

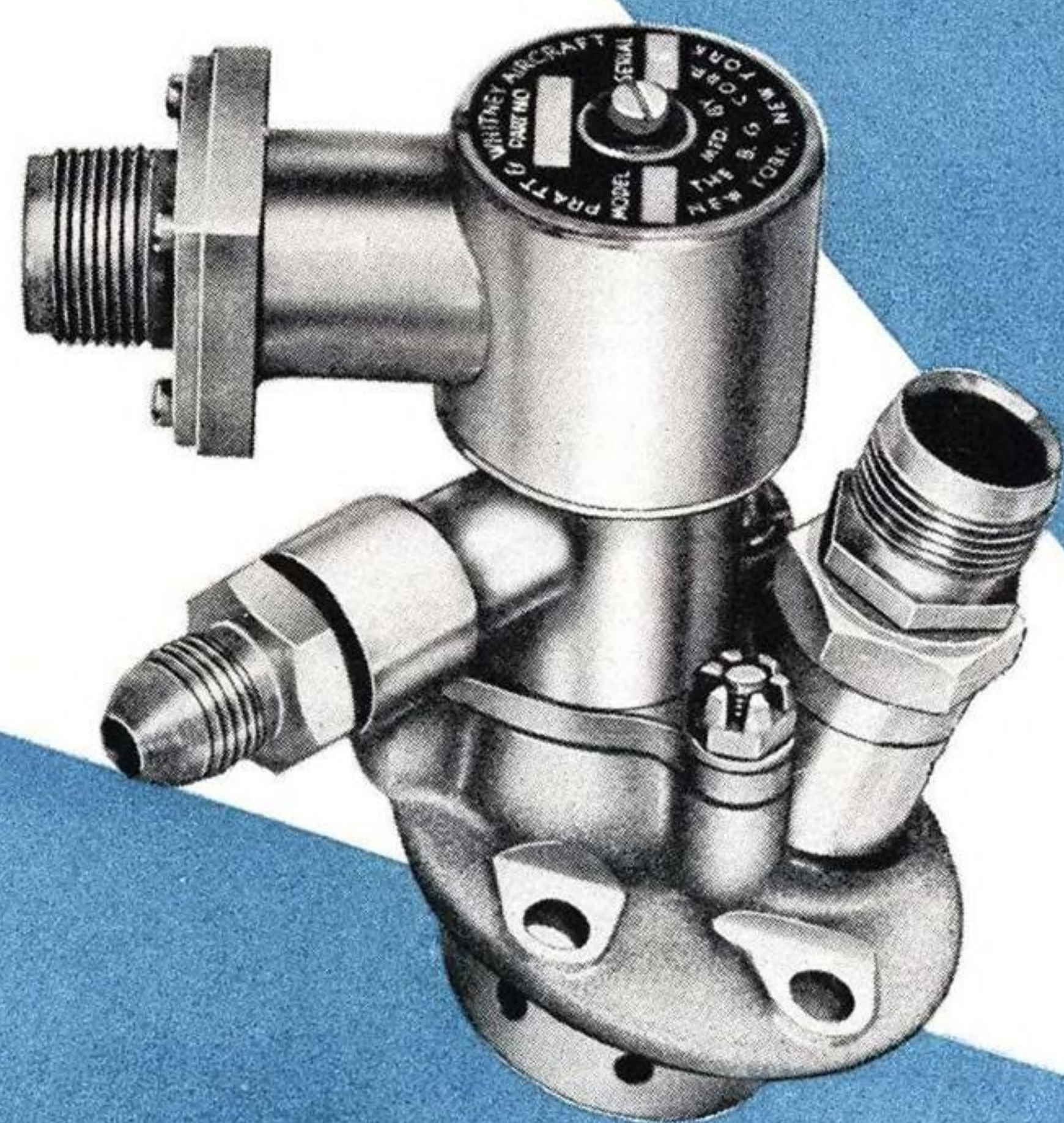
AVIATION WEEK

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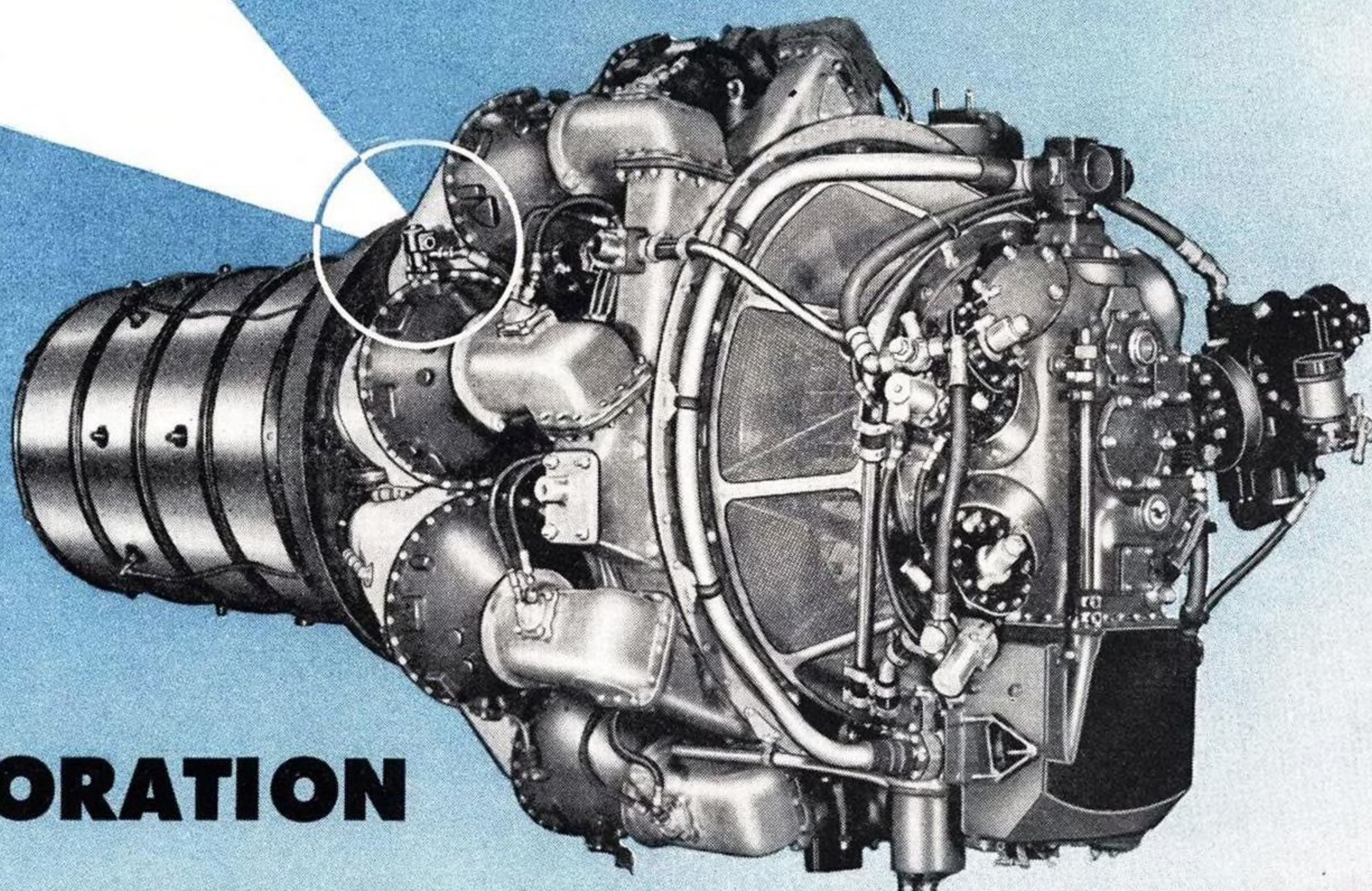
JANUARY 24, 1949

BG turbo-jet flame igniter

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BG model M 794
flame igniter installed
on Pratt & Whitney
Aircraft JT-6B
Turbo-Wasp Engine



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Relative sizes of 2-inch shut-off valve for military planes (left) and a selector valve for private and commercial aircraft.

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B.F. Goodrich
FIRST IN RUBBER



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AVIATION WEEK

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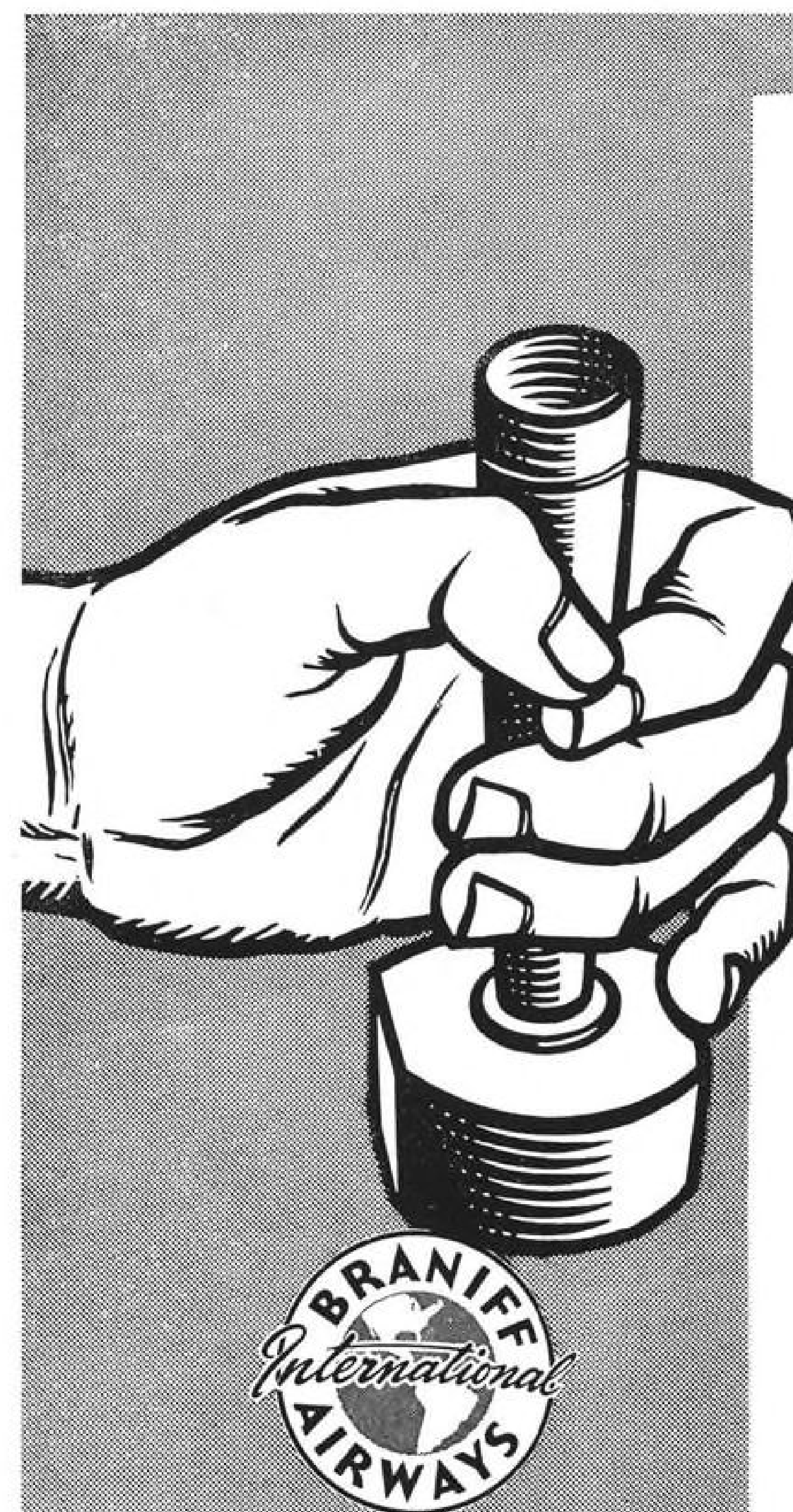
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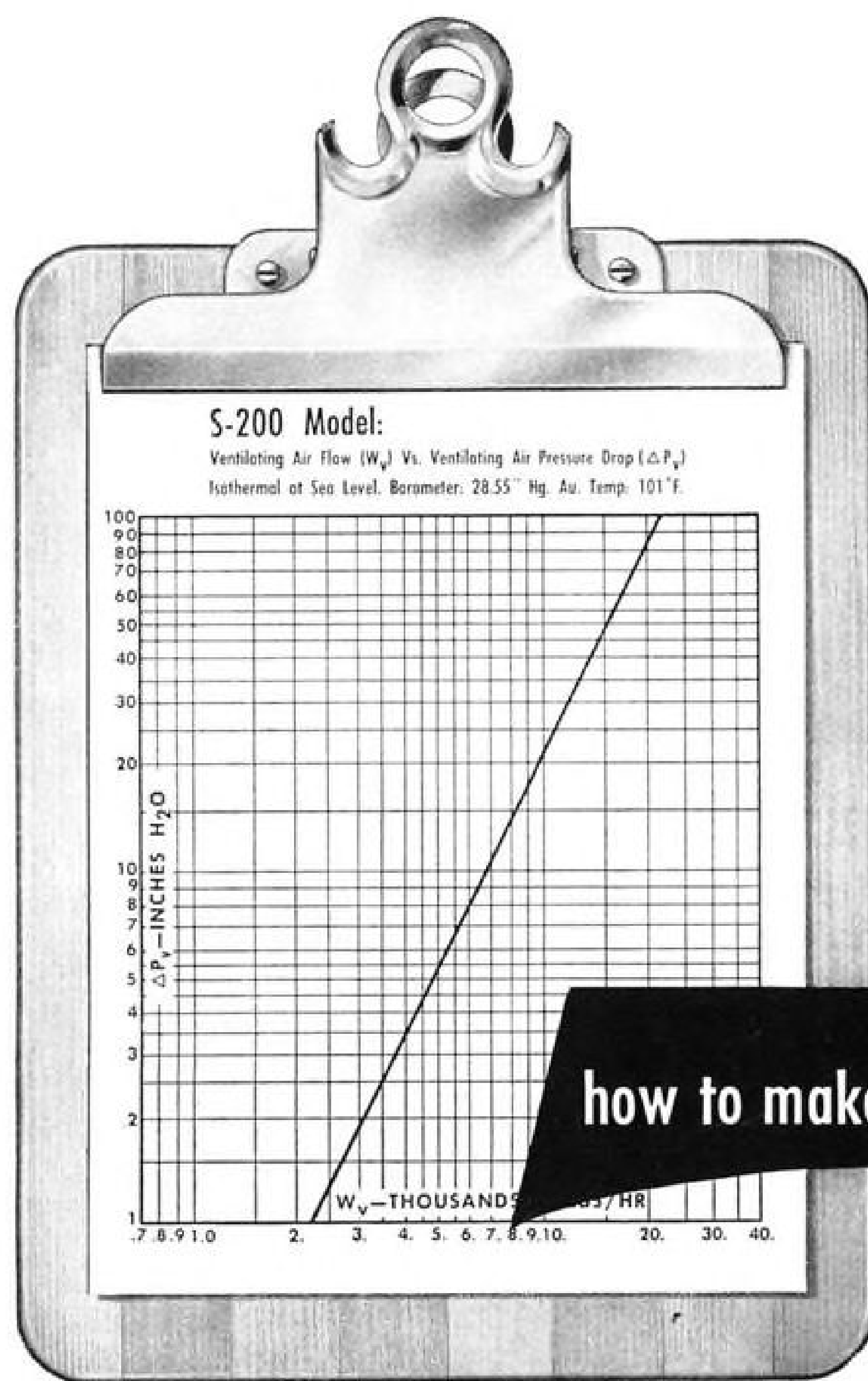
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AVIATION GASOLINE



**4 LOW VENTILATING
AIR PRESSURE DROP**
FOURTH IN A SERIES OF MESSAGES
ON COMBUSTION TYPE HEATERS FOR
THE AIRCRAFT INDUSTRY.



how to make a heating system breathe easily

Select a heater with low ventilating air flow resistance! Check the above chart. It shows ventilating air pressure drop versus air flow for the Model S-200 Janitrol aircraft heater, latest addition to a large, constantly growing line.

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NEWS SIDELIGHTS

Air Mail Cards

Post Office Department estimates the new air mail post card volume over the next six months at approximately 1.5 million cards monthly. This is only a fraction of the one-cent card volume, which runs about 310 million cards monthly. Postmaster General Jesse Donaldson is expected to recommend a boost in the regular card to two cents, and there is a good chance that Congress will approve this year—a development likely to divert business to the air mail card. Donaldson made the recommendation last year, but it was rejected. Father of the air mail card is Rep. Harold Hagen (R., Minn.). Hagen has plumped for it for the past five years, over lukewarm department opposition. He had an amendment authorizing the card inserted in the postal pay raise-rate increase bill passed by Congress last year.

Pilots' Gripe

Airline pilots are fuming over a recent U. S. Air Force policy on return to active duty in the USAF. The new policy, outlined in a memorandum signed by Lieut. Col. Mark J. Roy of the USAF Hdqts. Personnel Directorate, informs pilots who are now employed by or on furlough from an airline that they cannot be accepted for return to active duty with the USAF unless the management of their particular airline approves their return. Pilots, particularly those who have been furloughed by airlines, feel it is a violation of their personal liberty to require airline management permission before they can rejoin the USAF which badly needs transport pilots for the Berlin airlift. The USAF policy is also interpreted as applying to former USAF pilots who are now working in ground jobs with airlines but want to return to a flying job with the Air Force.

No Stepping Stones

KLM Royal Dutch Airlines will have a serious problem on its hands if resentment already shown by India against the Netherlands' current "police action" in Indonesia spreads. During the summer of 1947, KLM's service to the Far East was crippled when India closed its airports to the Dutch. The airline squeezed through by stopping at Colombo, Ceylon. This time Ceylon has banned passage of any kind of Dutch war material. Should the British, India and Ceylon all take a rigidly neutral atti-

New Sales Peak

A new postwar peak for aircraft industry sales was forecast for 1949 in President Truman's fiscal 1950 budget message. Truman estimated that military aircraft sales will hit \$1.7 billion for the fiscal year ending July 1950. This compares with about \$1.1 billion for 1948 which put the industry overall into the black for the first time since the end of the war. This year's sales will contain the first reflection of the record peacetime aircraft budget voted last year by the 80th Congress with the major effect on sales coming during 1950. Industry is expected to deliver about 25 million airframe pounds in fiscal 1949, rising to 37 million pounds in 1950 and slightly higher in 1951.

tude in the Indonesian dispute, KLM would be faced with a complete lack of stepping stones to the East Indies.

Group Purchasing

The certificated airlines are taking a long, hard look at the feasibility of group purchasing agreements. Anti-trust laws may block all such moves. But the economy-minded carriers, individually and through the Air Transport Assn. are making studies of the legal aspects of the problem.

Training Merger?

Watch for further efforts during the year toward organizing a joint training program to turn out new pilots for the U. S. Air Force and Naval Aviation. USAF and Navy will begin using the same primary trainer as soon as the Fairchild T-31 gets into production at Hagerstown. Preliminary studies have indicated considerable economies could be effected by a joint training program, at least until the advanced stages where USAF and Navy cleavage in operational techniques begin. Some people who have been studying the problem believe it would be a good idea to train all military aviators in specialized Navy techniques so they could be used interchangeably by both USAF and Navy according to the demands of specific tactical situations. Defense Secretary Forrestal has endorsed the idea at least in principle.

Strategic Shift

Military significance of the U. S. Air Force recent order for more Convair B-36s and cancellation of \$300 million worth of short range jet bombers, fighters and transport helicopters is that the emphasis will now be on strategic air power at the expense of tactical air power. USAF will not make an across-the-board cut in all its combat branches to meet the 48 group minimum imposed by the fiscal 1950 budget. Instead, it will cut its tactical air power, designed primarily for support of ground troops, to the bone and use its remaining resources to continue the build-up of a long-range striking force capable of exercising the functions of strategic air power, which has always been the Air Force's first love.

Watch Mahon

Rep. George Mahon (D., Tex.) was slated to become chairman of House Appropriations Committee's military establishment subcommittee as this issue went to press. The group will handle all Army, Navy and Air Force appropriations. The leading contender for the post, Rep. John Kerr (D., N. C.), chairman of the Army-Air Force appropriations subcommittee in the last Democratic Congress, stepped aside to take over the chairmanships of the public works appropriations subcommittee and the subcommittee on deficiencies. Rep. Harry Sheppard (D., Calif.), chairman of the Navy appropriations subcommittee in the last Congress, was in line to become vice-chairman of the new national defense subcommittee. Mahon has 27 days more seniority in the House than Sheppard.

Canadian Chill

Greeted by a story in the Montreal Gazette confirming AVIATION WEEK's predictions (Jan. 17) that the Canadian aircraft industry was interested in selling planes built under U. S. license back to U. S. military services, Fairchild negotiators came to no terms with Canadair Ltd. in Montreal last week. The Gazette, in a story from Canadian Press correspondent in Ottawa, bemoaned the Truman budget air power slash as "lessening hopes for selling Canada-made, American designed F-86 fighters and Fairchild Packets as part of USAF purchases running into billions of dollars." Fairchild was not interested in setting up Canadian competition for its biggest customer—USAF.

INDUSTRY OBSERVER

► North American Aviation Inc. still is working on a USAF contract for a prototype and static test model of the F-93 (formerly F-86C) despite temporary shelving of production plans for the new transonic fighter. Both flight and static test articles should be completed this summer.

► Crash of a Fairchild Packet (C-82) at Pope Field, N. C., last week was caused by an encounter shortly after takeoff with a flock of more than a thousand small birds. Air scoops were jammed with dead birds as the Packet climbed through the flock just after takeoff. Engines quickly overheated and cut out at an altitude of 300 ft. Most of the paratroopers bailed out successfully but three crew members were killed in the crash. One Fairchild technician extracted seven dead birds from one of the Packet's air scoops.

► Newsmen who were trying to fly from the Navy carrier Saipan to Argentina, Newfoundland after the unsuccessful mercy dash of the Saipan to rescue USAF flyers down on the Greenland ice cap, never did get the story of why the Piasecki HRP-1 twin rotor helicopters couldn't bridge the gap. The HRP's were hastily recruited from Marine Helicopter Squadron One at Quantico and on the trip northward were winterized to operate at temperatures of 30 below zero (anticipated over Greenland). When the trip from the Saipan to Argentina was attempted air temperature was about 32 degrees above zero. Without time to change the extremely heavy oil needed for operation 62 degrees colder, the HRP's quickly overheated their engines after about 10 minutes flying from the carrier and were forced to return.

► Glenn L. Martin Co. Mauler (AM-1) recently took off from a Navy carrier deck with a 9000 lb. load of armament, believed to be the heaviest military load ever carried by a single engine plane. The Mauler used only 650 ft. of carrier deck to take off into a 25 knot wind, carrying three full-size torpedoes, 12 five-inch rockets and four cannons with full ammunition loads. Martin is also expected to develop several later versions of the Mauler, using both Pratt & Whitney and Curtiss-Wright compound engines.

► Navy is still pondering entries in a new design competition for a high speed, long range escort fighter. McDonnell, which won the recent Navy jet interceptor design competition, and most of the other entries in that contest, are competing for the escort fighter design.

► Among the features veteran marine helicopter pilots want in new type transport helicopters are sliding panel type doors and stressed skin fuselage in place of fabric covering.

► Hughes Aircraft Co. built the JB-3 air-to-air guided missile which the USAF now reveals as a jet-propelled radar controlled weapon to be launched from defense aircraft against enemy aircraft and guided missiles. The JB-3 had a radar-seeker control head. Hughes work at Culver City is now aimed primarily at guided missiles and aviation electronics with no fixed-wing aircraft development planned.

► Nobody knows better the rising cost of aircraft than the Air Force. Where it paid \$39,393,000 for 27 Boeing Stratofreighters last year, it is now paying the same amount (\$39,422,000) for only 23 of the planes. Although this price includes spare parts, engines, propellers and other items of government furnished equipment, it does indicate that all-told the four-engine cargo airplanes will cost about \$1.7 million each.

► Air Force is planning experimental installation of its newly-developed nylon bed prone pilot position in the nose of a Boeing B-17 bomber. The new prone design concentrates all controls in the hands of the pilot, eliminating the need for rudder operation by toe action, an objection to earlier designs.

► Navy has added five Lockheed P2V Neptune twin-engine, long-range search aircraft to the flight training program at Pensacola. The planes, latest tactical type model of any used for training, will be used in the advanced training flight syllabus at the station.

NEWS DIGEST

DOMESTIC

An electrical system fire resulted in the crash and demolition of Beech Aircraft Corp.'s 20-passenger experimental Twin-Quad transport plane last week two miles north of Wichita. Joe Drum, copilot and former Air Force B-29 pilot was killed and three other crew members were injured.

Lewis E. Reisner, 46, pioneer airplane designer and manufacturer, died Jan. 9 at Nashville following a heart attack. A stunt flier in his youth, he founded the Kreidner-Reisner Aircraft Corp. (a predecessor of Fairchild Engine & Airplane Corp.) at Hagerstown, Md., and later the Tennessee Aircraft Corp.

Walt Bonney has resigned as public relations director of Bell Aircraft Corp. and will be succeeded by Francis W. Dunn. Bonney will become information specialist of the National Advisory Committee for Aeronautics in Washington.

Agnew E. Larsen, manager of the Rotawings division of Glenn L. Martin Co., has been elected chairman of the Helicopter Council Aircraft Industries Assn., for 1949, succeeding B. L. Whelan, general manager of Sikorsky division of United Aircraft Corp.

FINANCIAL

Garrett Corp., parent organization of AiResearch Manufacturing Co. and other firms, reports sales totaling \$8,300,000 for the last half of 1948, compared with \$7,360,000 for the first half. Backlog is about \$11,250,000, mostly in specialized aircraft pressurization and air conditioning equipment.

Northwest Airlines will pay a quarterly dividend of 28½ cents a share on the 390,000 shares of 4.6 percent cumulative preferred stock. The dividend totals \$112,250.

FOREIGN

Argentina will buy nearly \$4-million worth of Percival Prentice trainers, Percival Aircraft Ltd. has announced. The three-seat British craft will become the standard basic trainer for the Argentine Air Force, the company said. In addition to the planes, the Argentine government has acquired the license to make Prentice trainers in Argentina.

Twenty Americans were believed killed when a U. S.-bound B-29 bomber crashed in the highlands of Argyllshire, Scotland, Jan. 17, in what appeared to be the worst disaster suffered by the U. S. Air Force since war ended.

