

AVIATION WEEK

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MAR. 19, 1951

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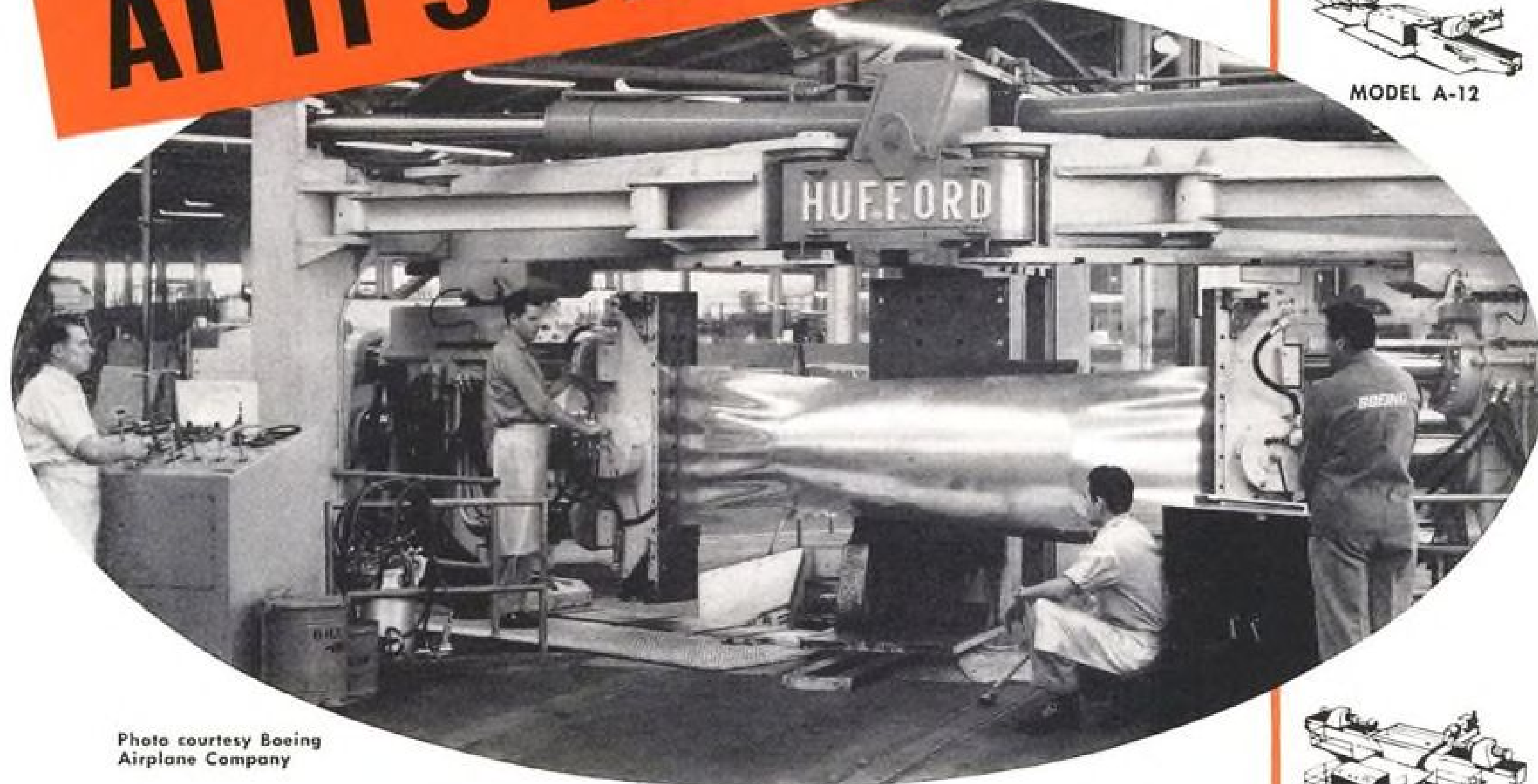
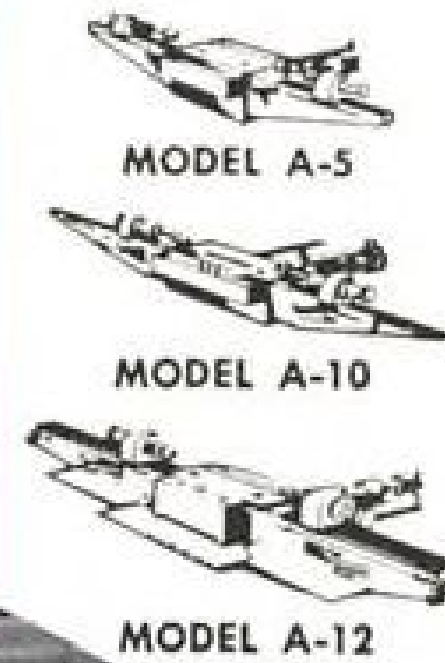


Photo courtesy Boeing Airplane Company

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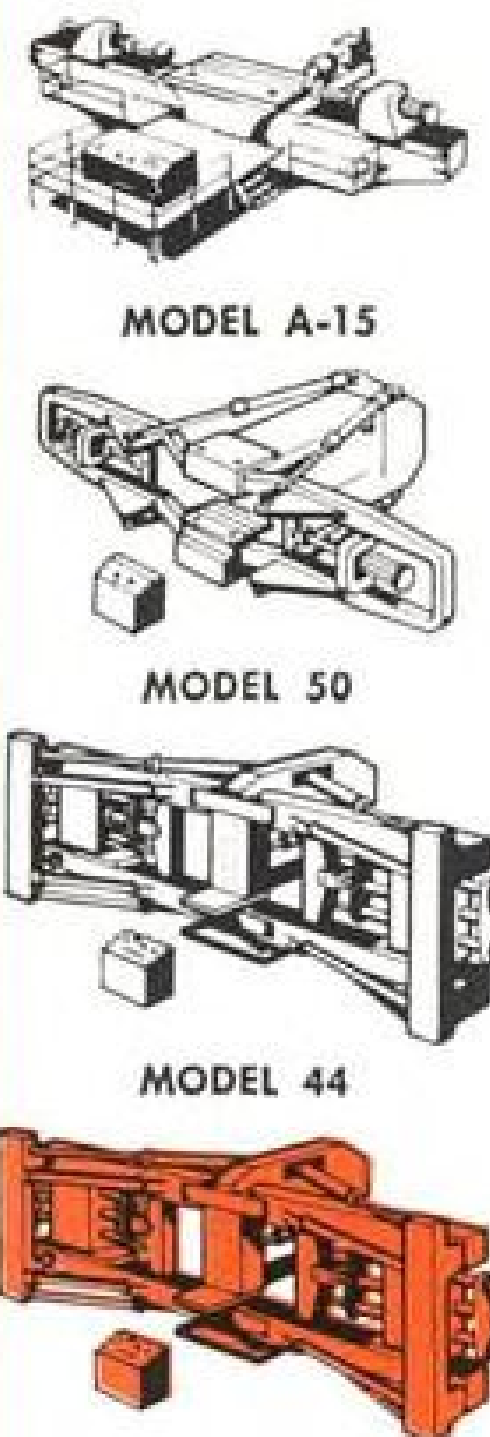
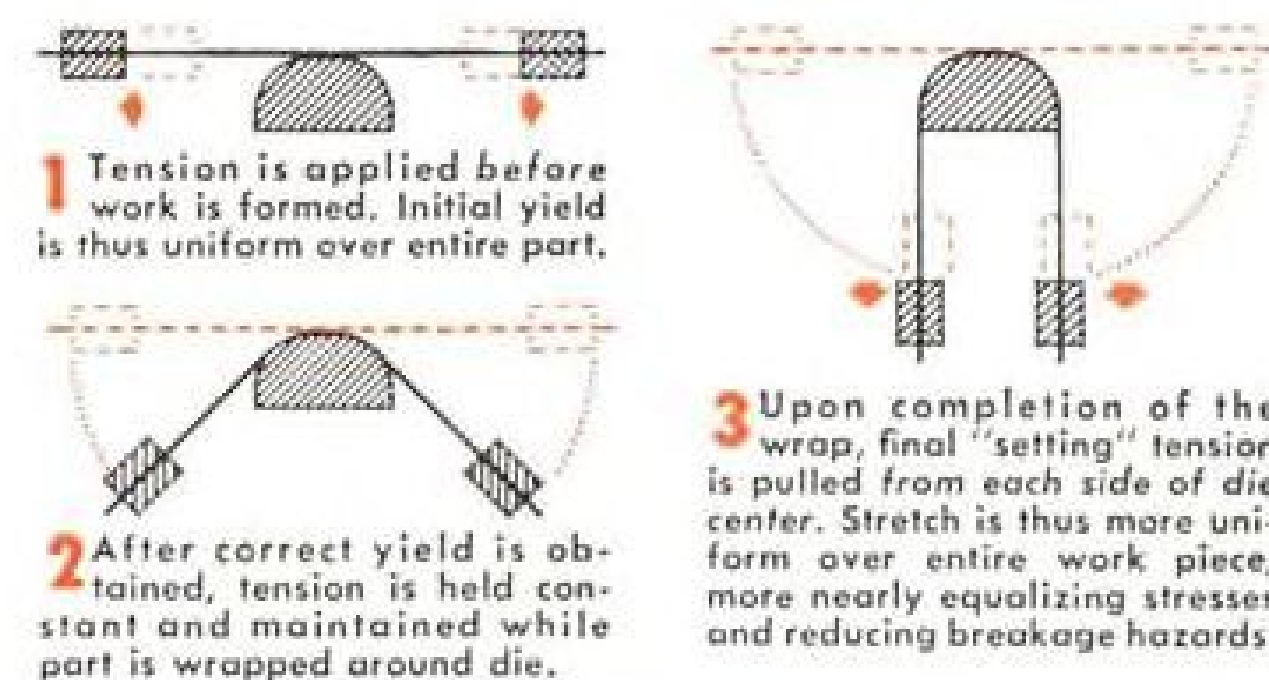
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Model 46

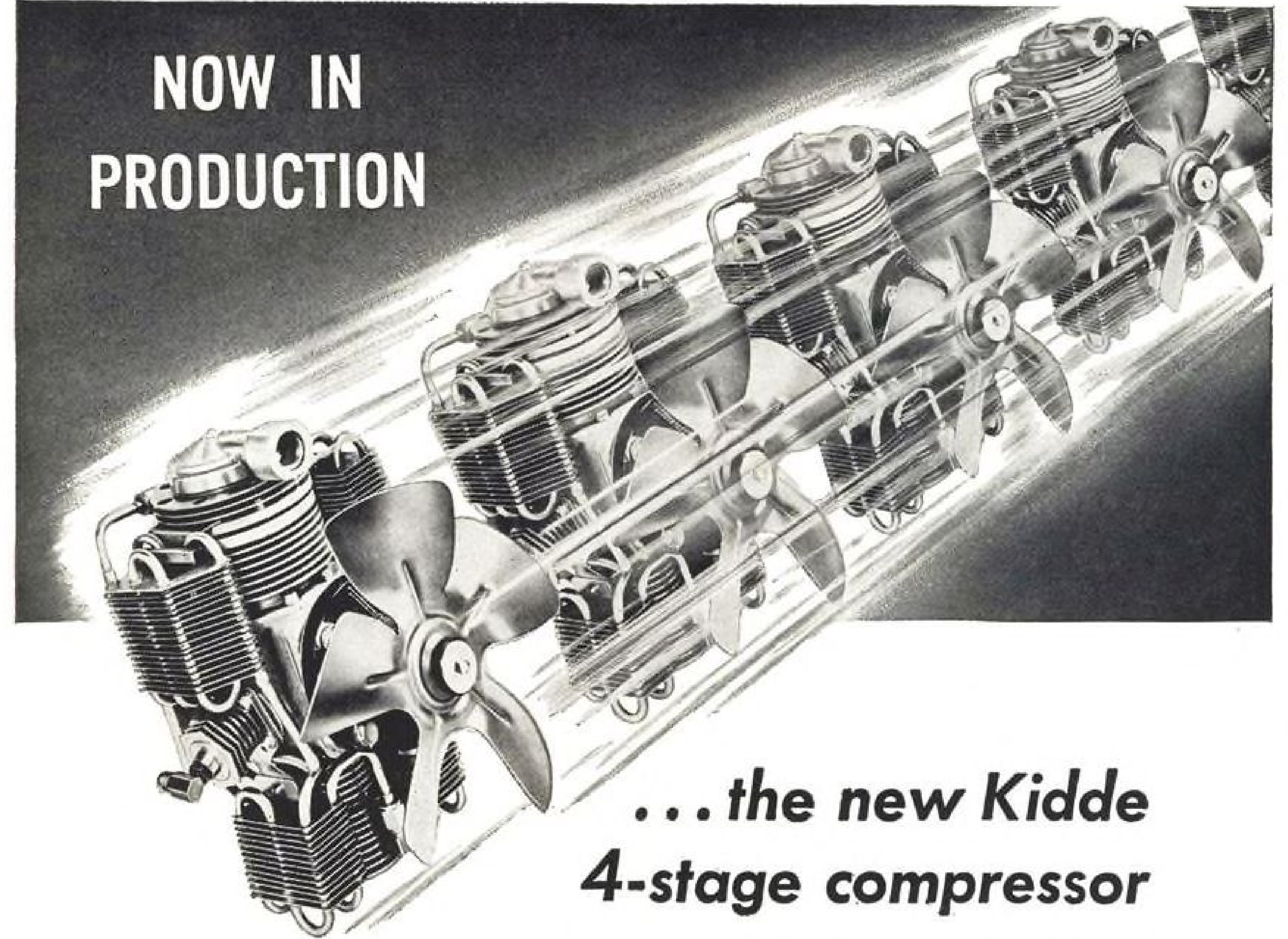
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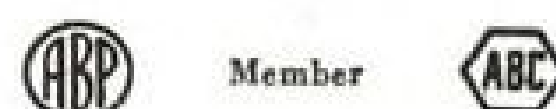
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Aviation Week



