible for a situation that "created near-riot conditions at the Burbank terminal."

"It has been a common practice to sell many more tickets than there are seats on the planes," he said. "Passengers have been required to wait not only hours but sometimes days at the airport for planes."

Bauer testified that several hundred complaints about irregular air carriers and ticket agencies had been received by the Better Business Bureau in Los Angeles—home base of many nonsked outfits. Ticket agencies, he said, in many cases sell so-called "tickets" that are merely receipts to be exchanged at the airport for whatever transportation is available.

He described these as little more than "hunting licenses" permitting a passenger to go to the airport and search out his own transportation.

▶ **Agency Practices**—The Better Business Bureau chief testified that the majority of complaints received involved misrepresentations and financial practices of ticket agencies which sell space on irregular carriers, rather than quality of service of the carriers themselves.

Under cross-examination by George Berkowitz, counsel for several nonskeds, Bauer expressed the belief that a direct contact between the air carriers and the public—permitting the nonskeds to sell their own tickets—would help establish responsibility and clear up difficulties with the public, difficulties which he said were giving the entire airline industry a bad name.

▶ **Fly-by-Night Brokers**—Other testimony followed similar lines—that it was the ticket agencies causing most of the trouble. "I think the brokers are using the carriers, rather than the carriers using the brokers," commented Don Keller, district attorney of San Diego County, as he described "unscrupulous brokers on the sidewalks of San Diego."

Testifying that he knew of no instance of embezzlement by an irregular carrier itself, Keller expressed his belief that "if they had direct sales and direct contact with the purchasers of transportation, it would eliminate the problem."

Keller told of fly-by-night ticket brokers who give kickbacks to taxi drivers, pay commissions to military personnel, and climb aboard ships in the bay in an effort to drum up business, sometimes for non-existent airlines. Assistant District Attorney William B. Acton of San Francisco, who heads the city's Fraud Bureau, told of similar difficulties in San Francisco.

No attempt was made to link ownership of the ticket agencies with irregular carriers.

Protracted and heated bickerings by attorneys for both sides, sked and nonsked, frequently interrupted testimony. As the session dragged through the hot afternoon of its first day, it was apparent that it would be many weeks before examiners Wiser and Walsh could move on to the cooler air of Seattle for the second session of their West Coast trip.

Aircoach Fares May Climb to Five Cents

Some aircoach fares may increase one fourth to one half cent per mile Dec. 31 when the present tariff rates must be renewed by Civil Aeronautics Board.

Lucrative longhaul rates like the $99 transcontinental fare are expected to remain unchanged, however.

CAB promised to decide by Sept. 30, if possible, to give the airlines time for orderly adjustment of services, rates and advertising.

▶ **Leading Operators**—Present ceilings are four-and-a-half cents a mile for high-density coach planes during normal travel hours, four cents a mile for any plane operating off-hour service commonly referred to in the industry as night coach.

American, National, Trans World, United and Eastern Air Lines are leading four-and-a-half cent day-coach operators among scheduled airlines. EAL and Capital are leading four-cent-a-mile offpeak operators.

▶ **Increased Costs**—Some airlines say four-cent night rate must be raised to meet increased fuel and other costs.

CAB staff has not decided what fares to recommend to the full Board yet. But a recommendation must come soon because the Board plans to rule by Sept. 30.

▶ **Shorthaul Problem**—A separate issue is the problem of how to price tickets sold for shorthaul segments of through aircoach flights.

CAB is threshing this out in a formal proceedings with American and Eastern. The Board recently started an investigation of their practice of charging first-class rate (six to six-and-a-half cents a mile) on the Boston-New York and New York-Washington segments of their longhaul aircoach flights.

A rate of about five cents a mile may be accepted by CAB, but the carriers have not yet offered to come down that far.

Japan Gets C-54 Parts

(McGraw-Hill World News)

Manila—Philippine Air Lines has received permission from the Philippine government's Export Control Committee to ship $42,423 worth of Douglas DC-4 spare parts to the Japanese Aircraft Maintenance Co., Ltd., Tokyo, whch will use them on Japan Air Lines' fleet of C-54s.

Permission was required because strategic materials may not be sent from the Islands unless it can be shown that they no longer are required. PAL sold its C-54 planes to airline operators in the United States, India and Indo-China.