No. 3

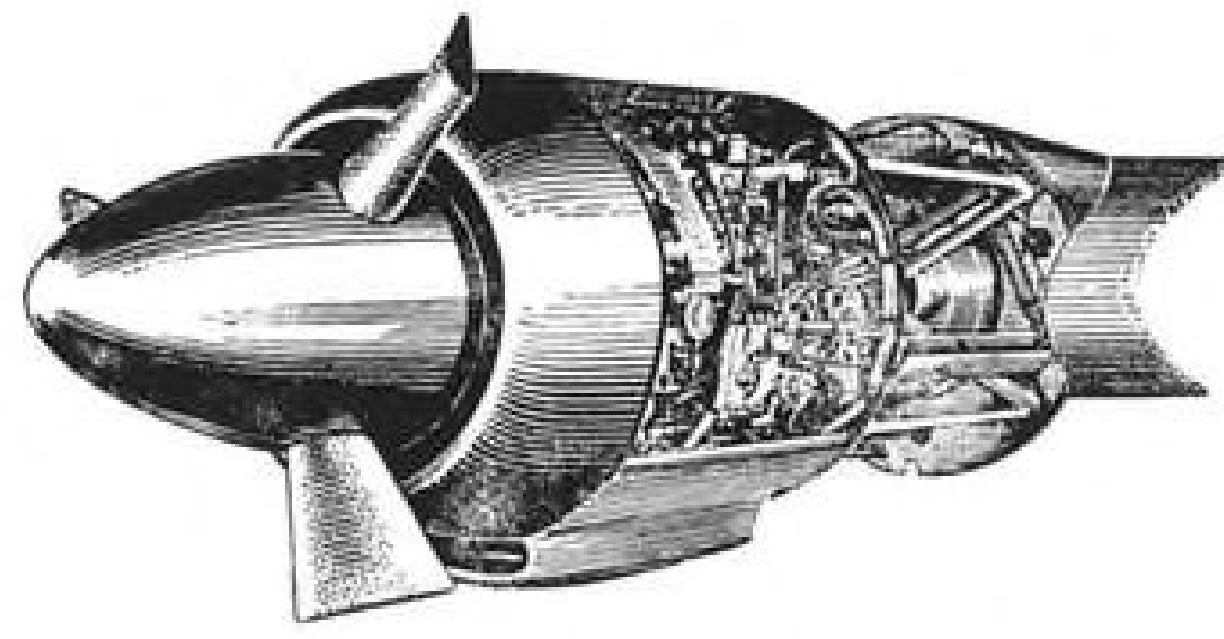
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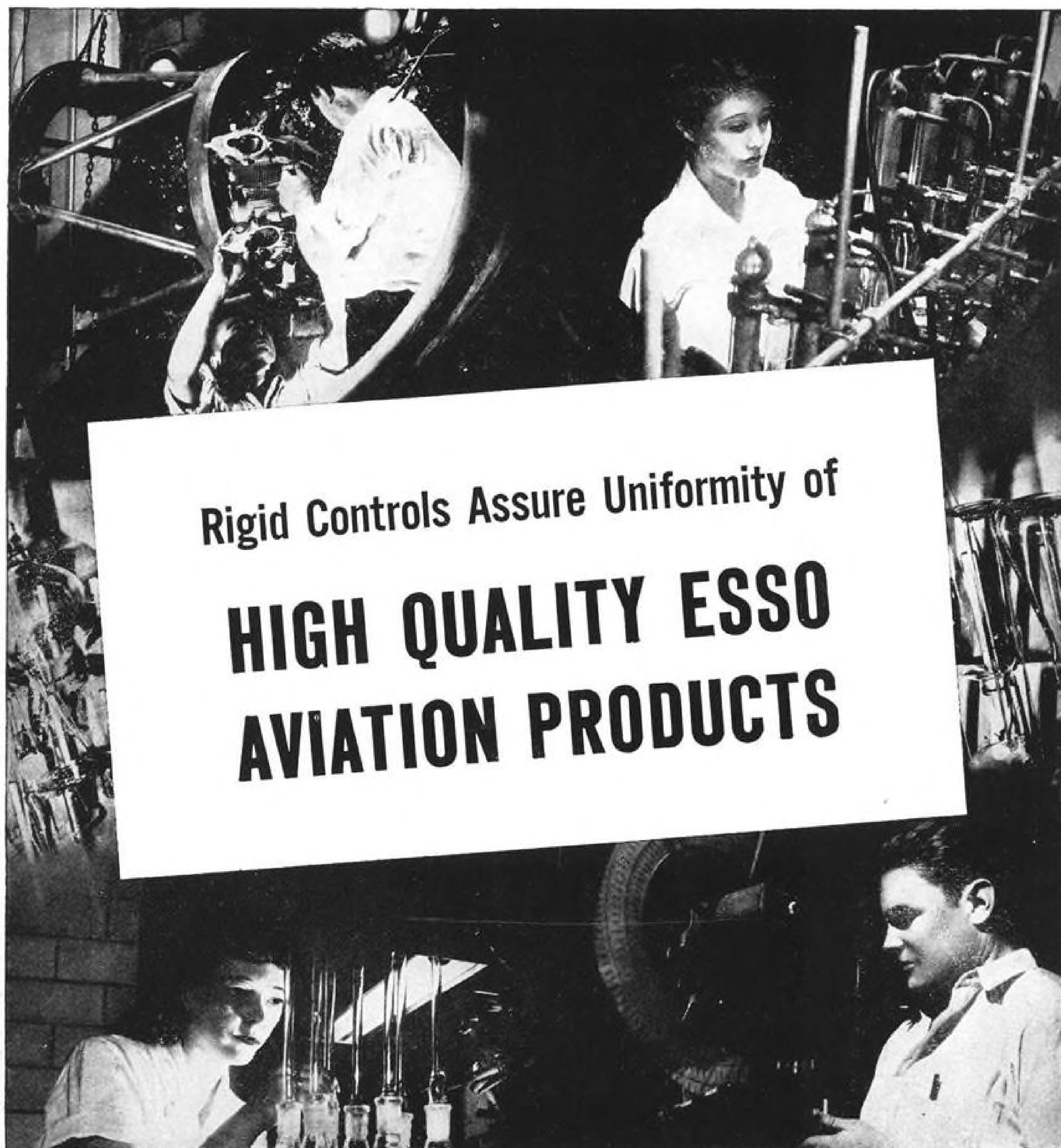
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AVIATION WEEK, January 24, 1949

Vol. 50, No. 4

AVIATION WEEK

January 24, 1949

Plane Order Shifts Involve \$500 Million

Boeing still tops list after changes in 1949 military business of 11 major companies.

By Robert Hotz

Half a billion dollars in military plane orders have been reshuffled by the U. S. Air Force and Navy since last October. These large scale procurement shifts confirmed AVIATION WEEK's prediction Oct. 25 that additional changes would be made in the original fiscal 1949 procurement schedules announced by both services last June.

No overall cutback or reduction in the amount of new plane contracts authorized in the fiscal 1949 budget is involved. Scheduled contracts have merely been shifted among eleven of the industry's 15 major airframe manufacturers.

► **Boeing Leads**—These shifts in future military business leave Boeing with the largest share of fiscal 1949 military contract authorizations with a total of \$532 million. Convair is in second place with \$311 million, followed by North American (\$284 million), Lockheed (\$249 million), Douglas (\$222 million), and Grumman (\$141 million).

Only two of the production changes were more than bookkeeping shifts within the procurement divisions of USAF and Navy. Curtiss-Wright, which was tooling up for production on 88 F-87 all-weather jet fighters, required negotiation to terminate its \$1,500,000 tooling contract. North American released 2600 production workers at its Long Beach and Inglewood plants when a USAF letter of intent for the final 51 B-45C four-jet light bombers was cancelled.

► **No Formal Notice**—In some cases, no formal notice had been given the individual companies regarding the additional business scheduled last June to come their way from the services. Consequently no formal cancellations or renegotiation procedures will be required and the companies will suffer only a diminution or delay in their hopes for future business.

Virtually all of the shifts affected production scheduled during the calendar year of 1950. Generally, most of the cancellations will result in production lines now under way terminating

sooner than originally anticipated. Some will merely experience a delay until fiscal 1950 contract authorizations are available next July to take up the slack again.

► **Policy and Progress**—Navy's shifts were based almost entirely on technical improvements in newer models that superseded the planes originally scheduled for production. USAF changes combined technical advances with basic shifts in strategy and policy. Biggest switch of more than \$300 million (AVIATION WEEK, Jan. 17) was made as a result of a policy decision to absorb the bulk of the 12 combat group cut ordered by President Truman in USAF tactical units and accelerate the buildup of the Strategic Air Command's long range striking force.

Money earmarked for production of the most advanced type jet fighter (F-93) and two types of jet bombers (B-45C and RB-49) were diverted to buy 39 more Convair B-36 long range bombers and bring earlier models up to the latest performance standards. Included in the new order will be the RB-36, a ten engine photo-reconnaissance version of the bomber (AVIATION WEEK, Jan. 17). Four jet engines slung in pairs under each wingtip will supplement the six Pratt & Whitney Wasp major reciprocating engines now used.

► **Convair Grows**—Biggest winner in the procurement sweepstakes was Convair. This company did not have a single order in the original fiscal 1949 procurement schedule and now has approximately \$311 million worth of business out of fiscal 1949 allocations. It got a \$21 million order for 36 T-29 navigator trainers and a prototype T-32 bombardier trainer when its commercial Convair-Liner won a stiff competition from the Martin 2-0-2 transport for the military trainers. The additional B-36 order, plus funds for modernizing the B-36A, gives Convair the rest of its fast-growing military backlog.

North American took the largest cutback—approximately \$190 million—although prospects are good for reinstatement of the F-93 contract during the next fiscal year. Northrop had approxi-

mately \$112 million removed from its production schedule although the B-49 jet Flying Wing may reappear in the production picture at a later date. USAF was considering a new version of the B-49 with 12 jet engines, including four slung in pairs under each wing similar to the arrangement planned for the Convair RB-36.

Curtiss-Wright lost approximately \$80 million for 88 F-87 twin jet USAF all-weather fighters plus a share of a \$1.5 million preliminary production tooling contract for the F-87 line at the Columbus, Ohio, Airplane division. Republic's allocation for F-84 fighters for USAF took a \$30 million (100 planes) downward revision.

► **Navy Cancels Jets**—Chance Vought's second increment of 33 Pirate (F6U) Navy jet fighters was abandoned in favor of an additional order for its latest model Corsair (F4U-5) of increased dollar value. Navy is going slow on its conversion to jet fighter carrier groups and now plans to use jets only as interceptors, with the piston engine Corsairs and Grumman Bearcats doing long range escort and ground attack work. Glenn L. Martin Co. lost about \$9 million in future production on the Mauler (AM-1) Navy carrier-based attack plane.

Cancellation of production plans for the Kellett-designed H-10 transport helicopter caused no loss to the manufacturer. Kellett Corp., the designer and builder of the prototype H-10, is in process of reorganization under federal bankruptcy proceedings and USAF had not yet designated a company to build the ten production models it desired.

Company Details

Here are details on how the shifts affect individual companies:

• **Bell**—The Niagara Falls firm picked up its first prime contract for fiscal 1949 with a Navy commitment for 9 HTL helicopters at a cost of \$634,000.

• **Boeing**—Additional business resulting from the B-47 production contract put Boeing's No. 2 plant at Wichita back into full activity. The high volume production planned for the B-47 during subsequent fiscal years is indicated by the extensive subcontracting already done by Boeing on the pilot production order for 10 of the sweptwing six-jet bombers. Boeing also picked up order

Revised Military Plane Orders

(To be purchased under contract authorization in fiscal year 1949 budget)

Company	Model ⁽¹⁾	Dollar Value ^{(2) (3)}
		(All figures in millions)
Bell	9 HTL helicopters	\$6
Boeing	132 B-50D	264
	43 B-54	189
	10 B-47	40
	23 C-97A	39
Total	208	\$532
Cessna	12 Model 195	\$5
Convair	36 T-29	\$20
	1 T-32	1
	39 RB-36	200
Total	76	\$221
Chance Vought...	120 F4U-5	\$30
	19 F7U-1	20
Total	139	\$50
	(33 F6U-1 cancelled)	\$15
Curtiss-Wright ...	(88 F-87 cancelled)	\$80
Douglas	356 AD-2 and 3	\$107
	38 F3D-1	20
	28 C-124A	95
Total	422	\$222
Fairchild	107 C-119B	\$85
	100 T-31	5
Total	207	\$90
Grumman	317 F9F-2 and 3	\$105
	38 SA-16	16
	23 AF-1	20
Total	368	\$141
Kellett	(10 H-10 helicopters cancelled)	\$2
Lockheed	557 F-80C	\$96
	144 TF-80C	40
	110 F-94	50
	82 P2V-3	61.8
	2 C-121	2
Total	895	\$249.8
Martin	(47 AM-1 cancelled)	\$9
McDonnell	179 F2H	\$57
North American...	333 F-86A	\$115
	266 T-28	34
	28 AJ-1	35
Total	627	\$184
	(118 F-93 and 51 B-45C cancelled)	\$190
Northrop	48 F-89	\$50
	(30 RB-49 and 30 C-125 cancelled)	\$112
Republic	409 F-84C	\$117
	(100 F-84C cancelled)	\$30
Sikorsky	25 H5G helicopters	\$2.5

⁽¹⁾ USAF and Navy official figures.

⁽²⁾ All dollar values are estimates since contracts have not been signed and exact prices have not yet been determined.

⁽³⁾ All dollar values represent total cost of plane to the service, including government furnished equipment. Dollar volume for airframe manufacturers runs about 50-60 percent of total cost, depending on plane types.

for 23 additional C-97A Stratofreighters and 13 more B-54s to swell its Seattle plant backlog.

• **Convair**—Additional B-36s, including the RB-36, will be built at the Fort Worth plant where the B-36 production rate is now rolling out one of the giant bombers every week. About 50 of Convair's original order for 96 B-36s have been delivered and two B-36 groups have been activated by Strategic Air Command. As part of the modification plans for the B-36, the model A (of which 23 have been built) will be equipped with the 3500 hp. Pratt & Whitney engines now used in the model B. Some B-36As will also be refitted as aerial tankers for mid-air refueling. Present B-36 production was scheduled to end next fall but will now continue through part of 1950 with a production speed-up likely.

• **Chance Vought**—Navy merely shifted money allocated for one Chance Vought fighter—the Pirate—(F6U) to another—the Corsair—(F4U-5). Dollar volume of the business doubled. Original Navy order for 30 Pirates (out of fiscal 1948 contract authorization) is now nearing completion at Chance Vought's new Dallas plant. Parts have been made in the Stratford, Conn. plant and shipped to Dallas for assembly. The new order for 120 Corsairs will also be filled from Dallas under the same arrangement, beginning in April. Biggest job facing the Dallas plant is quantity production of the Cutlass (F7U) twin-jet swept-wing fighter built for transonic speed ranges. The Dallas plant will be ready to begin turning out Cutlasses early in 1950. Employment is now at 3500 with an increase to 8000 expected by June.

• **Curtiss-Wright**—The Airplane division at Columbus has no airframe production contracts and is operating on subassembly contracts from Boeing on its B-47 jet bomber and Republic on the F-84 fighter. USAF night fighter production originally scheduled for the F-87 has been shifted to the Northrop F-89.

• **Fairchild**—Production on the T-31 trainer is expected to begin at Hagerstown before the end of the year. Production on the C-119B is just getting under way there.

• **Lockheed**—Additional orders for 110 F-94 night fighter versions of the two-seater TF-80C jet trainer; 16 TF-80Cs for the Navy; another 100 F-80C jet fighters for USAF and two Constellations equipped for radar picket duty, boosted Lockheed's military backlog some \$72 million over its original fiscal 1949 allocations.

• **Martin**—The 47 Maulers dropped from the Navy procurement schedule were to begin at the end of an order for 149 AM-1s which will be completed by the end of the summer. Approximately 100 AM-1s have now been made at Martin's Baltimore plant. Martin is also working on a Navy order for 36

P5MA amphibians and is about to go into production on another order for 19 four engine P4M Navy patrol bombers, powered by two reciprocating engines and two jets.

• **North American**—Layoffs for 2600 production workers (1900 at Long Beach and 700 at Inglewood) followed USAF cancelling its letter of intent for 51 B-45C four-jet light bombers. This increment was scheduled to come after completion of North American's present order for 139 B-45s. These layoffs represent a payroll loss of \$18-million in the Los Angeles area. Orders totaling \$3-million to some 600 subcontractors, mostly in Southern California, were also cancelled by North American.

The F-93 (for which an order for 118 was cancelled) is an improved version of the F-86 and was not scheduled for production until 1950. USAF will probably pick up the F-93 contract after fiscal 1950 contract authorizations become available next July. North American also gained an initial production order from the Navy for 28 AJ-1 com-

posite powered carrier attack planes. • **Northrop**—Cancellation of the USAF contract for 30 RB-49 jet Flying Wings in favor of the Convair B-36 will affect Northrop's employment only slightly. USAF decision was apparently made on the basis of the longer range (12,000 miles) offered by the reciprocating engine powered bomber at present in contrast to that of the jet powered Flying Wing (5000 miles) although the RB-49 has the longest range of any jet bomber now flying.

This company is currently converting 10 B-35 propeller driven Flying Wings to jet power similar to that of the B-49 and USAF service testing and technical development will be continued with these planes. The B-49 may come back into the production picture during fiscal 1950 or at a later date.

• **Republic**—This company is making no changes in its production plans on the F-84 fighter until it receives formal notification from USAF on the cutback of 100 already announced by USAF in Washington.

Rentzel for Alison?

Delos W. Rentzel may succeed John Alison as assistant Secretary of Commerce for aeronautics, advancing from his present post as administrator of civil aeronautics, according to a report strongly circulated in Washington last week.

Two other candidates mentioned as possibilities to succeed Alison are Dr. Dean W. Brimhall, assistant to the administrator in charge of research, and Col. Clayton Stiles, a veteran United Air Lines pilot, who had an outstanding Air Force war record in charge of airfields in Africa and Italy.

► **Lee Favored**—If Rentzel steps up into the Alison job, which is expected to be vacated soon when Colonel Alison takes an industrial job, probably on the west coast, Fred B. Lee, deputy administrator, is favored to succeed Rentzel. Lee has an excellent record as deputy administrator and is understood to have strong national Democratic political backing.



Allen E. Puckett



Dr. W. Randolph Lovelace II



Paul Armstrong Humphrey



George W. Brady

Winners of I.A.S. Annual Awards

Four of the country's top aeronautical achievement awards will be presented this evening, Jan. 24, by the Institute of the Aeronautical Sciences at its annual Honors Night dinner at the Hotel Astor, New York City.

The winners, all for 1948:

• **Allen E. Puckett**, the Lawrence Sperry Award for "outstanding contributions to the design and development of supersonic wind tunnels." Puckett, 29, is chief, wind tunnel section, jet propulsion laboratory, California Institute of Technology.

• **Dr. W. Randolph Lovelace II**, the John Jeffries Award for "outstanding contributions to the advancement of aeronautics through medical research." Dr. Lovelace, 41, is now head of the section on surgery, Lovelace Clinic and during the war was chief of Wright Field's Aero Medical Laboratory.

• **Paul Armstrong Humphrey**, the Rob-

ert M. Losey Award for "outstanding contributions to the science of meteorology as applied to aeronautics." Humphrey, a 1942 graduate of the University of Chicago, is a meteorologist at the Weather Bureau, Washington, D. C., at present detailed to the U. S. Air Force to complete an aerological section of the final report on the atomic bomb tests conducted in the spring of 1948.

• **George W. Brady**, the Sylvanus Albert Reed Award for "contributions to the development of the reversing propeller resulting in shorter landing runs for large aircraft." Brady, 45, is chief engineer of Curtiss-Wright Corp.'s propeller division and headed development of the reversible-pitch propeller.

The 1949 American Honorary Fellowship in the Institute will be presented to Dr. Clark Millikan, acting director of the Guggenheim Aeronautic

Laboratory, and the 1949 Foreign Honorary Fellowship will be presented to J. Laurence Pritchard, secretary of the Royal Aeronautical Society of Britain. Honorary Fellowships will be presented to:

H. Julian Allen, Ames Aeronautical Laboratory; Maurice A. Biot, professor of applied physical sciences, Brown University; Francis H. Clauser, John Hopkins University; Oliver P. Echols, president, Aircraft Industries Assn.; Dr. C. C. Furnas, director, Cornell Aeronautical Laboratory; Carl Kaplan, chief, physical research division, Langley Aeronautical Laboratory; Galen B. Schubauer, chief, aerodynamics section, National Bureau of Standards; C. Richard Soderberg, head of the mechanical engineering department, Massachusetts Institute of Technology; F. L. Thompson, chief of research, Langley Aeronautical Laboratory; and Sydney Goldstein, professor, department of mathematics, University of Manchester (England).



TEMCO Unveils Primary Trainer

TE-1A, adapted from Swift, designed for foreign and domestic military market at unit price of \$12,000.

A new military primary trainer has been developed by TEMCO (Texas Engineering & Manufacturing Co.) of Dallas, and is being offered to the U. S. Air Force and bargain-hunting foreign air arms at the basement price of \$12,000.

The TE-1A has been undergoing the first phase of a performance check at the hands of Air Force personnel at Barksdale Field, La., and Randolph Field, Tex.

The tandem single-engine model, says TEMCO's president, Robert McCulloch, was developed over the better part of the past year at the company's own expense, on request by several foreign governments, including the Philippines.

► Low Price—Unit price of the TE-1A, essentially an adaptation of the company's two-place all-metal Swift personal plane, markedly undercuts the \$20,000 indicated for the recently announced Beech Model 45. The latter was said to be about half the price of other comparable trainers (AVIATION WEEK, Dec. 20).

Described as incorporating all high-performance characteristics specified by the Air Force, the TE-1A was designed under direction of TEMCO's chief engineer, L. A. Childs, with emphasis on ease of service and maintenance.

Plane is of semi-monocoque aluminum alloy riveted construction, and is powered by a Continental 145-hp. en-

gine, 20 hp. above the C-125 used in the Swift. It has a Sensenich controllable pitch propeller.

► Maximum Vision—The trainer is designed to give maximum vision and ease of operation. Enclosure is Plexiglas, and consists of a windshield section, two sliding sections, and a fixed rear section. Dual instrument panels are said to have sufficient instruments to meet Civil Aeronautics Administration requirements for contact day and night flying. Tandem seats are of military type, and are adjustable and removable.

Gross weight of the craft, which has a 29 ft. 4 in. wing span and wing area of 134 sq. ft., is 1880 lb. Maximum speed at sea level is given at 160 mph., average maximum cruising speed is 140 mph. speed at 63 percent power at 10,000 ft.: 155 mph.

External surface is Alclad, except for insignia, anti-glare coating and other markings. Skin consists of lap jointed Alclad sheets, fabricated with Universal type rivets.

► Landing Gear—Retractable landing gear provides sufficient tread, TEMCO says, to eliminate ground-looping tendencies. The craft has a full swivel and steerable tail wheel. All gear is hydraulically controlled.

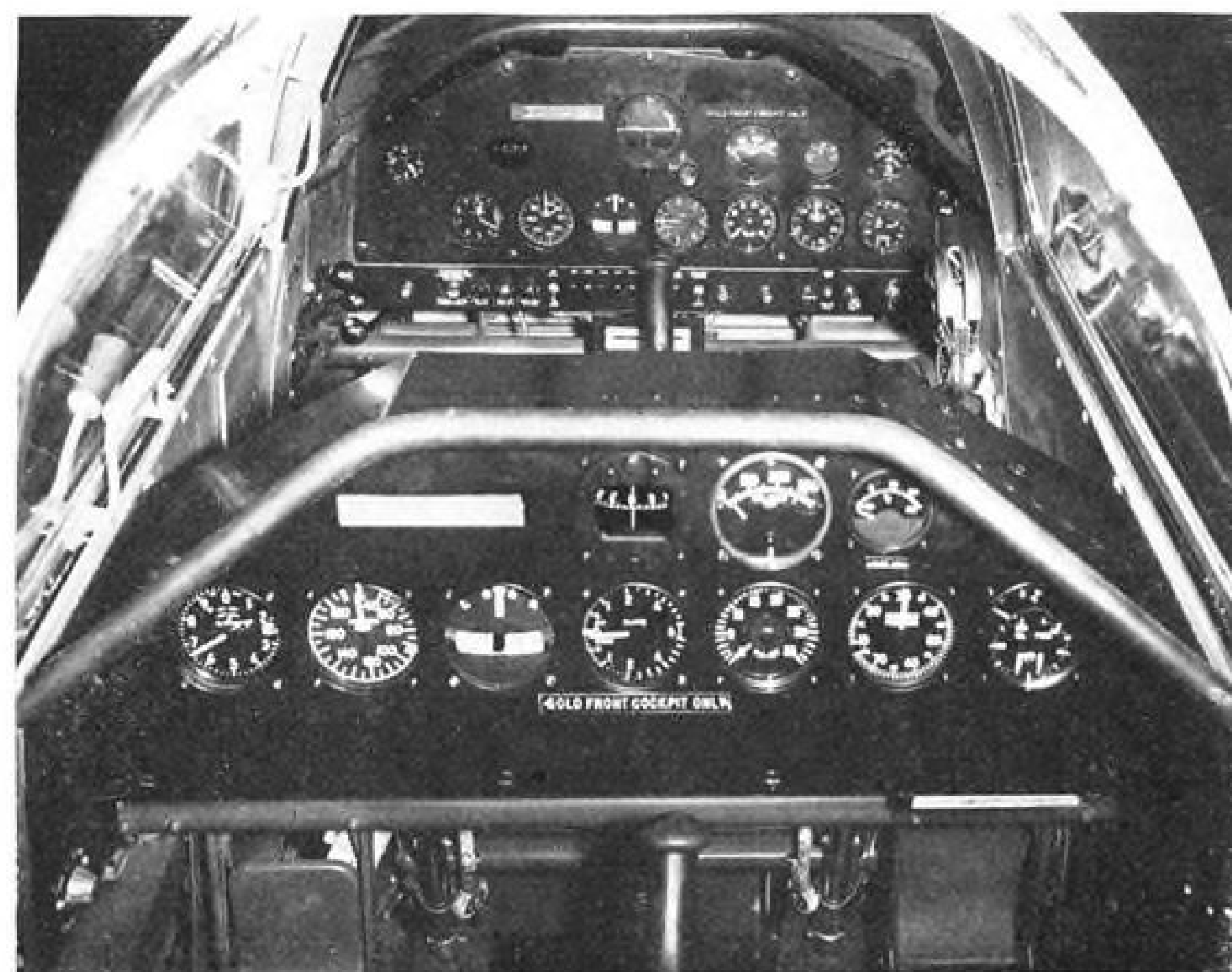
The trainer has escape provisions and a structure designed to provide maximum protection for personnel in event of a turnover.