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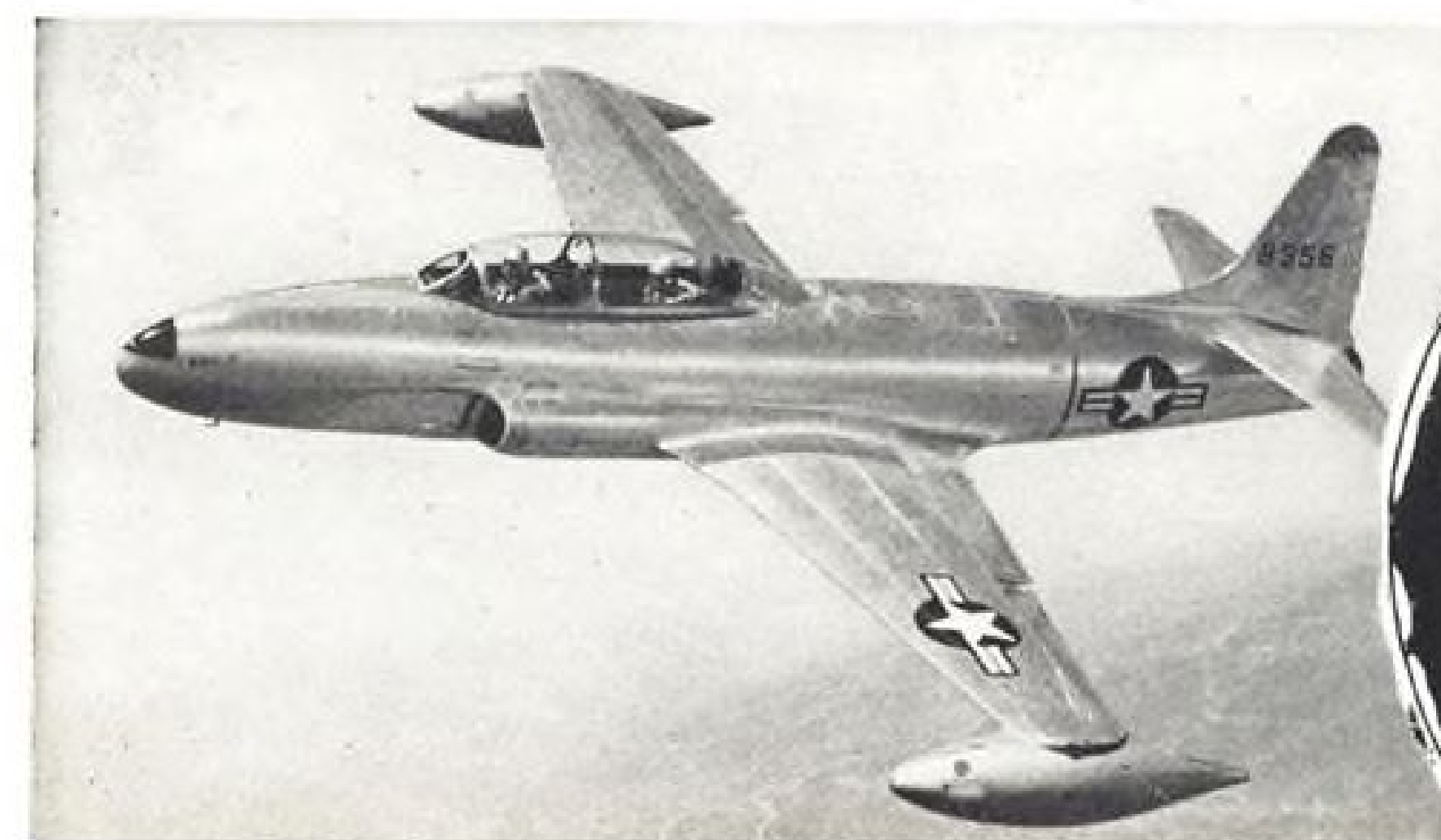
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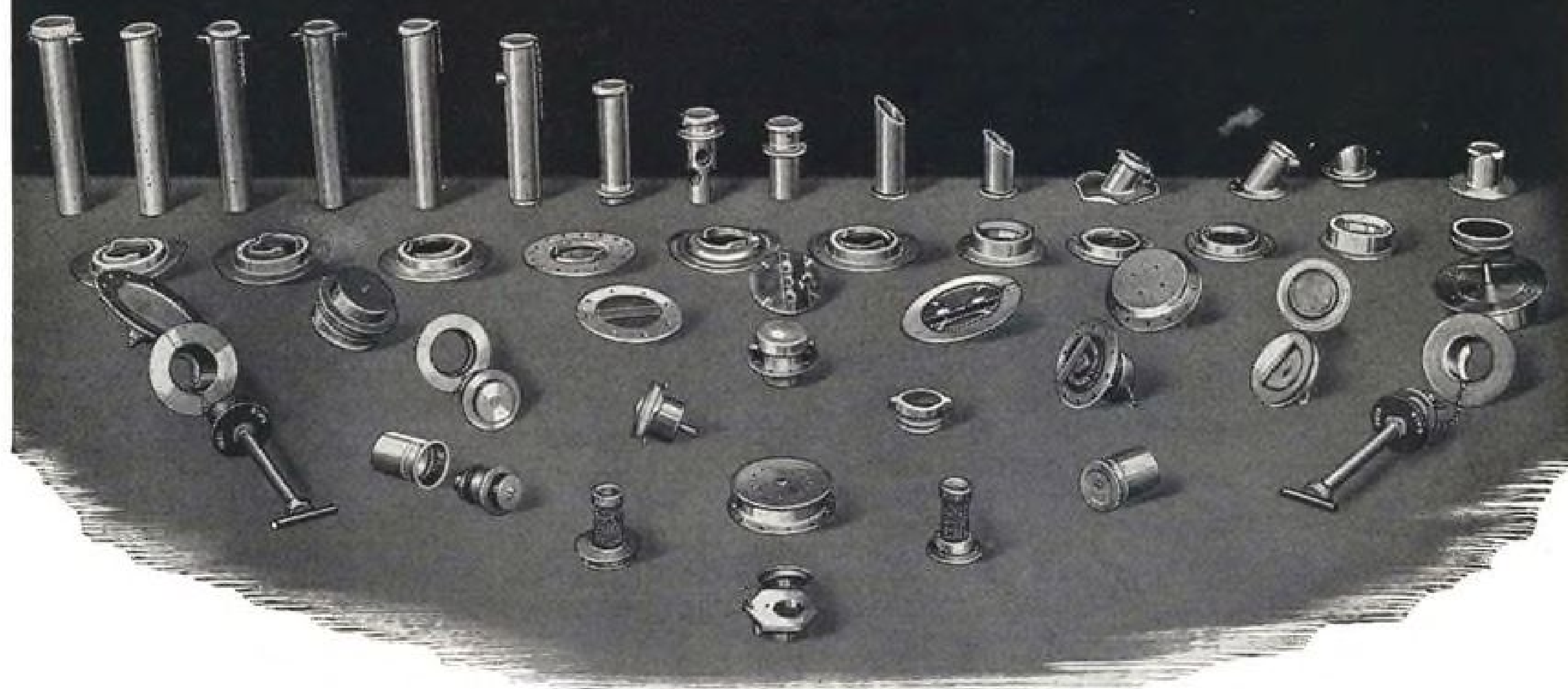
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NEWS DIGEST

DOMESTIC

Approval of Douglas DC-6A and B by CAA will be finalized soon, says the Aircraft Safety division's chief, George Haldeman. Problem of control under the wide center of gravity loading requested by both USAF and airlines is the main detail not yet settled by CAA. United Air Lines is testing its first DC-6B.

Inquiry into fares and operations of eight airlines carrying passengers between San Francisco and Los Angeles has been ordered by California's State Public Utilities Commission. PUC claims the carriers are charging higher fares (up to \$11.70) than it has authorized (\$9.95 to \$9.99). CAB had approved raise to \$11.70; apparently PUC feels, since the route is intra-state, its approval is also needed.

Five-cent hourly pay boost, based on an increase in the consumers price index, has been given to the 22,600 hourly rated employees of United Aircraft Corp. The cost of living allowance adjustments made by UAC now total eight cents an hour.

Hillis O. "Rocky" Nelson, regional vice president of Frontier Airlines, died in Tucson Mar. 6 of a heart attack. He was 46 years old. Nelson headed Arizona Airways at the time of its merger with Monarch Air Lines and Challenger Airlines to form Frontier Airlines.

Newly established Services Division of Air Materiel Command has taken over full responsibilities for all USAF activities in the food field, ammunition safety, and photo services, laundry and dry cleaning, graves registration and mortuary work, and will handle surveillance over AMC Wright-Patterson photo service center. Many of these functions formerly were performed by Army, but have been allocated to USAF under 1947 National Security Act.

Initial class of 135 aviation cadets has arrived at reactivated Greenville AFB, Miss., which is to operate under civilian contract by Graham Aviation, Butler, Pa. Flying training will get underway Apr. 4. When peak training load at Greenville is reached, there will be about 135 civilian instructors, approximately 583 cadets and a total of 163 North American T-6s.

USAF's Douglas Super DC-3 has been redesignated YC-47F. It previously was called the YC-129. Navy version is R4D-8.

Roosevelt Field, N. Y. tenants have received their eviction notices, heralding the end of the world-famed private airport, which with adjacent Curtiss Field, was the scene of much aviation history, including Lindbergh's takeoff to Paris. The property has been rezoned for industrial use.

Piasecki Helicopter Corp. has received Navy orders for a modified version of the HUP-1 helicopter. This pushes company's backlog to around \$100 million.

C. S. Casey Jones, president of the Academy of Aeronautics, LaGuardia Field, and World War I pilot and racing pilot of the 1920s has been elected president of the National Air Council. E. R. Boots of the U.S. Steel Corp. has been elected treasurer of the council and member of the board of managers.

Glenn B. Eastburn, former aviation manager of the Los Angeles chamber of commerce, has been designated by National Aeronautic Assn. as a vice-president and assigned to a project of reactivating NAA membership, with primary emphasis on West Coast membership activity.

FINANCIAL

Mid-Continent Airlines reports a net profit of \$22,120 for Jan. 1951, after provision for income taxes, compared with \$5912 in Jan. 1950. Operating revenues were \$788,005 for Jan. 1951, \$225,678 over the same period the previous year. Passenger load factor was up to 54.11 percent.

Curtiss-Wright Corp. reports for year ending Dec. 31, 1950 profit of \$7,278,564 after taxes on sales of \$135,662,863.

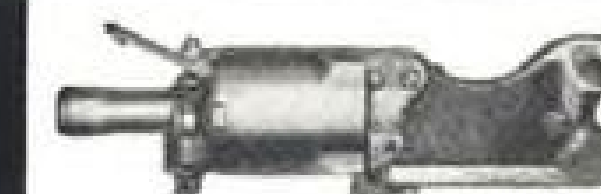
INTERNATIONAL

F-86E Sabre production by Canadair, Ltd., Montreal, will soon reach 20 monthly, with output slated for a stepup to 50 a month.

IATA Clearing House transactions during 1950 totaled \$147,682,000, a ten-percent rise over 1949; despite the turnover reduction represented by merger of AOA with PAA, and British South American Airways with BOAC. December's total was \$15,054,000, the second highest monthly turnover recorded since operations started in 1947.

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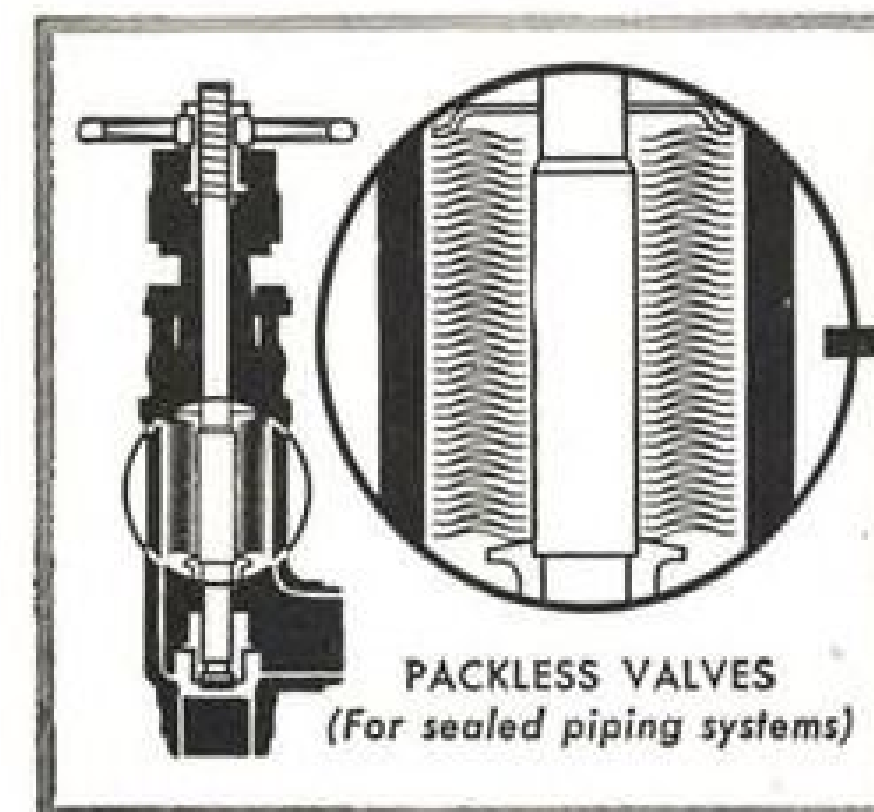
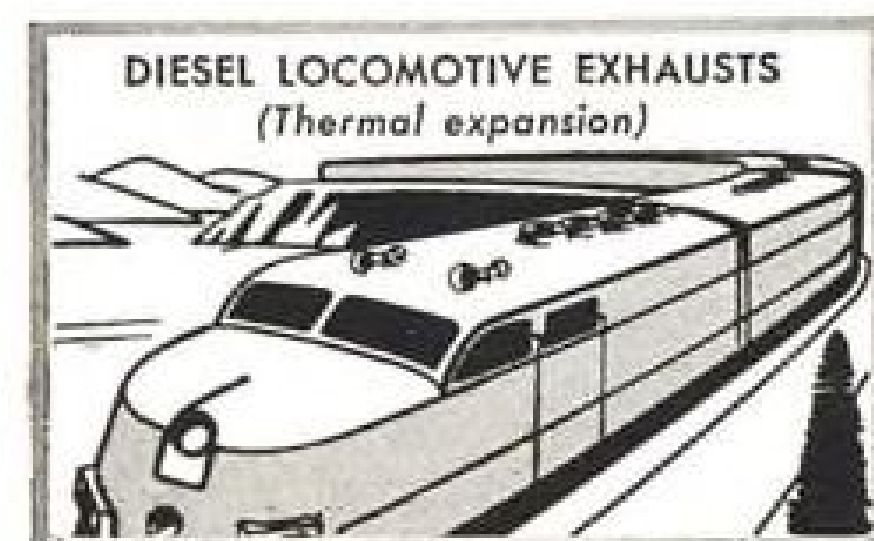
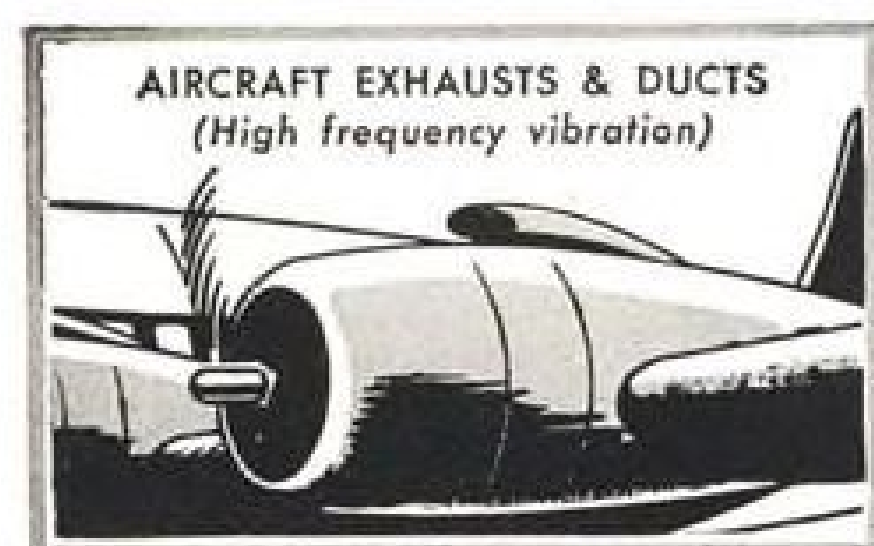
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SIDELIGHTS

Congress

Ohio's Sen. Bricker will soon introduce a bill that would transfer CAB's economic regulatory functions to Interstate & Foreign Commerce Committee. His staff is now drafting a report on domestic transportation, based on hearings held last year by a Senate subcommittee. . . .

Airlines

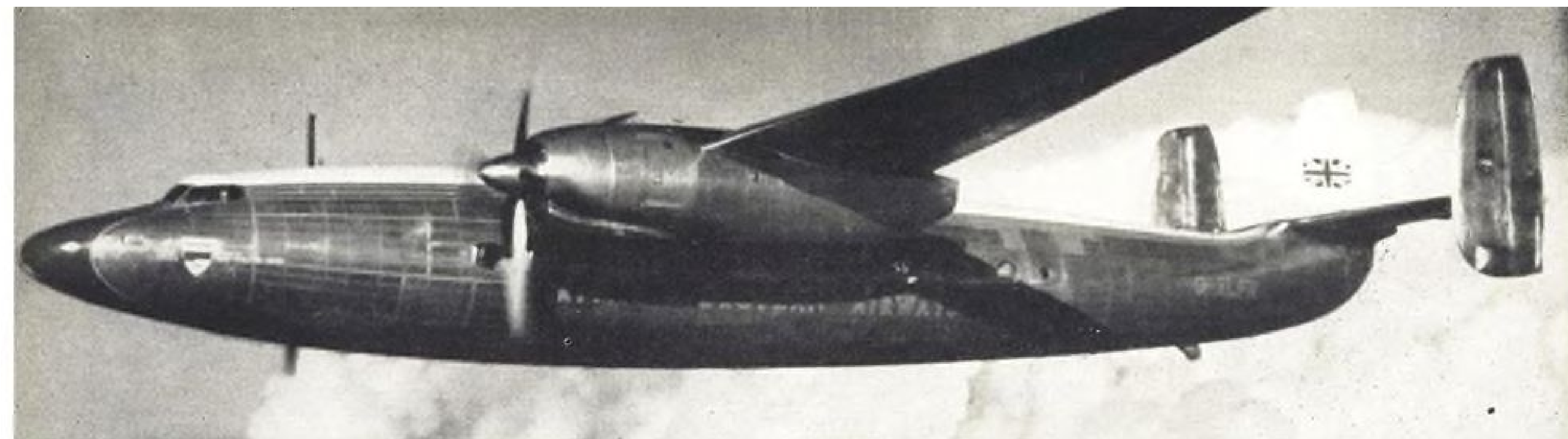
ATA says ad budgets for U. S. scheduled lines will exceed \$16 million this year. . . . IAM Lodge 1759 will protest to CAA because airline mechanics and other employees would be charged parking fees at Washington Airport under a proposed plan. . . . PAA spokesmen say they won't campaign for a single North Atlantic carrier next June, about the time when reconsideration of PAA & TWA certificates comes up. TWA people don't believe this; they're already alert for a move in Congress for single-carrier legislation. . . . Key senators say the Administration has decided on a three-member CAB but airline men write this plan off as a rumor. "It's a lot more than rumor," one senator told AVIATION WEEK. The same senator indicates the Administration may give CAB Vice Chairman Ryan a Federal judgeship.