LAI DC-6 is one of three operated by the Italian carrier on trans-Atlantic run.

TWA May Sell Holdings in LAI

U. S. ownership blocks subsidy for Italian airline, which plans trans-Atlantic and Far East expansion.

Trans World Airlines may sell all or part of its 40% holdings in Linee Aeree Italiane, S.A., to interests in Italy within the next 12 months to pave the way for the LAI to win government subsidy, authoritative sources in Rome report.

Foreign participation in the airline's management is cited by officials who have blocked subsidy grants to LAI, which plans to increase its New York-Rome service next spring and expand to the Far East by 1955.

► **New DC-6B Fleet**—TWA capital made possible LAI's strong entrance seven years ago into Italy's internal and regional air transport market with twin-engine equipment.

The carrier purchased three DC-6s with a $4.3-million loan from the Economic Cooperation Administration three years ago and opened the Rome-New York run on July 15, 1950.

The Italian airline plans to put its new fleet of three DC-6Bs into operation next spring, stepping up trans-Atlantic flight frequencies from three to five a week.

► **Increased Service**—The carrier's bid for a larger share of North Atlantic air traffic was developed by Gen. Luigi Gallo, LAI's director-general, and Cmdr. Antonio Nervi, administrative director who recently visited the U. S.

Final decision was made by the airline's president, Prince Marcantonio Pacelli, nephew of Pope Pius XII, and vice president Richard Mazzarini, who represents TWA's interests.

Management committed itself to expansion of the New York office to meet the demands of increased service.

► **Limited Budget**—A staff of 11 employes under general manager Alfred de Lancellotti handled more than one function in New York when LAI started its trans-Atlantic operation.

Administrative and secretarial personnel were kept to a minimum. Traffic and commercial workers helped handle arrivals and departures at Idlewild International Airport, holding down the size of the field staff.

Services such as public relations and catering were farmed out to New York firms. Limited budgets restricted sales promotion campaigns.

► **Blanketed Market**—De Lancellotti, experienced in the international travel market after 26 years with Thomas Cook (travel agency), focused LAI's initial efforts on the Italian-American interests in the New York area. He worked with commercial manager Claude Fusco to develop this basic market.

Even as load factors began to climb, it became clear that the New York office lacked the staff to win a healthy share of the market—blanketed by sales and public relations programs of TWA and Pan American World Airways.

Half a dozen strong European air carriers also competed for Rome traffic, most with average staff of more than 35 persons in New York.

Final decision to expand LAI's office was made after the carrier increased North Atlantic flights from two to three a week.

► **Aircoach Expansion**—The Italian carrier now operates one deluxe DC-6 New York-Rome flight carrying 46 passengers and offering eight berths. The two other four-engine transports are operated on combination first-class and tourist flights.

When the DC-6Bs swell the airline's fleet next spring, there is a good chance that three of the five weekly flights will be all tourist. Rome headquarters has kept a close check on trans-Atlantic aircoach load factors and reports they have been good.

LAI has built up a solid reputation for its first-class European and Mediterranean services, but the management is planning low-cost domestic and regional flights to meet demands for tourist services.

European operations are set up with this equipment:

• **DC-3s** fly the majority of domestic routes.

• **Convairs** connect Rome with Frankfurt, Munich, Zurich, Barcelona, Athens, Istanbul, Alexandria, Tunis and Cairo.

• **DC-6s** fly to Tel Aviv, eastern end of the New York-Rome flights.

► **Rome-Tokyo Service**—Far East route planned by Italian Airlines would fly from Rome to Tokyo via Bahgdad, Dhahran, Karachi, Delhi, Calcutta, Rangoon, Bangkok, Saigon, Hong Kong and Formosa.

There still is some discussion as to whether it would be advisable to inaugurate this route before the important trans-Atlantic market has been exploited fully.

With half a dozen modern four-engine transports, the Italians probably could not serve the Far East more than once a week if they maintain the necessary five to six flights to the United States.

Because the New York-Rome market is well established and the long trunk line to Tokyo is less certain to return a profit, Far Eastern flights will be deferred until 1955 at the earliest, officials say.

CAB ORDERS

(July 27-Aug. 2)

Proposed:

Nearly $1 million additional annual subsidy mail pay for Trans-Texas Airways. New temporary rate would yield TTA an estimated $2.5 million, or approximately 51 cents a plane-mile, for the year ending June 30. This compares with carrier's reported mail pay of $1.6 million for the year ended last May 31. Company reopened its former final mail rate July 1.