Further details: Maximum rate of climb at sea level, 925 ft. per min. for the first minute; time to climb to 5000 ft. from sea level at full throttle (2700 rpm.), 7 min.; service ceiling at full throttle, 14,000 ft.; takeoff distance (full throttle, full flaps, sea level, no wind, sod surface), 450 ft.; distance to clear 50-ft. obstacle, 775 ft.; landing distance (full flaps, hard braking, no slip, sea level, no wind), 380 ft.; maximum range (no allowance for warm-up, takeoff or landing), 435 mi.

► Flash Lights—TEMCO claims distinction for its TE-1A as the first trainer to use the Flash-aire system of navigation lights developed by W. R. Lightbody, Inc., New York, which TEMCO markets.

Some features of North American Aviation's wartime AT-6 advanced trainer are wrapped up in the TEMCO model, which was developed with attention to stepped-up performance demands in current trainers over wartime models. Chief executives of TEMCO are all former employees of North American at the Dallas plant.

High-volume production of the new trainer, contingent on orders, envisages utilization of about 80 percent of Swift tooling at TEMCO's plant (1,229,500 sq. ft.) next door to Chance Vought's new location on the outskirts of Dallas. TEMCO has a working force of 3000.



Tandem cockpits in trainer, as seen from rear seat.



New Markets Sought for Scandia

Swedish plane manufacturer commissions Babb Co. to survey North and Central America sales potential.

The Babb Co., oldest and largest airplane sales organization, next week starts a job that may herald the stiffest competition from abroad that any U. S. transport plane manufacturer ever has faced.

The company has been appointed the representative of SAAB Aircraft Co. of Sweden to make a study of the market in North and Central America for SAAB's twin-engine Scandia commercial transport. Temporarily, South America is excluded, as SAAB has begun some sales activity there. But Babb may get that representation later.

If the survey shows a market exists for the Scandia and for Scandia parts, Babb will become the exclusive sales representative, the agreement says, for "SAAB-manufactured aircraft." Although SAAB manufactures both military and personal planes, it is understood the Babb agreement at this time covers only the Scandia.

► Price Margin—The agreement brings together a U. S. company successful in selling aircraft (mainly used or reconditioned) to foreign governments and the foreign aircraft manufacturer that has produced what many engineers consider the finest transport built outside the U. S. If the survey justifies extension of the agreement, Babb salesmen will be offering a modern transport with performance comparable to U. S. planes—at a price U. S. manufacturers can't meet.

In the agreement with Babb, SAAB is taking direct aim at Consolidated Vultee Aircraft Corp.'s possible export market for the Convair-Liner. The Canadian market does not look promising for either manufacturer; there is probably no market at all for the Scandia in the U. S. (although a plane will be brought here shortly for demonstration

purposes); it is improbable that many sales possibilities will be uncovered in Central America. So the real battleground likely will be South America; and it will not be surprising if Babb eventually is given that continent as sales territory.

► Comparison—SAAB's belief that its Scandia is more than a match for the Convair-Liner is indicated in a recent comparison of the two planes, compiled by the Swedish manufacturer. The comparison also includes the British Vickers Viking, hot competitor of the Scandia in Europe.

According to SAAB's sales claims, the Scandia and the Liner stack up like this:

- **Price**—Scandia, \$350,000; Liner, \$550,000.
- **Capacity**—Scandia, 32 passengers, 390 cu. ft. cargo space; Liner, 40 passengers, 423 cu. ft. cargo space.
- **Empty Weight**—Scandia, 20,608 lb.; Liner, 26,637 lb.
- **Payload**—Scandia, 10,092 lb.; Liner, 11,939 lb.
- **Direct Operating Cost** (based on 3650 hr. annual utilization, and a range of 500 mi.)—Scandia, \$1211 per ton mile at 208 mph.; Liner, \$1341 per ton mile at 222 mph.

The Liner is pressurized (an advantage in South America). The present version of the Scandia is not, although the manufacturer has plans for a pressurized model.

The Scandia was designed to meet all Civil Aeronautics Administration specification for transport planes, and uses the new Pratt & Whitney R-2180 engine (AVIATION WEEK, Nov. 22). First production models will go into service later this year on the Swedish airline ABA. In addition, SAAB has unannounced orders from other European lines.

House Leaders Set Air Aid Strategy

House strategy to boost aircraft procurement funds for the 1950 fiscal year, despite President Truman's opposition, had fairly well crystallized last week.

Three key figures in the coming battle on Capitol Hill predicted to AVIATION WEEK that the House will insist on increasing the 48-Group Air Force procurement program recommended in the President's budget to the level required for the second step in a 70-Group program. They are: Rep. Carl Vinson (D., Ga.), chairman of the House Armed Services Committee; Rep. Paul Kilday (D., Tex.), ranking member of the committee; and Rep. Joseph Martin (R., Mass.), House minority leader.

► House Strategy—House strategy will be: House Armed Services Committee will build up a case to indicate the critical need for the 70-Group procurement program.

Four defense chiefs—Defense Secretary James Forrestal, Secretary of the Army Kenneth Royall, Secretary of the Navy John Sullivan, and Secretary for Air Stuart Symington—will be summoned to testify before the committee on two subjects: (1) The authorized strength of the three services, and (2) Their program for fiscal 1950.

Little controversy is expected on the first issue. Authorized strength of the Navy has already been set and the revised Army strength is not expected to raise objections. Forrestal has indicated he will support legislative authorization for a 70-Group strength for the regular Air Force.

► Expect Fight—On the second issue, Vinson and Kilday—with the backing of most, if not all, the members of the Armed Services Committee—will force a fight. They plan to use Symington's statements of last year, plus the recently-issued annual report of the Air



Rep. Carl Vinson

Force, setting the 70-Group program as the minimum, as texts for the show-down.

Kilday suggested:

"It's up to us to ask Symington the right questions, and force him out."

The aggressive Texas congressman told AVIATION WEEK that at a recent conference he and Vinson held with the four defense secretaries, the subject of a 70-Group Air Force was "intentionally avoided". He added:

"We knew that in the presence of Forrestal, such a discussion would involve embarrassment for him (Symington)."

► **Support Expected**—Buttressed by the anticipated testimony before the Armed Services Committee, the House Appropriations Committee is expected to support funds for a 70-Group program.

Following is comment to AVIATION WEEK by the three men slated to become the top-notchers on the National Defense Establishment appropriations subcommittee of the House.

• **Rep. George Mahon** (D., Tex.), slated to become chairman of the subcommittee:

"Last year I vigorously supported the 70-Group Air Force procurement program. My conviction that this is the minimum requirement for the national defense of the United States has not changed—although, of course, I would not want to indicate that I shall not give proper attention to the arguments of the national defense chiefs (advocating a 48-Group program) when they appear before our subcommittee."

• **Rep. Harry Sheppard** (D., Calif.), former chairman of the Navy Department appropriations subcommittee and slated to become vice-chairman of the National Defense Establishment appropriations subcommittee this year:

"Last year I wholeheartedly supported funds for a 70-Group Air Force procurement program. I have not regretted it. I think that the appropriations subcommittee must place great weight on the proposals of the national defense chiefs of this country. However, I believe that it is the duty of Congress to scrutinize the adequacy of their proposals. It is up to Congress to see that the security of the United States is assured . . . and to disregard any budget limitation—\$15 billion or otherwise—that will not assure that security."

• **Rep. Albert Thomas** (D., Tex.), slated to become the third ranking member of the National Defense Establishment appropriations subcommittee:

"A 70-Group Air Force program is a good insurance investment for the United States, and I intend to support it this year as I did last year."

► **Republican Backing**—General Republican support for the drive of these key Democrats of the Armed Services and

Appropriations committees was indicated by Minority Leader Martin's statement to AVIATION WEEK: "I fought for the 70-Group Air Force program last year. And I intend to back Vinson's fight for it this year 100 percent."

The major issue which Vinson and Kilday plan to thresh out at hearings with the defense establishment chiefs is whether the 70-Group Air Force program can be provided for under the \$15 billion military expenditure ceiling set by the administration, by cutting down on allocations for other services. If it can, they will attempt action toward this end that will make the way easier for Senate approval of the 70-Group program. If other services cannot be cut-back without a too great weakening of the over-all national defense potential, Vinson and Kilday are prepared to support a boosting of the \$15 billion defense budget ceiling to provide for the 70-Group Air Force program.

Damon Resigns

Quits AA in rift over proposed sale of AOA; Smith new president.

Ralph S. Damon last week resigned as president of American Airlines and vice-president of American Overseas Airlines, stating he is "increasingly out of sympathy with management programs and policies of American Airlines, including the proposed sale" of AOA to Pan American Airways.

American's board of directors met the same day (Wednesday) that Damon issued his statement, and accepted his resignation. The board elected C. R. Smith president, combined his duties with his former duties as chairman of the board, and announced that the latter position is abolished.



Ralph S. Damon

► **Effective Promptly**—Damon had asked the board to make the resignation effective "promptly". Result was that AA had a new president within a few hours of Damon's resignation.

Damon's resignation was the most startling of a mounting series of protests on the PAA-AOA deal. TWA plans to ask Civil Aeronautics Board to re-examine the entire Atlantic route structure in considering the proposal, and the Air Line Pilots Assn. criticized the purchase on the ground that adequate provisions to protect pilots were not included in the purchase agreement.

► **Major Resignation**—Damon's is the second major resignation in the American Airlines System that has been precipitated by the proposed sale. Even before the two carriers announced their agreement, John Slater, board chairman of AOA, resigned because he, too, was not in sympathy with the move.

Informed financial circles expect that if and when the purchase is put before the AOA board, Slater, representing American Export Lines, will fight it. There was some belief last week that Damon might join him in opposition.

Intensity of Damon's feelings in the matter could be judged by the circumstances of his resignation. He has been in ill health for some time, and this would have been a logical excuse for his resignation, had he sought to avoid an open break with Smith. Damon took the unusual step of issuing his statement direct from his office, rather than through AA's public relations office.

► **Loaned to Republic**—Damon had been with American since 1935, first as vice president-operations. Early in the war he was loaned to Republic Aviation Corp. as president and generally is credited with a superlative job in stepping up Republic production. (Before joining AA he had held several executive posts in Curtiss-Wright Corp.).

He went back to American as president while Smith was in the Army Air Forces. He retained the presidency after the war when Smith returned and assumed the post of board chairman. The AA management setup, however, left Damon as operations boss and Smith as the policy-making executive officer.

► **No Plans**—In his statement, Damon declared, "I have no plans to announce and no further comment to make." But last week unconfirmed reports were circulated in Washington that Damon might become the new president of TWA. Generally they were given little credence.

Damon's action seemed to confirm previous reports (AVIATION WEEK, Dec. 20) that Smith was the prime advocate of the AOA sale to PAA, and moved almost alone in working out an agree-

PRODUCTION

New DC-3?

Douglas would modify planes for more speed, lower operating cost.

Douglas Aircraft Co. is taking another look at the "DC-3 replacement" problem. Before the middle of next month the company is expected to disclose the results of surveying the airlines on a proposal to take in old DC-3s and so greatly modify them they would be practically new planes.

In brief, the plan would cost an airline \$150,000-\$200,000 per plane. Douglas would replace the outer wings with new high-lift panels, hook on new-design tail surfaces, re-do the cabin to carry 26 passengers, beef up the wing-root and nacelle structure, and install 1475 hp. Wright C-9HE engines.

► **Standardization Is Hurdle**—Whether Douglas will go ahead with the plan depends not alone on the survey the company now is making. It will be decided to some extent on the success Douglas salesmen have in getting airlines to agree on a common configuration and appointments so a modification line could turn out the planes at the greatest economy—and profit to Douglas.

Within reason, Douglas undoubtedly will grant individual airlines style and furnishings concessions to make certain the perpetuation of the basic DC-3 structure and, even more important, perpetuation of his busy parts replacement business, which has been a consistent money maker throughout the life of the airplane.

In advance of the public announcement of its decision, the company is doing little talking about its newest proposal. Reversing the DC-9 experience, when the company made available detailed drawings and specifications and still didn't awaken sufficient buyer interest, Douglas claims that it has not even prepared an "artist's conception."

► **New Designation**—However, careful probing has turned up some definite facts on what the new plane would be like. It would have a new, and still undecided serial designation. It would cut by about 20 percent the existing seat-mile costs of carriers flying four-engine equipment at sub-profit load factors.

The modified DC-3 would offer a 50 percent increase in speed over present versions. It would show a direct operating cost of 39 cents per mile at

200-mi. range and 35 cents at a 400-mi. range. Gross takeoff weight would be 26,900 lb. Empty weight would be 18,400 lb.

Bell Subcontract

Bell Aircraft Corp. will hire "several hundred additional production workers" as a result of the receipt of a \$7,575,072 subcontract from the Boeing Airplane Co.

These workers, augmenting Bell's present force of 1880 employees, probably will not be added to the payroll for several weeks, after engineering plans on the subcontract are completed.

Under the contract approved by the U. S. Air Force, the Bell plant will build power packs, horizontal stabilizers and elevators for Boeing B-47 Stratojet bombers. Bell has sent about 20 of its engineers west, to the Boeing plant in Seattle, Wash., to assist in the production engineering.

A Bell spokesman said it probably will be "two or three months before volume production" of the Boeing bomber parts is under way at Bell.

Bell's receipt of the order gives Buffalo's efforts to regain its position as a leading aircraft center another shot in the arm. This is the second multi-million-dollar subcontract order placed with a Buffalo company by a major aircraft producer in a month.

At the end of November, the Twin Coach Co.'s Buffalo plant received from the Grumman Aircraft Engineering Corp., Bethpage, N. Y., a subcontract running into millions of dollars. Twin Coach's plant now is undergoing extensive retooling for the order.

J-47 Subcontracts

Acting to speed up deliveries of J-47 jet engines, General Electric Co. has awarded substantial subcontracts for J-47 parts to Solar Aircraft Corp. and Ryan Aeronautical Co., both of San Diego.

Parts from both companies will go to GE's new Lockland, Ohio, plant for assembly, rather than to the present GE jet engine production center at Lynn, Mass. The Lockland plant is expected to be in operation next month. Lynn will continue parts manufacture.

Indicating that the Solar and Ryan contracts are only the first of others to come, GE stated that the Lockland plant will be for assembly and testing only, with all parts for its work produced by subcontractors.

Under the contracts, Ryan will turn

out tail cone transition liners and combustion chamber liners, and Solar will make those parts and also aft frames and combustion chambers. Dollar value of the contracts was not disclosed.

WHO'S WHERE

Consolidated Vultee Aircraft Corp. appointed Ernest Wenigmann manager of the San Diego division. He has been in aviation manufacturing since 1924, and with Convair since 1942. For several months he has been San Diego works manager.

Allison division of General Motors Corp., Indianapolis, appointed J. A. McPetridge comptroller. He has been with GM since 1928, recently serving as comptroller for the Buick, Oldsmobile-Pontiac assembly division.

General Tire and Rubber Co. named Adm. K. H. Noble USN (ret.) technical assistant of California operations. Under this section of the company is Aerojet Engineering Corp., Azusa; Marquardt Aircraft Co., Venice and Van Nuys; and General Tire and Rubber Co. of California, South Pasadena. Noble was assistant chief for research of the Bureau of Ordnance until his retirement last fall.

Republic Aviation Corp., Farmingdale, N. Y., elected Seton Porter to the board of directors. He is president and a director of National Distillers Products Corp. and of several other large industrial firms.

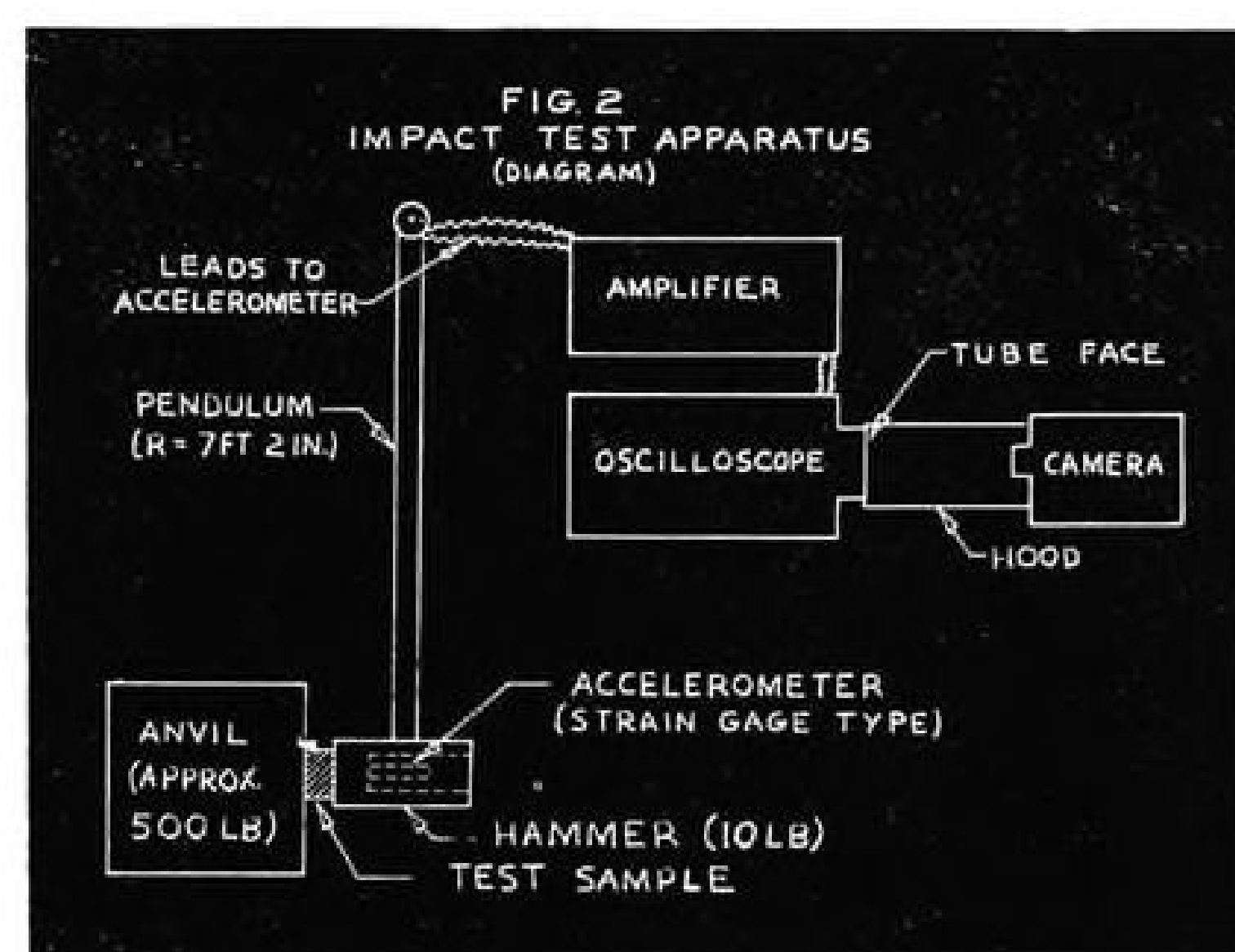
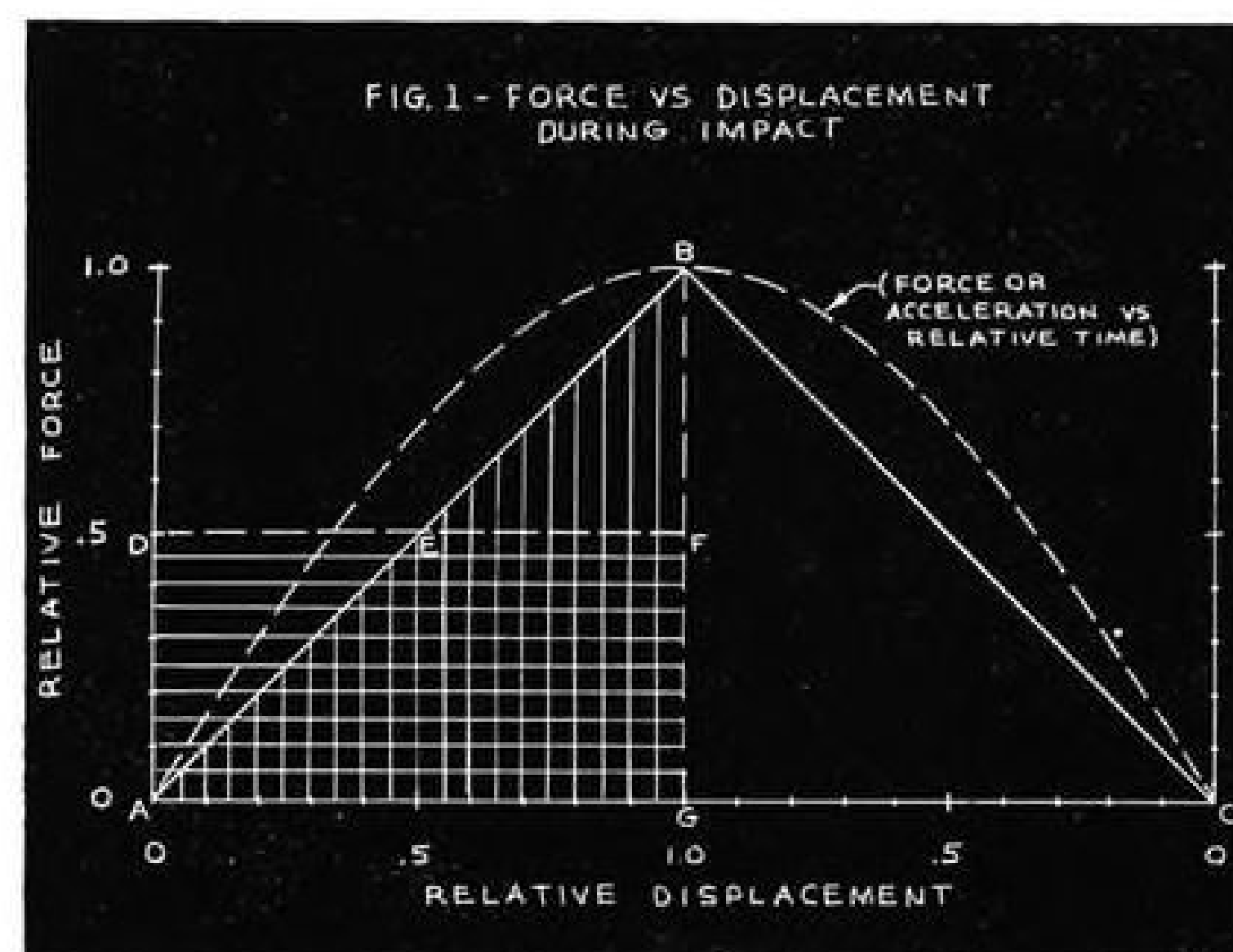
Stanley Aviation Corp., Buffalo, N. Y., announces addition to its engineering staff of Allen Price and Edward Replogle. Price has served as engineer with several aircraft companies, most recently McDonnell. Replogle, until recently head of his own company, was a design engineer during the war for Kaiser Cargo's Fleetwings division.

Belden Manufacturing Co., Chicago, elected Charles S. Craigmile president, succeeding Whipple Jacobs who resigned to become president of Phelps Dodge Copper Products Corp. The new president, associated with the company since 1915, had been executive vice president since 1942. Succeeding him is Arthur L. Wanner who retains his post as treasurer.

Curtiss-Wright Corp., New York City, elected Cleeman Withers secretary, succeeding Miss J. M. Scanlan who resigned to establish an organization to handle the transfer for all classes of C-W stock.

Continental Motors Corp., Muskegon, Mich., appointed Thura A. Engstrom works manager of the aircraft, automotive and industrial engine divisions. He also is a vice president.

ENGINEERING



New Helmet Protection Theory Advanced

Headgear makeup based on impact resistance rather than energy absorption designed to give more safety.

Highspeed flight has intensified the action of gusts on the pilot to an extent necessitating employment of protective headgear to guard against injury from striking the canopy.

The use of jettisonable canopies has also made head protection mandatory, because of the peculiar twisting effect of the slipstream as the canopy leaves the cockpit—producing a “scooping out” action of canopy edges into the cockpit.

High stalling and landing speeds of jet aircraft also demand increased pilot protection against ground loops and forced landings. And shipboard catapulting, deck arresting and carrier landings are often accompanied by large forces requiring pilot precautions and protection.

► **Extensive Study**—To meet this problem of impact resistance pilot helmets have been fabricated, in the past, of resilient material designed to distribute the impact force and provide protection against penetration of the helmet by sharp objects in the event of a crash.

However, recent investigations indicate that brain injury can also result from acceleration of the head. It is equally important, therefore, not only to provide maximum energy absorption but to limit the acceleration of the head.

In the spring of 1946, development of an improved protective headgear for aviation was undertaken as a project in the Aeromedical Laboratory, School of

Medicine, University of Southern California, Los Angeles.

This program has been principally the work of Charles F. Lombard, Herman P. Roth, Arthur G. Gross and Aaron Z. Klain, all of the school's Dept. of Aviation Medicine.

Initial investigation revealed that not only should the outer shell of the headgear possess both maximum force-distributing and penetration-resisting characteristics, but the space between the shell and head should be filled by an essentially non-resilient, energy-absorbing material.