People

Del Rentzel's visit to Mexico to talk to top government officials there about a bilateral air agreement was as a personal representative of President Truman, the N. Y. Times says. Washington sources say Rentzel's influence is high at the White House. . . . Emil Jarz, formerly assistant personnel director of American Airlines, is now special assistant to the treasurer of Mandel Bros., Chicago department store. . . . Beverly Griffith, EAL's public relations director, is recuperating at his sister's home in Atlanta after a heart attack. . . . Chan Gurney, former Republican Senator from North Dakota was confirmed by the Senate as CAB member to succeed Harold Jones, who resigned.

Here & There

Newest copter autopilot, a five-gyro installation using Eclipse Pioneer equipment, has shown outstanding success in trial runs at Navy's air experimental station at Philadelphia when used in a big Sikorsky 10-place HO4S in combination with the craft's hydraulic control system. . . . Civil Defense Administration will set up a separate aviation unit to work out civil air mobilization with state organizations. This is a victory for NASAO, which forced CDA to drop its original plan to have air mobilization handled by an over-all transportation unit. . . . Fred Weick's experimental agricultural plane has separate dust hopper and spray tanks so it can switch from dusting to spraying or vice versa at a moment's notice, in flight. . . . CAA Aviation Safety warns airborne coyote hunters: know your plane's limitations, use a stall-warning device, know (Continued on page 18)



SHAPELY AMBASSADOR—Production prototype of the 47-passenger Airspeed Ambassador is seen in British European Airways markings. Powered by two Bristol Centaurus 661 piston engines, the transport can fly 1100 mi. at 280 mph. with 7700-lb. payload.



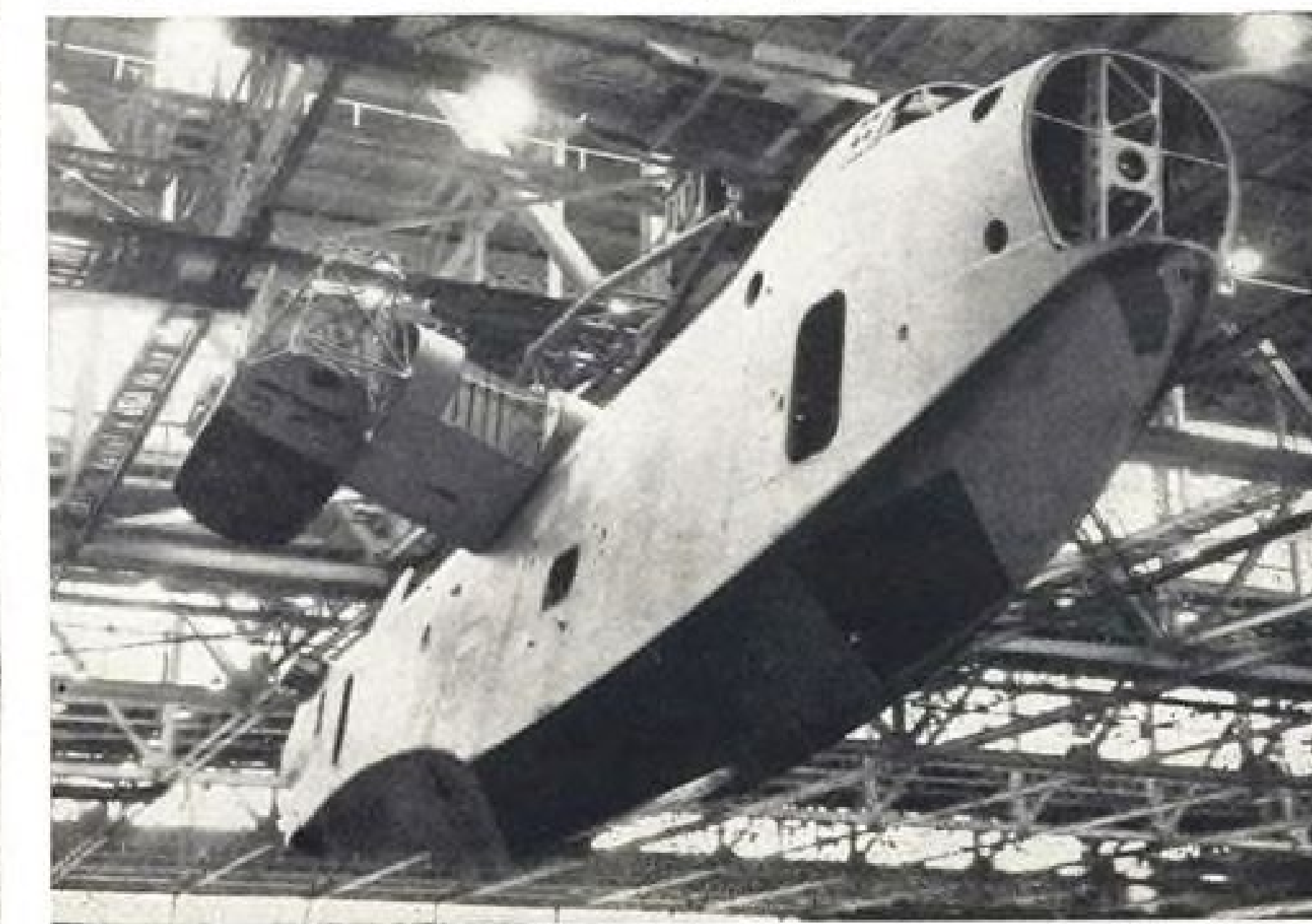
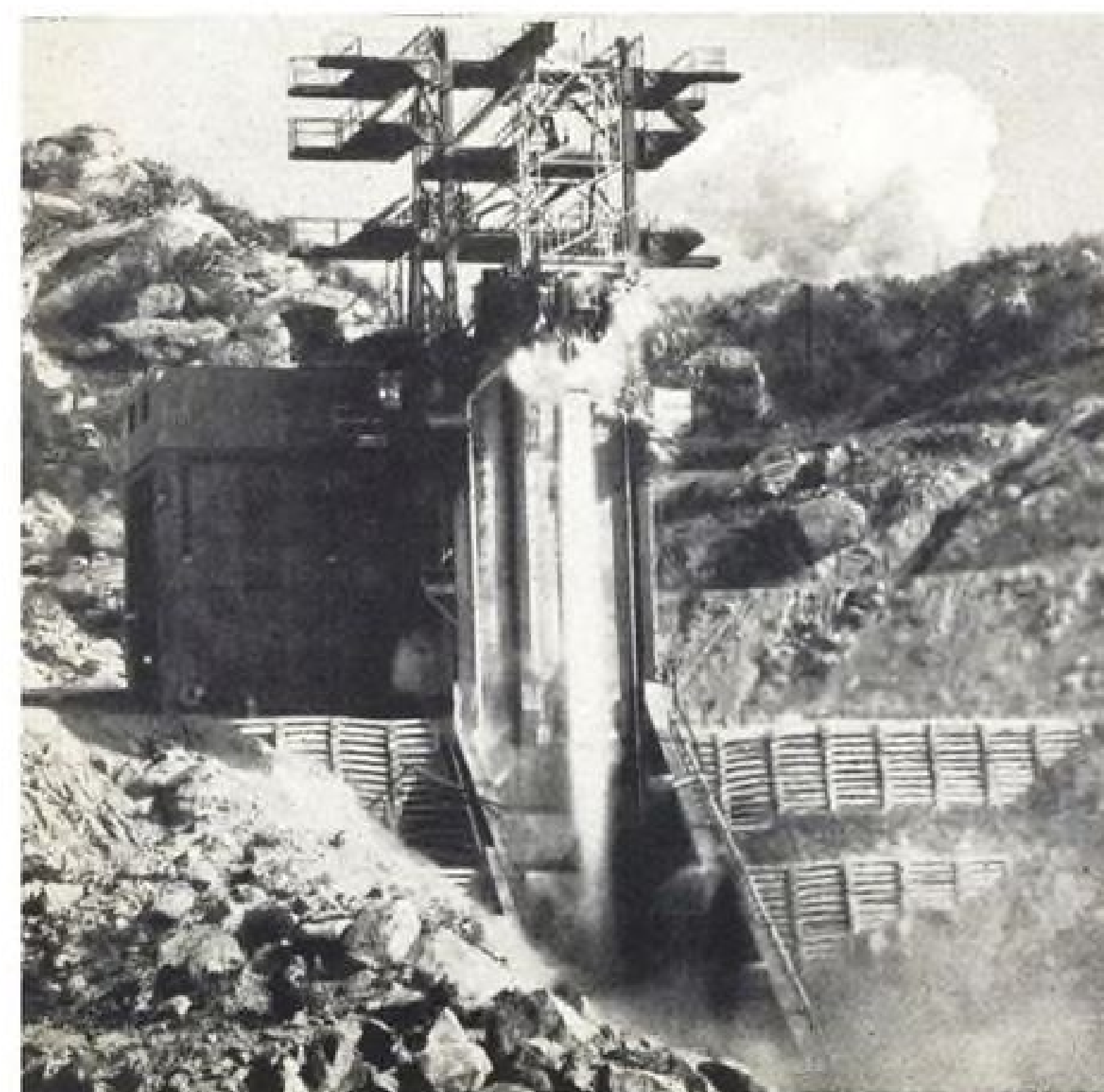
ALL-WEATHER PUNCH — Two-place Lockheed F-94B all-weather interceptor (above) sports new increased capacity wing-tip fuel tanks. Now in production, along with the F-94C (P&W J-48), the Allison J-33-powered B totes elaborate radar.

BULBOUS BREDA—The high-wing Breda-Pitoni BP-471 (right) is a new 18-passenger airliner-freighter powered by two 1200-hp. P&W Twin Wasps. Top speed is about 265 mph. and weight loaded is approximately 19,000 lb. The wing center section is of inverted gull design.



ROCKET TEST—Powerful North American Aviation rocket motor (about the size of a V-2 motor) undergoes static testing (left) at the company's Santa Susana Aerophysics Field Lab.

FIRST "FLIGHT"—A Martin P5M-1 Marlin hull (left) swings through the air on its way to an assembly stage at Baltimore, Md.

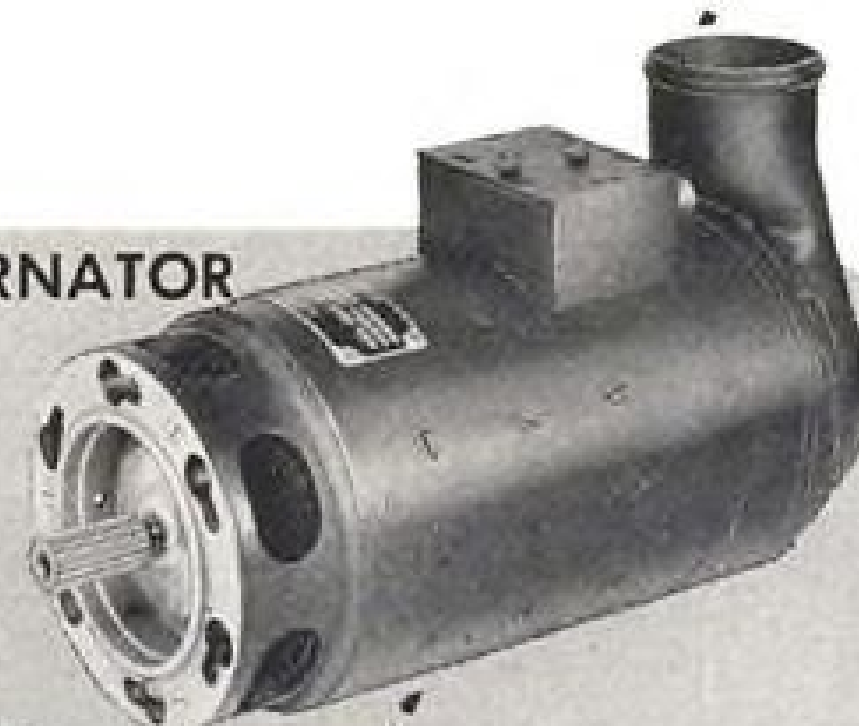


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for aircraft power conversion equipment

WHO'S WHERE

In the Front Office

Albert G. Handschumacher has been named vice president of Lear, Inc., and gives up his position as assistant to the president to become assistant general manager of the company's Grand Rapids plant. He joined Lear in 1945 after serving as chairman on several industry advisory committees during World War II.

W. T. "Tom" Stark has been made executive vice president and member of the board of United Aircraft Products, Inc., Dayton. Stark formerly was with Wright Aeronautical for 13 yr. as project engineer on fuel metering and ignition, and turbine control and accessory development.

Stephane P. Thouvenot, newly appointed deputy director general of the International Air Transport Assn., has taken up his duties in the Montreal headquarters, following a two-months tour in Europe familiarizing himself with the work of the IATA traffic conferences.

Changes

Prof. Courtland D. Perkins has been appointed chairman of aeronautical engineering at Princeton University, filling the vacancy created by appointment of Prof. Daniel C. Sayre to the Forrestal Research Center.

Charles L. Hall has been named technical representative in charge of Bell Aircraft's new Dayton office. . . . E. W. Hill has been appointed procurement manager, reporting directly to the general manager of the Fairchild Engine division. . . . John A. Smith has been named assistant to the vice president of Continental Air Lines to handle federal agency and legislative matters. Freeman E. Fish moves to Smith's former post as sales promotion, cargo sales manager.

John G. Burnett has been appointed to the newly created post of advertising manager for Braniff International Airways. . . . J. M. Klapp has been named to the new position of superintendent of government and convention sales for United Air Line. . . . P. E. Willis has been made director of administrative procedures and N. E. Taylor has been appointed director of economic studies for Trans-Canada Air Lines.

Honors and Elections

I. M. Laddon, a director of Convair since 1931, has been made chairman of the executive committee of Convair's board of directors. . . . Gen. Ralph Royce has been elected to the board of Boots Aircraft Nut Corp. . . . Maj. Gen. Edward M. Powers (USAF ret.), vice president and director of engineering of Curtiss-Wright, has been named to C-W's board.

William D. Strohmeier, vice president of advertising firm Davis-Parsons, Inc., has been elected to the agency's board. . . . Elmer Schlesinger, president of U. S. Helicopters, Inc., Oakland, has been named president of the California Helicopter Assn. for 1951.

INDUSTRY OBSERVER

► Canadian military sources say that the Avro CF-100 night fighter will outperform the sweptwing F-86 fighter at high altitudes.

► Delivery of the long-delayed Curtiss-Wright rocket motor for the Bell X-2 supersonic research plane is now due early this summer. The two-combustion powerplant delivers about 15,000-lb. thrust. With many test runs yet to be performed the test stand trials to date are considered satisfactory.

► CAA certification of the Allison T-38 turboprop is still a long way off. Allison expects to put enough time on its Turboliner to work out a lot of operational problems before it gets around to certification procedure.

► Long-recommended transport safety practice of installing rearward facing seats in transport passenger cabins is getting a new boost internationally from Great Britain. The United Kingdom delegation to an airworthiness conference of International Civil Aviation Organization at Montreal, is asking approval of a requirement that seats facing backward be installed in any transports carrying more than six passengers.

► Operations of two American helicopters, a Bell 47-D and a Hiller 360 by two Italian companies, for mountain photography, passenger hopping and spraying for malaria control, have proved so profitable that the Italian operators, Aersilta and Ela, are seeking additional machines. But they are running into priorities problems due to large military orders held by the American manufacturers.