Granted:

Pioneer Air Lines service to Snyder between Abilene and Midland-Odessa, Tex. Board deferred or denied other requests in its reconsideration of Texas local service case.

Mohawk Airlines permission to omit night service to Pittsfield, Mass., until pilots become thoroughly familiar with the new territory acquired from Wiggins Airways dismemberment.

Trans World Airlines a waiver of Civil Air Regulation requiring 50 hr. proving test of new equipment on a route. TWA will fly Delta Convair 340s from Cincinnati to Detroit on TWA-DAL interchange. TWA completed 29 hr. proving on the CV-340.

Intervention in trans-Pacific and West Coast-Hawaii route cases by Seattle, Oakland and Burbank chambers of commerce, Washington Public Service Commission and Pacific Northwest Trade Assn.

Approved:

Free meals on shorthaul coach flights between United Kingdom and the continent. International Air Transport Assn. amendment eliminated the former ban on free aircoach meals.

Routine inter-airline contracts among 23 groups of carriers.

Northwest Airlines trade name changed to Northwest Orient Airlines. NWA used the name occasionally since starting Orient service in 1947 and went over to it entirely last winter under new president Harold Harris and public relations vice president Willis Player.

Changed merger scope proposed for the States-Alaska case. Board last April proposed Western Air Lines merger with Pacific Northern and/or Alaska Airlines. Scope of case is now re-worded, after conferences with carriers, to propose "single unified system by means of merger, consolidation, acquisition of control, or route transfer between Northern and Alaska. . . ."

Interlocking directorships of T. R. Hudd, P. J. Coughlin, M. L. Lesnik, J. K. Conningham and N. C. Myers in National Air Freight Forwarding Corp. and five carloading corporations.

Ozark Air Lines route request consolidation in its renewal case. Ozark wants a route from Moline to Chicago via Clinton and Rockford.

Free transportation offers by U. S. international carriers to members of small foreign air carrier operators previously not approved formally for this reciprocal right along with the regular foreign airlines.

Delayed:

Effective date of Alaska Airlines and Wien Alaska route changes. They were slated to take effect in September, but were deferred pending study of applications for reconsideration.

Dismissed:

West Coast Airlines application to omit service to Chehalis and Centralia on certain flights. Company withdrew request.

TWA Ft. Wayne, Ind., service amendment previously proposed as an issue in Indiana-Ohio local service case. Question of changing this now is made a separate case.

Denied:

California Central and air transport carriers application for expedited hearing on requested Reno-San Francisco service. CAB consolidated this with Western Air Lines' Yuma and El Centro petition.

Ozark Air Lines request to consolidate in its renewal case proposed suspension of all trunk airline services duplicating intermediate segments of the Ozark system.

Newport, Vt., request for service by Colonial or Northeast Airline May through October of each year. Board said this would require full hearings procedure to be followed.

SHORTLINES

► **Aerovias Venezolanas** and Linea Aeropostal Venezolana are operating night aircoach services between Caracas and Maracaibo at 40% less than regular one-way fares.

► **Laurentide Aviation, Ltd.,** has recommendation of CAB examiner J. L. Fitzmaurice for a three-year foreign air carrier permit for operations of a "casual, occasional or infrequent nature" between Montreal and U.S. cities.

► **National Business Aircraft Assn.** (formerly Corporation Aircraft Owners Assn.) has welcomed its first airline member, Pan American.

► **Northeast Airlines** is surveying routes inherited from Wiggins Airways by CAB decision. These include Pittsfield-New York, Fitchburg-New York, Pawtucket-Woonsocket to New York, and Rutland-Boston, effective next month.

► **Northwest Orient Airlines** is rewiring its 10 Stratocruisers, moving wires from back wing spar to front one at $3,500 per plant. . . . Will install Hytrol automatic brake-metering device on its ordered Super Constellations. Company was first to install this braking device on Stratocruisers. . . . NWA plans to install Bendix flight path computers in all its Stratocruisers by next January.