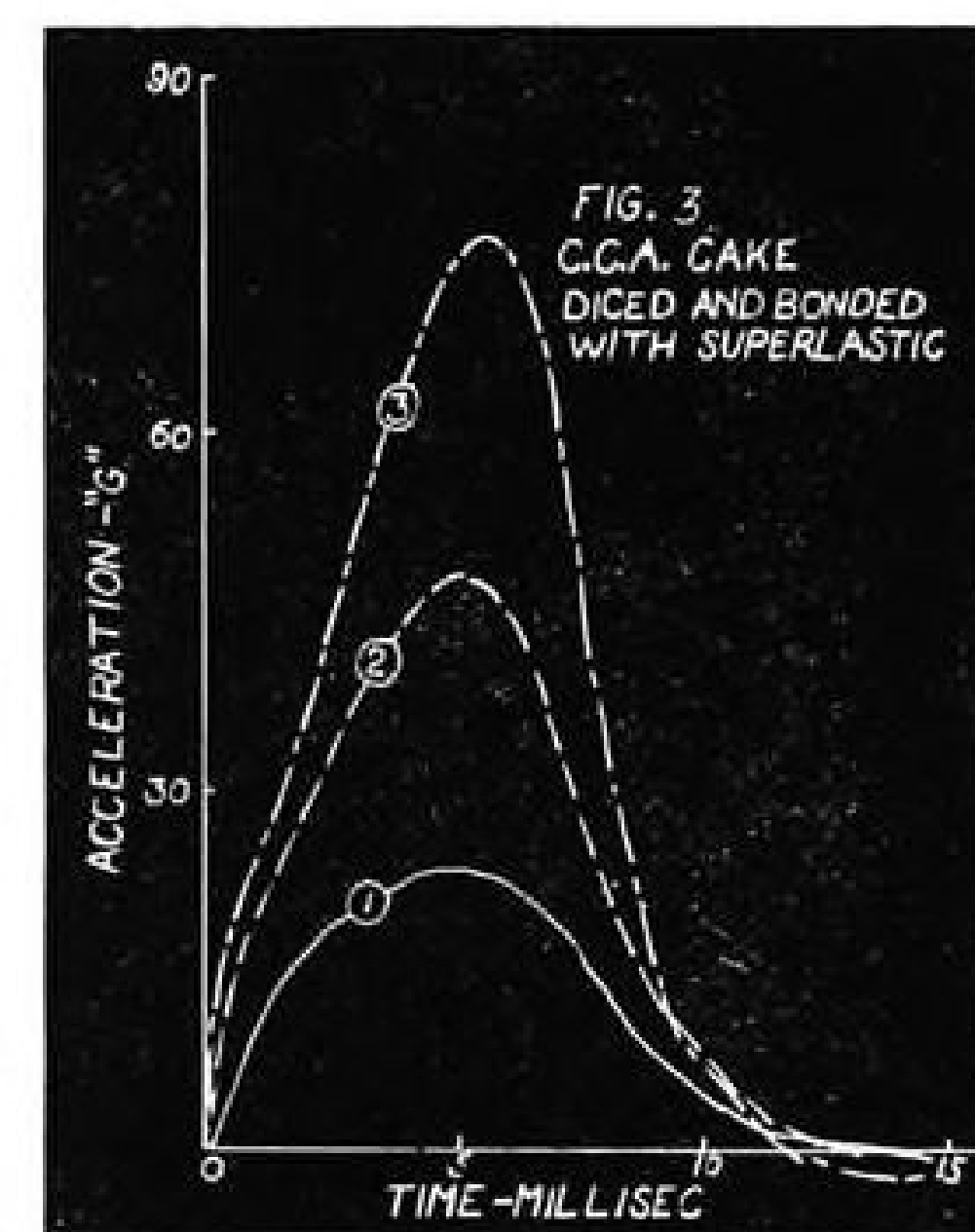
► **About Resiliency**—Greatest disadvantage of resilient material for the job of energy absorption is that during deflection it stores rather than dissipates energy. As it is deflected, an increasing restoring force is created which reaches a maximum at the point of maximum deflection and the energy is returned in the form of a rebound of the helmet from the object. This effect of a perfectly resilient material under impact loading is illustrated in Fig. 1.

Point A represents the initial point of contact of a moving object with a perfectly resilient material. As displacement proceeds from A to G, force rises to the value shown at B. Since force times displacement is work, which is proportional to energy, the vertically hatched area in triangle ABC represents stored energy, which can only be dissipated by accelerating the object in the opposite direction.

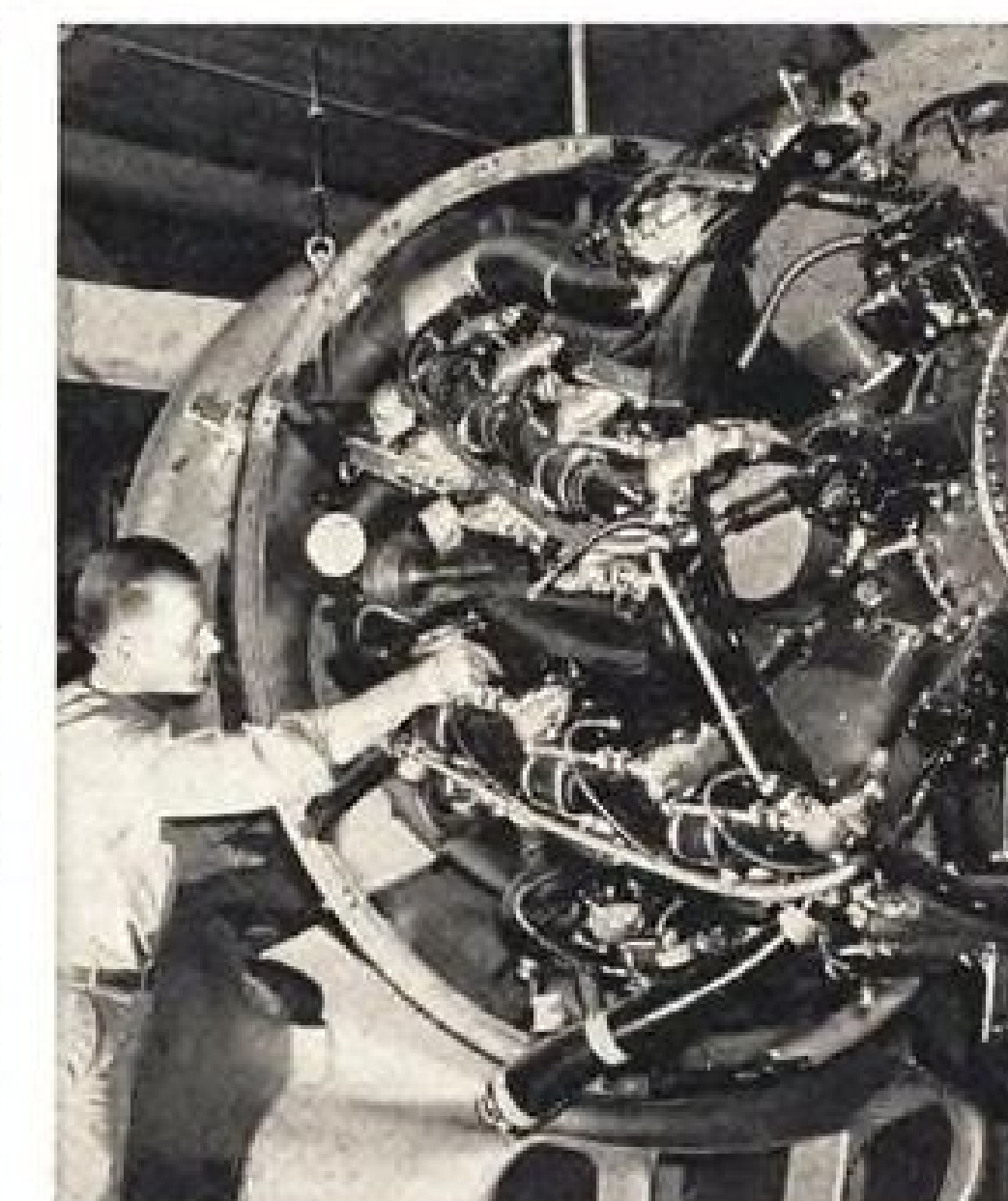
Since force equals mass times acceleration, the object has been subjected to an increasing acceleration, in the direction opposite to its original motion, from A to G. Point B therefore represents a peak of acceleration as well as of force.

► **Non-Resilient Materials**—In contrast, assume that dash-line DF represents a constant force produced by deflection of a perfectly non-resilient material in which process the energy is assumed completely dissipated. Work done, or energy absorbed, is represented by the horizontally hatched area ADFG.

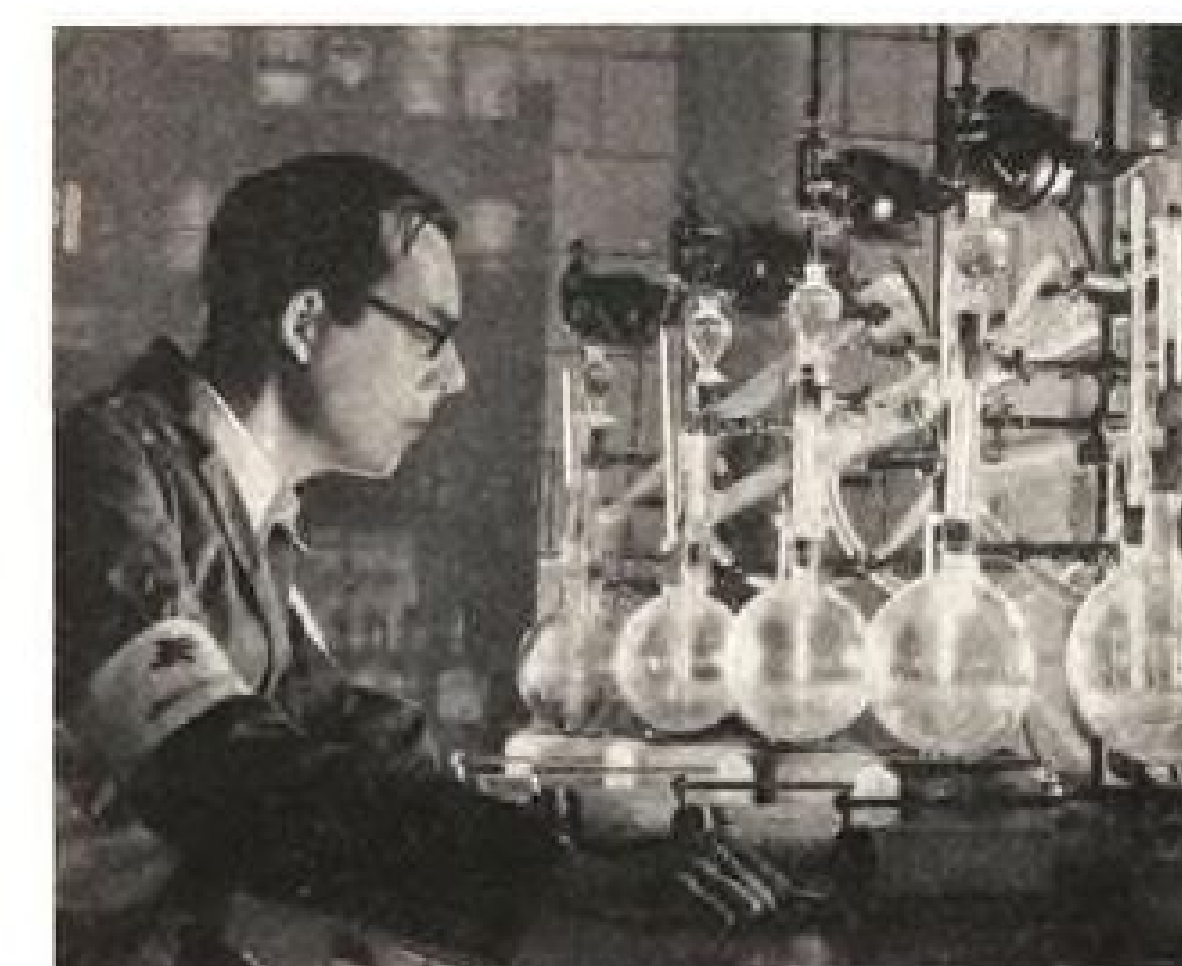
This area is the same as that of triangle ABC, indicating that the same amount of energy has been absorbed at only one-half the force and acceleration



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encountered during elastic impact. And, there is no rebound.

Most satisfactory non-resilient, energy-absorbing type of materials investigated to date is the general class of foamed or cellular plastic products. When subjected to compressive loads such materials deflect only slightly until the load reaches a value at which destruction of the cellular structure begins. The material will then deflect to about $\frac{2}{3}$ of its original thickness without much further increase in applied force.

► **Test Setup, Data**—To provide dynamic load test data, the apparatus shown in Fig. 2 was developed.

The device consists of a large mass (anvil) on which the test specimen is mounted, a pendulum hammer which can be released from different heights and allowed to strike the test specimen with various velocities and quantities of kinetic energy, calibrated strain-gage accelerometer mounted within the pendu-

lum head, amplifier for the output of the accelerometer, oscilloscope operated without sweep and a 35-mm camera operated with the film moving at a uniform speed of approximately 16 in. per sec. to record displacement of the spot.

Fig. 3 indicates the type of data obtained with this rig. The test material is cellular cellulose acetate, diced and bonded with superlastic. The shapes of the curves approximate the sine wave shown as a dotted line in Fig. 1. This latter curve is a replot of force vs. time, rather than displacement, the same set of coordinates used for Fig. 3.

Similar sets of curves for other materials indicate that acceleration varies indirectly with resiliency. For example, an ordinary golf ball created an acceleration (in a negative direction) of an estimated 150 G, cork material an acceleration of 75 G, solid cellular cellulose acetate 40-50 G.

The three curves in Fig. 3 indicate

three different levels of kinetic energy but, except for scale variations, all are of the same general shape.

► **Material Makeup**—Most successful material so far tested is cellular cellulose acetate with criss-cross saw cuts into which foam rubber is molded. The foam rubber is also molded over the surface of the material.

By selection of the proper spacing and shape of the cuts, characteristics of the foam rubber used and thickness of the rubber in relation to that of the cellular material, a resulting product can be formulated having energy-absorbing characteristics which are controllable throughout a fairly wide range.

Such a material has already been applied successfully to the "Toptex" helmet (AVIATION WEEK, Oct 4, 1948) made by Protective Equipment Co., Inglewood, Calif. This headgear is now being supplied to the Air Force, Army Ground Forces and Naval Aviation.

handle the highest load and dissipate the most power of any regulator ever designed.

Each of the three regulators consist of a tank 20 ft. high containing an electrolytic salt solution. Movable electrodes are suspended in this solution, their separation distance controlled by a hoist mechanism. Equal values of resistance can be placed in the circuit for each phase by regulating distance between the electrodes.

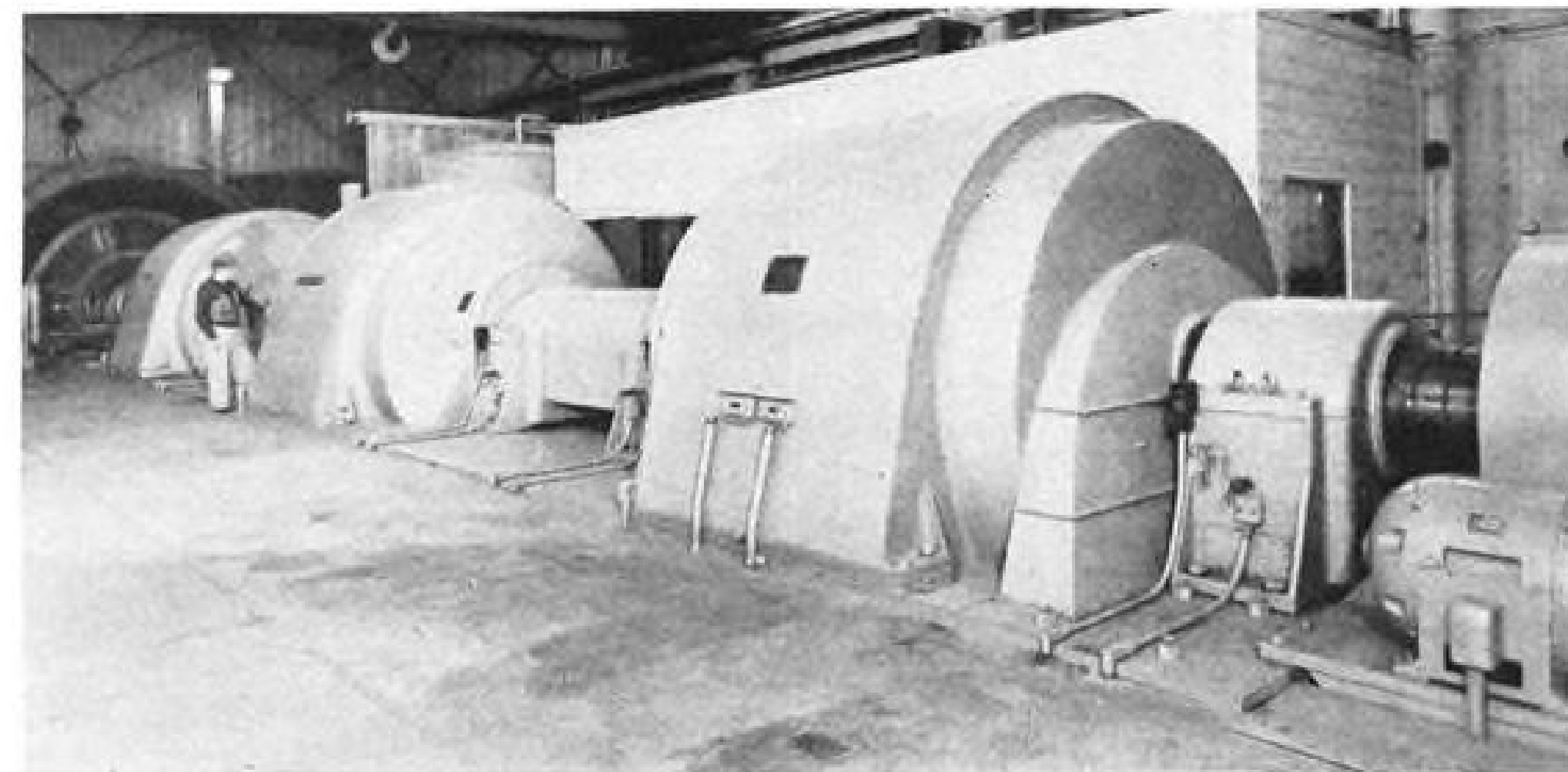
► **Start-Up**—A vital part of the system is the starting mechanism, which must be operated to avoid overloading the local power system. The motors are started in tandem, the first being accelerated to about 50 percent full primary load before allowing the second motor to cut in, the process being repeated for the third motor.

This sequence starting permits the use of lighter switching equipment, which can handle 35,000 kw. from the community utility line.

The tremendous power requirement for this tunnel will make it necessary for NACA to notify local Cleveland power officials of operating schedule requirements. The tunnel will only be operated in the early morning hours to prevent interference with local power needs demanded during the day and early evening.

Despite the unmatched size of the equipment, the tunnel is operated by finger-tip controls mounted in a remote central station.

Although the huge motors are installed, completion of the tunnel awaits installation of compressor blading and minor equipment. When completed late this year, it will give the U. S. the largest and most advanced aerodynamic and propulsion testing facility.



Drive for Huge Supersonic Tunnel

Three 29,000-hp. motors hooked in tandem to turn seven-stage compressor in Lewis Lab test facility.

Greatest amount of power ever placed on a single shaft by electric motor drive will be used to operate the new 6x8 ft. supersonic wind tunnel at the National Advisory Committee for Aeronautics' Lewis Flight Propulsion Laboratory, Cleveland, Ohio (AVIATION WEEK, Oct. 11, 1948). The huge tunnel is capable of a continuous speed of Mach number 1.8, the equivalent of 1370 mph. under standard sea level conditions.

The drive system comprises three General Electric motors each developing 29,000 hp., to afford a total of 87,000 hp. on a single shaft. This tremendous power is the equivalent of 65,000 kw.—enough to supply the needs of a 70,000-population community. The system actually has an overload capacity of 100,000 hp., more than twice as much

as the largest battleship afloat.

This huge power is required to turn the seven-stage compressor of the new tunnel, which contains 964 individual blades and weighs 600,000 lb. Despite this great weight, the rotor is so accurately balanced that a 1-oz. weight placed on one of the blades is enough to turn it.

► **Regulation**—Design of the monster motors for the tunnel required solution of complex problems. The units are wound-rotor, 8-pole, 6600-volt, induction type devices using 3-phase, 60-cycle power from standard lines.

Because it is essential that the three motors operate in perfect synchronization, special attention was paid to the design of slip-regulators. These liquid rheostat installations are the largest,

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"... have proven themselves in all sorts of weather in western states and Canada." ... Western.

"... actually require less maintenance coast-to-coast, border-to-border and to Hawaii." ... United.

"... We have been able to reduce maintenance costs with these starters." ... American Overseas.

"... among the most reliable pieces of equipment on our air freighters." ... Slick.

"... are giving reliable and economical performance on our Constellation Fleet." ... TWA.

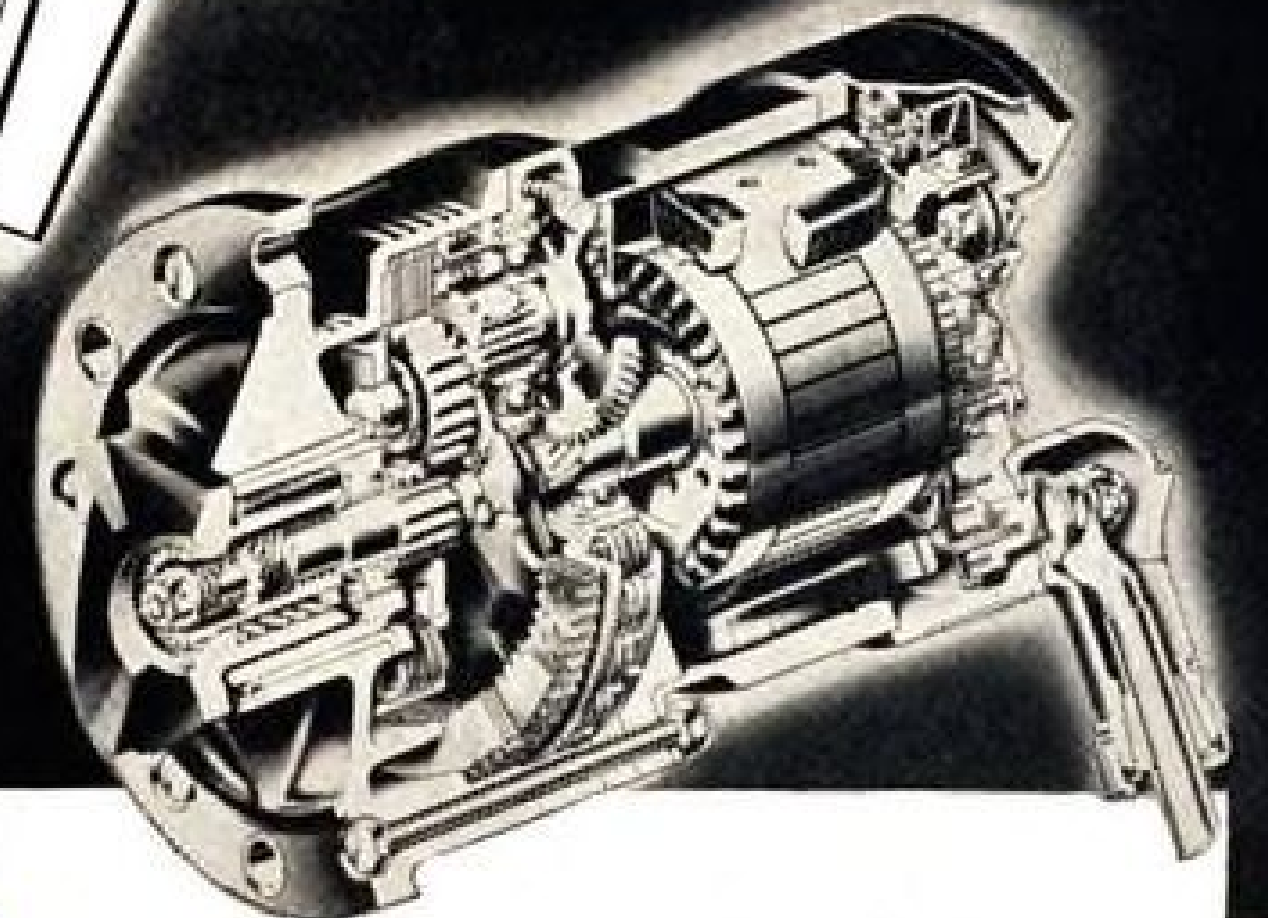
"... have cut overhaul time in half and reduced off-schedule maintenance." ... Northwest.

"... their durability and simplicity of design mean less parts replacement and less man-hours to overhaul." ... National.

"... from both operational and maintenance viewpoints their service has been very satisfactory." ... Colonial.

"... Jack & Heintz Starters have given excellent service with minimum maintenance." ... Delta.

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Congested and often hazardous traffic conditions exist on many airport aprons because of the large number of trucks and other equipment required to service an airplane. Many airports require two fuel trucks for each plane parking position.

Airports Need Better Engineering

Underground system is designed to speed plane servicing and also eliminate congestion caused by apron equipment.

By E. R. Trammell*

Rapid growth of air transportation and aircraft development in the past ten years has created a pressing demand for better-engineered airport servicing facilities.

Because of their inherent permanence, airports can't always be altered to keep pace with fast-changing air transportation requirements. But future airports could be designed with greater foresight. And, means can be devised to bring existing airport installations up to desired servicing standards.

Airlines are keenly aware of losses caused by excessive time used for servicing planes—time in which income could be produced. They envision service which is not only quicker, but more economical.

Present apron conditions at most large airports delay turnaround of transports. It takes about 30 min. to unload and load a carrier, service it and make it ready for takeoff. This delay cuts heavily into operating revenue.

► **Save Time**—Improved apron design can reduce lost time—and at the same time clear the area exclusively for aircraft.

This can be done by putting all utilities in a tunnel, with surface pits under hinged covers to house all serv-

icing facilities and safety needs.

Overhead could be cut down and income increased by reducing the time aircraft stand on the apron. Assume that at a large airport a loading position is actually in use 18 hr. daily, accommodating 36 planes for an average time of 30 min. each. If time each plane occupies the position could be reduced 15 min., 72 planes could be accommodated during the 18-hr. period.

Saving in idle time would add 15 min. flying time to each of the 72 planes, a total of 18 additional hours in the air. If the average plane carries 25 passengers and flies 175 mph., the speed-up could add 78,750 passenger miles, worth, say, 5 cents per passenger mile—\$3937.50 per day or over \$1,400,000 per year.

Apron space needed for airline operations is determined by number and spacing of scheduled flights and average length of time the scheduled aircraft occupies the apron for unloading, loading and servicing. If aircraft standing time can be reduced, there is a proportional reduction in the number of loading positions needed.

For an airport that requires 20 loading positions to take care of its traffic under present apron operating conditions (30 min. on the apron for each aircraft), a reduction to 15 min. would cut the needed number of loading positions to ten. If width of apron is 400

ft. and loading positions are 150 ft. wide, such reduction could mean a decrease in required pavement of 66,667 sq. yd. At \$7.00 per sq. yd., the average total cost of apron, this would represent a saving of \$466,669.

► **Improvement Suggested**—Thus, a considerable amount could be spent economically in improving apron utility services.