► The supersonic Curtiss-Wright Turboelectric propeller has recently run up to speeds as high as Mach 1.6 in windtunnel tests.

► The new Boeing C-97C Stratofreighter recently delivered to the USAF with a beefed-up fuselage and a one-ton greater maximum payload with a few more modifications, will be the standard C-97 for Boeing's huge mass production order for MATS. Flush-mounted antenna and new main landing gears identical with those used on the B-50 bomber are other features. Boeing's Flying Boom aerial refueling equipment is now designed for quick installation and removal on C-97s at any Air Force base.

► A modification of the Douglas C-124 landing gear to a four-wheel gear like that of the Convair B-36 may be forthcoming in response to Army evaluations of the airplane's limited capabilities in operating in small forward area bases.

► Boeing has disclosed that one or the other of two forms of aerial refueling equipment are now standard equipment on its B-50 superfortresses now in service use. Latest B-50s are leaving the Seattle plant equipped with receiving equipment for the Flying Boom refueling system, while earlier B-50As and B-50Bs are equipped for the British flight refueling hose and reel system. B-29 refueling tankers are designated KB-29P when they are equipped with the boom system, and KB-29M when they have the hose and reel.

► Lockbourne AFB, near Columbus, Ohio, soon to become a Strategic Air Command base, is getting a new 9000-ft. runway to accommodate B-36 and B-47 bombers. But an Air Force spokesman has denied reports that Lockbourne would become SAC headquarters instead of Offutt AFB at Omaha.

► Lockheed and the Union of South Africa are negotiating over purchase of eight Lockheed P2V5 long-range patrol bombers, the version equipped with Wright Turbo-Cyclone engines, to be used by the South African Air Force for coastal defense. In addition SAAF is receiving 10 new Vampire jet fighters now on order from de Havilland.

► Stanley Aviation Corp., Buffalo, N. Y., has developed an ejection seat for use by bomber crewman on high speed jet bombers. The ejection seats will thrust the crewmen down through the floor of the crippled plane. Company reports orders will equip Boeing B-47 and B-52 bombers with the escape seats.

Washington Roundup

Important People

• **Charles E. Wilson.** Politicos give the Defense Mobilization chief six months more—at the outside—to stay in Washington.

He's tried to run Defense Mobilization like a business. It can't be done in Washington. Too many political factors have to be considered.

Labor's revolt is only the first open outbreak against the Wilson regime. Ostensibly, labor's kick is Wilson's failure to put labor representatives on his councils, and, to a lesser degree, to freeze wages. Actually, labor's biggest concern is that efficient businessman Wilson will ruthlessly cut off civilian production for defense conversion, making for mass local unemployment. And, they're right about that—if Wilson gets his way.

Businessman Wilson can't see channeling prime defense contracts to a Small Defense Plants Corp. for parceling out to small businesses, when large corporations can efficiently, and at less cost, fill the contracts. But congressmen, pressured by the powerful small business lobby, are determined that it's going to be that way. Rep. Wright Patman's Small Business Committee, with \$100,000 to spend, is off on a series of local hearings to whip up small business' determination for parceled-out prime contracts.

And, businessman Wilson's refusal to view agriculture as an essential defense industry and allocate it materials needed for war weapon construction has set the farm bloc against him.

Politicos ask: Who, no matter how right, can survive with the three most powerful political elements in the country—labor, small business, farmers—against him?

• **W. Stuart Symington.** The former Secretary for Air has gritted his teeth and determined to stay on in the Washington scene, his friends say.

Some months back, Symington willingly surrendered a big hunk of his jurisdiction as Chairman of the National Security Resources Board to Charles Wilson's Office of Defense Mobilization.

But then followed some developments Symington hadn't anticipated:

• NSRB's functions of long-range mobilization planning were clipped by the White House's creation of a special board to do the job, under the chairmanship of Columbia Broadcasting System's president, William Paley.

• Symington's invitations to after-dinner White House parties ceased.

• Last week, virtually the last vestige of NSRB power—civil air mobilization—was transferred from NSRB to the proposed new Undersecretary for Transportation, Delos Rentzel.

Washington insiders ascribe the decline of Symington to the strategizing of John Steelman, Presidential adviser. Symington does too. The insiders say the "Palace Guardsman" (senators call him the "Palace Bouncer") didn't like the Symington threat to his power; Symington is too able, has close political friends, was on too good terms with the President (whom, reportedly, Guardsman Steelman no longer permits him to see).

Friends say Symington recently analyzed the situation something like this: "Steelman's tried to put the screws on me, I know now, rather lately; we'll see whether he or I will win out."

Reconstruction Finance Corp.

Senators aren't going to settle for the President's belated endorsement of their plan to set up a single RFC governor to supplant the present five-member RFC board.

They'll insist on other changes in the law. Two of them:

• All RFC applications for loans must be open to public inspection. This comes from the finding that two loans to Kaiser-Frazer Corp. "of doubtful public interest" were transacted in complete secrecy. According to the Fulbright Committee's still-confidential records, Kaiser "played ball" with the Harley Hise-Harvey Gunderson faction of RFC, dominated by Presidential adviser John Steelman. After the Walter Dunham-William Willett faction, headed by Presidential adviser Donald Dawson, took the loan-making lead, Gunderson and Hise provided evidence for the Fulbright committee, were ousted from office by the President last November.

• CAB intervention in airlines' applications for loans must be ended. This stems from RFC's loan to Northwest Airlines. Senators claim that RFC granted the loan for the purchase of Stratocruisers without looking subsequently authorized mail pay to Northwest to make good on the loan.

No More Plane Contracts Soon

It looks as though there will be no more plane contracts for many months, aside from two comparatively minor USAF contracts, one for a lightplane, and the other, probably, for a tactical plane.

Navy's BuAer had obligated all the funds it had for aircraft and engine procurement by last December. It hasn't been given any new funds since.

USAF has now obligated 99 percent of its funds for airframe and engine procurement.

An appropriation request for additional planes was supposed to go up to Congress the beginning of January. Don't count on it reaching there before mid-April, at the earliest. Contracts under it won't go out before July.

Navy's Air Carrier

Navy has long suffered from the effects of that old order of former Defense Secretary Louis Johnson canceling construction of its super-carrier, the proposed 65,000-ton United States.

But now Congress and the public are all in favor of a revised super-carrier—with emphasis on mobility, as well as size. It seems that the Navy, though, can't agree on one.

The intra-Navy fight is over whether the carrier is to have an "island" or not.

Vice Adm. John Cassady, Deputy Chief of Naval Operations for Air, wants a flush deck, so planes can take off in complete freedom, without obstruction.

Vice Adm. D. B. Duncan, Deputy Chief of Naval Operations for Operations, though, wants a small island, so the carrier commander can see where he's going.

The proposed compromise—a disappearing island, that could be lowered at plane takeoff times—hasn't solved the argument. Adm. Duncan claims it would be entirely too expensive.

—Katherine Johnsen

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Aircraft Industry Steps Up Subcontracting

Manufacturers wary of over-expansion in face of higher taxes, uncertain future.

By William Kroger

The increasing share of prime contracts being passed out to subcontractors in the mobilization period may be indicative of slow but fundamental changes in the aircraft industry's normal way of doing business.

Up to now most of the pressure for greater subcontracting has been from the government for a reason quickly and easily understood: it broadens the production base better to meet national defense needs.

But there are growing signs among the manufacturers that there may be subtler, more important economic ends to be served by stepping up subcontracting. You see those signs when manufacturers like Curtiss-Wright Corp. and Lockheed Aircraft Corp. break with past traditions and go in heavily for subcontracting because it now appears the better way to do business.

► **Why Subcontract?**—Reasons for the subcontracting policy of those and other manufacturers differ in detail. But the result is the same: a greater net of subcontractors that likely will become a peacetime adjunct to the industry as time goes on.

In the case of Boeing, which is subcontracting up to 60 percent of the B-47 being built at Wichita, the farming-out policy was decided in part to avoid artificially swelling Wichita's population with consequent economic and social problems.

In the case of Curtiss-Wright, subcontracting (and its extension, licensing) is in part a revulsion from an unhappy policy of keeping everything at home in World War II, in part a permanent policy of new management, and in part an economic measure as favorable to C-W as to recipients of the subcontracts.

Lockheed's case has elements of most of the others. During World War II, the company subcontracted only 18 percent of its business. Now it is subcontracting about 40 percent of its work, even though President Robert E. Gross in the annual report released last week says this step will cut down profits.

The stark figures of the report give part of the reason for subcontracting:

1950 sales were \$173,331,000, up from the \$117,667,000 of 1949; but 1950 profit after taxes was \$7,210,000, against \$5,491,000 in 1949. In 1950, profit after taxes was 4.2 percent of sales; in 1949 it was 4.7 percent; in 1948, it was 5.0 percent.

The rest of the reason for greater subcontracting by big manufacturers is summed up by Lockheed President Robert Gross like this:

"Aircraft manufacturers have had to learn the difficult lesson of how to expand and contract like an accordion with the defense needs of the nation and still go steadily forward. One of the difficulties that confronts production organizations today is that we are neither in a peacetime program with freedom of action nor in a wartime program calling for full mobilization. It is not one or the other but something in between. We are trying to achieve defense production in some fields surprisingly close to all out mobilization rates without taking the steps necessary to assure it."

► **Twilight Zone**—Lockheed and other manufacturers trying to live in the mobilization twilight zone are increasing their own facilities—but only up to a certain point. Beyond that, they lean heavily on subcontracting.

Some manufacturers found out years ago that is the safest way to keep a solid financial footing both in peace and war. Pratt & Whitney Aircraft, perhaps the aircraft industry's pioneer in peacetime subcontracting, was founded on a policy of subcontracting. That meant keeping the home company smaller than it might have been. But it also meant less expansion and contraction as sales went up and down.

Lockheed's 1950 report reflects results before the new orders. So the company expects sales to continue rising. But it is worried by the falling profit margin. New taxes are expected to pull the ratio lower. That leads inevitably to the question of where the post-emergency reserves will come from.

With \$6,500,000 budgeted for plant expansion in 1951, Lockheed probably will have facilities sufficient to meet normal future commitments; and greater subcontracting will handle demands above that and help avoid later

Past & Future

The most significant development in the industry's return to subcontracting is the likelihood that the farming-out of the work will become a permanent policy for most of the manufacturers, come war or peace. It is not as likely that, at the present level of mobilization, subcontracting will become as widespread as it was during World War II, for three principal reasons:

• **Prime contracts**, of course, are not as large as during the war.

• **Licensing** of complete planes or engines is being used now more than during the war.

• **Large subassemblies** are subcontracted now more than during the war. This may mean that the dollar value of subcontracts will be proportionately larger than during the war, but the actual number of subcontracts may be smaller.

Here's how subcontracting grew during the past war:

• **September, 1941**, airframe, 16 percent; engine, 29 percent.

• **December, 1942**, airframe, 29 percent; engine, 47 percent.

• **December, 1943**, airframe, 30 percent; engine, 35 percent.

• **December, 1944**, airframe, 38 percent; engine, 28 percent.

The decline in engine subcontracting reflects the increase in licensing of engines for manufacture. In contrast, subcontracting rose in the airframe field. At one point, Republic was subcontracting 68 percent of the P-47. But that was late, in 1944. Already, in this early stage of mobilization, Boeing is subcontracting about 60 percent of the B-47.

Subcontracting now of large subassemblies shows how well the industry remembers its World War II experience. A Harvard University study after the war concluded that subcontracting at times was more a hindrance than a help because most of the parts farmed out were small, requiring an elaborate checking system.

conversion problems. Still a great commercial airplane producer, Lockheed's future business in that field, combined with military orders, could easily make subcontracting a permanent policy.

In the year ending Dec. 31, 1950, Lockheed's sales were 31 percent commercial, compared to only 17 percent the preceding year. And the company now has a backlog of 53 commercial Constellations, enough to keep it busy on that work until the spring of 1953.

► **Mostly Military**—But the pattern for the immediate future is indicated by the fact that 85 percent of the \$625 million backlog is military. It covers three Air Force planes (F-94, T-33 and C-121), and four Navy planes (TC-2, P2V, R7O and PO-2W), of which the F-94B, F-94C and P2V-5 were put into production during 1950.

Lockheed's 1950 production totaled 7,001,000 lb. Number of military planes involved is not disclosed, but 37 Constellations were included. Four-fifths of the deliveries were jet fighters and jet fighter-trainers. Three models of P2Vs were delivered.

Lockheed's facilities expansion, while tied in with its heavy military backlog, is also designed to fulfill normal needs.

A \$2 million-office building soon will start going up at Burbank to house administrative and engineering employees—who will be needed even after the present emergency.

A \$300,000 electronics laboratory with \$100,000 worth of special equipment is under construction. But, as the report points out, the electronics field is growing and demand won't slack off.

And if additional production space is needed, Lockheed believes it will be provided by the government, thus relieving the company of a post-emergency drain on its resources. This, of course, has already been done in the case of Marietta, Ga., where Lockheed will recondition B-29s, and prepare the plant for later production of a plane, probably the B-47.

With that sort of regulated expansion, plus the stepped-up subcontracting, Lockheed and other manufacturers hope to nip a recurrence of the 1945-46 reconversion blues.

Pentagon Reshuffle To Cut Red Tape

Reshuffle of internal organization of the Defense Department in an attempt to cut away red tape is now under way at the Pentagon. The reorganization, while having no direct bearing on the staff agencies of Air Force, Army and Navy services is designed to effect a speed up in coordination of joint service activities.

The new plan has been under review of Air Force General Joseph T. McNar-

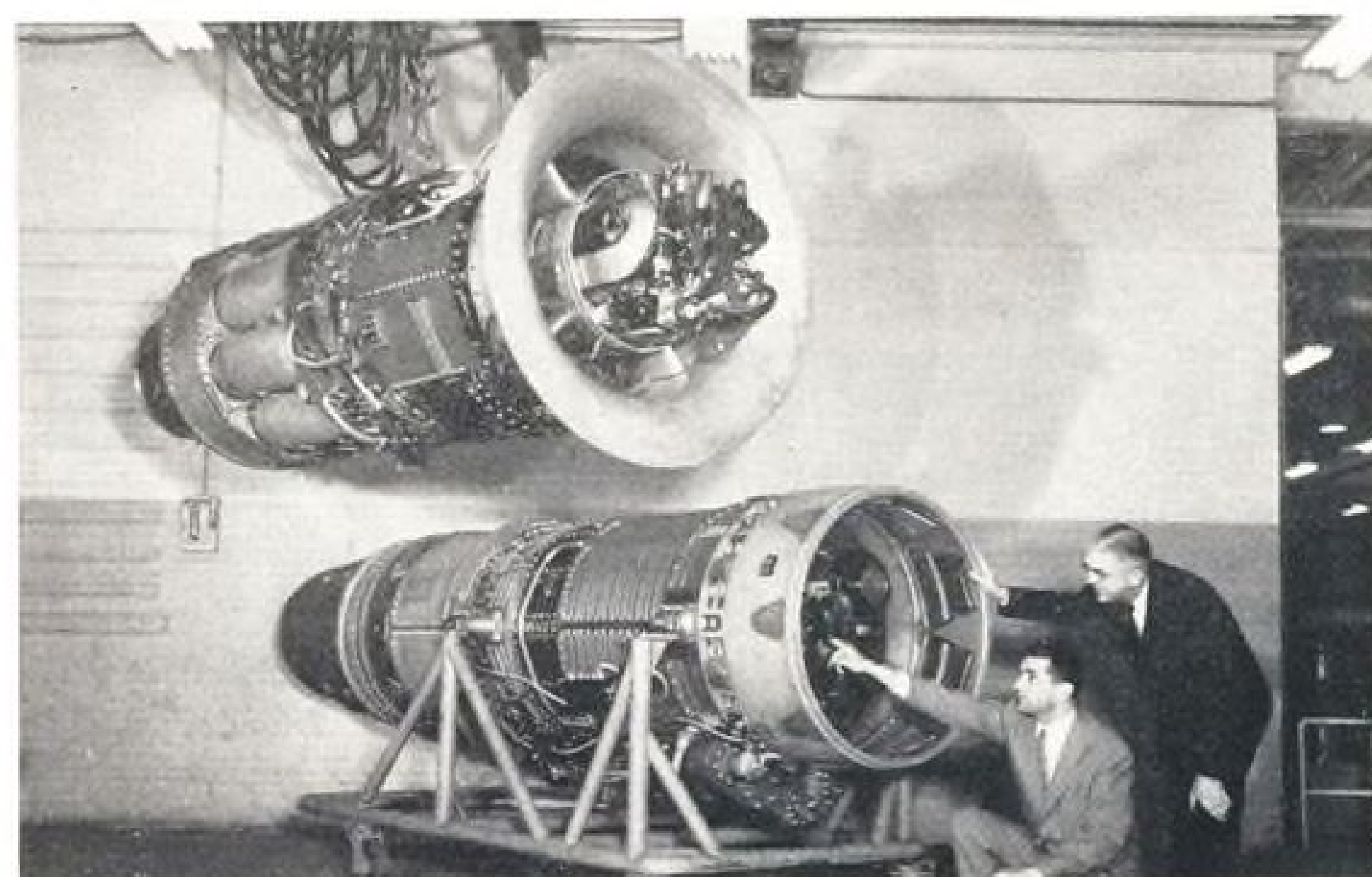
ney's top level management committee for the last six months. It is being implemented as sections are completed.