► **Pan American World Airways** will have 45 Douglas Super-DC-6Bs and three DC-6As by mid-1954. The cargo-carrying DC-6As are convertible to PAA's 82-seat coach, 56-seat luxury, and 44-seat Sleeperette interiors. . . . Company will add three more trans-Atlantic coach flights weekly Aug. 1 because of continued deliveries of DC-6Bs at rate of about two a month. . . . DC-6Bs will go on U.S.-South American routes later this year.

► **Pioneer Air Lines** says its average of 14 passengers per plane flown the first year with Martin 2-0-2s is 31% higher than a year ago (with DC-3s) and is "proof of acceptance of new planes by the public." Mileage dropped 16% to 3,384,164 plane-miles, but number of passengers increased 2% to 175,972.

► **Resort Airlines** reports revenues in 1953 running 20% ahead of a year ago, due to "extraordinary and heavy expenditures in 1952" to expand facilities, capacity and sales.

► **TAP,** new Portuguese airline, plans to switch from DC-3s to four-engine equipment and increase schedules between Lisbon and Luanda, Angola, Portugese West Africa, from one to two a week.

► **Trans World Airlines** 1,357,278,933 passenger-miles gained 33% the first half of 1953, compared with a year ago. Sales vice president E. O. Cocke attributed the increase "in large part to . . . Low-fare sky tourist services."

► **West Coast Airlines** is moving five flight crews from Seattle and three from Boise to Portland, making Portland a permanent base for some schedules.

NEWS SIDELIGHTS

Ike to Unveil 'A' Bomb?

Watch for an announcement that **President Eisenhower** will add punch to the big 50th Anniversary of Flight national TV show planned for December by unveiling **the atomic bomb** for the first time. It's in the works, say persons who have attended planning sessions, but super-cautious government officials may force a change in plans.

Air Force Hit by Truce Terms

Korean truce terms hit USAF hard. Under the agreement, Communists are allowed to build up **North Korean airfields** which FEAF bombed persistently in order to keep the potent Red air force north of the Yalu. U. S. also pulled out of Cho-Do and other islands along the North Korean coast which served as radar sites and air-sea rescue bases for USAF. U. S. is denied aerial reconnaissance of North Korea during the truce. **Air Force position** in Korea, none too secure at best, thus will be even worse if fighting is renewed, officers point out.

Navy

One faction at **Convair** felt the XF2Y water-based fighter should have been a conventional carrier-based Navy fighter but lost out to the pleadings of the hydrodynamic group. . . . Oleos for the hydro-skis on the XF2Y are made by Menasco Mfg. Co. of Burbank. Hydro-ski development was a joint project by Convair, Navy, Air Force, NACA, Edo Corp. and All-American Airways' Engineering Division. . . . **Navy P2V-5** at Lockheed is being equipped with two J34 engines in pods under the wings for additional power. Lockheed refuses to confirm this but the aircraft is visible from a nearby road. . . . P2V-5s have been flying over Southern California with pointed tail cones, which extend the length more than six feet behind the tail section. It's reported to be a magnetic detection device.

Industry

Some aircraft firms that have been using Edwards AFB, California, for experimental flight testing are miffed because the Air Force hasn't consulted them on the new **master plan** for Edwards. Industry representatives say they have been invited to only one brief meeting on the plan. . . . Lockheed is at work on another version of the Starfire all-weather interceptor. . . . It's the **F-94D**. . . . Company sources say the Air Force turned down an offer of two Fletcher FD-25s at $1 each if it would try them out for close support in Korea. . . . Main wheels of the **Lockheed C-130** will retract straight up into the sides of the fuselage by means of a jack-screw arrangement. Nosewheel will fold in the conventional manner. The C-130 prototypes are about 60% completed. Although production will be at Marietta, prototypes are being constructed at Burbank.

CAA May Get a Kyes

Shakeup of Civil Aeronautics Administration is just starting, according to informed sources in Washington. Watch for a **Kyes-type** appointment in CAA soon.

Civil Aeronautics Board

CAB is embarrassed by one major point in the current attacks by the nonscheduled airlines: The Board has never in its 15-year history admitted any new company to the most **lucrative field** of airline business—passenger service between maior cities. Board finds it hard to explain to Congress and the new Administration why it repeatedly turned down the whole principle of non-subsidy service (stated directly in its transcontinental aircoach case three years ago) while increasing subsidies to already-certificated airlines—now $80 million a year.