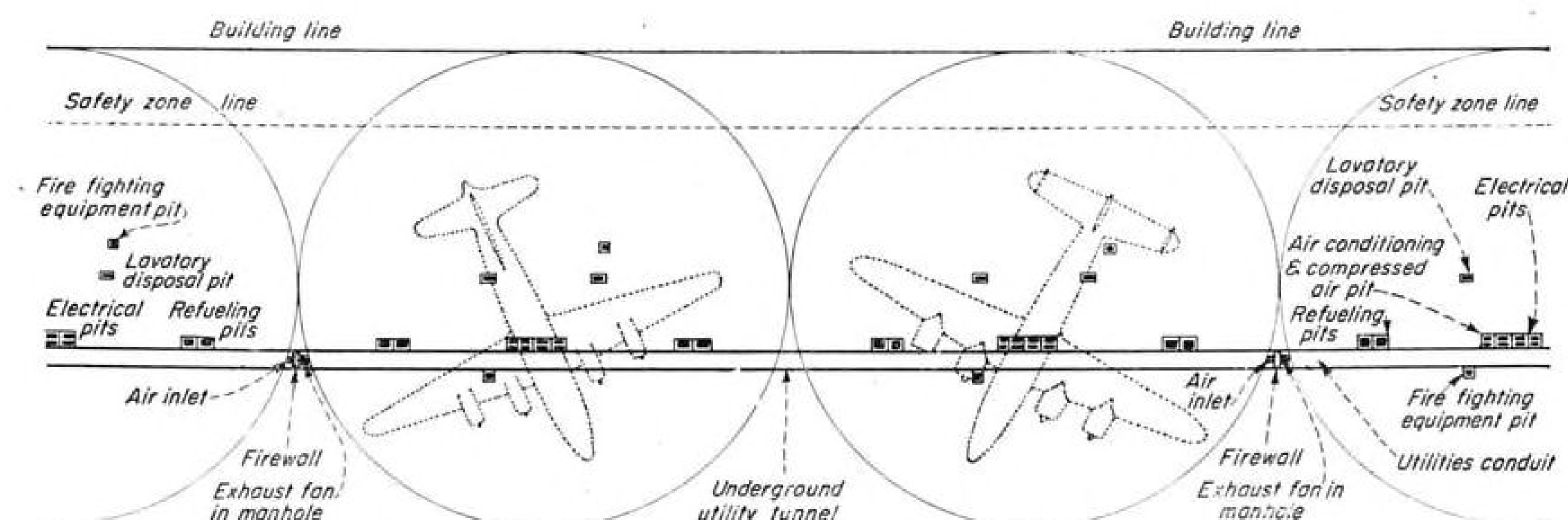
As different types and sizes of planes have developed, a great assortment of equipment has grown up for servicing them and for handling passengers and cargo. The result is that a large portion of the apron space near the terminal building is used for parking and storing equipment.

Each plane's servicing operation requires at least one fuel truck, an air-conditioning truck, waste disposal truck, two fire extinguisher carts, electric utility cart, two ladders for refueling use, and miscellaneous mechanics tools.

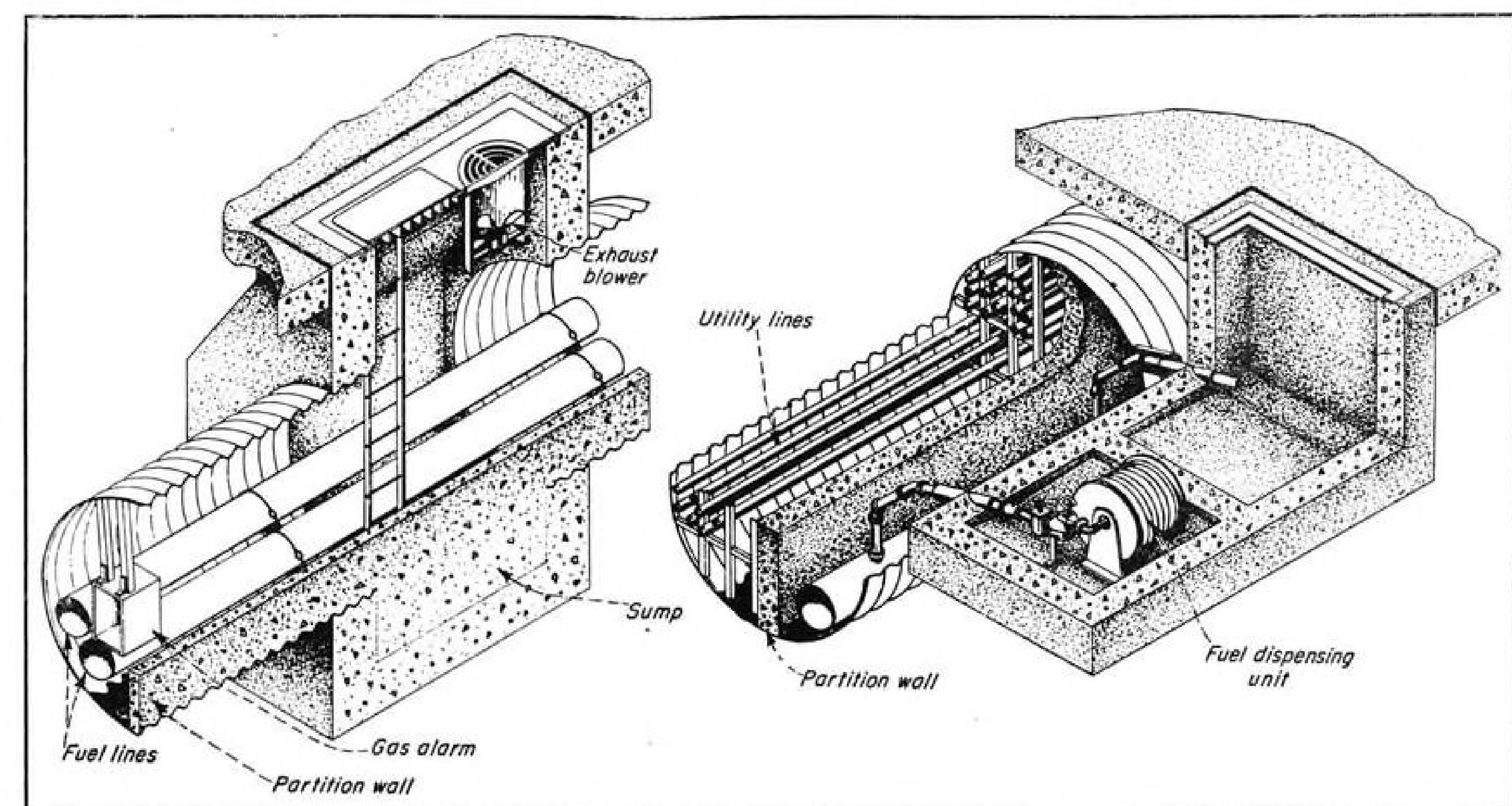
Each time a plane docks, ground crews must move this equipment out to the plane—then back after servicing. Approximately eight men are required for each plane serviced.

Most apron service units have been developed as the need for each arose.

► **Utility Tunnel**—It would seem practical to put all these facilities into a utility system that will greatly reduce the time required for apron servicing. In one such type of system, the basic



Utility tunnel under airport apron carries all piping and conduits to service pits located conveniently at each plane parking position. Pits have flush, hinged covers stressed to take aircraft wheel loads, also serve as storage space for accessory equipment, tools.



Underground facility is 6½ ft. in diameter, affording sufficient working space for accommodation of maintenance crews to make repairs or to install additional equipment as the need may arise. Longitudinal partition separates fuel lines from electrical conduits.

utilities are housed in an underground conduit with service outlets provided at each loading position. The 6½-ft. conduit is large enough to admit workmen for maintenance and for addition of new utilities when needed.

Loading positions have utility outlets grouped for convenient access to the parked planes. Utility connections are installed just below the apron surface in pits with hinged aluminum alloy covers designed to support the heaviest aircraft using the airport. When coming into loading position, the plane moves over the pit cover into its dock. Pit is located so that the landing gear of the plane will not rest on the covers. And all utility outlets in the pit are close to their connections on the aircraft.

With such a layout, the electric outlet is almost in the center of the loading position near the external plug on the bottom of the fuselage, regardless of direction in which the plane is pointed. Similarly, the refueling pit is always close to the fuel tank inlets in the wings.

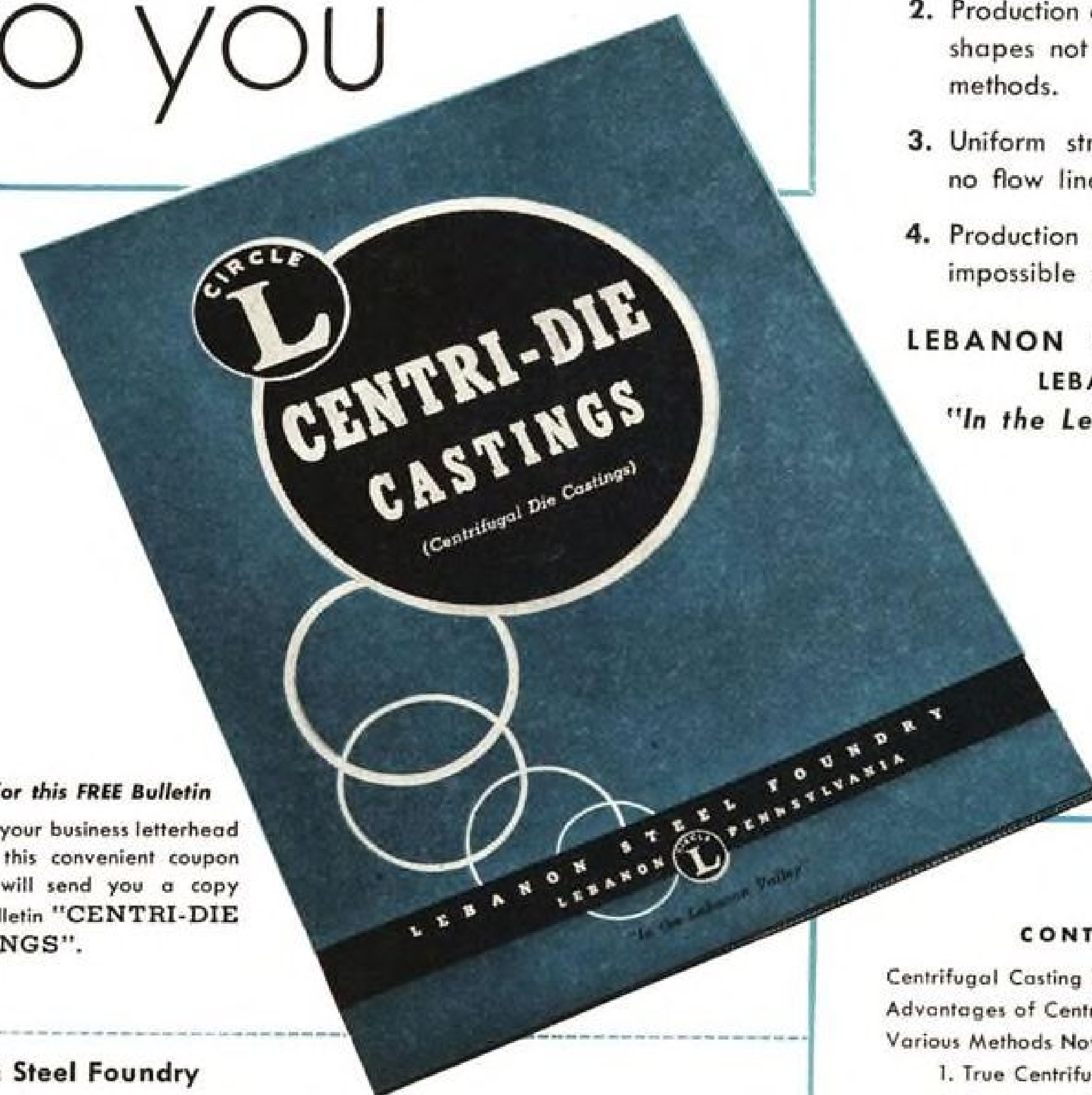
There are pits containing fire extinguishers on both sides of the plane. In case of a sudden fire, at least one could be placed in operation immediately. Air conditioning and compressed air pits are near the center of the loading position, where they will be needed. Air-conditioning may be obtained from individual units at each loading position, or from the building airconditioning system.

A convenient utility is the proposed lavatory disposal connection—a 6-in. flexible hose with a half twist connection on each end for attaching to the plane and to the sewage outlet in the pit. The pit connects with an 8-in. sewer pipe (inside the utility conduit) that carries sewage from all the loading positions. Attached to the flexible sewage hose is a water line that connects to the plane and flushes the waste container inside the ship.

► **Fewer Personnel**—This plan removes most equipment from the apron. It places each utility where it can be reached and used with a minimum of effort. All utility hoses are on self-winding spindles. After using the equipment, the attendants simply close the

* Chief Engineer, Airways Engineering Consultants, Inc., Washington, D. C.

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pit covers, and the operation is complete.

Two men can bring the plane into the loading position and perform the ground services (air conditioning, sewage, water, checking tires, and loading and unloading baggage while two mechanics refuel, check oil, service engines, provide electrical connections and stand by for fire protection.

Thus, four men can perform all services in much shorter time than eight men take for the same operation at most airports today.

A large-diameter conduit is desirable for several reasons. It permits installing only the immediately necessary utilities in the first stage of construction and adding others later, as air traffic grows, without ripping up the apron surface. **► Safety Provisions**—Maintenance and repairs of utility lines can be made inside the conduit without hindrance to aircraft operations on the apron.

To prevent accumulations of gasoline vapors in the conduit, there is installed, at each alternate manhole, a masonry firewall and an explosion-proof exhaust fan capable of changing the air in the

section between firewalls every two minutes.

In addition, a gas detector, sensitive to two percent of gasoline vapor in the air, is installed in each section. The detector is connected to a central station alarm which will be sounded if vapor collects in dangerous amounts.

Additional safety is provided by constructing a longitudinal 12-in. masonry partition wall that divides the conduit into half and acts as a firewall. On each side is a 21-in. walkway.

In one half of the tunnel are the electric conduits, communication conduits and related utilities, with adequate space for future additions. In the other section are the fuel, sewage, water and compressed air lines, and related utilities.

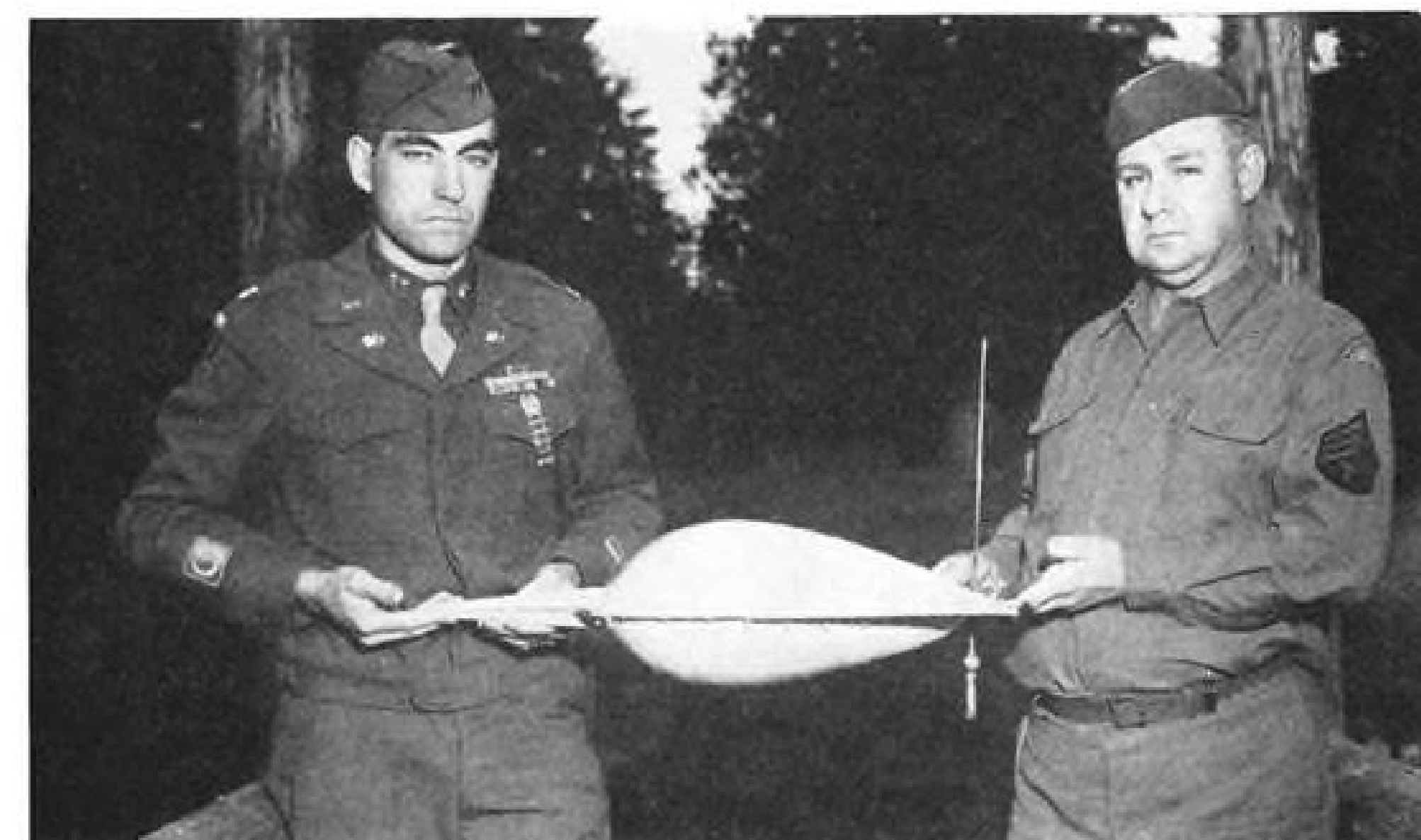
► Tunnel Cost—Estimated cost of the proposed underground conduit, with fuel lines and racks for other utilities installed, is \$80 per linear ft., or \$12,000 for each 150-ft.-dia. loading position. Estimated cost of two fuel pits with equipment to deliver 400 gpm. is \$3,000, making the total cost of the underground fuel system \$15,000 per loading position. The minimum esti-

mated useful life of the underground system is 30 years.

Refueling at most airports is done by trucks. To insure continuous refueling by this system requires at least two trucks—a total cost of \$30,000—for each loading position. Life of a fuel tank is estimated at 5 yr.

For the same construction cost specified above, the underground conduit is available for carrying other apron utilities. A saving of approximately \$30 per foot of loading position could be realized on electric and communication utilities through the elimination of underground conduit which would otherwise be required.

To obtain the viewpoint of interested people on such a proposal, the design criteria for the utilities conduit have been submitted to such groups as the Air Transport Association of America, American Petroleum Institute, aircraft manufacturing companies, and individual aviation fuel and oil companies. Comments also have been received from the Civil Aeronautics Administration, the Air Force, and the Office of the Chief of Engineers, U. S. Army.



Metal-Stretcher Use Extended In Industry

The "rotor stretcher," developed during the war by Goodyear Aircraft Corp., has been sold to the Cyril Bath Co. of Cleveland and is now being offered commercially to industry.

The device is basically a stretch press but utilizes a power-driven turntable as the operating element, rather than a conventional linear actuator.

One end of the raw stock is attached to a fixed base, the other end to a clamping device on the turntable. As the table turns, a form is moved against the raw stock and rotated to apply a stretching action which molds the material in the shape of the form.

Both Goodyear and Bath used the rotor stretcher during the war for the forming of a wide variety of aircraft parts. Wing attach angles for the Curtiss C-46 were formed of four-by-four extruded angle stock held to close contour because of the need for accurate machining to wing shape. Parts for Curtiss, Boeing, Budd and others included tank straps, wing tips, cowlings parts, tunnel rings in both aluminum and stainless steel, spar angles, stabilizer supports, engine mount rings, etc.

The stretcher is now being applied to produce jet engine shrouds and liners and a wide variety of complex bends for miscellaneous industrial applications. Aluminum alloy, stainless steel, bronze, magnesium and steel stock is being handled by the device.

Crash Radio Aids Rescue Search

This 10-lb. crash radio set, held by its creators, Capt. Iver Jacobsen and Sgt. Frank Perry of the Washington National Guard, is designed to be held in the tail of a lightplane, on rubber supports.

A trip switch goes off on impact and starts the radio operating, while a counterbalance holds the 18-in. antenna upright. The transmitter works on a frequency of 142,920 kc., giving a signal for 100 hr. with two tiny batteries.

Transmitting distance is "line of sight" on the ground. In the test area it has been found to be 18 mi.

In event of a water crash, the set will float.

It's believed that the device could be made to sell for not more than \$30 if produced in quantity. Further testing and refinement of the apparatus is being carried out.

Idea for the crash set was conceived by R. C. Ward, Washington state patrolman, who has spent much time searching in the rugged mountain areas for 53 planes still missing.

He knew of many plane crashes where injured flyers might have been rescued if searchers could have reached them sooner. A radio which would start operating at the time of the crash and send out a continuing signal was the answer, he reasoned.

NEW AVIATION PRODUCTS



proper operation. Long studs can be run out of handle hole and puller can then be turned via 1-in. hex milled on top.

Spline Burring Machine

Flytool machine that can burr spline where adjacent shaft diameter approaches spline root diameter is marketed by Sheffield Corp., Dayton 1, Ohio. While primarily single purpose device for use on involute or straight spline, it can handle more than one size, provided parts lend themselves to machine's general specification. Part is placed in receiver and hand-or-air-operated clamping device forces it into rotating spline collar and forward against positive stop. Part and cutter are timed together, flytool passing through spline tooth, chamfering 30 to 40-deg. angle on each side of tooth. It's stated that in many cases splines may be chamfered in root as well as on sides. After part has made complete revolution, burring all splines, operator is signaled by light. With unclamping, part is ejected by spring collar. Average 10-tooth spline can be burred in approximately 3 sec., and machine and loading time will average 7 sec., making total floor to floor time 10 sec.

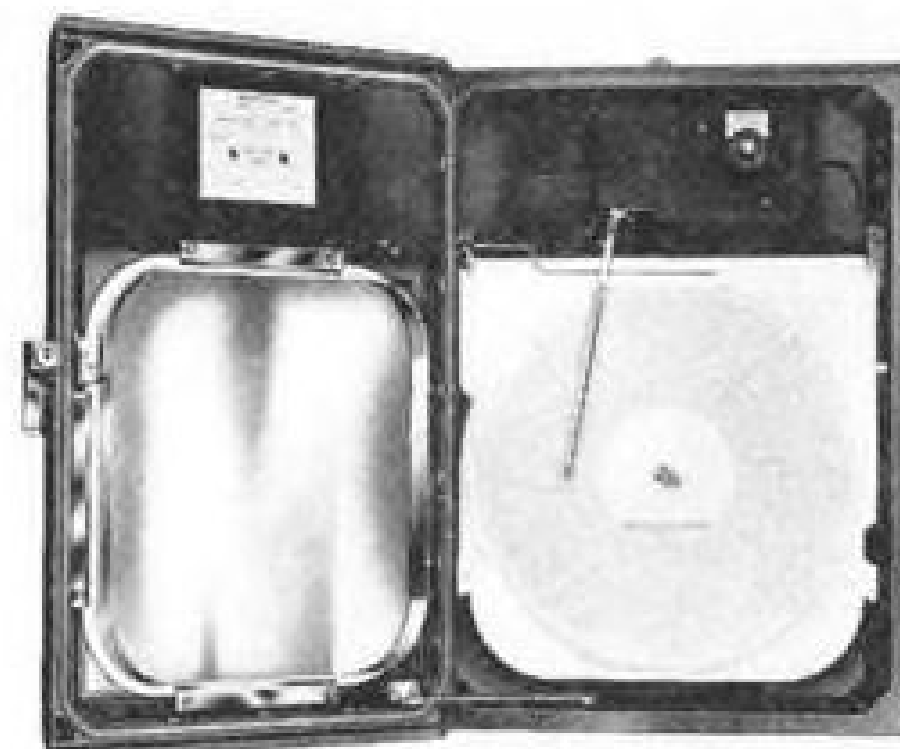
Controls Machine Speed

Thy-mo-trol drive, Type HL, is offered by General Electric Co., Schenectady 5, N. Y., to provide, via turn knob, smooth stepless speed control on small lathes, grinders, drill presses, conveyors and pumps. Furnished in ratings through 1/2 hp., device utilizes simplified half-wave circuit to provide d.c. flexibility from a.c. power, and operates from 220v., 60c. source (for other voltages, suitable anode transformer is available). Unit has 20-to-1 speed range from 1725 to 86 rpm., operates efficiently in ambient temperatures from 50 to 104 F., and is furnished in non-reversing or reversing type. Intended for constant-torque loads, drive is stated to have under normal conditions excellent speed regulations from no load to full load. Dynamic braking permits quick stopping. Maximum tube life is obtained when voltage fluctuates no more than 5 percent. Electronic panel is mounted in a compact, ventilated enclosure.

New Stud Puller

Tool with capacity of 1/4 to 1/2 in., and requiring no collets, wedges, or other parts to adjust it to different studs in its size range is made by Snap-on Tools Corp., Kenosha, Wis. Knurled collar is turned to "in" for replacing or "out" for removing. Square drive is 1/2 in. Three jaws automatically close to stud and grip when pressure is applied. Jaws release with pressure release to ready for another "bite." Tool has 2 3/8-in. face, is 3 1/2 in. high and only 1/2-in. stud protrusion is necessary for

lulose nitrate and has precision-milled beveled cutouts for accuracy. Size is 4 x 3 1/2 in.