Robert Lovett, Deputy Secretary of Defense is said to be providing impetus towards cutting away Defense Department red tape in an effort to place its management on a more businesslike basis. Many reforms in Air Force management which have since been adopted by Army and Navy are directly attributable to Lovett's World War II activities as Assistant Secretary of War for Air.

The reorganization of the office of Secretary of Defense structure is designed to simplify coordination between boards, committees and divisions of the Defense secretariat that are responsible for policies handed down to the three services.

The management committee was established by former Defense Secretary Louis Johnson in 1949 to ride herd on the three military services in eliminating monetary fat. Johnson simultaneously established a management advisory group and retained Robert Heller and Associates, Cleveland, Ohio, to conduct a survey of the services management. The organization has been paid \$620,000 so far, for its advice on how to streamline Defense Department management.

The management committee formerly a temporary committee is to be given permanency and "division status" next month. Duty of the division will be to advise the Defense Secretary on matters of management and to guard against duplication of effort between the three services.



MORE POWER is obtained from J-35-A-23 (bottom) in same diameter and only slightly more length than earlier J-35, suspended above it. Project engineer Dimitrios Gerdan (pointing) shows some of new engine's features to Ronald M. Hazen, Allison director of engineering.

Allison J-35: New No. 1 Engine

Latest model, A-23, gets 10,000-lb. thrust with revised compressor and turbine, and novel combustion system.

By Alexander McSurely

A new leader moved into No. 1 position in the hotly contested U. S. jet engine race last week as Allison division of General Motors unveiled its J-35-A-23 axial flow turbojet engine, now ready for mass production.

The new engine is reliably reported to have a dry rating of approximately 10,000-lb. thrust, which is by a considerable margin the highest power yet reported for any U. S. or British engine.

Closest competitor whose rating has been announced is the Sapphire (J-65) which Curtiss-Wright and Buick are

preparing to build in this country, and which has a 7200-lb. thrust rating dry. Unofficial sources say that the Westinghouse J-40 has a dry rating of around 7300-lb. thrust dry. Two other contenders are a General Electric advanced J-47-23 engine whose dry rating is described as only "in excess of 5200 lb.," and the dark-horse Pratt & Whitney J-57 which could be the next No. 1 engine.

► **New Design Features**—The new Allison engine has a number of important new design features which presumably account for its big step-up in power. Actually, as it has been previously

announced it isn't just a new version of the J-35, but is virtually a complete new powerplant, designed to the same diameter, 37 inches, as the older J-35s.

Comparing it with the old J-35 engine these important changes are disclosed:

- **Sixteen stages of compression** as compared to 11 stages.
- **Three-stage turbine** as compared with single stage.
- **Overall length is 172 in.** as compared to 146 in.

Probably the most interesting innovation, however, and an indication that the new engine has moved along a step beyond jet powerplants currently powering service fighters and bombers is the treatment of the combustion section.

The section has eight individual burner cans, essentially similar to the eight burners of the older J-35s but these are encased in a large outer combustion chamber, which would be similar to an annular type burner section, if it did not contain the inner cans. Allison calls this a "cannular" burner section. After compression and ignition the mixture in the outer burner section is bled into the inner cans. In effect, the individual cans act as "afterburners" to the larger outer combustion chamber.

► **Added Strength**—Allison points out that the construction of the burner section adds to structural strength of the engine and to the ease of assembly. It is understood that the outer burner section is a load-carrying structure, to which the inner cans are attached, whereas the old style J-35s carried the cans attached to a supporting load carrying member in the center.

Allison states that the engine is scheduled for first installation in the USAF's four-jet Boeing B-47C Stratojet. It is stated that the four new engines in the B-47C will deliver more power than the six GE J-47 engines which power the current production version of the Stratojet, the B-47B.

Since these are rated at 5200-lb. thrust dry each, total power would be 31,200-lb. thrust. This would place the new Allison engine power at more than 7800-lb. thrust each or more than anything officially reported. Actually, reliable sources indicate to AVIATION WEEK, the dry rating of the new engine is well beyond the 7800-lb. thrust mark and at least very close to the coveted 10,000-lb. thrust mark which has been the goal of all recent jet engine developments.

► **Longer Range Expected**—Saving in total engine weight, together with the lower fuel consumption is expected to result in a much longer range for the XB-47C than has been attained by the earlier versions of the Stratojet. The engines are expected to be arranged in single pods under the wing, to prevent

too great concentration of engine weight at any one point. First experimental plane of the B-47C version is scheduled to fly later this year, Allison stated.

Other interesting features of the new Allison engine are its all weather provisions. De-icing provisions are made on the air-inlet vanes and the bullet nose at the air intake. An automatic ice detector is also supplied. Heat for the de-icing is bled from the compressor. In addition air inlet screens are automatically retractable, and there are closeoff doors for the air inlet.

The J-35-A-23 has its own complete oil system, which is independent of external oil supply. It also has an independent hydraulic system which operates the variable-area jet nozzle and the air inlet screens.

The J-35-A-23 is going into production under a new Air Force contract described as one of the largest single orders ever placed with General Motors. It includes large scale production at the Allison Indianapolis plants, plus substantial production by the Chevrolet Motors division of GM. The Chevrolet production will use a large plant at Tonawanda, N. Y. for production plus assembly. Additional production at other Chevrolet plants will feed into the Tonawanda assembly plant.

Northwest to Ground 20 Martin 2-0-2s

Northwest Airlines last Saturday was to ground its 20 twin-engined Martin 2-0-2 airliners for modifications recommended by a board of aeronautical experts appointed by CAA Administrator Donald Nyrop.

The modification board had two aims in mind: discover anything that might have caused Northwest's series of accidents with the Martin; recommend modifications and operating procedures to make the plane safer. This was essentially the same procedure followed by two modification boards for the Lockheed Constellation and the Douglas DC-6 four years ago.

Here are the main findings of the Martin 2-0-2 modification board:

- **No basic design fault** was discovered to have contributed to Northwest's accidents with the plane.
- **All transport plane types** will require some modifications as a result of this board's investigation.
- **No structural changes** are recommended, despite the great total number of other types changes recommended in the board report.
- **Nothing so urgent** was found as to require immediate grounding of the Martins. Changes may be made one plane at a time, the modification board feels.

Despite the leeway to modify the

planes one by one, Northwest decided to ground them all at once. Said NWA President Croil Hunter: "This work could be done over a period of time without withdrawing the planes from operation, but in the interest of expediting the program and a more efficient utilization of our mechanical forces, it was decided to withdraw the fleet entirely."

Two more reasons why Northwest grounded all its Martins at once: the company's pilots had said they would not fly the plane after Mar. 17; Northwest must bend over backward on safety matters because of its recent series of accidents.

► **The Modifications**—Most changes listed as mandatory provide additional fire protection by changes in electrical, hydraulic and fuel lines and junctions.

No priority was laid down in reports by the 13 committees studying 13 phases of the plane and its operation. Here are some major items declared mandatory in the preliminary report.

- **Replace dural fuel cross feed lines** by fire-resistant lines.
- **Move oxygen supply** from hydraulic compartment.
- **Vent all heater fuel lines** overboard and provide shrouding.
- **Give the battery vent line** a negative pressure scoop installation.
- **Lower the gear ratio** on the rudder servo mechanism of the autopilot and install a field rheostat to reduce torque.
- **Install separate circuit breakers** for each inverted control and warning light circuit.
- **Improve lateral control** of the plane, with special regard to control under icing conditions. (Method of achieving this is not detailed.)
- **Install an ice-indicating mast** on the plane.
- **Either replace 3-in. 61ST hydraulic tubing** in the 3000-lb. hydraulic system, or establish service life records, or replace the tubing with stronger material.

Ramspeck Given Leave By ATA for New Post

At the request of President Truman, Air Transport Assn. directors have granted Executive Vice President Robert Ramspeck a leave of absence to June 30, 1952, with the right of renewal if necessary. Ramspeck has taken over as head of the Civil Service Commission for the duration of the national emergency, at the President's request.

The ATA directors appointed no one to fill in for Ramspeck. The ATA management will make its own plans for getting along without him. Some officials say Counsel Stuart Tipton and others will fill in for Ramspeck on most of his jobs.

Bill Sets up New Renegotiations Board

There's going to be a new five member independent board to carry on renegotiation soon.

Congress handed the President legislation setting it up last week. At least three of the members will be civilians. They will serve at \$15,000-a-year, with the chairman receiving \$17,500. The old set up it will replace, with Department of Defense responsible for renegotiation of its own contracts, has been criticized on the ground that it doesn't draw a sharp-enough line between procurement and recapture of excessive profits.

All contractors and subcontractors receiving or accruing over \$250,000 from government contracts during a year, and any broker receiving or accruing over \$25,000 would be subject to renegotiation. A contractor's government business would be treated as a whole. If he makes money on Air Force business but loses it on Navy business, the two would be lumped together for renegotiation. Also, if he takes a loss one year, it would be carried over as cost on the next year's business.

► **Big Issue**—The big issue now is how broadly renegotiation will be applied. This will be administratively determined. Only Department of Defense contracts are now subject to renegotiation. The new law expands this to General Services Administration, Department of Commerce, Atomic Energy Commission and all other agencies "exercising functions in connection with the national defense." But there's a loophole under which this coverage—to virtually all government business—will probably be restricted. The board would exempt contracts that do not have "a direct and immediate connection" with national defense.

The new law would be retroactive to Jan. 1, 1951.

The board will have broad power to exempt both individual and general classes of contracts: contracts whose renegotiation might jeopardize secrecy; contracts where it is not considered administratively feasible to determine and segregate renegotiable profits; contracts with airlines, or other common carriers, when the contracts are at rates fixed by the Civil Aeronautics Board or another regulatory agency, would be exempted.

► **Procedure**—This is the step-by-step procedure that will be followed:

Contractors furnish financial statements within four months after the close of their fiscal year.

If the Board sees evidence of excessive profits, it would have access to the contractor's records.

Should investigation indicate excessive profits, the Board would notify the contractor, and an attempt to negotiate an agreement would be made.

If agreement is not reached, a Board order would set the amount and date for recapture by the government.

The contractor would have up to 90 days in which to file an appeal with the U. S. Tax Court. This court's ruling would be final.

Jetliner Purchase by AF Seen Possible

Visits of the Avro C-102 Jetliner at Wright-Patterson AFB and Washington National Airport for inspection by high brass of the Air Force and Navy are causing considerable speculation that the plane may be purchased by USAF for high priority transport and multi-place navigation training purposes.

Announced policy decision that USAF is aiming towards build up of an all-jet air force as rapidly as possible also lends credence to possibility that USAF may order the plane at least in service test quantity for further test. ► **Official Interest Indicated**—Indicative of official interest in the plane is the fact that most headquarters members of the Senior Officers Board who make final decisions on proposed purchase of planes have viewed the plane at Wright Patterson and in Washington, and many have flown in it.

The Avro C-102 has a wing span of 98 ft. 1 in.; length of 82 ft. 9 in.; and a ht. of 26 ft. 5½ in. The plane has accommodations for a crew of three and seating capacity for 40 to 50 passengers. Service ceiling of the plane is reported to be 35,000 ft. The cabins are fully pressurized. Power plants are four Rolls-Royce Derwent turbojet engines developing 3500-lb. thrust each.

► **Second Model Due**—A second Avro Jetliner should be flying in six months. It incorporates changes recommended by CAA, the Canadian Board of Transport, and the manufacturer, based on tests of the first prototype. Manufacturer tests of the second plane may take six months, followed by perhaps another year or so of joint CAA and Canadian Board evaluation before certification.

Interest of National Airlines in the Jetliner as a New York-to-Miami high speed luxury carrier, remains high, a National Airlines spokesman told AVIATION WEEK, but there has been no commitment for equipment.

One factor in airline interest in the plane, it is pointed out, is the huge backlogs that have already been built up by American manufacturers for conventional powered transports. Because

of these backlogs it is expected that Avro could deliver two or three Jetliners, possibly before American manufacturers could make delivery on their standard transports ordered today.

Harvard School to Study Air Policy

A review of U. S. international aviation policy in the present emergency will be undertaken by Harvard Business School under a Commerce Department contract, Commerce Secretary Charles Sawyer announced last week.

Prof. Paul W. Cherington, former executive assistant to the CAB Chairman, and now of the business school's staff, will direct the study, which will be conducted with cooperation of the State Dept. and the Civil Aeronautics Board, Sawyer said.

The Mobilization Analysis Center of the Harvard Business School which has the assignment, will draft a preliminary report on the policy review, to be ready within 90 days.

A panel of five advisors, private citizens with a background in aviation, will consult with Cherington, on his report.

Panel members are George A. Brownell, New York attorney; William A. M. Burden, former assistant Commerce secretary for aviation; John C. Cooper, of the Institute for Advanced Study, Princeton, N. J.; Harold Jones, recently resigned CAB member; and L. Welch Pogue, former CAB Chairman and now Washington attorney.

Brownell was an AAF brigadier general in World War II, and the first secretary of the Air Coordinating Committee; Cooper is a past vice president of Pan American World Airways, and is a legal consultant to the International Air Transport Assn.

The Mobilization Analysis Center, created in December, 1950 to conduct research projects connected with the national emergency, is directed by Prof. Stanley F. Teele, associate dean of the Harvard Business School.

Avionics Purchases Near Billion Mark

Air Force electronics and electrical equipment purchases as of Mar. 5 from funds committed in 1951 Regular, First and Second Supplemental budgets have now reached \$854 million. Official sources predict that electronics obligations will top the billion mark by several millions in funds being programmed out of the Third Supplemental scheduled to go to congress in the next few days.

Requirements of Air Force in the

avionics field have caused phenomenal rise in the electronics market. In 1949 total government spending for avionics, Army, Navy, USAF, CAA, etc., totaled \$303,779,970. In 1950 avionics purchases reached \$500,722,890.

While specific dollar value and types of equipment manufactured are withheld for security reasons, Air Force has disclosed the list of its 45 major manufacturers of electronic equipment. These include:

A. C. Spark Plug div., General Motors Corp., Flint, Mich.; Air Associates, Inc., Teterboro, N. J.; Aircraft Radio Corp., Boonton, N. J.; Baldwin Co., Cincinnati; Bendix Radio div., Bendix Aviation Corp., Towson, Md.; Cincinnati Electronics; Collins Radio Corp., Cedar Rapids, Ia.; Colonial Radio Corp., Buffalo, N. Y.; Crosley div., Avco Mfg. Corp., Cincinnati;

Emerson Radio & Phonograph Corp., New York; Federal Manufacturing Corp., New Britain, Conn.; Federal Telephone & Radio Co., Clifton, N. J.; General Electric Co., Electronics Dept., Schenectady, N. Y.; Thomas B. Gibbs & Co., Delevan, Wis.; Hallicrafters Co., Chicago; Hammarlund Radio Mfg. Co., New York; Frederick Hart & Co., Inc., Poughkeepsie, N. Y.;

Hazeltine Electronic Corp., Little Neck, N. Y.; Hoffman Radio Corp., Los Angeles; Hughes Aircraft Co., Culver City, Calif.; LaVoie Laboratories, Morganville, N. J.; Magnavox Co., Fort Wayne, Ind.; W. L. Maxson Corp., New York; Mercury-Pacific; Midwest Engineering & Development; Motorola, Inc., C. & E. Div., Chicago; Philco Corp., Philadelphia; Pickway;

Radio Corporation of America, Harrison, N. J.; Radio Receptor Co., New York; Raytheon Mfg. Co., Waltham, Mass.; Reeves Instrument Laboratories, New York; Remler Co., Ltd., San Francisco; Schuttig & Co., Inc., Washington, D. C.; Servo Mechanisms Co., Inc., Mineola, N. Y.; Specialty Assembly; Sperry Gyroscope Co., Div., of The Sperry Corp., Great Neck, N. Y.;

Standard Rolling Mills, Inc., Brooklyn, N. Y.; U. S. Navy; Utility Electronics; Webster-Chicago Corp., Chicago; Western Electric Co., New York; Westinghouse Electric Corp., East Pittsburgh, Pa.; Wickes Engineering Co., Camden, N. J.; Wilcox Electric Co., Kansas City, Mo.