Ryan Will Stay

Administration sources in Washington say flatly that **Oswald Ryan** will remain on the Civil Aeronautics Board, although the chairmanship will rotate to another member next year, probably Harmar Denny.

Press

With constantly higher costs, newspapers are cutting the space devoted to aviation columns. The newest annual syndicate directory issued by Editor & Publisher reports "none" under its listing for syndicated aviation features. . . . American Aviation has abandoned its exclusive Audit Bureau of Circulations policy and has adopted a "new" circulation method. This involves **giving away free** several thousands of copies each issue. . . . It intends to continue with a part-paid and part-free list as long as possible. According to announcement, total paid and total free circulation is about 40,000. In the past, many publications which have tried this policy have experienced difficulties from readers **compelled to pay** for their subscriptions while other got free copies, publishing observers point out.

AVIATION CALENDAR

Aug. 11-12—First half of Air Mail Pioneers' two-part national convention, Willard Hotel, Washington, D. C.

Aug. 19-21—Western Electronic Show and Convention, San Francisco.

Aug. 19-24—Seventh International Model Plane Contest, sponsored by Plymouth Motor Corp. at Selfridge AFB and Belle Isle, Detroit.

Aug. 20-23—Air Force Assn. annual convention, Statler Hotel, Washington, D. C.

Aug. 25—Ninth legal committee session, International Civil Aviation Organization, Rio de Janeiro. Meeting will study and revise a draft intended to replace or amend the Warsaw Convention international air law.

Sept. 1-4—Pacific general meeting, American Society of Electrical Engineers, Hotel Vancouver, Vancouver, B. C.

Sept. 5-7—National Aircraft Show and 50th anniversary of powered flight, Dayton (Ohio) Municipal Airport.

Sept. 7-13—1953 SBAC Coronation Year Flying Display, Farnborough, England.

Sept. 7-17—Fourth International Aeronautical Conference, joint meeting of RAeS and IAS, London.

Sept. 8-9—Second half of Airmail Pioneers National Convention, Cheyenne, Wyo.

Sept. 9-15—Joint meeting of the Royal Meteorological Society and the American Meteorological Society, University of Toronto, Toronto.

Sept. 10-11—Second conference and seminar of the American Society of Traffic and Transportation, University of Pittsburgh, Pittsburgh.

Sept. 12-13—Third Wisconsin air pageant, Curtiss-Wright Airport, Milwaukee.

Sept. 19—Canadian National Air Show, sponsored by Toronto Flying Club, Toronto.

Sept. 20—Naval Air Reserve Day commemorating 50th anniversary of powered flight, Niagara Falls (N. Y.) Municipal Airport.

Sept. 21-25—Eighth National Instrument Exhibit, Instrument Society of America, Sherman Hotel, Chicago.

Sept. 22-25—1953 meeting of Aircraft Spark Plug and Ignition Conference, Champion Spark Plug Co., Toledo.

Sept. 28-30—Ninth annual meeting, National Electronics Conference, Hotel Sherman, Chicago.

Sept. 29-Oct. 3—National Aeronautics Meeting, Aircraft Engineering Display and Aircraft Production Forum of the Society of Automotive Engineers, Hotel Statler, Los Angeles.

Sept. 30-Oct. 2—Aircraft electric equipment conference, American Institute of Electrical Engineers, Benjamin Franklin Hotel, Seattle.

Sept. 30-Oct. 2—Series of seminars on transonic testing in windtunnel, Purdue University, Lafavette, Ind.

Oct. 1-3—Air Reserve Assn.'s annual convention, Augebilt Hotel, Orlando, Fla.

Oct. 5-9—General meeting of the International Air Transport Assn., Montreal.

Oct. 10—England-Christchurch (New Zealand) air race, with speed and transport handicap sections.

Oct. 13-15—Air Transport Assn.'s annual Engineering and Maintenance Conference, Saxony Hotel, Miami Beach, Fla.

ADVERTISERS INDEX

AVIATION WEEK

AUGUST 10, 1953

SEARCHLIGHT SECTION
(Classified Advertising)
H. E. Hilty, Mgr.

LETTERS

Piasecki's Crackup

"Industry Observer" in the June 1 AVIATION WEEK states, "Recent crackup of a Piasecki H-21 helicopter on the ground at Morton, Pa., was believed due to ground resonance, which built up a rocking condition to a point where both rotors were smashed. . . ."