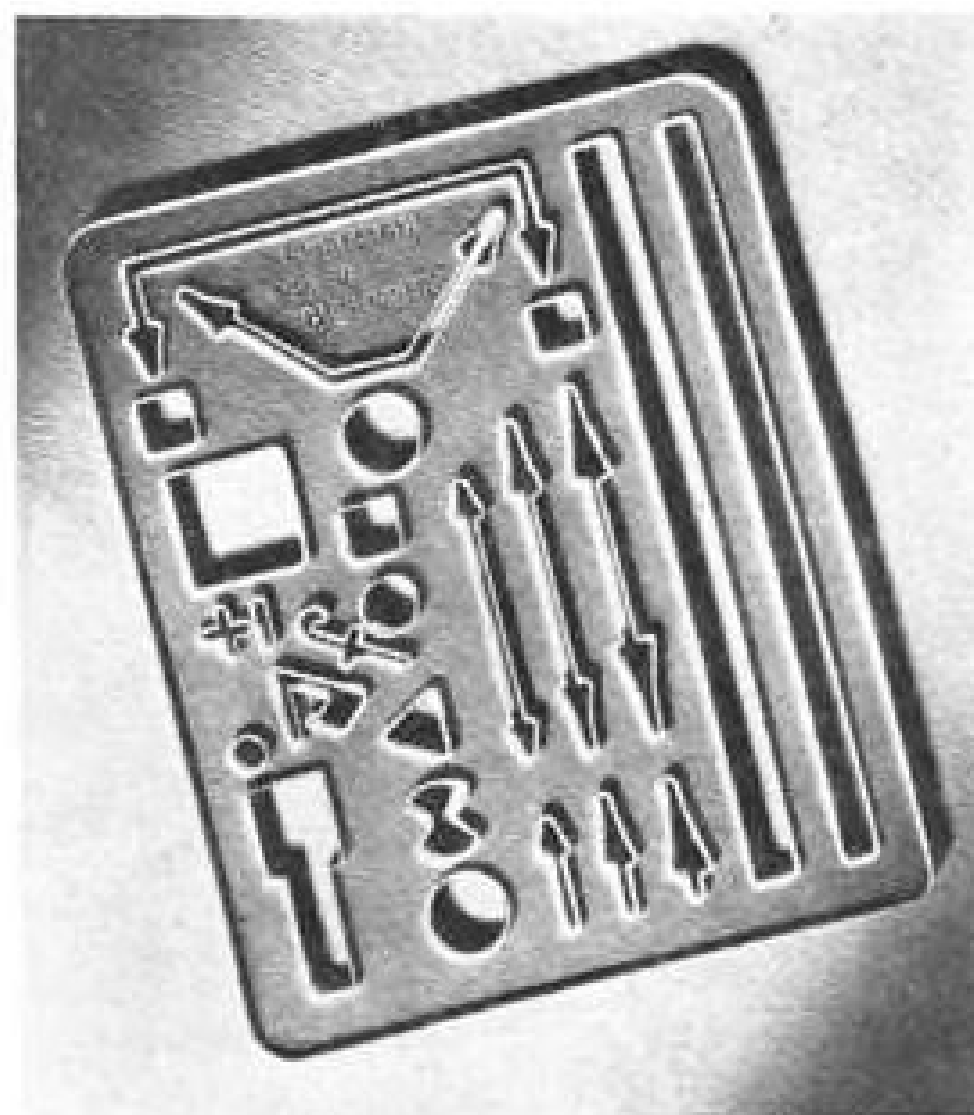


Checks Production Jobs

New production instrument known as "Running-Count Recorder" is announced by Bristol Co., Waterbury 91, Conn. Device plots curve of number of operations against time. Total number of operations or pieces produced is determined by multiplying number of complete pen traverses across chart by count per traverse for which instrument is calibrated. Hourly rate of production can also be read. This gives information regarding effect of fatigue on operators, variations in productibility between operators, effectiveness of job training programs, and the effect of variations in working conditions. Excessive down time is easily observed.

For Material Testing

New motor-driven, screw-type, 20,000-lb. testing machine, designed for short-time, creep-rupture tests at high temperatures, with minimum of operator attention, is announced by Baldwin Locomotive Works, Phila. 42, Pa. Constant loads are maintained up to 100,000 psi. on standard 0.505-in.-dia. specimens while temperatures are held constant up to 2200 F. It's claimed tests of this type may run for 10 to 400 hr. Feature of machine is flat 10 x 10-in. chart recorder panel in front, with which no extensometer is required and no strain readings need be made. Elongation vs. time curve is automatically drawn on chart from start of test until rupture occurs. Elongation is also indicated by revolution counter reading in thousandths of an inch. Change gears in elongation drive to recorder give 1, 2 and 4 percent elongation per inch. When specimen ruptures, control circuit (of which specimen is part) is broken. Unit can also be adapted readily to short-time tensile, constant strain-rate, or relaxation tests. Machine weighs approximately 1200 lbs., is 7 ft. high, and requires 16 by 30-in. floor area.



Drafting Aid

New No. 60 dimensioner template, for speeding callout, dimensioning and lettering of drawings, is intended to facilitate execution of uniform and neat symbols conforming to standard drafting room practice. Made by Rapide-sign, Inc., P. O. Box 592, Glendale, Calif., device is fabricated of .040 cel-

FINANCIAL

Option Holders Eye Slow Market

Investment bankers and airline officials hoping for comeback in securities as expiration dates approach.

Airline warrants and options are running out. With declining markets for airline securities in recent years, the value of such options gradually has been dissipated. In most instances, only through a substantial recovery in market quotations during the remaining limited life of these options can the holder expect to realize any profits.

For this reason, various airline officials and investment bankers are hoping fervently for a rise in market prices to breathe substance into options and warrants they now hold, which presently are under water with expiration dates rapidly approaching.

► **Next Expiration**—The earliest option about to expire is that held by Croil Hunter, Northwest Airlines president, entitling him to a call on 10,000 shares of NWA common stock at \$14 per share by Feb. 8, 1949. With the common now selling around \$10 per share, the option value is most academic. However, this same option was scheduled originally to expire a few years ago, but has been renewed from year to year. At the discretion of the company's board of directors, it again may be extended for another year. Northwest has reserved an additional 20,000 shares of common stock subject to option to officers, but has made no allocations in this respect.

Colonial Airlines, in its 1947 stock financing, issued a total of 30,000 warrants to its underwriters, Auchincloss, Parker & Redpath; Shields & Co.; and Hornblower & Weeks. Each warrant can purchase one share of Colonial at \$12.25 per share before Feb. 20, 1950. With the quotation of the stock now around \$6 per share, it would have to more than double in market price to impart any value to the warrants. Any further time extension for these warrants would be difficult to justify, as they were issued originally in consideration as part compensation for the 1947 underwriting. T. J. Dunnion, assistant to the president of Colonial, holds an option on 5000 shares of common at \$12.50, good until Nov. 9, 1949.

► **Significant Warrants**—The most significant warrants, probably, are those originally granted C. R. Smith, chairman of the board of American Airlines. As adjusted by stock split-ups, these give the holder the right to purchase

250,000 shares of American Airlines common at \$11.70 per share up to June 1, 1950. This option once was worth more than \$2 million in paper profits. Currently, it is under water, with the stock quoted around \$8 per share. The leverage existing in the American Airlines capital structure, however, imparts considerable potential value to these options.

Western Air Lines awarded its new president, Terrell Drinkwater, an option on 25,000 shares at \$9.37 1/2 per share up to Dec. 31, 1951. With about three more years to run and the price of Western's stock around \$6 per share, considerable potential value remains to this option. Less fortunate were Western officials who formerly held options on more than 75,000 shares at \$16.50 up to Dec. 31, 1947.

► **Option Variation**—United Air Lines has a variation of the option arrangement. During 1945, it awarded "management" stock to key officials. At that time, "management" stock which closely approximated book value was available at a substantial discount from the market price of the common into which the former is ultimately exchangeable. On this premise, material awards of management stock were made to United officials. At the 1946 year-end, a total of 39,150 shares of such special stock was issued. With the subsequent decline in United's market price, the holders of the management shares received no advantage. In fact, they suffered a material paper loss through their original purchases. The company apparently had been re-purchasing some of this stock, as there were only 36,650 shares outstanding as of Sept. 30, 1948.

In addition to 5000 shares of management stock, President Patterson held an option on 2817 shares of common stock at \$11 per share. This option, first schedule to expire on Dec. 31, 1946, has been extended from year to year, and was slated for expiration at the last year-end. However, it is not now known if the board of directors have granted a further extension.

► **Other Arrangements**—Braniff Airways, in January, 1947, granted options on 45,000 shares of its common stock at \$11.87 1/2 per share to five members of its executive committee for a period of five

years. With Braniff's equity currently selling around \$6 per share, about three years remain in which to impart real value to these options.

All American Airways awarded Robert Love, its president, an option on 15,000 shares at \$12 per share, good until Jan. 7, 1951. With the price of the stock now around \$2.50 per share, there is some distance to overcome in breathing substance to this option.

The longest option arrangement prevails in the case of Chicago & Southern Airlines. In 1946, ten-year options were extended to two officers of the company, permitting them to acquire a total of 15,000 shares of common stock at \$10 per share. Usually, five years has been considered the maximum period for any option's duration.

► **Past Profits**—Despite the sorry plight of holders of options on airline securities in recent years, this instrument has proved extremely profitable to its recipients during the earlier development of the air transport industry.

For example, Capt. E. V. Rickenbacker, president of Eastern Air Lines, received in 1938 an option to purchase 20,000 shares of Eastern at \$10 per share over a period of years. This option and another for 5000 additional shares were all exercised. Allowing for the subsequent four-for-one stock split-up, the cost is \$2.50 per share.

Pan American Airways, in December, 1935, granted its president, J. T. Trippe, an option to purchase 50,000 shares of stock at \$15 per share. Subsequently there have been two separate stock split-ups which increased the shares four-fold.

► **Established Practice**—The option and warrant device to make stock available to management on advantageous terms is well-established in American corporate practice. Applied within the confines of reasonableness, the principle has led to progressive management policies and benefited the companies involved. The issuance of such options is designed to give the officials concerned a greater incentive in promoting more profitable operations.

Only the passage of time can show whether these added forms of compensation are justified. Frequently, many companies may be part of an industry which happens to be riding the tide of success through circumstances beyond management control. The course of the business cycle, in the past, has spelled success or failure for many an enterprise without or despite any special efforts on the part of the executive officers. When a management can show constructive results in the face of an adverse industry trend, there is very little cause to begrudge the officials responsible the added compensation afforded through stock options.

—Selig Altschul

AVIATION CALENDAR

Jan. 24—Honors Night dinner, Institute of the Aeronautical Sciences, Hotel Astor, New York City.

Jan. 24-27—IAS seventeenth annual meeting, Hotel Astor, New York City.

Jan. 27—Society of Automotive Engineers, metropolitan section, fuels and lubricants meeting, Engineering Societies Bldg., New York City.

Jan. 31-Feb. 4—American Institute of Electrical Engineers, winter general meeting, Hotel Statler, New York.

Feb. 8—ICAO Operations division, Montreal.

Feb. 19-27—National Sportsmen's Show, Grand Central Palace, New York.

Feb. 22—ICAO Airworthiness division, Montreal.

Feb. 24-25—4th annual aviation conference, Washington-Youree Hotel, Shreveport, La.

Mar. 3—Society of Automotive Engineers, metropolitan section, air transport meeting, Engineering Societies Bldg., New York City.

Mar. 10-12—Annual meeting of American Society of Tool Engineers, Hotel William Penn, Pittsburgh.

Mar. 18—Annual national aircraft propulsion meeting, Hotel Carter, Cleveland, sponsored by IAS.

Mar. 22-24—Air Transport Assn., annual airline engineering and maintenance conference, Continental Hotel, Kansas City.

Apr. 25-27—American Association of Airport Executives, Oklahoma City.

Apr. 11-13—Society of Automotive Engineers national aeronautic and air transport meeting, Hotel New Yorker, New York.

Apr. 11-16—Western Metal Congress and Exposition, sponsored by American Society for Metals, Shrine Civic Auditorium, Los Angeles, Calif.

Apr. 19-21—AIEE, southwest district meeting, Baker Hotel, Dallas, Tex.

Apr. 22-24—Second Annual Oklahoma City Air Show, sponsored by Oklahoma City Chamber of Commerce.

May 2-4—2nd annual meeting of the Airport Operators Council, Denver.

May 19-21—Society for Experimental Stress Analysis, spring meeting, Hotel Statler, Detroit, Mich.

May 23-24—Annual meeting of the Magnesium Assn., Edgewater Beach Hotel, Chicago.

June 20-24—AIEE, summer general meeting, New Ocean House, Swampscott, Mass.

July 3-4—First Annual Southern California International Air Race, Long Beach.

July 13—ICAO North Pacific regional air navigation meeting, Seattle.

Aug. 24—ICAO African-Indian ocean air navigation meeting, Algiers.

Aug. 29—Federation Aeronautique Internationale, Cleveland.

Sept. 3-5—National Air Races, Cleveland.

Sept. 26-28—National Electronics Conference, Edgewater Beach Hotel, Chicago.

PICTURE CREDITS

13—IAS, Lovelace Clinic, Weather Bureau, Curtiss-Wright; 14—TEMCO; 15—Press Assn., McGraw-Hill World News; 20—NACA; 33—PAA; 34—Seaboard and Western.

LETTERS

Helicopter Comments

AVIATION WEEK is still receiving letters from the industry commenting on an editorial Jan. 3, "Lift the Ceiling on Mercy Copters," of which the following are examples:

It is true, in my opinion, that the helicopter is a forgotten item on military procurement. The potential use of this type of aircraft has not even been touched by our military forces.

However, I would carry the criticism one step further: Helicopters can be used only if good helicopters are developed. So far, there are no simple or inexpensive helicopters. A strong criticism of the armed forces is that money should be made available on a large scale to procure research contracts while this type of aircraft is in its infancy so that millions of dollars can be saved in later procurement.

Do you know that there are absolutely no funds available for helicopter research either from Wright Field or the Bureau of Aeronautics? And, in addition, this condition has existed for some time!

As a prime contractor to the U. S. Air Force for the construction of their HH-11 helicopter, I have found that Wright Field does not have any funds for the procurement of research data that would lead to the development of low cost, easy to fly, helicopters for military and public use; what little money the Bureau of Aeronautics has been able to obtain has had to go toward the development of minor changes on existing equipment or re-designs.

To me, this is a very short-sighted policy because a few million dollars spent on basic research on new types of helicopters and rotors at this time would develop low cost machines that would cut down the cost of production models and produce not only better helicopters but have less money in them in the long run.

I want to congratulate AVIATION WEEK for the excellent publicity and information that it has given toward the encouragement of the "infant" helicopter industry. Keep up the good work!

GILBERT MAGILL, President
Rotor-Craft Corp.
1204 Airway Drive
Glendale 1, Calif.

It is the most effective and encouraging statement of the helicopter's import I have read. I feel with the utmost sincerity that a straight-forward editorial of this nature—and particularly one coming from such a respected source—constitutes a substantial contribution to military preparedness, to development of commerce, and to fuller and quicker application of the helicopter in the public services it can render . . .

We owe a debt to the designers, engineers and test pilots who in a few years have brought the vision of the helicopter . . . to the point of an extremely useful vehicle and tool. But without distracting from the accomplishments of the technicians, we must be equally grateful to those life yourself who

are doing so much to put this and other useful tools to work.

Perhaps the complexities of these intricate times do not permit many official minds to realize immediately the full import of all new developments which are placed before them.

Your editorial is particularly pertinent to concepts of trans-Polar and Arctic warfare. Most of us are familiar with and fully appreciative of the extensive rescue facilities—surface craft, submarines and aircraft—which were a major component in the success of B-29 operations through the hazards of the long over-water flights between the Marianas and Japan. It is equally essential that a comparable rescue potential be readily available in the event of operations in the Arctic. . . .

MONROE R. BROWN, Secretary
Helicopter Council
Aircraft Industries Assn.
Shoreham Building
Washington, D. C.

"Persuading Millions . . ."

Your third editorial on "Persuading Millions to Fly" was another excellent one . . . For over a year our Junior Chamber of Commerce . . . has been working on an Air Age Education Program . . .

We conducted the "First St. Louis Air Age Institute" on Sept. 25. Those invited to attend . . . were a select group of educators . . . members of the Board of Education of . . . St. Louis and staff members, principals of elementary schools, high schools and colleges, faculties of our teachers colleges and representatives from the Education Department of our two universities . . . There were 131 who attended this program; 92 took a plane ride; 67 were first riders . . .

It was indeed gratifying for me to note the fine work which American Airlines has done in many of our leading cities. Perhaps we in St. Louis are not too important to the airlines or at least we found it to be so at our Air Age Exhibition held on Oct. 17. At this exhibition, which over 75,000 people attended, all the airlines presently serving St. Louis were contacted and requested to have planes available, if not for sightseeing flights, at least . . . for walk-through inspection . . .

Slick Airways, which had a C-46 available throughout the day, had a continuous line of people looking through the plane from the time the exhibition was opened . . . The only other commercial plane which was available for any period of time was a lay-over plane of Mid-Continent. What a tremendous selling job could have been done by the carriers serving St. Louis by making their Constellations, DC-6s, DC-4s and Convairs available for this exhibition.

. . . I am happy that at last some of the industry is realizing this is the way we overcome fears and prejudices which are presently holding back much development of air travel.

A. PAUL VANCE, Transportation Bureau
St. Louis Chamber of Commerce
St. Louis, Mo.

AVIATION WEEK, January 24, 1949

SALES & SERVICE



Odom waves after landing at Oakland Airport.

Odom Plans to Break Own Record

Hopes to make second Honolulu-New York nonstop try; rough weather cut first attempt short at Oakland.

By Alexander McSurely

Capt. William P. Odom is already planning a second attempt at a 5010 mile Honolulu-New York non-stop flight in the same Beech Bonanza which he landed last week at Oakland (Calif.) Municipal Airport, after completing 2406.9 miles of the trip.

Charles Logsdon, NAA contest committee secretary, told AVIATION WEEK that official confirmation of the new record set by Odom for planes of the Bonanza power class, awaited complete checking of fuel tanks and timers' reports from Honolulu and Oakland. Odom's flight exceeds by 145.2 miles the previous international record of 2061.7 miles held by two Russian flyers since 1937.

Headwinds, thunderstorms and icing weather were blamed by the round-the-world flyer for termination of his first flight at the half-way point. Actually he turned back to land at Oakland after flying past this point as far as Reno, Nev. Near Reno he ran into snow and went up to nearly 14,000 ft. to escape it, but icing conditions developed so he returned to Oakland.

Odom was escorted on the first stage of his flight by a Navy flying boat. He flew seven and a half hours into thunder-

storms and headwinds during the Pacific crossing which put him approximately an hour behind schedule when he reached the mainland.

He estimated he had sufficient gas remaining for 1500 miles flight in still air, when he turned back at Reno. He was in the air 22 hr. 5 min. from takeoff at John Rodgers Field, Honolulu, Hawaii, to landing at Oakland (Calif.) Municipal Airport.

Odom's second flight attempt probably will be made within the next two months, following another complete checkup of the airplane at the Beech factory. He had considered making a flight from Alaska to Miami as a possible alternate but finally decided he would make a second attempt at the Honolulu-New York route.

Odom left Oakland to fly the plane back to Wichita, but was stopped by weather at Tucson, and left the plane there for a quick trip to New York by commercial airline.

Beech officials pointed out that the action of Odom in terminating the flight at Oakland had their complete approval.

The flight was made in constant communication with land stations and was carried out with full safety precautions. The pilot reported to the company that

the airplane "functioned perfectly" and that he was confident it could make the full route with reasonably good weather and accurate forecasting.

He started from Honolulu with a forecast of about 45 min. of thunderstorms instead of the 7½ hr. thunderstorms he actually encountered.

He consumed 196 gal. fuel and landed with more than 60 gal. in his tanks. Normal Bonanza tank capacity is 40 gal. but he had an extra 100 gal. tank in the cabin and two 60 gal. special wingtip tanks, in addition to the regular tank.

Except for special fuel tanks and special radio and instrumentation installations the airplane is essentially a standard Beech model A35 four-place all-metal Bonanza, powered with a Continental E-185-1 six-cylinder engine with 185 hp. takeoff rating.

"Buzz-Boy" Nabbed

New California air navigation act cost a "buzz-boy" flight student \$500 and a six-month jail sentence after he was brought before City Court Judge Deane Laughlin in Santa Maria, Calif., and pleaded guilty to reckless and dangerous flying.

Witnesses said 23-year-old Ernest E. Hewitt, of New York, had rented a Bellanca Cruisair in Paso Robles and "buzzed" the Santa Maria area. A week later, he came back for a repeat buzz performance when five CAA inspectors, nine Air Force officers, seven city police and two sheriff's aero squadron members watched. Hewitt finally ran low on gas, came into Hancock Field for a normal approach but forgot to lower his landing gear and made a belly landing on the runway.

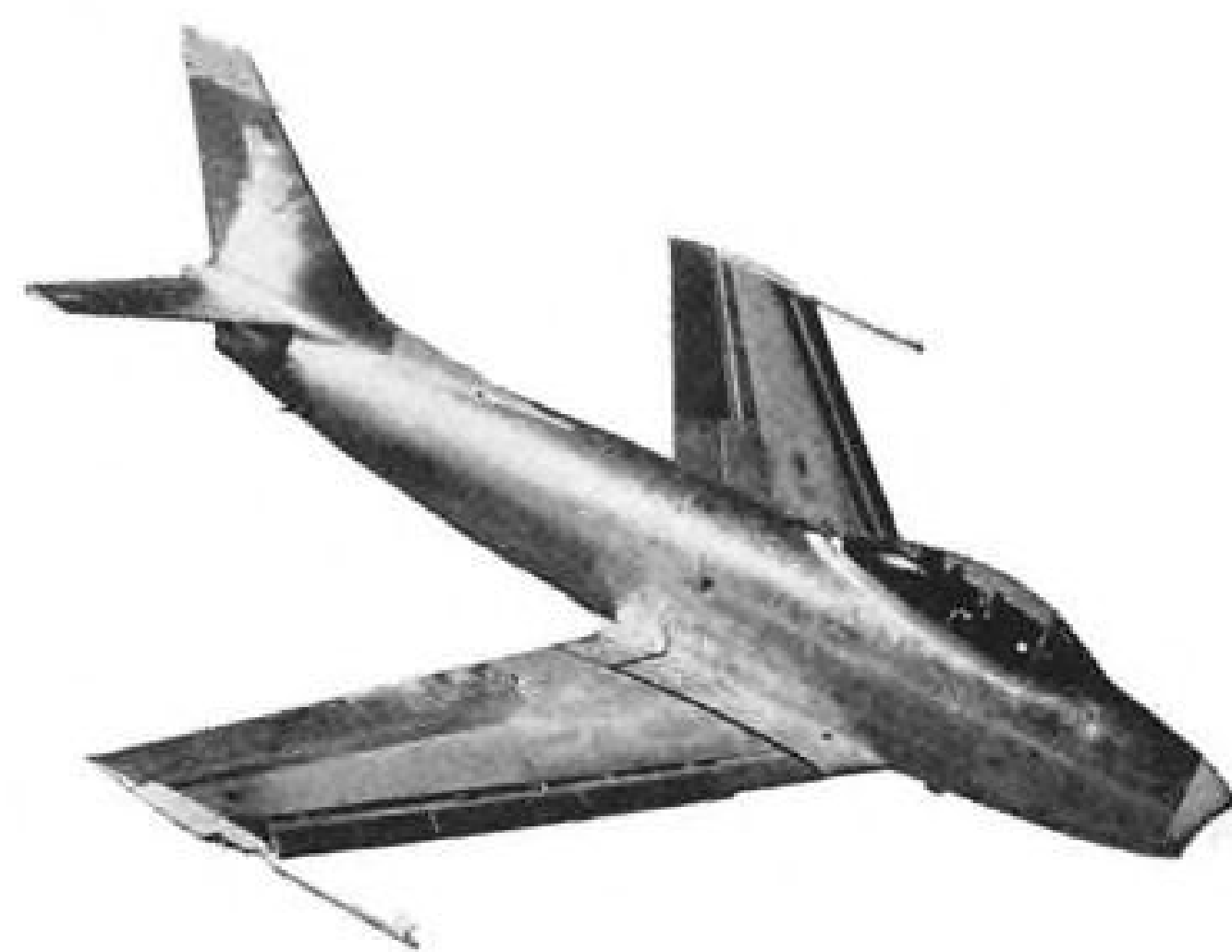
Hewitt had been a flight student at the U.S.C. College of Aeronautics at Hancock Field, but was grounded and dismissed after he performed an unauthorized parachute jump "just to see how it felt."

CATA Officers

John Schwaner operator of Sacramento Sky Ranch, has been elected president of the California Aviation Trades Assn., succeeding Harry D. White, operator of Palo Alto Airport, Inc.

Other officers: Richard Hyde, Fresno, central region vice president; William Dupen, Sacramento, northern vice president; William Gibbs, San Diego, southern vice president; Clarence Bergren, Los Angeles, secretary-treasurer, and Henry Livermore, El Monte; P. J. Murray, Oxnard; Alton Walker, Monterey; C. T. Jensen, Sacramento; and Edward Watson, San Mateo, board members.

• COMING FEBRUARY 28



1949 PROGRESS

REPORT

ON U. S. AIR POWER

Aviation Week's 16th Annual Yearbook will report the first year's progress of our Air Power rebuilding program

The resurgence of U. S. Air Power dominates the news . . . both domestically and internationally . . . politically and economically!

One year ago *Aviation Week* published its now famous "Inventory of U. S. Air Power" . . . explained then that our country's position of world leadership depended upon the strength of its aviation establishment.

This year . . . February 28th . . . based upon the same sound premise, *Aviation Week* will present its progress report on U. S. Air Power . . . what has been done about it since the 80th Congress voted the 66 air groups . . . what is being done . . . what is likely to be done.

This will be a complete and detailed report of our country's entire aviation resources and facilities . . . profusely illustrated . . . completely documented . . .

If you want extra copies of this year's edition, be sure to order in advance. (Last year's sold out in less than a month). Copies will be available at \$1 each, postpaid.

To those companies engaged in the air power rebuilding program . . . either directly, or indirectly . . . this 16th Annual Yearbook of *Aviation Week* offers very unusual advertising opportunities. Regular advertising rates apply . . . Closing date, February 11th. Write or wire your reservation.

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ABC and ABP.

Goodyear's Beech Bonanza Kept Busy by Salesmen

Example of the effective use of a post-war airplane in sales work is the record made by Goodyear Tire & Rubber Co. Aviation Products division pilot-salesmen with a Beech Bonanza purchased in May, 1947. Already it has been utilized well over 500 hr. for sales and other business travel.

The plane is operated alternately by Jack Leonard and C. A. (Bud) Hulsman, sales engineers. Most of their business is directly with aircraft manufacturers and aviation distributors, so the plane usually takes them directly to the airport doorsteps of the firms on which they are calling.

The Bonanza also serves as a demonstrator for Goodyear aviation products, and is equipped with tires, tubes, wheels, brakes, fuel cells and airfoam cushions and various other products which are made by the company.

Hulsman and Leonard divide an eastern and midwestern territory and occasionally fly the Bonanza to the West Coast for sales contacts there. Leonard cites as an example of his travel a 2300-mile trip made in the Bonanza in a week from Akron to Wichita, Dallas and return. He usually plans his sales trips to return to Akron for the weekend. He flew the Akron-Wichita leg of his trip nonstop (plane carries an auxiliary tank in luggage compartment) in 4 hr., 30 min., averaging 195 mph. ground speed with help of a tailwind.