Tool Stockpile

NPA program provides pool of metal-working machine orders.

A new machine tool stockpiling program affecting all new tooling programs by aviation goods producers has been announced by National Production Authority.

The new plan:

• **Provides for NPA** to set up a pool of orders for machine tools regarded necessary for defense production needs.

• **Arranges for General Services Administration** to place firm orders with DO

priorities for the machine tools required by the orders pool, so machine tool manufacturers can schedule the orders along with non-priority production.

• **Sets up a system** to regulate delivery of the tools produced under the pool orders system so they are distributed for maximum benefit to defense production.

NPA took two other actions affecting aviation producers:

• **Announced code numbers** assigned for the various Defense Order priorities used for production in defense mobilization. These code numbers are of interest to the aviation manufacturers:

Aircraft, 01; guide missiles, 02; electronics and communications equipment, 07; fuels and lubricants, 08; production equipment, 19; NPA, CAA and NACA miscellaneous programs, 45; industry plant expansion, 46; Coast Guard aircraft, 61.

• **Announced a program** to permit all types of civilian establishments in the U. S. to use priority ratings to buy equipment and supplies for maintenance, repair, and operation of their present facilities. This regulation is expected to provide large additional competition for existing DOs, but is set up on the theory that the nation can better afford a few pounds of metal to keep a machine running than several tons, later, to make a replacement machine.

Each pool order placed for machine tools will carry a certificate authorizing the producers to apply a DO rating to obtain the materials needed in their manufacture.

► **What's Covered**—The following types of machine tools may be produced under the pool orders system: Balancing machines, boring machines, brakes, broaching machines, buffing machines, centering machines, chamfering machines, crankshaft regrinders (stationary), cut-off machines, filing machines, forging machines, forging rolls, gear cutting machines, gear finishing machines, grinding machines, hammers, headers, key seating machines.

Also lapping machines, lathes, levelers, marking machines, measuring and testing machines, milling machines, nibbling machines, oil grooving machines, pipe flanging-expanding machines, planers, polishing and buffing machines, presses, profiling machines, punching machines, reaming machines, rifle and gun working machines, riveting machines, rolling machines, sawing machines, screw and bar machines, shapers, swagers, tapping machines, threading machines, upsetters, welding machines, shearing machines and slot-ters.

► **Scheduling Plan**—Machine tool producers who cannot fill defense orders scheduled for delivery are required, commencing July 1, to rearrange their de-

livery schedules in the following manner:

• **Up to 70 percent** of the production of each size machine tool shall be delivered to the various branches of the armed services or their contractors, if they have placed orders for such machines for delivery in that month.

• **Remaining 30 percent** may be delivered to all other purchasers with rated and non-rated orders.

The order sets up a system for scheduling deliveries of machine tools among the various branches of the armed services or their contractors on a percentage allocation basis.

To prevent disruption of manufacturers' production schedules, the order provides that no rated order received within three months prior to any delivery month shall affect the delivery of any metal-working machine which has been slated for delivery that month.

SEC Report Lists Stock Transactions

A total of 16,000 shares of Capital Airlines common stock has been acquired by J. H. Carmichael, Capital president, and three other Capital officers, through the exercise of options to purchase.

Securities and Exchange Commission's latest survey shows the Capital Airlines transactions were: J. H. Carmichael, purchased 7000, making 7437 held; James B. Franklin, officer, 5000, his total holding; Charles H. Murchison, director, 2000 purchased, making 8300 held; and Robert J. Wilson, director, 2000 purchased, making 3036 held. Outright purchase of 500 common shares was reported by James W. Austin, officer, making a total of 6300 held.

Other recent transactions reported by aviation officials (involving common stock unless otherwise indicated) include:

Aero Supply Manufacturing Co., Kenneth R. Henson, director, 400 purchased, making a total of 1000 held.

American Airlines, Inc., William Nelson Bump, officer, 2000 purchased; Charles R. Speers, Jr., officer, 3000 purchased.

Beech Aircraft Corp., John P. Gaty, director, 6750 sold, leaving 5400 held.

Sessna Aircraft Co., Frank A. Boettger, director, 900 sold, leaving a total holding of 7700 shares; Getto McDonald, director, 500 sold, leaving 5600 held.

Consolidated-Vultee Aircraft Corp., Robert H. Biron, Jr., officer, 1000 sold, leaving 1800 held.

Curtiss-Wright Corp., T. Roland Berner, director, 1200 sold, leaving 12,200 held.

Eastern Air Lines, Inc., S. Peabody, Jr., director, 900 sold, leaving 200 shares held.

Grumman Aircraft Engineering Corp., L. R. Grumman, director, 1800 sold, leaving 169,000 held; L. A. Swirbul, director, 1400 sold, leaving 21,200 held; dividend of 20,000 common shares to Albert P. Loening, director, making 40,000 held.

Lockheed Aircraft Corp., Dudley E. Browne, officer, 700 purchased, which is his total holding; T. S. Rathman, officer, 1000 purchased, making 1100 held; L. W. Wulfe-kuhler, officer, 800 purchased, his total holding.

Glenn L. Martin Co., Richard L. Johnson, officer, 60, his total holding, sold.

Northrop Aircraft Inc., John K. Northrop, director, 500 shares sold, leaving 3400 held.

Northwest Airlines, Inc., Croll Hunter, director, 50 purchased, making 4050 held; Kenneth R. Ferguson, director, 100 sold, leaving 150 held.

Pan American Airways, Inc., Juan T. Trippe, director, transfer into trusts of 20,000 shares. Awarding of common stock, under a compensation plan, to the following: Erwin Balluder, officer, 400, making a total of 14,111 held; Harold McM. Bixby, director, 250, making 7253 held; Henry J. Friendly, director, 600, making 3070 held; Franklin Gledhill, director, 550, making 1712 held; H. Preston Morris, officer, 125, making 1611 held; Andre A. Priester, officer, 250, making 4803 held; Samuel F. Pryor, director, 550, making 4648 held; John H. Towers, officer, 250, making 485 held; John S. Woodbridge, officer, 300, making 1163 held; Clarence M. Young, 150, his total holding.

Piper Aircraft Corp., Norman J. Greene, 1000 common sold; he now holds only 2500 preferred.

Solar Aircraft Co., E. Franklin Hatch, director, 200 purchased, making 400 held.

Sperry Corp., Thomas B. Doe, director, 200 sold, leaving 400 held.

Thompson Products, Inc., a stock split-up resulted in the following common stock transactions: Lee M. Clegg, director, 3000 increased to 6000; A. T. Colwell, director, 1440 increased to 2880; Matthew P. Graham, officer, 954 increased to 1908; Paul D. Hileman, 845 increased to 1690; L. W. Reeves, 51 increased to 102.

Trans World Airlines, Warren Lee Piersen, director, 300 purchased, making 2000 held.

United Air Lines, John J. Mitchell, director, 1000 purchased, making 4202 held.

United Aircraft Corp., Frederick B. Rentschler, director, 100 sold, leaving 14,250 held.

United Aircraft Products, John M. Meyers, director, 400 purchased, making 1500 held; Metal Production Corp., 1600 purchased, making 28,300 held; National Highway Hotels, 1000 purchased, making 8000 held.

Aircraft Labor Reservoir Dropping

Aircraft employers seeking to import workers from other cities are faced with two major problems: lack of housing in plant cities and a nationwide shortage of certain skills.

These obstacles now confront most companies which send recruiting staffs to loose labor supply areas to hire workers on the spot, even with advance advertising and help from the local public employment office, the U. S. Bureau of Employment Security finds.

BES' list of more than 40,000 jobs which local employment offices are trying to fill from outside local areas includes many aircraft skills. Requests to find skilled and semi-skilled workers come to BES from aircraft plants in Los Angeles, San Diego, Dallas, Seattle, Wichita, Phoenix and Paterson, N. J., indicating a nationwide shortage of aircraft builders and airplane mechanics.

The number of areas in which workers may be easily recruited is being gradually reduced. There are now no "depressed" employment areas, with 12 percent or more unemployment, although a year ago there were 20.

There still are, however, 14 areas of "substantial" labor surplus with 7 to

11.9 percent unemployment: San Jose and Stockton, Calif.; Honolulu, Portland, Me.; Lawrence, Mass.; Duluth; Springfield, Mo.; Atlantic City, Utica, N. Y.; Durham and Winston-Salem, N. C.; Scranton and Wilkes-Barre, Pa., and Beaumont, Tex.

And there are these areas of "moderate" labor surplus with 5 to 6.9 percent unemployment: Mobile; Fresno; Sacramento; San Bernardino; Springfield, Ill.; Terre Haute; Baton Rouge; New Orleans; Shreveport; Boston; Muskegon, Mich.; Jackson, Miss.; St. Joseph, Mo.; Portland, Ore.; Johnston, Pa.; Pittsburgh; Providence, R. I.; Charleston, S. C.; Knoxville; Memphis; Spokane; Tacoma; and Charleston and Huntington, W. Va.

These areas had labor surpluses during January. They would be likely sources of labor if the situation was not a temporary one.

Big Four Mail Rates

Civil Aeronautics Board and American, TWA, Eastern and United Airline officials are holding a series of meetings looking toward fixing the Big Four's mail rates without a formal hearing.

Action on the mail pay of these carriers goes back as far as 1947, and, until permanent rates are established, none can determine the final results of its operations from that point forward. It is known that the industry would like to settle the matter because it realizes that the longer a decision is delayed, the less favorable the ultimate settlement may be.

Already, at one point in the present meetings, CAB has proposed a rate of 45 cents a ton mile, as opposed to the present rate of about 60 cents.

First Ford R-4360 Expected by 1952

Ford Motor Co. hopes to produce its first Pratt & Whitney Wasp Major R-4360 piston engine at Chicago by Mar. 1952, it was indicated last week. Ford has already gotten more than 3000 machine tools from the USAF machine tool pool, out of a total of 5500 needed for quantity production of the 3500-hp. engine. Contracts for over \$17 million have been let to get the old Dodge World War II plant in shape.

Ford announced that it had received amendments to its original R-4360 contract increasing the total dollar value of USAF commitments for the engine.

The engine has about 20,000 parts, of which at least 2000 are unduplicated. The Chicago plant will be used for assembly and production of about 200 of these.

SIDELIGHTS

(Continued from p 8)

your ability as a pilot, beware of steep turns close to the ground, and don't try to follow the coyote into a hollow log.

Pentagon

Top Pentagon officials are becoming very concerned about the increasing number of senior officers of all three services who are joining industries which sell to the armed forces. A new policy is being worked up which would "forbid" high ranking officers from joining organizations which in any way would come into contact, procurement-wise, with their respective services. . . .

Air Force

Air attaché officers have been opened in Indonesia & Burma. . . . AF says it will call 10,000 Air National Guard officers and men to duty during the next nine months. These men staff 19 service-type ground units. Two months ago the AF said it would federalize all but five of the Air Guard's 27 flying wings. . . . AF has set up its own Services Division under AMC, Wright-Patterson AFB, Ohio, to control all USAF activities in food, laundry, graves registration, ammunition safety and photographic services. Army formerly did it for the USAF. . . . Officers retired by the AF in company and field grades are retired in grade of next higher rank, not only in recognition of a "job well done" but for pay benefits. Colonels were previously excluded because promotion into general officer ranks could be granted only by Congress. The new law permits colonels to be retired as generals. . . .

Washington Notes

The chief of the Russian Tass news agency's Washington bureau, Mikhail Federov, is an aeronautical engineer with five years' experience in the Russian aircraft industry. Defense agencies admit Tass representatives to press conferences, and let them stay on when officials go into off-the-record backgrounding. . . . The Confederacy still lives on. The civilian pilot instructors at Graham Aviation's Greenville Air Force Base in Mississippi will wear "specially-designed uniforms of Confederate gray," says a press release. . . .

Army

Army is conducting tests of 75mm. recoilless rifles mounted under wing tips of small L-5 liaison craft. So far, the tests, being run at Ft. Sill, Okla., have shown the aerial "weapons carrier" to have remarkable accuracy. Pilot has reported an average of five out of six hits at 1000-yard range. . . . Every Army unit of battalion size and over in the U. S. is scheduled for training in techniques of calling for air strikes. Army & USAF, in attempting to build better liaison for air-ground support, have ordered establishment of a joint air-ground instruction team (JAGIT). The team is already touring Army & air installations.

We Mobilize for Freedom

FIRST OF A SPECIAL SERIES

The Defense Production Problem

To win out in the struggle for freedom into which the Russian Communists have plunged us we must do at least four things. We must:

1. Speedily carry through a program of defense production which, at its peak, is scheduled to take about one-fifth of our national output.
2. Pay for this program as we go, by methods that will enable us to maintain the effort for an indefinite period — as long as may be necessary to insure peace and security.
3. Manage intelligently and endure intelligently a set of direct government controls which, in certain critical departments, will put our national economy for a time in a hateful straight jacket.
4. See that these emergency controls are not fastened upon us permanently thereby presenting to our Soviet antagonists a major victory for collectivism on our home front.

This is the first of a series of editorials designed to present in the simplest terms these key aspects of our struggle to preserve our free institutions.

A Staggering Task

The magnitude of the defense production job staggers the imagination. Over the next year it calls for a larger volume of goods and services than the 20 million people of the states of New York and New Jersey will use for all purposes. The (London) TIMES has observed that, taken alone, the increase

of defense expenditures which has been budgeted for the federal government's coming fiscal year (about \$30 billion) "is in itself not far short of the total national income of the United Kingdom."

Yet so powerful is the production machine created by free American enterprise that, at the scheduled peak, the defense program will take only about one-fifth of our total national output. The exact form and dimensions of the program will, of course, be hammered out on the anvil of public and congressional debate. But the President's recent estimate of an annual rate of expenditure of \$45-55 billion for defense by the end of this year may well turn out to be somewhere near right.

To meet even these vast requirements of defense production we are in better shape technically than we were when we started to prepare for World War II. Our industrial plant and equipment is greatly improved. Over \$65 billion has been invested in it since V-J Day. Our working force is about eight million larger than it was ten years ago and much better trained.

The difficulty, and it is a very serious economic difficulty, is that we must fit the defense program into a productive machine that has been almost fully extended to meet the needs of a booming civilian demand. The present plan is to step up defense production during 1951 from about 7% to about 18% of our total national output. Because there is relatively little slack in our economy, this means that civilian production at the outset must

be cut back as defense production is stepped up.

The cut-back of civilian goods must be especially severe in the case of products made of metal. This is particularly true of goods that use scarce strategic metals such as aluminum and copper. Of our total defense production program, about half will go for "military hardware" — airplanes, guns, munitions, tanks and the machinery to make them. By the end of 1951 defense requirements are scheduled to absorb most of the metalworking production not required for essential construction and for the spare parts necessary to keep existing equipment running. For a time at least, there will be a sharp cut in the supply of new metal products available to civilian consumers. The defense squeeze on both materials and manpower will also cut sharply into housing and other civilian construction.

For the Short Run — Controls

In the short run there is no answer to the problem of meeting defense production schedules except controls. Sharp reduction of non-defense expenditures by government is essential and would help greatly. But the basic fact is that we cannot increase our total production fast enough to meet immediately both civilian and defense requirements.

Controls are needed, therefore, to switch resources from civilian to defense production, and at the same time prevent the combined demand for critical products from sending prices right through the roof. In the case of many scarce strategic metals such as nickel, copper and cobalt, the task of increasing output is especially difficult because our limited supplies are tucked away deep in the earth in many quarters of the globe.

For the longer pull — and that is what we must face — there is another answer to our defense production problem that is infinitely better than controls. And this time, in contrast to World War II, it is all-important that we get the right answer to our defense production problem for the longer pull and that we get it right now. In World War II we geared our economy to meet the requirements of a

relatively short and decisive conflict. Now our leaders, however they may differ as to methods, are well agreed that, at best, "the conditions under which we labor may persist for ten, fifteen or twenty years." That is General Bradley's phrase.