In this particular case, an H-21 helicopter was being tested for ground resonance in which the pilot went through every known means to induce it and was at the final step prior to flight when apparently the latches on one of the structural engine compartment doors failed, completely changing the structural characteristics of the fuselage and allowing the tail end of the ship to go into advanced resonance, which resulted in damage to the tail and the rear rotor blades. The front rotor blades were not damaged in any way nor was the cabin or cockpit area of the helicopter.

I think you can see from this that a completely different viewpoint is expressed in Industry Observer indicating that the H21s are subject to ground resonance.

Normally the helicopters as put into service are not subject to ground resonance except in the case of a definite malfunction of parts. In this case it was entirely self-induced in a test program in which a brand new type of rotor blade was being tested because it is our policy to do this with any new components in the rotor system.

Actually, it is our Engineering Department's feeling that we carried the tests further than necessary and the helicopter should have been free to become airborne, which would automatically break up the ground resonance condition.

It seems a shame that our thoroughness in testing is presented in such a manner that people will be induced to believe the H-21, as such, is subject to ground resonance under normal conditions. . . .

HARRY S. PACK, Vice President
Piasecki Helicopter Corp.
Morton, Pa.

Pilots & Fan Markers

It strikes me odd that Mr. McGiffin, president of Gavco Corp. (a manufacturer of aeronautical radio equipment), would make the statement (AVIATION WEEK July 13, 1953) that "pilots cannot (and do not) depend on the high-frequency fan markers which must tell them their position in the glide path—mainly because there is no aural signal. As a result, it is standard procedure for all airline pilots to use the low-frequency compass locators . . . to definitely orient their position on the glide path with respect to distance from the field."

Mr. McGiffin should know that pilots can (and do) depend on the high-frequency fan markers. Not only do we use the visual signals but also the aural signals. As a matter of fact pilots of many airlines are forbidden to go below marker crossing altitudes unless **both** visual and aural signals are received.

Furthermore there are several ILS landing systems which do not have compass locators at one or more of the marker beacon sites, consequently we do not (and cannot) orient our position by compass locators at these fields.

ASHTON VAUGHN
3305 W. 115th St.
Inglewood 2, Calif.

More on Fuel Gages

Having been for 12 years a field service engineer in many parts of the world for a well-known manufacturer of both float- and capacitance-type aircraft fuel gages, I feel qualified to make the following brief comments, having reference to Mr. Schrier's letter appearing in your July 6 issue:

1. The Liquidometer Gravimetric Float Gage currently being used on six jet fighter models is the only gage that gives true gravimetric fuel indication regardless of fuel density.
2. MIL-G specifications for capacitance gages only require compensation based on ASSUMED but not necessarily rigid relationship between a fuel's dielectric constant and its density.
3. The Liquidometer Gravimetric Float Gage does not depend on any such assumed relationship and as correction for fuel density differences is made by a fuel density sensitive device known as the Liquidensitometer. This unit can also be incorporated in a capacitance gage system to give true gravimetric fuel indication, which is not being obtained in capacitance-type gages currently being used.
4. Besides the jet fighters referred to above, Liquidometer Float Gages are currently being installed on 15 other types of aircraft.
5. Properly designed float gages will give a good account of themselves if care is exercised in providing the proper number of tank units at the right locations and when installed properly.
6. Present capacitance fuel gages are much improved over the types sold by a number of manufacturers several years ago, but have not been in service long enough to determine their full measure of worthiness.

ROBY ROBINSON
Field Service Engineer
The Liquidometer Corp.
Long Island City 1, N. Y.

Wide Angle Lens?

I have noticed a good deal of discussion in your magazine about visibility out of transport and lightplane cockpits. . . .

Let's face it. Visibility *is* extremely restricted but I wonder whether a wide angle lens system could not be designed and so mounted forward of the cockpit as to give vision forward and down and upward and back. . . .

ROLAND C. HALPER
Oakland 1, Calif.
2744 Barry Pl.

AF Safety Research

AVIATION WEEK's article June 29 by Alexander McSurely, "Air Force Research Cuts Crash Rate," is a nice tribute to a group of very hard working Air Force personnel who are beginning to reap rewards from a well-planned operation. Mr. McSurely did an excellent job in his account of this work. I am sure he was inspired, as are most of us connected with military aviation.