Van Nuys to L.A.

Acquisition from War Assets Administration of the Metropolitan Airport at Van Nuys, Calif., by the City of Los Angeles for \$1, has been announced by Department of Airports Manager Clarence Young.

The airport was started as a private field and was acquired by the military services during the war. Improvements include a 6000 ft. runway and a large aircraft modification center, which is currently being used to house the Aviation Maintenance Corp.

Los Angeles will take possession of the field and operate it as a public airport beginning some time this month. The city will take over the government's contract with Aviation Maintenance Corp. and the rental payments for the modification center.

California National Guard will continue to maintain its 146th Fighter Group at the field.

Value of airport is estimated by Airport Manager Young at between \$2,500,000 and \$3 million.

It is the last property of this type to be sold by WAA in the Los Angeles area.

BRIEFING FOR DEALERS & DISTRIBUTORS

BENDIX RADIO SALES UP—Deliveries of Bendix flightweight (personal plane) radios in 1948 showed an increase of more than 10 percent over 1947 deliveries, J. W. (Sheriff) Colvin, aviation radio merchandising manager reports from Baltimore. He forecasts a further increase of at least 20 percent in 1949, and says individual distributors are optimistic about healthy business growth next year.

Considering that 1948 was about as lean a year as may be expected in personal aircraft for quite a while, the Colvin optimism for 1949 has some basis in reality. Trend of personal aircraft sales is going increasingly toward four-place planes (most of which require radio) and away from the minimum price two-placer.

It follows that the proportion of radios-in-use to planes-in-use ought to climb steadily next year. Colvin also reports Bendix Aviation radio distributors cashed in on "Christmas merchandising" in December, and took 75 percent greater deliveries from the manufacturer in December 1948 than in the same month in 1947.

FLAT RATE BONANZA MAINTENANCE—Southwest Airmotive Co., Dallas, has announced a comprehensive list of flat rates for maintenance operations on the Beech Bonanza. Sample rates: 100 hr. inspection as outlined by Beech, \$70; tire change, \$5; remove and replace tail cone, \$2 (all quotations for labor only).

Bonanza flat rates are issued as supplement to the flat rates catalog published by SAC last year which included engine overhaul and accessory flat rates. Additional surveys are being made on other airplanes used by business firms, and other flat rate price lists on these will be issued later.

STATE DIRECTORS COMMENT—As a result of the flight demonstrations last fall at Boston of the modifications to quiet engine and propeller noise of a standard Piper tandem trainer and a Stinson four-placer, Crocker Snow, Massachusetts aeronautics director has been getting a unanimous collection of favorable reaction.

He asked for it, by sending out letters to state directors who attended the NASAO convention and witnessed the demonstration of Aeronautical Research Foundation.

Sample comments: Warren Carey, California: Results . . . almost unbelievable . . . Principles developed would go a long way toward popularizing aviation, particularly in vicinity of airports. . .

Bill Lazarus, Florida: If the general public suspected that it were engineeringly possible to quiet airplanes to the extent demonstrated, I fear that legislation would be promptly introduced requiring silencing of aircraft just as was done 30 years ago when automobiles lacked mufflers. . .

C. F. Cornish, Indiana: I was amazed at the quietness with which the aircraft operated . . . Experiments now being conducted should include a tour of the country in order that the general public may learn first hand what is possible. . .

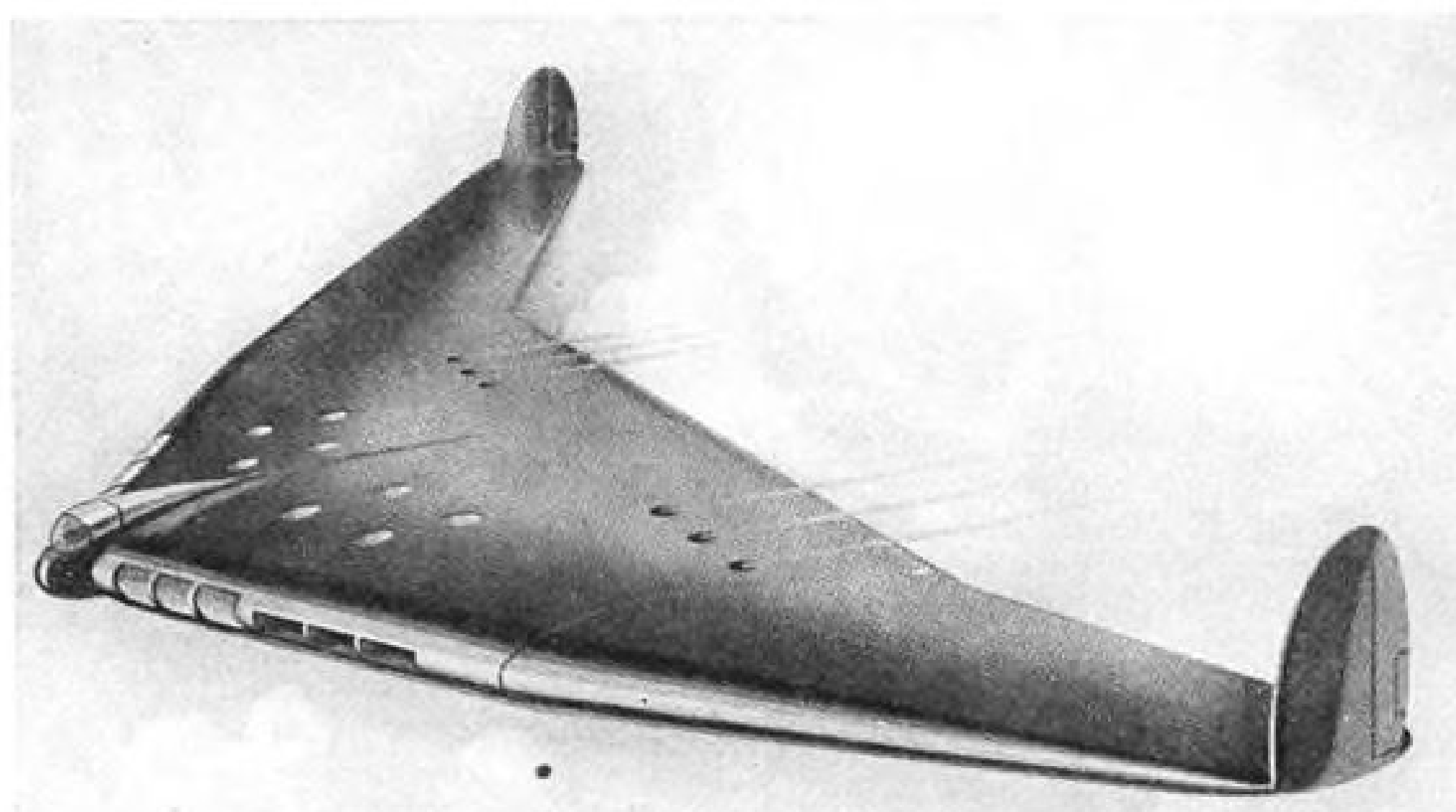
Frank Wiley, Montana: Modifications necessary to accomplish development of a quiet airplane seem fairly simple to me. I would think that manufacturers of private aircraft would see the value of incorporating the principles now developed in aircraft production. . .

JOHNSON FOUR-PLACER—By the time this is published, if all goes well, Johnson Aircraft, Corp., Tyler, Texas, should have conducted its first test flights on the Bullet, all-metal 185 hp. four-placer, which claims distinction of being the first airplane for private owners which incorporates jet assist for increased performance.

MACDONALD RESIGNS—When Alfred MacDonald, Wichita director of parks and airports for the last 28 years, resigned recently because of continued ill health, aviation lost a pioneer in the still small field of men who make municipal airports pay. MacDonald is credited with a major share of the development of the huge Wichita Municipal Airport, and also did important work on the development of an overall national airport program with congress and other municipal officials and federal agencies.

Emory L. Cox, acting director in the past year during MacDonald's illness, succeeds him at Wichita. —ALEXANDER MCSURELY

AIR TRANSPORT



Armstrong-Whitworth Aircraft of the British Hawker-Siddely Group is working on designs of flying wings with laminar flow and jet engines for long range commercial flights. Above is one of the proposed designs for an A-W flying wing, jet transport.

Jet Airliners Three Years Away

When British turbo transports available they will be cheaper to maintain than piston planes, Whittle says.

A capsule summary of the problems and potentialities of jet propulsion in the commercial field has been given top airline operations and engineering executives by Air Transport Association Vice President Milton W. Arnold following discussions with Sir Frank Whittle, jet propulsion pioneer.

Whittle, who is now a technical advisor for British Overseas Airways Corp., stated flatly that a jet transport would not appear in less than three years. But he added that a British jet model would be available immediately following 1951. **►D. H. 106 Top Entry**—Planners for Great Britain's nationalized airlines pin many of their hopes for the future on the de Havilland D. H. 106 swept-wing transport powered by four turbojets (AVIATION WEEK, Oct. 4). This still-secret 40-passenger airliner has been designed to cross the Atlantic in 6 hr., traveling 600 mph. above 40,000 ft.

Whittle said he was interested in U. S. progress in cutting down air traffic delays and American theories on how the jet transport could be brought into congested airports. He felt that the jet could be held for a maximum of 10 minutes in a stack.

►Landing Priorities for Jets—The approach Whittle assumed would be taken with the jet transport is similar to that adopted by the U. S. Air Force with jet planes—they will carry priority over other types of aircraft and will be landed im-

mediately. This presents a problem because if priorities of this nature are given jet airliners the regularity of air transportation obtained by users of conventional transports will suffer greatly.

British development of the gas turbine has met with great success, Whittle declared. He said 1000 hr. had been obtained from units under operating conditions without overhaul or replacement of integral parts. The 1000-hr. engine test included 100 hr. at takeoff power.

►Reliability Assured—Whittle stated there was no question about the reliability of British gas turbine engines. He declared they could be made more reliable (operating 1500 to 2000 hr. without overhaul) provided the operator limited the engine speed to normal cruise as much as possible. Breakdown and deterioration of jet engines is hastened considerably by operating at the additional 5 to 10 percent power for takeoff.

Jet units will decrease over-all aircraft maintenance expense by 60 to 70 percent, Whittle told Arnold. This includes savings on both man-hours and materials.

►Vibration Eliminated—The British expert declared that the stability and lack of vibration of the jet unit will eliminate the majority of present-day aircraft maintenance difficulties since many troubles with transports are due to vibra-

tion and fatigue traceable to engine types now in use. He said it is a fact that a small coin can be balanced on the jet cowl with the engine operating at normal cruise conditions.

Arnold questioned Whittle in regard to improvements or increased efficiency which would result from the compound conventional engine which has been publicized recently by U. S. engine manufacturers. Whittle replied that the maximum saving at 4 percent on fuel due to the slightly increased efficiency of the compound engine over the normal engine would be more than offset by the added maintenance costs and complexity of the new unit.

Upon returning to England following his American tour, Whittle said there was a ready market for jet transports in the U. S. Given proper encouragement, he asserted, British manufacturers might capture the American and other markets.

Nonskeds Brace For CAB Crackdown

Uncertificated airlines which are facing a possible death sentence in CAB's proposed tightening of the nonscheduled exemption have organized a new industry-wide group—National Independent Air Carriers—to battle the imminent crackdown.

Composed of six nonscheduled airline associations representing operators in all parts of the U. S. and its territories, NIAC has attacked federal subsidies as a method of developing air transportation. It has criticized CAB for reducing commercial aviation to a "luxury industry" and asserts that elimination of the independents would have a catastrophic effect on U. S. security by restricting the number of transport planes operating.

A publicity campaign designed to acquaint Congress and the public with the independent carriers' fight to stay in business is contemplated by the new group.

Headquarters of the National Independent Air Carriers is in Washington.

Executive committee of NIAC consists of Amos Heacock, president of Air Transport Associates, Inc., Seattle; Stanley Weiss, president of Standard Airlines, Long Beach, Calif.; R. R. Hart, president of Viking Airlines, Burbank, Calif.; and Fred A. Miller, president of Air America, Inc., Burbank.

The uncertificated operators' move to take concerted action against CAB's proposed revision of the nonscheduled exemption came as the Board extended the deadline for comments on the stiffening of regulations from Jan. 15 to Feb. 1. Oral argument on the new rules is scheduled for Feb. 15.

How Mail Pay Award Will Benefit Capital

As a result of favorable Civil Aeronautics Board action in award of retroactive mail pay, Capital Airlines has been able to effect some far-reaching improvements in its financial condition.

CAB's action gave the company about \$3,150,000 in additional mail pay applicable to 1947 and 1948. At the year-end, before receipt of such additional funds, the company's cash and U. S. government position was reported slightly above \$4 million.

The mail pay award permitted Capital to pay \$1 million toward the reduction of its \$4 million demand bank loans. It is believed that when the Post Office actually makes the added mail payments now due, another \$500,000 of the bank loans will be retired. It is also possible that later in the spring still another \$500,000 will be paid the banks, reducing the loan to \$2 million.

►Gain on Debentures—Holders of the company's 3½ percent convertible debentures also stand to gain. A total of \$861,875 to pay all coupons deferred in 1947 and 1948 along with the one due Apr. 1, 1949, has been deposited with the Manufacturers Trust Co., trustee for the debentures. Payment will be made on the interest date next Apr. 1.

Further, the company is expected to anticipate the interest payment due Oct. 1, 1949. Accordingly, each holder of \$1000 principal amount of debentures will receive \$87.50 on Apr. 1, 1949, with the likelihood of another payment of \$17.50 on Oct. 1, 1949.

Following the forthcoming interest payments Apr. 1, sinking fund operations are expected to become effective and scheduled to be completed by May 1. During this short period, at least \$1 million principal amount of debentures are to be purchased for retirement. This will cure the \$500,000 annual sinking fund deficiency requirement for 1947 and 1948.

►Modification Due—There are reports that another attempt will be made soon to modify certain provisions of the indenture surrounding the company's debentures. The outstanding purpose will be to permit additional borrowings, presumably for equipment purchases, to come ahead of the debentures. As partial "payment," the debentures' conversion right into common stock may be reduced from the current price of \$38 per share to levels much closer to current market prices.

A previous attempt in this direction encountered strong resistance from a number of large debenture holders.

One of the added incentives presented by the sponsors of the modification plan is a merger with National Airlines. How-

ever, certain Capital debenture holders do not view this proposal with favor at the present time. It is their belief that the financial health of National should submit to a considerable improvement and that Capital should further strengthen its route structure, before entering into any actual merger arrangement.

►Convair Leasing—In the meantime, Capital is prepared to enter into a lease arrangement with the Convair Leasing Corp. for ten Convairs. Reliable sources indicate that Capital will be permitted to turn over about \$1,500,000 of its Model R-2800 engines, not now in use, as part payment toward the lease or possible purchase of the Convairs.

Latest reports, on the other hand, indicated that Convair was attempting to obtain firm leases for at least 40 planes to implement its plan. The Reconstruction Finance Corp. is believed inclined to assist in the implementation of the leasing arrangement, providing a minimum of 40 planes are involved.

Military Discount

Twenty-six domestic scheduled airlines last week offered a 5 percent discount and special baggage allowances on all travel covered by transportation orders issued and paid for by the National Military Establishment.

The move represented the airlines' bid for part of the \$80 million worth of travel authorizations issued annually to military personnel moving under orders inside the U. S. (AVIATION WEEK, Dec. 13). Since 1913, the railroads have granted a 10 percent discount and as a result now have an arrangement with the armed services whereby they handle virtually all of the military travel-order business.

Airline officials emphasize that their 5 percent discount compares favorably with the railroads' offer to the military agencies inasmuch as plane service frequently includes free meals and permits other savings due to greater speed. The airlines' proposed discount covers the fiscal year starting next July 1.

Radio Group Protests

The Flight Radio Officers Air Safety Committee, representing both AFL and CIO groups, has asked CAB to suspend Northwest Airlines' flights between the Pacific Northwest and Honolulu until the carrier adds a qualified communications officer to its crews and installs additional radio equipment on its planes. The union committee charged "great laxity" on the part of the Civil Aeronautics Administration for permitting the 2700-mile over-water flights on the present basis.



PAA MECHANIZES LOADING

Large-scale expansion of cargo operations on Pan American Airways' Latin American division (Aviation Week, Jan. 10) is being accompanied by extensive use of machines to replace muscles in loading and unloading jobs. Four new tractor-mounted, power-driven conveyor belts manufactured by Mercer-Robinson Co., New York, are being used by PAA at Miami, New Orleans, Houston and San Juan. Six more of the \$4000 loaders are to be delivered to Pan

American stations at Brownsville, Tex.; Caracas, Venezuela; Kingston, Jamaica; Port of Spain, Trinidad; Guatemala City and Panama. The belt, shown above loading a shipment of baby chicks, can be adjusted quickly to fit the varying hatch levels of PAA's DC-3s, Convair-Liners, C-46s, Constellations and forthcoming Stratocruisers. Device has a 1500 lb. capacity for baggage or cargo and can be operated by one man on the ground and one in the plane.

Trans-Atlantic Commercial Flights for Military

(June 26, 1948, through Dec. 31)

Carrier	Operation Vittles*		Operation Looker**		Operation Crow***		Total
	Pass.	Cargo	Pass.	Cargo	Pass.		
Seaboard & West.....	5	63	12	43	37		160
American Overseas	41	27	13	14	62		157
Transocean	3	45	6	5	40		99
Alaska	1	49	3	16	17		86
Pan American	20	5	2	0	55		82
TWA	0	3	2	4	15		24
Trans-Carib.	0	1	0	0	1		2
Total	70	193	38	82	227		610

* Mainly in support of Berlin airlift of USAF.

** Mainly in support of USAF's B-29 bomber groups in England.

*** War bride movement to U. S. for Army.

Carriers Aid In Atlantic Airlifts

Airlines make 610 ocean crossings supporting Air Force and Army in Operations Vittles, Looker and Crow.

U. S. commercial airlines moved swiftly into the fringes of military activity during the last half of 1948 as an increasingly-tense European situation brought sudden demands from the Air Force and Army for an expanded trans-Atlantic airlift.

Between June 26 (when the USAF began its "Operation Vittles" flights into Russian-blockaded Berlin) and Dec. 31, American civil air transport made 610 Atlantic crossings for the armed services.

► **Seven Carriers Used**—The three certificated and four contract carriers used by the military handled an estimated 3,575,000 lb. of high-priority cargo and around 15,000 passengers. In aggregate, the 610 flights meant an estimated \$6 million worth of business for the air-

lines which were participating in the lift.

Commercial air carriers were used by the military for three major projects during the last half of 1948. First and largest trans-Atlantic lift was in support of "Operation Vittles" and involved principally transportation of spare parts from Westover Field, Mass., to Frankfurt, Germany, for use in C-54s flying the corridors to Berlin.

One hundred and ninety-three trans-Atlantic cargo flights were made for Operation Vittles by the seven commercial carriers. In addition, 70 passenger trips were completed, largely to transport soldiers' dependents and civilian personnel from the American zone of Germany back to the U. S.

► **B-29 Support**—The second project—"Operation Looker"—involved 82 cargo

flights and 38 passenger flights made in support of USAF B-29 bomber groups based in England.

A final trans-Atlantic air movement for the military—"Operation Crow"—reached peak activity last month as the Army contracted for all available equipment to transport thousands of war brides to the U. S. before expiration of the Alien War Brides Act on Dec. 28. Two hundred and twenty-seven passenger flights were completed during Operation Crow.

► **Largest Carrier**—Seaboard & Western Airlines, New York, made the most trans-Atlantic flights for the Air Force and Army during the six-month period. Of this uncertificated operator's 160 DC-4 trips, 106 carried cargo totaling 1,375,756 lb.

American Overseas Airlines completed 157 trips, mostly passenger flights, for the three projects. Transocean Air Lines followed with 99 flights, Alaska Airlines made 86 flights, Pan American Airways 82, TWA 24 and Trans-Caribbean Air Cargo Lines 2.

Besides its military business, Seaboard & Western flew more than 5½ million ton miles of freight between the U. S., Europe and the Middle East during 1948. This contrasts with 1,266,786 ton miles flown by the company in the eight months of 1947 following its inauguration of trans-Atlantic operations on May 10 of that year.

► **Prospects for 1949**—Military traffic will probably continue during 1949—with highly uncertain volume. But S&W President Raymond A. Norden says a record amount of commercial air freight will almost certainly move across the North Atlantic this year. He declared that the sustained rise in westbound commercial freight during the last four months of 1948 is a good indication of European industrial recovery under the Marshall plan.

Westbound merchandise consists largely of textiles, essential oils, watches, clocks, pharmaceuticals, toilet preparations, machinery, livestock and wearing apparel. More than 50 percent of eastbound trans-Atlantic merchandise consists of wearing apparel, with repair and construction machinery accounting for 15.8 percent and aircraft engines and parts 10.3 percent.

Nonsked Safety Probe Proposed

Uncertificated airlines again are in hot water on Capitol Hill because of their safety record.

Rep. John A. McGuire (D., Conn.) has introduced a resolution authorizing the House Interstate and Foreign Commerce committee to investigate existing Federal safety regulations for chartered

board & Western DC-4 cargoplane for the trans-Atlantic crossing. Also on the plane were nearly 2000 lb. of aircraft parts.

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passenger flights. He acted following the recent crash of a DC-3 at Boeing Field, Seattle.

Eleven Yale students and the three-man crew of the plane, operated by Seattle Air Charter, Inc., were killed in the mishap.

Thirty persons were aboard the craft, which was returning the students to New Haven, Conn.

► **Circumstances Repeated**—Circumstances surrounding the McGuire resolution were almost identical with those cited by Rep. Charles A. Wolverton (R., N. J.) when he called for a similar investigation a year ago. In both instances a fatal West Coast charter plane accident and an East Coast mishap involving a carrier transporting Puerto Ricans followed each other in quick succession.

Uncertificated operators who were hopeful of Congressional help in their fight against more stringent economic regulation by CAB are fearful that the proposed safety probe will have serious repercussions.

Meanwhile, attorneys for Seattle Air Charter have complained to Washington about statements attributed to R. D. Bedinger, regional CAA administrator, after the crash. Bedinger was quoted as saying the pilot took off against control tower warnings, which the CAA employee termed "were tantamount to telling him the field was closed."

► **Tower Transcript Cited**—The attorneys said a transcript of tower conversations with the DC-3 showed that the pilot waited on the field after he was told visibility was below minimums. "Then, after telling the pilot a break in the weather appeared likely, the tower cleared the plane for takeoff," the attorneys contended. A CAB hearing to bring out the facts at issue was scheduled for Seattle last week.

Reports indicated the plane's wings had been swabbed with alcohol as a protection against ice about half an hour before the mishap. During the takeoff, a wing tip touched the runway, and the DC-3 veered into a hangar, and burst into flames.

2-0-2 Modifications

The Glenn L. Martin Co. plans to make further modifications in the wings of Northwest Airlines' 2-0-2 transports.

CAA-approved changes were made in the wings following the accident involving a NWA 2-0-2 at Winona, Minn. (Aviation Week, Oct. 11). The new modification involves a basic change in the span which should give a permanent solution to the wing problem.

Northwest's planes will go back to the Martin plant for wing reworking in groups of four or five. The carrier has 24 2-0-2s in its fleet.



You probably saw the news-reel stories about the Air Force's new Edo-built Lifeboat which is carried under a B-29 and dropped by a parachute 100 feet in diameter. We're busy now building 150 more of these air-sea rescue boats. This type of construction involving light weight but tremendous strength comes naturally to us because of our 24 years experience in building the world-famous Edo floats.



The A-3 lifeboat weighs nearly two tons, is 30 feet long and can carry 15 men with provisions. Equipment includes a 4 cylinder marine engine, fresh water still, warm clothing, food and fuel for more than 500 miles.

When it was found that jet engines could not be shipped easily by air in standard crates, the Navy awarded a contract to Edo for design development of a new type of shipping container. What may be a revolution in shipping is the result. The whole outer crate was designed to absorb shocks by being made elastic, thus leaving the contents relatively undisturbed. In one test, a 47 G load on the outer shell meant only a 7 G impact on the engine itself.

In the field of electronic development, Edo is assuming an increasingly significant role. Operating quietly for the past three years, our large electronic engineering staff has developed highly important detection equipment for the Navy and units are now in production by Edo's Electronics Division.

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Air Mail Loss

The Post Office Department has set its 1948 fiscal year loss on air mail operations at an all-time high of \$54,831,132—\$24,488,857 over the 1947 fiscal year deficit of \$30,342,275.

The department's cost ascertainment report, which will be released shortly, shows a \$27,075,431 deficit on domestic air mail operations for the last fiscal year, and a \$27,755,701 loss on foreign air mail. These compare with 1947 fiscal year deficits of \$18,984,425 for domestic air mail and \$11,357,850 for foreign air mail.

► **Overhead Allocation Challenged**—Air-

line executives have repeatedly challenged the Post Office policy of allocating departmental overhead to the air mail service. If relieved of the burden of assuming part of the departmental overhead, air mail service for the 1948 fiscal year would show a deficit of only \$12,232,298.

Air mail revenues for the year totaled \$76,519,520—\$53,351,470 from domestic and \$23,168,050 from foreign services. Obligations directly allocable to air mail totaled \$88,751,818—\$49,421,609 for domestic and \$39,330,209 for foreign operations.

► **Rate Increase Eyed**—The big deficit shown in the department's 1948 cost

ascertainment report increases the likelihood that Congress will favor another air mail rate boost. In his forthcoming report to Congress, Postmaster General Jesse Donaldson will call for postal rate increases totaling \$250 million for the 1950 fiscal year, starting July 1. But he is not expected to recommend any air mail hikes.

The President maintained in his budget message—and this is the position that has been taken by the department—that a substantial part of the air mail deficit is due to airline subsidization. This cost, he said, "is not properly chargeable to the users of the postal service."

► **Losses on Surface Mail**—As indicated in the President's budget message, Donaldson's report will call for rate hikes in the mail categories that show the biggest deficits. The 1948 fiscal air mail loss was only a fraction of the department's \$152,665,801 loss on second class mail (magazines and newspapers), its \$86,681,326 loss on third class mail (small bulk), and its \$76,094,786 loss on fourth class mail (big bulk shipments).

The department's total 1948 fiscal loss was a record \$308,972,005. And estimates are that its current fiscal year deficit will be upwards of \$500 million—a fact which places Congress under heavy pressure to boost rates.