For the Long Pull — More and Better Production

For this longer pull, the constructive answer to our problem of defense production is clearly more and more efficient production all along the line. It is true that overall we now have the most efficient industrial establishment in the world. But, even so, much of it is far short of attainable efficiency. Some plants using up-to-date equipment and methods are as much as six times more efficient than others in the same industry that are lagging in modernization.

Our Director of Mobilization, Charles E. Wilson, has clearly in mind this problem of increasing our industrial efficiency. The first step in his job, as he conceives it, is to get out an adequate supply of weapons to equip the army, navy, and air forces already mobilized or in process of organization by us and our allies. The second step is to make sure of our capacity to produce both "military hardware" to meet any increased requirements and the maximum possible volume of goods for civilian use.

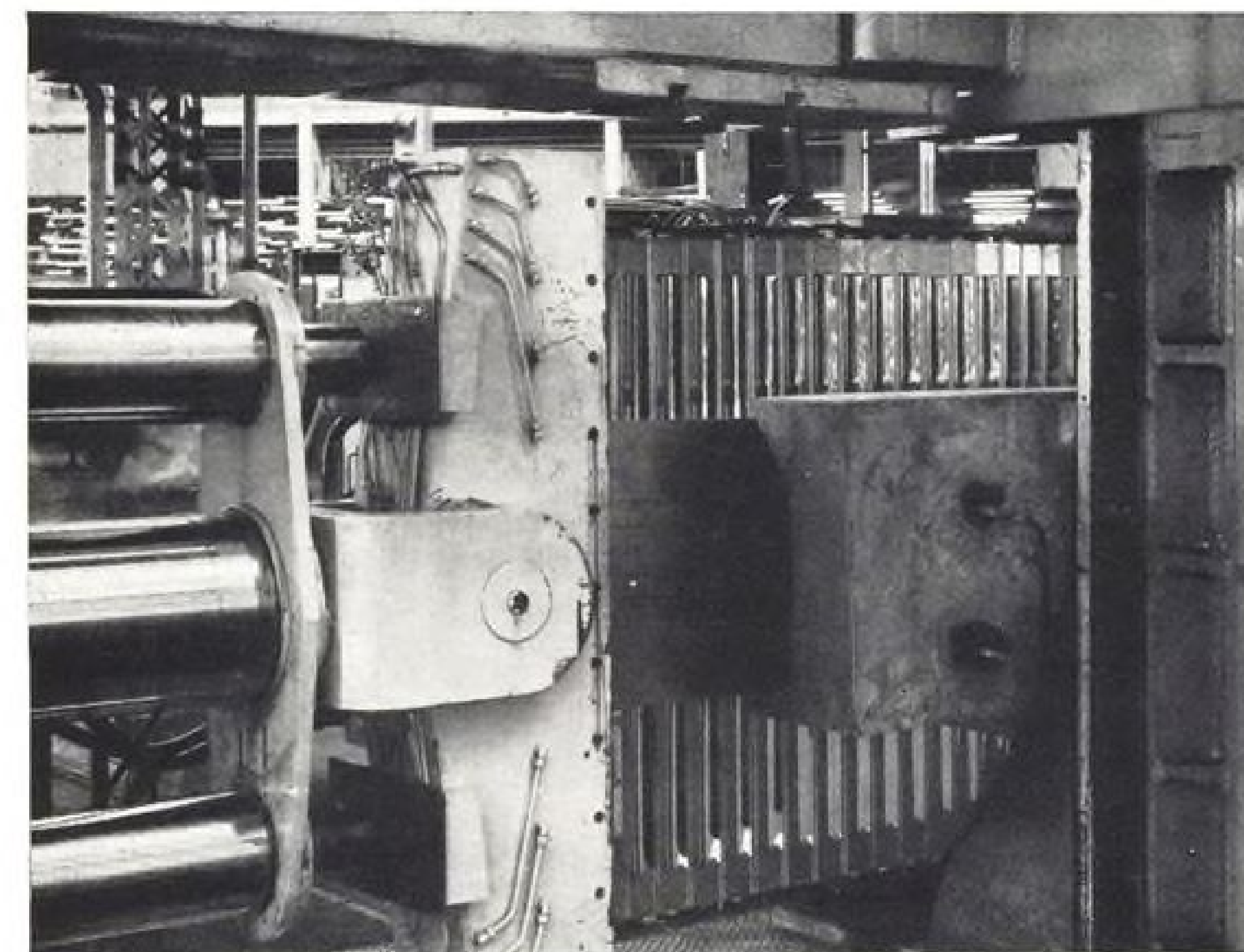
In concentrating on more and more efficient production, Mr. Wilson is squarely on the beam. We can attain his objective — by sustained effort on the part of each one of us backed by up-to-date industrial methods and equipment.

If we do that, we can maintain indefinitely an adequate defense effort and at the same time enjoy a standard of living higher than any other in the world.

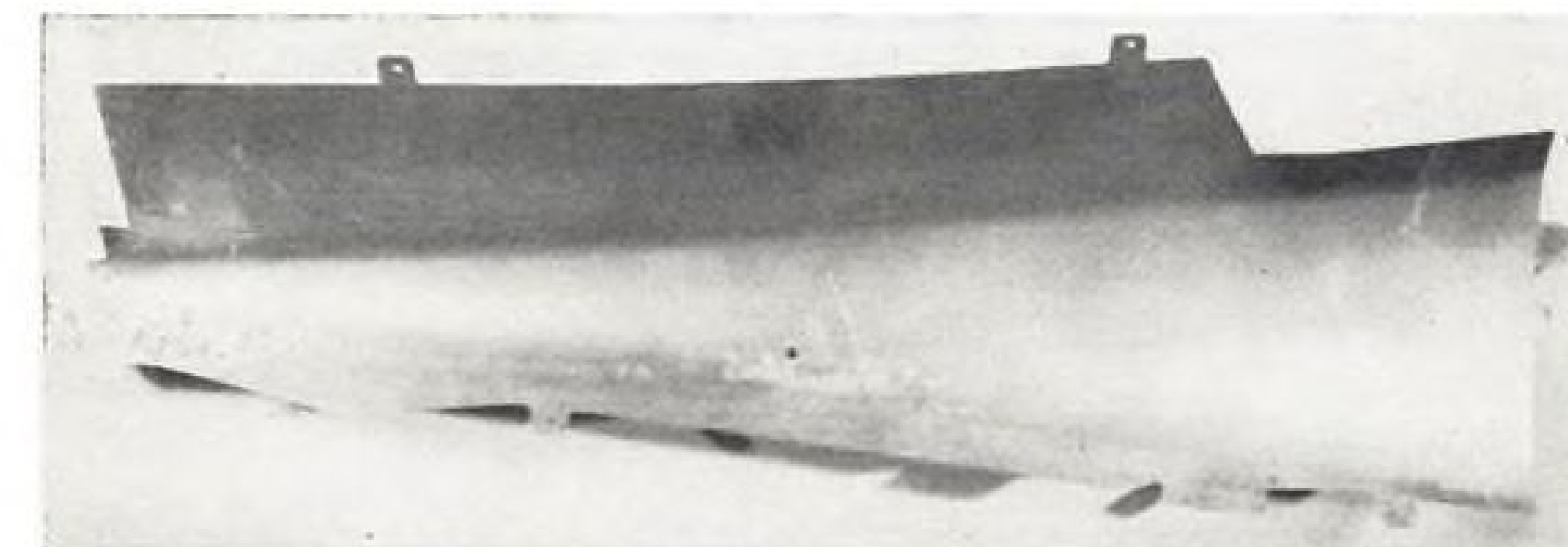
Additional production and more efficient production are our surest safeguards against our two most menacing enemies on the home front—the deadly inflation that can destroy our free economy, and the strangling government controls that can destroy our political freedom.

McGraw-Hill Publishing Company, Inc.

PRODUCTION



FEMALE DIE of Huford Stretch Press, with heating elements in position at right, forms . . .



ELEVATOR FAIRING, seen after rough trim. Preheat time was 30 sec., forming time 1½ min.

How to Stretch-Form Magnesium

Aircraft manufacturer shows how to apply and control heat; solves other problems in metal's fabrication.

A practical and efficient method of stretch-forming magnesium, developed by a major aircraft manufacturer, shows promise of stimulating the use of this material in plane construction.

There is no fundamental difference between the forming of aluminum and magnesium except that the latter must be formed at elevated temperatures. And by carefully controlling the application of heat, magnesium readily can be formed, using the stretch-wrap technique already developed for aluminum.

Tool engineers at one of the country's foremost aircraft plants have, during recent months, solved the problem of how to apply and control the heat, as

well as many related problems, such as the selection of most suitable die materials and lubricants. The process, which is being patented, is reported to give highly satisfactory results consistently, even with part configurations that are difficult to form in aluminum, and is applicable to both annealed and hard-rolled magnesium sheet. Elapsed preheat and forming time can be as low as two minutes.

► **Heat Control**—Principal controlling factors are said to be die temperature (when pre-heated dies are used), and correct arrangement of heating elements to give optimum heat distribution for each individual part configuration.

For example, care must be taken to avoid overheating in critical forming areas, because this will result in localized excessive elongation and rupture before the rest of the part is formed.

Heat is applied by means of heavy-duty resistance-type, infra-red radiant heating units. Temperature is regulated thermostatically, using thermocouple type pickups attached at strategic points around the edge of the material being formed. Temperatures must be checked and controlled separately at several points to maintain desired limits at all critical locations on the part to be formed.

► **Placement**—The heating unit is a straight resistance rod placed at the focal point of a curved highly polished reflector. As many of these units as required are placed side by side at a distance of about 6 in. from the material during the preheat period. Exact gap between heating unit and material for best results depends on the nature of the part to be formed and may vary at different points along the same die.

Normally after the desired preheat temperature has been reached the heating units are rolled back, allowing the press operator full visual control of the forming operation. Parts as large as 48 x 144 in. may be formed at the present stage of development.

► **Die Holds Heat**—The process has been used with both male and female dies, including some employing vacuum. When Kirksite dies are used they must be preheated to slightly below forming temperature to prevent too rapid cooling of the part.

Enough heat is absorbed by the die during preheating of the material to maintain its temperature within allowable limits for at least a half day of continuous operation.

Use of plastic as die material eliminates the need for die preheating. Softening point of the plastic now being used is 275 F. and experiments have shown that temperature of the die surface never approaches within 100 deg. of this point during the forming operation. About ¼ in. inside the surface the plastic material remains at room temperature.

► **Magnesium's Advantages**—Many parts are difficult to fabricate from aluminum because they approach or exceed the elongation limit of the material during forming. Such parts generally are easily formed from magnesium when heated to the proper temperature, since the limit of elongation is approximately two to three times greater than with heat-treatable aluminum alloys.

Another point favoring magnesium for ease of fabrication is the total absence of springback.

As more experience is accumulated in the use of this process it is to be expected that wider use of magnesium in



LOW-COST PROTECTION for Airborne Electronic Equipment

New LORD *TEMPROOF Mountings

- Exceed AN-E-19 Drop Test Requirements
- Designed for JAN-C-172A Equipment
- Maintain Efficiency from -80°F to +250°F

*Temperature-proof

Here is reliable vibration protection for base-mounted airborne electronic equipment . . . and for other apparatus which must function properly above and below usual temperatures. And TEMPROOF Mountings are priced to meet the needs of manufacturers in competitive markets.

TEMPROOF Mountings provide superior protection by maintaining their high vibration-isolating efficiency from -80°F to +250°F. Selective-action friction dampers prevent excessive movement at resonant frequencies. Equipment does not sag or droop . . . mounting drift is negligible. The unusually wide load range of TEMPROOF Mountings makes it possible to standardize on one mounting for several types of equipment, and to effect additional economies in purchasing, storage and assembly.

For complete information on TEMPROOF Mountings, or for specific recommendations concerning their use, write to Product and Sales Engineering Department. A quantity of Vibration Isolation and Natural Frequency Charts in full color is available. Copy of each will be sent free upon request.

LORD MANUFACTURING COMPANY
ERIE, PENNSYLVANIA



Vibration-Control Mountings
... Bonded-Rubber Parts

aircraft structural design will follow. A major advantage of magnesium, in addition to weight saving, will be greater freedom in the design of formed parts, allowing one part, for example, to cover an area formerly requiring two or more parts joined together. Heavier gages of sheet for stressed skin applications may now be formed than was formerly practical with aluminum.

It is conceivable that the method may be applicable to extruded skin material, if such material should become available in magnesium, and to standard structural extruded shapes already available. The most immediate use probably will be in the fabrication of fairings and leading edges for nacelles, wings, empennages, etc., for high-speed jet aircraft.

Subcontracts Upped

Bendix Radio at Baltimore has received its World War II subcontracting scheme to meet increased military demands for electronic gear. The company has let out subcontracts to the value of over \$20 million, nearly half of them to companies having less than 100 employees. Robert E. Wine has been placed in charge of coordinating this work and will preside over the subcontracting group.

Further to boost output, Bendix Radio has increased production facilities and employment. During the last war, the company supplied the Allied armed forces with nearly a half-billion dollars worth of electronic equipment.

PRODUCTION BRIEFING

► **American Phenolic Corp.**, maker of electric and electronic components, wire and cable and plastic products, is putting up a new \$750,000 plant in Chicago providing 80,000 sq. ft. of new space.

► **Hamilton Standard division of United Aircraft** has opened a course for USAF propeller maintenance and instruction personnel, graduating classes of 12 men every three weeks.

► **Aircraft Engineering & Maintenance Co.**, Oakland Municipal Airport, is handling its MATS overhaul work in a three-shift around-the-clock basis, employing over 1100 mechanics, technicians and helpers, including women.

► **National Aeronautical Radio Corp.**, VHF radio makers, has purchased a new 9000-sq. ft. building, to speed up Omnigator production.

► **Airwork Corp.**, Millville, N. J., has set up production-line overhaul for P&W R-2800-CB16 engines.

AF Invitations

Bid openings are 20-30 days after approximate issue dates shown in the following bid proposals. Bid sets containing specifications for items to be procured will be sent to qualified applicants who state bid invitation number.

One bid set will be available for examination without obligation by prospective bidders, after bid publication date, at each of the seven AMC procurement field offices. This will enable firms to see specifications before writing or telegraphing for their own bids sets.

Procurement field office locations: Boston Army Base, Boston 10, Mass.; Government Aircraft Plant No. 4, Ft. Worth 1, Tex.; 39 S. LaSalle St., Chicago 3; Wright-Patterson AFB, Dayton, Ohio; West Warren and Longo Aves., Detroit 32; 155 W. Washington Blvd., Los Angeles; 67 Broad St., N. Y. 4.

INVITATIONS

Drill presses, 1-22 items, bid invitation No. 51-1537, issue date 8 Mar., delivery starting within 30 days, complete within 210 days.

Grinders, 1-4 items, bid invitation No. 51-1519, issue date 8 Mar., delivery starting within 90 days, complete within 150 days.

Hose, 1-4 items, bid invitation No. 51-1536, issue date 5 Mar., delivery starting within 30 days, complete within 60 days.

Field maintenance shelters, 58 each bid invitation No. 51-1535, issue date 2 Mar., delivery complete within 180 days.

Gages, 1-34 items, bid invitation No. 51-1534, issue date 2 Mar., delivery starting within 60 days, complete within 90 days.

Carburetor components, 1-30 items, bid invitation No. 51-1524, issue date 2 Mar., delivery complete within 120 days.

Aircraft voltmeters, 1-12 items, bid invitation No. 51-1525, issue date 2 Mar., delivery starting within 60 days.

Cylinder assemblies, 252 each, bid invitation No. 51-1531, issue date 2 Mar., delivery beginning within 30 days, complete within 90 days thereafter.

USAF Awards

Air Materiel Command Procurement Division makes available to AVIATION WEEK recent bid awards, shown on this page. Requests for further information should be addressed to Contracting Officer, AMC, Wright-Patterson AFB, Dayton, Ohio, attention: MCPSPX72.

ABSTRACTS

For drills (51-822): Companies sharing: D. Nast Machinery Co., Philadelphia, on a bid of \$15,435; Avildsen Tools & Machines, Inc., Chicago, on a bid of \$852,464; and Everede Tool Co., Chicago, on a bid of \$1244.