As chairman of the Design Safety Committee at Convair, Fort Worth Div. it has been my pleasure to be closely associated with the Air Force program. All manufacturers of aircraft must realize the importance of safety and accept the responsibility of designing it into the aircraft. This, of course, is not new, but rather a continuing thing which demands attention.

G. S. GREEN
Chief of Service Engineering
Convair, Fort Worth Div.
Fort Worth, Tex.

Report on Plastics

We would appreciate receiving reprints or tear sheets of the article, "Why Designers Are Using More Plastics," by Irving Stone, in the June 15 issue. This material is requested for our Engineering Library for use by our engineers and other personnel.

L. P. BRADLEY
McDonnell Aircraft Corp.
P. O. Box 516
St. Louis 3, Mo.

If such is available, we would appreciate a reprint of your article "Why Designers are Using More Plastics."

F. R. WILLCOX
de Havilland Aircraft of Canada, Limited.
Station "L" Toronto, Canada

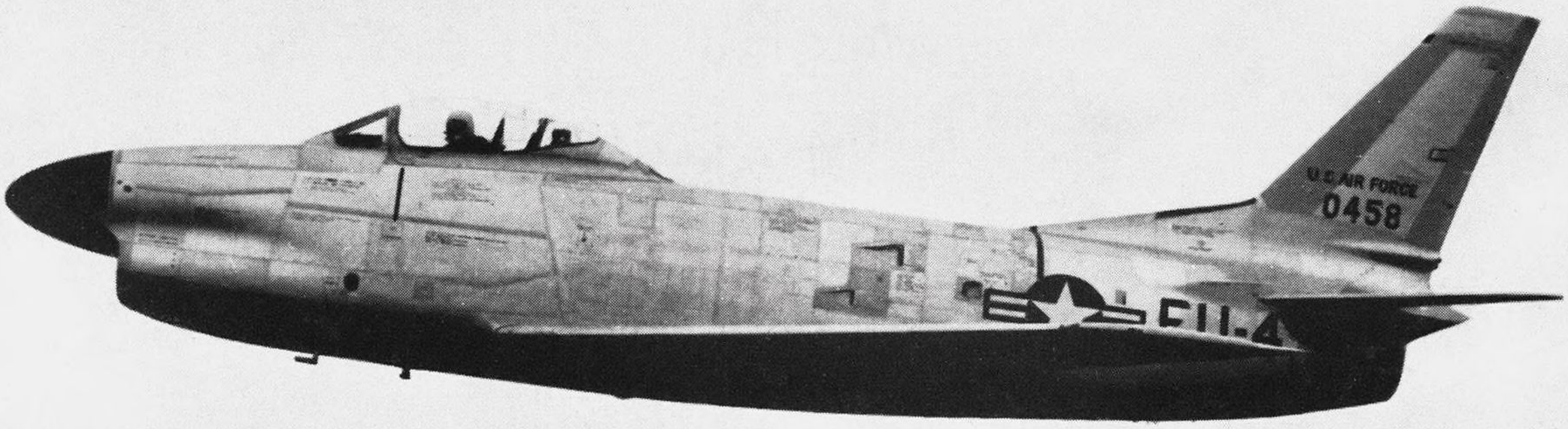
Praise

We express our appreciation for the article in the June 15 AVIATION WEEK by Irving Stone, covering our work on compressor blades. . . . It seems to have been read by practically everyone in the aircraft industry, as we have had comments now from Wright Aero, Westinghouse, General Electric, Republic Aviation, Grumman, and several others.

ELMER WARNKEN, Director
Cincinnati Testing & Research Laboratories
Cincinnati 2, Ohio

All of our aviation people here at Bendix think that your Pan American-DME story by George Christian was the best thing yet to appear on the subject. May I offer our thanks.

F. D. FENHAGEN, Manager
Advertising & Public Relations
Bendix Radio Div.,
Bendix Aviation Corp.
Baltimore 4, Md.



EXTREMELY FAST CLIMB RATES are possible on F-86D Sabre Jets equipped with new G-E afterburner fuel pumps. The afterburner of the Sabre's jet engine gets vapor-free fuel from its new G-E pump. "System complexity" is eliminated.