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

Increase Student Training

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

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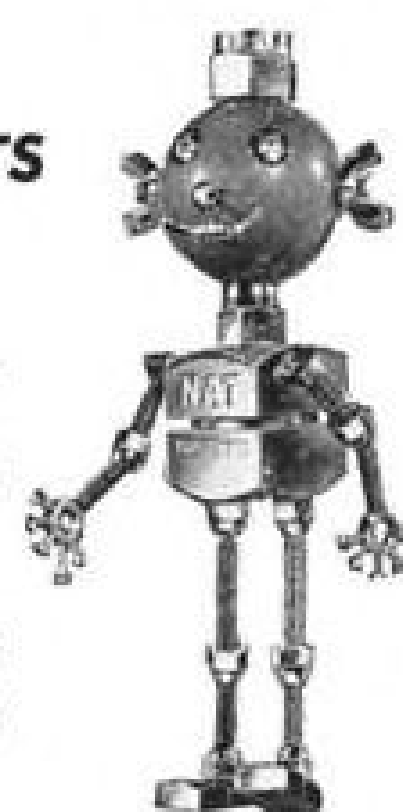
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SHORTLINES

► **Alaska Airlines**—Has been granted a \$232,000 loan by the Reconstruction Finance Corp., pending carrier's receipt of back mail pay. Company reportedly was in the black for the fiscal year ended Oct. 31, with revenues up 50 percent.

► **American**—CAB has agreed to expedite decision whether to grant temporary approval to the American-Delta Air Lines agreement providing for interchange of equipment between the two carriers at Dallas. The pact would permit through service between points on the West Coast served by American and points east of Dallas served by Delta. Permanent approval of the agreement will be considered in the southern transcontinental route case.

► **Braniff**—Plans to extend its service from Lima, Peru, to La Paz, Bolivia, Jan. 31. DC-3s used on the run will connect with Braniff schedules to the U. S. and with DC-6 flights to be inaugurated shortly from Lima to Rio de Janeiro.

► **BOAC**—Was slated to discontinue its Baltimore-Bermuda flights last week because of declining traffic.

► **Capital**—Is modifying some of its

DC-3s to carry 24 instead of 21 passengers. The planes will have built-in passenger loading ramps and will provide for baggage stowage in easily-accessible racks near the door. Male attendants may replace stewardesses on the craft. Object is to reduce ground time and costs on short hauls, at the same time increasing potential revenues by boosting the seat capacity.

► **Flamingo**—Has been declared bankrupt by a Newark, N. J., federal referee. The Teterboro, N. J., cargo carrier listed assets of \$233,350 and liabilities of \$167,994 when it filed a petition for reorganization last March.

► **KLM**—Celebrates its 30th anniversary this year. Company now has 60,000 miles of routes and 13,500 employees.

► **Scandinavian Airlines System**—Carried 1326 passengers on its North Atlantic route last month compared to 880 in December, 1947.

► **TWA**—Was well in the black on its international operations in December but considerably below the break-even point on domestic services.

► **United**—Heavy holiday traffic enabled the carrier to fly almost 29 percent more passenger miles in December than in the same 1947 month, when its DC-6s were grounded. Airmail ton miles were up 57 percent and freight ton miles 59 percent over the 1947 period. . . . Carrier has instituted new low freight rates on a number of commodities moving from California eastward to help correct the directional unbalance of transcontinental traffic.

CAB SCHEDULE

Jan. 24—Hearing in Milwaukee-Chicago-New York service case. (Docket 1789 et al.)

Jan. 24—Hearing on TWA's complaint against Pan American Airways' Saudi Arabian service. (Docket 3264.)

Jan. 31—Hearing on additional service to Puerto Rico. (Docket 2123 et al.)

Jan. 31—Hearing on TWA's complaint against Seaboard & Western Airlines. (Docket 3346.)

Feb. 2—Hearing on Board's enforcement proceeding against Transocean Air Lines. (Docket 3244.)

Feb. 9—Hearing on Board's investigation of through service and interchange requirements at St. Louis and Memphis. (Docket 3426.)

Feb. 14—Hearing on Board's investigation of National Airlines route transfer. (Docket 3500.)

Feb. 14—Hearing on Board's enforcement proceeding against Nats Air Transportation Service. (Docket 3456.)

Feb. 15—Hearing on Florida trunkline service. Postponed from Feb. 8. (Docket 2215 et al.)

Feb. 15—Oral argument on Board's proposed revision of nonscheduled exemption.

Feb. 16—Hearing in reopened Mississippi Valley and southeastern states cases. (Dockets 548 and 501 et al.)

Apr. 11—Hearing in reopened Hawaiian case. (Docket 851 et al.)

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Additional Advertising on pages 38 and 39

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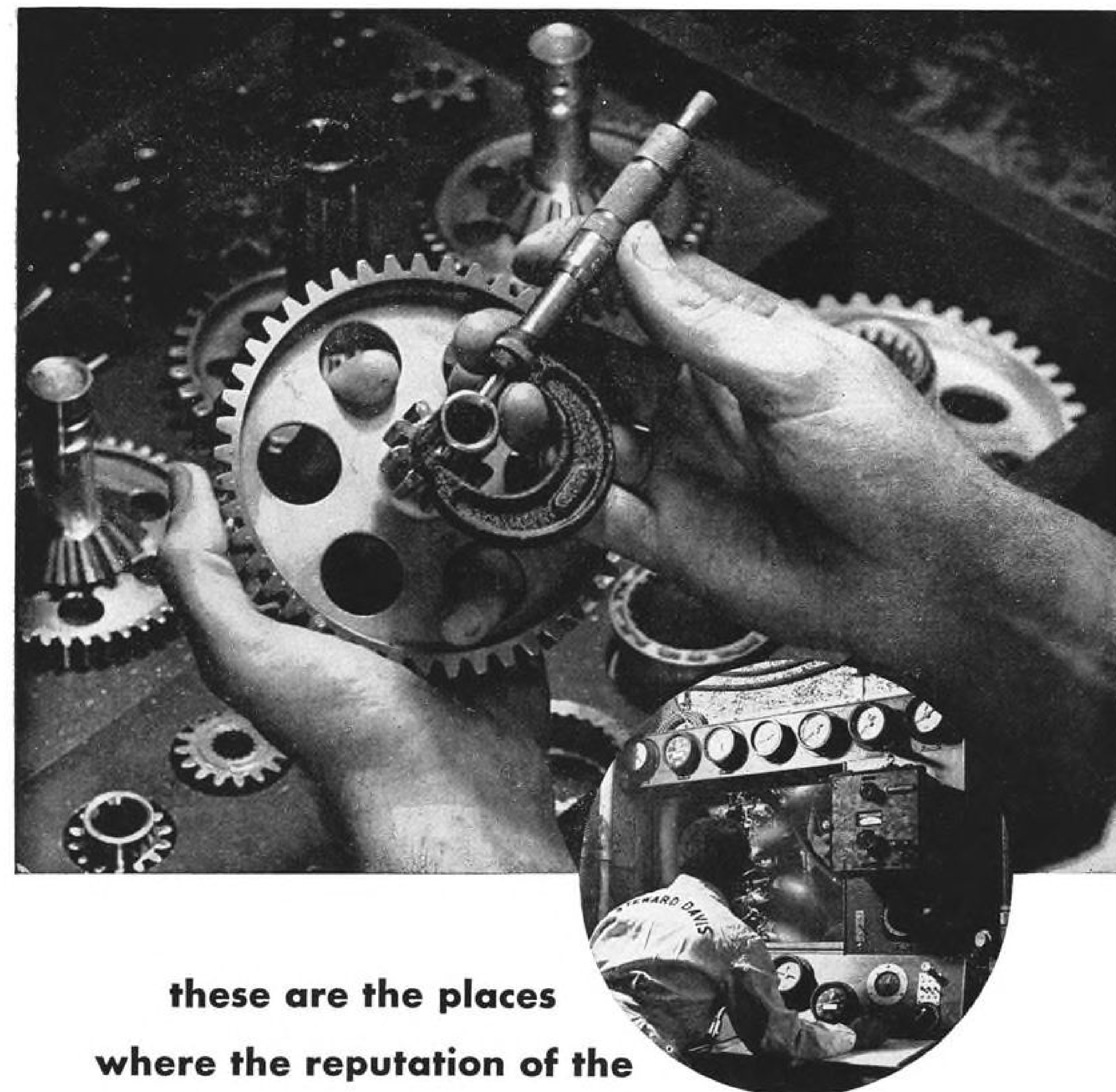
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STRICTLY PERSONAL

BRITISH AIR MAGAZINES ARE NETTLED—For years, those excellent and lively British weeklies, *Flight* and *The Aeroplane*, have uncovered stories and illustrations of our own new U. S. planes before any American manufacturer or publication has been able to talk about them. This has irked U. S. aviation writers, as well as the companies.

When *AVIATION WEEK* appeared with the XS-1 story, which six months later was described by the Attorney-General of the U. S. as no law violation, the public relations chief of a major aircraft firm told us, "Despite the current hue and cry, I'd much rather have read about the XS-1 flight in our own *AVIATION WEEK* than in *Flight* or *Aeroplane*." Such was the feeling in this country.

So, with that background, you can appreciate, with us, this note we received the other day from one of the editors of *The Aeroplane*:

"Dear Sir: Your issue of Nov. 29 contains no breach of British security regulations—you must be slipping. Yours faithfully, R. G. Worcester."

So Mr. Worcester received this from us:

"Dear Mr. Worcester: Your cheery note of alarm arrived this morning. We must apologize for what we trust is only a temporary lull in reports on European aviation developments. I am this morning dispatching a stern memorandum to our various foreign correspondents urging them to devote less time to McGraw-Hill's 33 other publications and to bear down again for good old *AVIATION WEEK*.

"As to British security regulations, you would hardly expect us to know what they are. Publishers of U. S. aviation magazines have been mystified and chagrined over the years at the surprising ability of British aviation magazines to learn and print so-called secret information on new aircraft in this country. Now it would seem the shoe is on the other foot. At any rate, it is a great business—this aviation journalism—and may the best man win!"

From other foreign sources we received a note a few days later telling us:

"... a friend at the Ministry of Supply, which runs aviation in England, called to my attention the fact that *AVIATION WEEK* has printed a great many stories which the British press has refrained from using under the British gentlemen's agreement not to print material which the Ministry indicates is not free for publication. It seems *AVIATION WEEK*'s British competitors have complained to the Ministry. . . ."

So we consulted a friend of ours, a seasoned correspondent, who wrote back "If nothing else, my years in Britain as a correspondent taught me that the British press generally, and magazines in particular, are the biggest grippers in the world when up against American coverage techniques. What's more, you haven't been climbing in back windows of aviation plants stealing news. You only tap legitimate news sources."

To which we say, amen. Mind you, we do not poke ridicule at necessary security. *AVIATION WEEK* is withholding secrets which it feels should remain secrets for the sake of national welfare. But we cannot forget the days, even during the war, when British aeronautical editors were blithely publishing new material about our military aircraft that U. S. editors were withholding. Ask anyone who worked in the wartime Office of Censorship how many times aviation stories were declassified only because of prior publication in *Flight* or *Aeroplane*. It makes us a little unsympathetic at the moment, although we strongly disapprove of the unofficial type of censorship the British press apparently is under with its present government.

* * *

BACK TO NORMAL—Next week this column will return to whimsy and personal notes. A few contributors have forwarded material, bless 'em, including John Creedv of PAA, Bill Wagner of Ryan, Gilbert Batancourt of AiResearch, and Roy Eckert. Keep your stories coming.

* * *

BITS ABOUT PEOPLE—E. E. Lothrop has been reappointed aviation representative of the American Petroleum Industries Committee and secretary of the Aviation Advisory Committee, while the well known Bob Oertel, manager of the aviation department of Esso, is elected chairman of the Aviation Advisory Committee. This group studies and recommends tax and legislative changes affecting aviation petroleum products. . . . Friends who gave Aviation Writer Ed Bauman a party on his 50th birthday insisted on keeping the aviation flavor by serving Piper champagne. . . . Joe Drury, once with UP and United Air Lines publicity, has become assistant public relations director of Hearst Magazines. R.H.W.

WHAT'S NEW

New Books

"**Jet Propulsion Turbojets**," by Volney C. Finch, professor of mechanical engineering, Stanford University, a technical treatment of the history of gas turbine development, and recent data of importance on the practical application of aero-thermodynamics to analysis, design and operation of turbojets. Published by The National Press, Milbrae, Calif. 328 pages, hard cover, lithographed.

"**The Measurement of Stress and Strain in Solids**," a Physics in Industry series, based on proceedings of a conference arranged by the Institute of Physics, London. Hard binding, 114 pages with 33 illustrations and 8 plates. Available from The Institute of Physics, 47 Belgrave Square, London, S. W. 1. Price \$4.

"**The Story of Magnesium**," first in a series of Techbooks, by W. H. Gross, Dow Chemical Co., Midland, Mich. Available from the American Society for Metals, 7301 Euclid Ave., Cleveland 3, Ohio. 260 pages, hard cover, \$1.50.

Trade Literature

"**New Products**," a compilation of products and services of more than 750 different manufacturers, available from the New York Journal of Commerce, 63 Park Row, New York. Price 50 cents.

"**OSTUCO Tubing**," a booklet designed as a guide for tubing users and prospective users, available from Ohio Seamless Tube Co., Shelby, Ohio.

"**CAA Aviation Release No. 312**," a guide containing CAA policies and procedures with respect to exporting aeronautical products, available upon request to Office of Aviation Information, CAA, Washington 25, D. C.

"**Measuring Microscopes for Laboratory and Shop**," a bulletin describing and illustrating micrometer microscopes, and other instruments, available upon request to The Gaertner Scientific Corp., 1201 Wrightwood Ave., Chicago 14, Ill.

"**AC and DC Arc Welders**," a folder describing company's complete line of equipment, available upon request to Metal and Thermit Corp., 120 Broadway, New York 5, N. Y.

"**Catalog Section No. 103**," describing hydraulic cylinders, is available upon request to Gerotor May Corp., Baltimore 3, Md.

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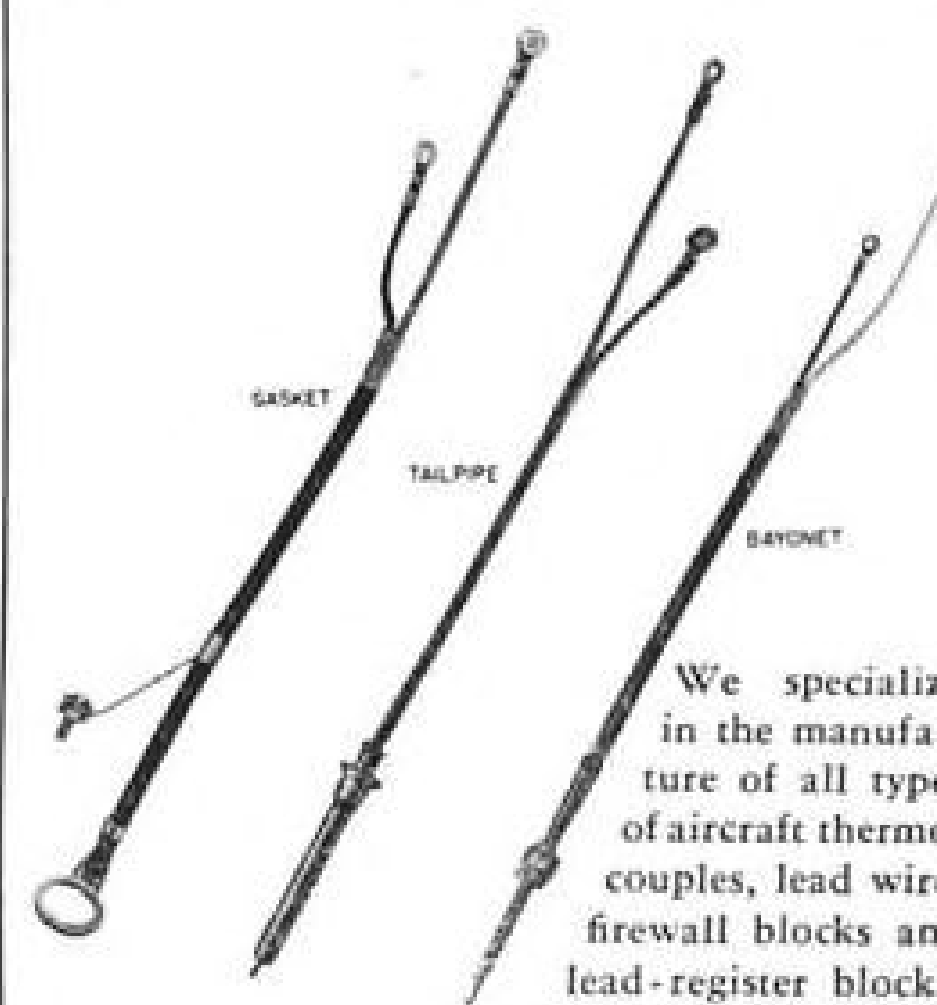


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EDITORIAL

Air Power Is Everybody's Business

"Air power is everybody's business."

Air Secretary W. Stuart Symington made that apt observation in a recent Chicago speech. It never rang truer than now. The national defense budget for fiscal 1950 is up for debate and issues that may mean the difference between national survival and catastrophic defeat, five, 10 or 20 years hence are being resolved.

Primary requisite for any debate and certainly for one with as much import for every inhabitant of this country as that on national defense, is ready access to basic facts and issues involved. Under the American system decisions on national policy are supposed to be reached on this basis, not in the secrecy of some particular leader's carpeted inner chamber.

So far there has been a tendency to withhold many of the basic facts without which the fiscal 1950 defense budget cannot be discussed intelligently.

For example: Neither the budget message nor the budget itself gives any adequate basis for comparison of the roles being allotted Naval Aviation and the U. S. Air Force. The President said USAF will be able to buy 1669 planes with fiscal 1950 authorizations but neither he nor the Navy will give out a comparable figure for Naval Aviation.

Similarly the total airframe weight for fiscal 1950 contract authorizations is given but no indication of how much is for USAF and how much for Naval Aviation. AVIATION WEEK has provided these missing links for its readers despite alleged security clamps applied by jittery major domos in the executive branch of the government.

So farcical has this "security" nonsense on the budget become that Civil Aeronautics Administration is prevented from telling the traveling public what kind of air safety devices it plans to buy with its fiscal 1950 funds and where it plans to install them. What could be a more ridiculous misuse of the term "security"?

Failing to get these vital facts from the executive branch of the government the American people apparently will have to rely on their elected representatives in Congress for any determined effort to debate the real issues involved in the national defense budget. Democrat Carl Vinson of Georgia, chairman of the House Armed Forces Committee and other key Democrat leaders in the House as well as Republican Minority Leader Joe Martin of Massachusetts, have already indicated to AVIATION WEEK that they will make every effort to extract these facts and insure a full and open debate on the subject.

There are a number of key questions around which this debate should center.

Is the National Military Establishment functioning as the truly single Department of National Defense, the backer of unification envisaged? Or is it functioning under a simple intramural political compromise of splitting the money available into three almost equal segments?

Will this type of defense budget give this country the kind of defense equipment it really needs to meet its specific defense problems? Or will it give us a defense force that is balanced only politically and dollar-wise and is in no way fitted to tackle our most likely foes???

Another question that warrants searching inquiry is why the overwhelming decision of Presidential advisers and Congress last year to begin rebuilding the foundations of American air power has been sharply reversed by the President's latest budget proposals? Also how much of the progress already achieved will be wiped out if his plans are approved and how much more will this alleged economy cost the taxpayer through the bloated expenses of air power that is stretched and pushed like an accordion?

President Truman has shown himself to be unusually shrewd in gauging public reaction on other issues. Why has he remained so deaf to the tremendous ground swell of public opinion endorsing the bi-partisan decision of the last Congress to recognize air power—whether it wears the Navy blue or the proposed new Air Force blue—as our first line of defense?

Why has President Truman ignored the advice of the able men he appointed to the President's Air Policy Commission to advise him on this very problem? The report of this Commission, headed by the brilliant Thomas Finletter, has been the cornerstone of U. S. aviation policy for the past year, yet it has been completely ignored by the President.

The Air Coordinating Committee has echoed the Commission's advice on many occasions and is supposed to be the President's permanent interdepartmental advisory group on aviation. Its advice has echoed emptily in the White House.

Air Secretary Symington has been solidly on record since 1946 for the buildup of the regular Air Force to 70 combat groups plus supporting reserves. He too found the President actively opposing his advice on air power.

If not from these men and groups who are charged with advising him on air power, from whom does President Truman get his advice on such a highly technical and complex subject as air power?

There is strong evidence to indicate that he is being poorly advised. In countering the first public blast against his slashing the Air Force to 48 combat groups he told reporters that groups were a misleading measure of air power and that numbers of planes was what really counted.

Everybody who has had experience with combat aviation knows the bloody fallacy of the "numbers racket." It was faith in this "numbers racket" of air power that in prewar years put White House pressure on the Air Force to put its meager funds into training planes and short-range B-18 bombers rather than Boeing B-17s because you could get more trainers and B-18s for the money and it made a more impressive Air Force—on paper.

Everybody who has studied air power in the last war is familiar with the bloody losses and sad results during the early years when insufficiently trained groups were sent into combat. The number of adequately trained combat groups is the only true measure of effective air power. Secretary Symington emphasized this again in his first annual report.

The people who are paying for the aircraft they count on to provide their first line of defense as well as the men who have the tough job of making those planes have the right to know:

Who is giving the President his bad advice on air power?

It is encouraging to note, as reported elsewhere in this issue, that key congressional leaders still place more stock in the advice of the Joint Congressional Air Policy Board, the President's Air Policy Commission and Secretary Symington than they do in the anonymous and apparently incompetent advisers on whom the President depends.

In the coming fight for air power Air Secretary Symington looms again as a key figure.

His testimony on this issue has been clear and firm for two solid years supporting the 70 combat groups of a Regular Air Force plus supporting reserves as the (minimum) measure of adequate air power for this country's defense. Last year his firm stand on testimony previously given under oath to Congress brought him into sharp conflict with Presidential policy and the stand of National Defense Secretary James Forrestal.

This year the President and Forrestal will probably bring strong pressure to bear on Symington to support the Presidential cut to 48 groups which is 22 groups less than the minimum Symington has testified is necessary to defend this country. Without Symington's continued support of the 70-Group program the Congressional leaders may have trouble rallying sufficient strength to boost the air power budget. Yet Symington's silence may be the price required for his retention in the Truman administration.

If he speaks up again for what he believes to be right he may lose a political job but he will earn an enviable niche in the history of American air power.

"Air power is everybody's business." Speak up Mr. Symington!

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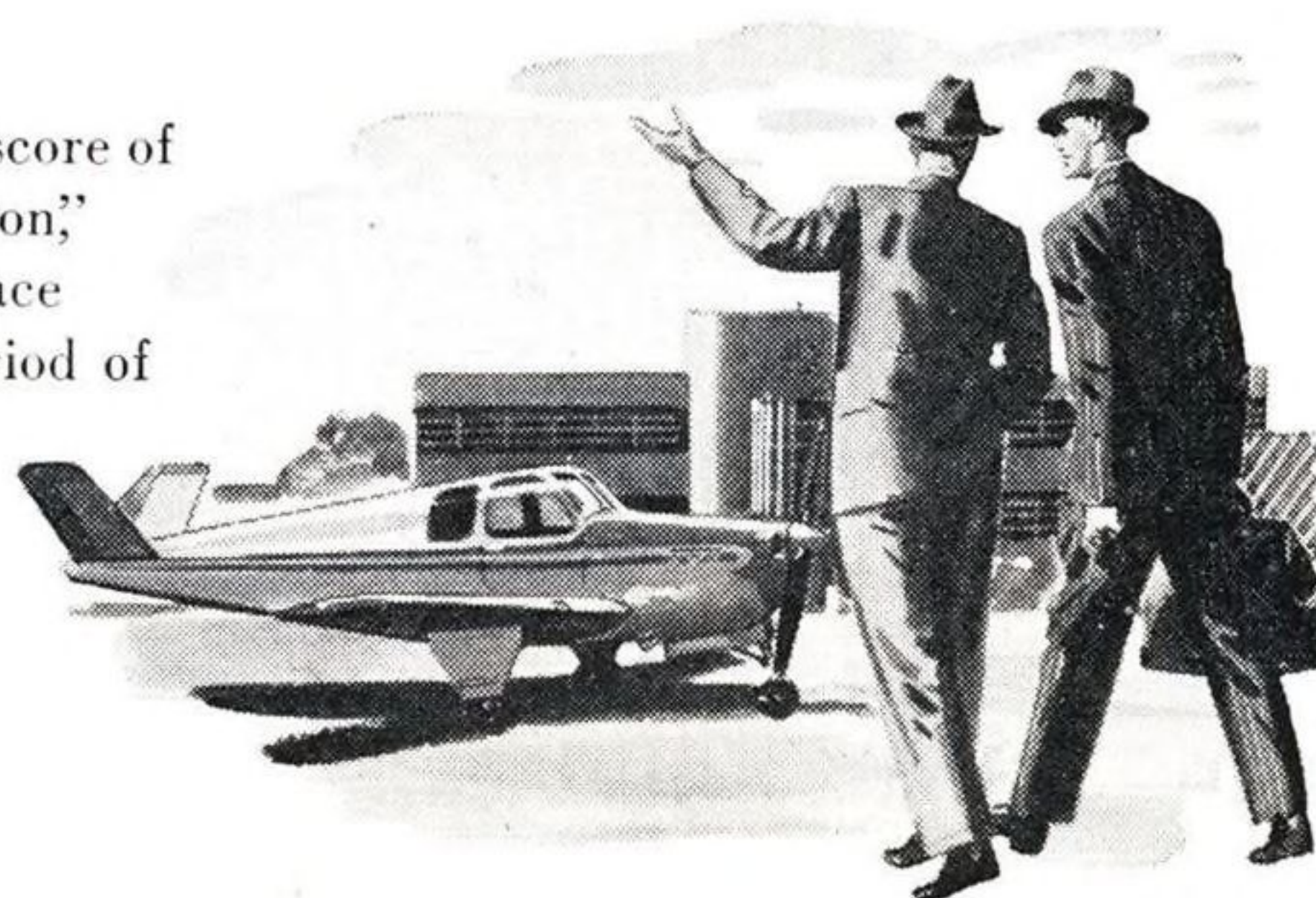
"I don't know where this idea came from that you have to be a long-experienced pilot in order to be a Bonanza-businessman," declares Francis D. Wetherill, executive of John Wanamaker's, Philadelphia. "With no previous aviation experience,

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