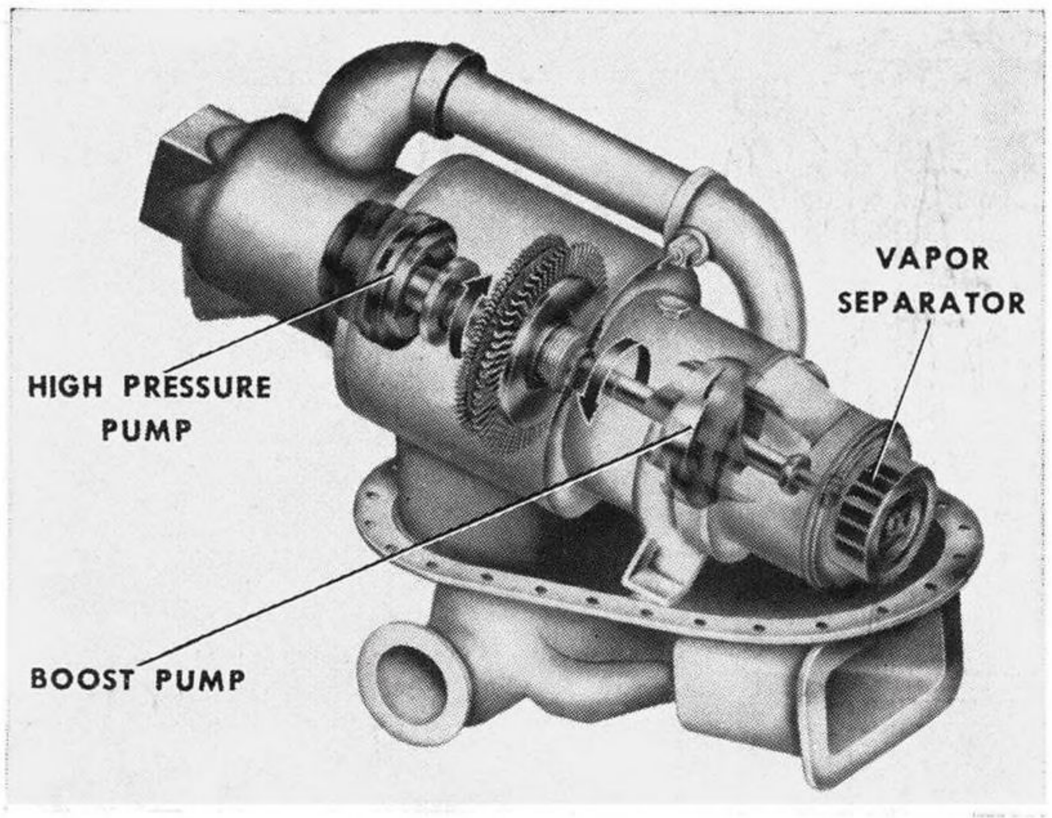
Why North American Chose G.E.'s Afterburner Fuel Pump for F-86Ds

EDWARDS AFB, CALIF.—A spectacular new lightweight afterburner fuel pump that combines in one unit boost pump, vapor separator, and a high-speed pressure pump will soon be installed in North American F-86D Sabre Jets.

The G-E "3-in-1" pump recently completed climb, level speed run, and negative "G" operation tests here. Mounted inside F-86D fuel tanks, the pump replaces a heavier and more complex system which involved combinations of boost pump, afterburner pumps, and associated piping and wiring. When a pilot requires thrust augmentation, the new "3-in-1" unit responds *instantly* to supply the required vapor-free fuel.

Operated on air supplied by the Sabre's jet engine, the pump can be turned off when the afterburner is not needed. This eliminates "recirculation" and its accompanying energy loss. Automatic aerodynamic overspeed protection is built into the pump through the use of a unique nozzle and turbine configuration.

An illustrated bulletin that describes the pump's many advantages and design details is now available. Send the coupon below to *Section 210-76, General Electric Company, Schenectady 5, N. Y.*



CUTAWAY VIEW shows unique dual-rotor turbine wheel design. This combines required low-speed boost pump operation with the advantages of a high-speed centrifugal pump—all without complex reduction gearing.

You can put your confidence in—

GENERAL ELECTRIC

General Electric Company
Section 210-76
Schenectady 5, N. Y.
Please send me your bulletin GEA-5871A, Aircraft Afterburner Fuel Pumps.
For:
.....Reference .....Immediate Project

Name.....
(Please print)
Position .....
Company .....
City.....Zone.....State.....