For connectors (51-1071): Companies sharing: Budd-Stanley Co., Inc., Long Island City, N. Y., on a bid of \$3876; Industrial Products Co., div. of Danbury-Knudsen, Inc., Danbury, Conn., on a bid of \$900; Kings Electronics Co., Inc., Brooklyn, on a bid of \$4375; Continental Electronics, Ltd., Brooklyn, on a bid of \$3750, and U. S. Radio & Television Supplies, Inc., Chicago, on a bid of \$27.

For relays (51-1081): Pharostron Co., South Pasadena, Calif., on a bid of \$142,728.30.

For 1 furnace (51-1088): United American Metals Corp., of Illinois, Chicago, on a bid of \$4161.40.

For 175,000 yards cheesecloth (51-1098): Companies sharing: Absorbent Cotton Co., Valley Park, Mo., on a bid of \$8703, and Lily White Sales Co., Inc., New York, on a bid of \$9027.

For bolts (51-1100):

Companies sharing: Aero Supply Mfg. Co., Inc., Corry, Pa., on a bid of \$18,557.04; Cooper Precision Co., Los Angeles, on a bid of \$3170; Air Associates Inc., Teterboro, on a bid of \$1091.49, and Kerr-Lake-side Industries, Inc., Cleveland, on a bid of \$736.

For cloth (51-1103): Ludlow-Saylor Wire Co., St. Louis, on a bid of \$7799.

For 3185 mountings (51-1119): Heppner Mfg. Co., Round Lake, Ill., on a bid of \$14,873.95.

For bushings (51-1136): Companies sharing: Deutsch Co., Los Angeles, on a bid of \$45,360; Superior Valve & Fittings Co., Pittsburgh, on a bid of \$2227.20; Bastian-Blessing Co., Chicago, on a bid of \$17,723.90, and Kerotest Mfg. Co., Pittsburgh, on a bid of \$15,724.

For indicators (51-1142): Companies sharing: Lewis Engineering Co., Naugatuck, Conn., on a bid of \$9400, and Weston Electrical Instrument Corp., Newark, N. J., on a bid of \$61,644.

For indicators (51-1146): Eclipse-Pioneer div., Bendix Aviation Corp., Teterboro, on a bid of \$109,459.72.

For 1500 clamp connectors (51-1152): Kings Electronics Co., Inc., Brooklyn, on a bid of \$4290.

For connector plugs (51-1157): Cannon Electric Development Co., div. Cannon Mfg. Corp., Los Angeles, on a bid of \$223,152.70.

For connector-plugs (51-1169): Companies sharing: Cannon Electric Development Co., div. Cannon Mfg. Corp., Los Angeles, on a bid of \$90,403.20, and Bendix Aviation Corp., Scintilla Magneto div., Sidney, N. Y., on a bid of \$4832.

For rheostats (51-1185): Clarostat Mfg. Co., Inc., Dover, N. H., on a bid of \$6605.50.

For voltmeters (51-1187): General Electric Co., Schenectady, on a bid of \$13,548.75.

For connector caps (51-874): Companies sharing: Duellman Electric Co., Dayton, on a bid of \$9410.70; Howard B. Jones, div. of Cinch Mfg. Corp., Chicago, on a bid of \$736.60, and American Phenolic Corp., Chicago, on a bid of \$4920.

For connectors, receptacle (51-734): Companies sharing: Graybar Electric Co., Dayton, O., on a bid of \$5041.90; Howard B. Jones Div., Cinch Mfg. Corp., Chicago, on a bid of \$4463.40; Westinghouse Electric Supply Co., Dayton, O., on a bid of \$5700, and American Phenolic Corp., Chicago, on a bid of \$225.

For cans and tanks (51-492): Companies sharing: George D. Ellis & Sons, Inc., Philadelphia, on a bid of \$9600; Eagle Mfg. Co., Wellsburg, W. Va., on a bid of \$1678.32; New Delphos Mfg. Co., Delphos, O., on a bid of \$2925; Justrite Mfg. Co., Chicago, on a bid of \$3307.70, and Protectoseal Co., Chicago, on a bid of \$23,462.50.

For interphone control (51-682): Taffet Radio & Television Co., N. Y., on a bid of \$151,427.89.

For mounting base (51-759): Groslex Motors, Inc., Cincinnati, on a bid of \$20,040.01.

For tool assemblies (51-964): Companies sharing: G. & W. Machine Shop, Minster, O., on a bid of \$585; Tobias & Co., Philadelphia, on a bid of \$167.50; Jayson-Halley Co., Binghamton, N. Y., on a bid of \$567.50; Jost Tool Co., Inc., Euclid, O., on a bid of \$3292.50; James H. Follen, D. B. A. Follen Tool Co., Spring Lake, Mich., on a bid of \$4029.75; Hanson & Co., Detroit, on a bid of \$131.25; Thomeco Mfg. Co., Inc., Redwood City, Calif., on a bid of \$640; Micro Instrument & Tool Co., Rochester, N. Y., on a bid of \$230, and Mechanical Devices Co., Bloomington, Ill., on a bid of \$162.50.

For 37 directional couplers (51-1259): Kings Microwave Co., Inc., Tuckahoe, N. Y., on a bid of \$4440.

For thermometer (51-1269): Weston Electrical Instrument Corp., Newark, N. J., on a bid of \$10,450.

For indicators (51-1271): Liquidometer Corp., Long Island City, N. Y., on a bid of \$15,212.67.

For indicators (51-1275):

Lewis Engineering Co., Naugatuck, Conn., on a bid of \$65,612.60.

For indicators (51-1278): Weston Electrical Instrument Corp., Newark, N. J., on a bid of \$201,713.75.

For gages (51-1281): United States Gauge div. of American Machine & Metals, Inc., Sellersville, Pa., on a bid of \$22,623.61.

For transmitters (51-1284): United States Gauge div. of American Machine & Metals, Inc., Sellersville, Pa., on a bid of \$75,181.90.

For aircraft starters (51-1289): Jack & Heintz Precision Industries, Inc., Cleveland, on a bid of \$635,905.56.

For indicators (51-1299): General Electric Co., Schenectady, on a bid of \$31,370.04.

For transmitters (51-1320): Liquidometer Corp., Long Island City, N. Y., on a bid of \$19,033.42.

For temperature bulbs (51-1323): Lewis Engineering Co., Naugatuck, Conn., on a bid of \$8156.50.

For dolly assemblies (51-1339): Companies sharing: Waldrup Sales Co., Hollywood, Calif., on a bid of \$98,114.86, and American-Coleman Co., Omaha, on a bid of \$1888.65.

For bulbs (51-1340): Lewis Engineering Co., Naugatuck, Conn., on a bid of \$39,865.

For bulbs (51-1344): Lewis Engineering Co., Naugatuck, Conn., on a bid of \$5149.

For thermometers (51-1345): Ohio Thermometer Co., Springfield, O., on a bid of \$5467.

For alternators (51-1349): Elcor, Inc., Chicago, on a bid of \$428,076.80.

For regulators (51-1363): Jack & Heintz Precision Industries, Inc., Cleveland, on a bid of \$40,925.

For strips (51-801): Companies sharing: Allied Radio Corp., Chicago, on a bid of \$90; Howard B. Jones, Div., Cinch Mfg. Corp., Chicago, on a bid of \$498.68; General Electric Supply Corp., Dayton, O., on a bid of \$1739.97, and Graybar Electric Co., Dayton, O., on a bid of \$5,795.98.

For aircraft hardware (51-966): Companies sharing: Dumont Aviation & Supply Co., Long Beach, on a bid of \$480; Aero Supply Mfg. Co., Inc., Corry, Pa., on a bid of \$10,906.50; American Chain & Cable Co., Inc., Detroit, on a bid of \$1920; Air Associates Inc., Teterboro, N. J., on a bid of \$3268.80; American Phenolic Corp., Chicago, on a bid of \$567.50, and Waltham Screw Co., Waltham, Mass., on a bid of \$12,060.

For connectors (51-972): Cannon Electric Development Co., Div. Cannon Mfg. Corp., Los Angeles, on a bid of \$13,707.50.

For adapter assemblies (51-973): Companies sharing: Robt. J. Zievers, Inc., LaVerne, Calif., on a bid of \$2380, and Bill Glover, Inc., Kansas City, on a bid of \$2190.

For 30 guides (51-985): Kings Microwave Co., Inc., Tuckahoe, N. Y., on a bid of \$3882.90.

For aircraft bolts (51-1035): Companies sharing: Aero Supply Mfg. Co., Inc., Corry, Pa., on a bid of \$7306.20; Aircraft Hardware Mfg. Co., Inc., New York, on a bid of \$8280.40, and Air Associates, Inc., Teterboro, N. J., on a bid of \$39,500.

For gaskets (51-1036): Companies sharing: Precision Rubber Products Corp., Dayton, O., on a bid of \$2878.75, and Air Associates Inc., Teterboro, N. J., on a bid of \$52.

For connectors (51-1047): Cannon Electric Development Co., Div. Cannon Mfg. Corp., Los Angeles, on a bid of \$23,014.50.

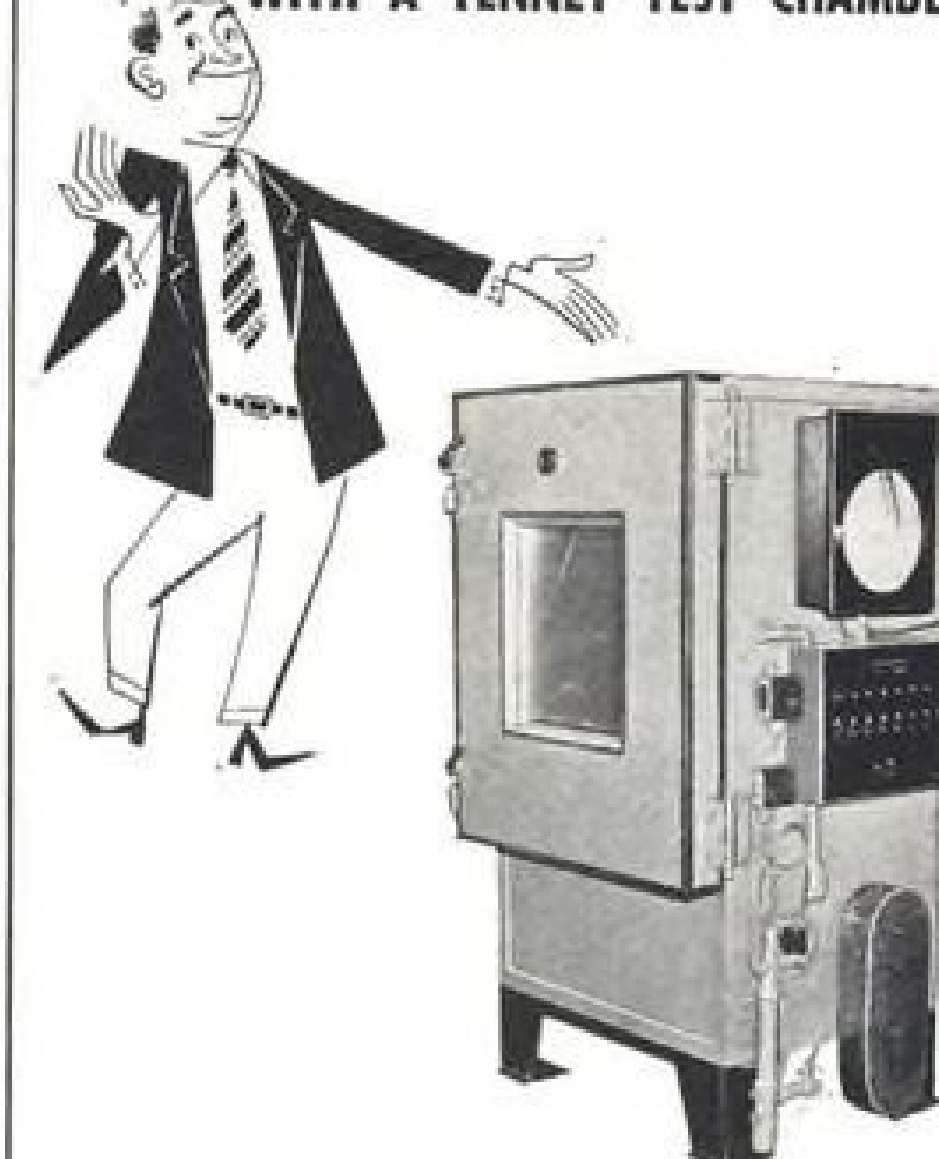
For drills (51-1117): Companies sharing: Avildsen Tools & Machines, Inc., Chicago, on a bid of \$26,682.25; Stevens Walden, Inc., Worcester, Mass., on a bid of \$08; American Brake Shoe Co., Kelllogg Div., Rochester, N. Y., on a bid of \$130.20; Devilbiss Co., Toledo, O., on a bid of \$866.40, and Federal Products Corp., Providence, R. I., on a bid of \$660.

"U.S.A.F.

No. 41065-B ?

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For 10,000 bracket assemblies (51-1165):
Lakewood Engineering & Mfg. Co., Chicago, on a bid of \$4150.

For temperature bulbs (51-1270):
Lewis Engineering Co., Naugatuck, Conn., on a bid of \$39,644.

For inverters (51-1262):
Leeland Electric Co., Dayton, O., on a bid of \$92,160.64.

For dining hall chairs (51-205):
Companies sharing: Virtue Bros. Mfg. Co., Los Angeles, on a bid of \$239,233.50; Great Lakes Mfg. Corp., Hammond, Ind., on a bid of \$232,887.50, and American Fixture & Mfg. Co., Chromcraft Div., St. Louis, on a bid of \$317,418.75.

For connectors (51-653):
Companies sharing: American Phenolic Corp., Chicago, on a bid of \$1273.74; Kings Electronics Co., Inc., N. Y., on a bid of \$40,450; Graybar Electric Co., Inc., Dayton, O., on a bid of \$2469; O. E. Szekely & Associates, Inc., Philadelphia, on a bid of \$774; Breeze Corporations, Inc., Newark, N. J., on a bid of \$6000; Howard B. Jones Div., Cinch Mfg. Corp., Chicago, on a bid of \$2245, and U. S. Radio & Television Supplies, Inc., Chicago, on a bid of \$1000.

For clocks (51-677):
Companies sharing: Dualite Displays, Inc., Cincinnati, on a bid of \$3494.40, and Simplex Time Recorder Co., Cleveland, on a bid of \$31,296.08.

For connectors (51-704):
Companies sharing: Westinghouse Electric Supply Co., Dayton, O., on a bid of \$10,029; O. E. Szekely & Associates, Inc., Philadelphia, on a bid of \$680; Cannon Electric Development Co., Div. Cannon Mfg. Corp., Los Angeles, on a bid of \$5375; American Phenolic Corp., Chicago, on a bid of \$2685, and Howard B. Jones Div. of Cinch Mfg. Corp., Chicago on a bid of \$589.30.

For photographic kits (51-797):
Yardley Industries, Columbus, O., on a bid of \$125,300.60.

For cable (51-791):
General Electric Co., Bridgeport, Conn., on a bid of \$14,474.80.

For socket-tube (51-784):
Companies sharing: U. S. Radio & Television Supplies, Inc., Chicago, on a bid of \$1874, and Continental Electronics, Ltd., N. Y., on a bid of \$6472.90.

For trailers and storage racks (51-762):
New Idea Div., AVCO Mfg. Corp., Coldwater, O., on a bid of \$99,852.66.

For grommets (51-746):
Rubbercraft Corp. of California, Los Angeles, on a bid of \$4084.57.

For grease and oil (51-739):
Companies sharing: Dow Corning Corp., Midland, Mich., on a bid of \$1315.20, and Paragon Oil Co., Inc., N. Y., on a bid of \$37,820.

For 850 cylinder assemblies (51-866):
Walter Kilde & Co., Inc., Belleville, N. J., on a bid of \$33,830.

For testers (51-942):
Ram Meter, Inc., Ferndale, Mich., on a bid of \$94,320.

For cable (51-967):
Companies sharing: Hackensack Cable Corp., Hackensack, N. J., on a bid of \$108,275; American Chain & Cable Co., Detroit, on a bid of \$912.50; Westinghouse Electric Corp., Dayton, on a bid of \$26,550; General Etching & Mfg. Co., Chicago, on a bid of \$543.75, and Keyes-Davis Co., Battle Creek, on a bid of \$325.

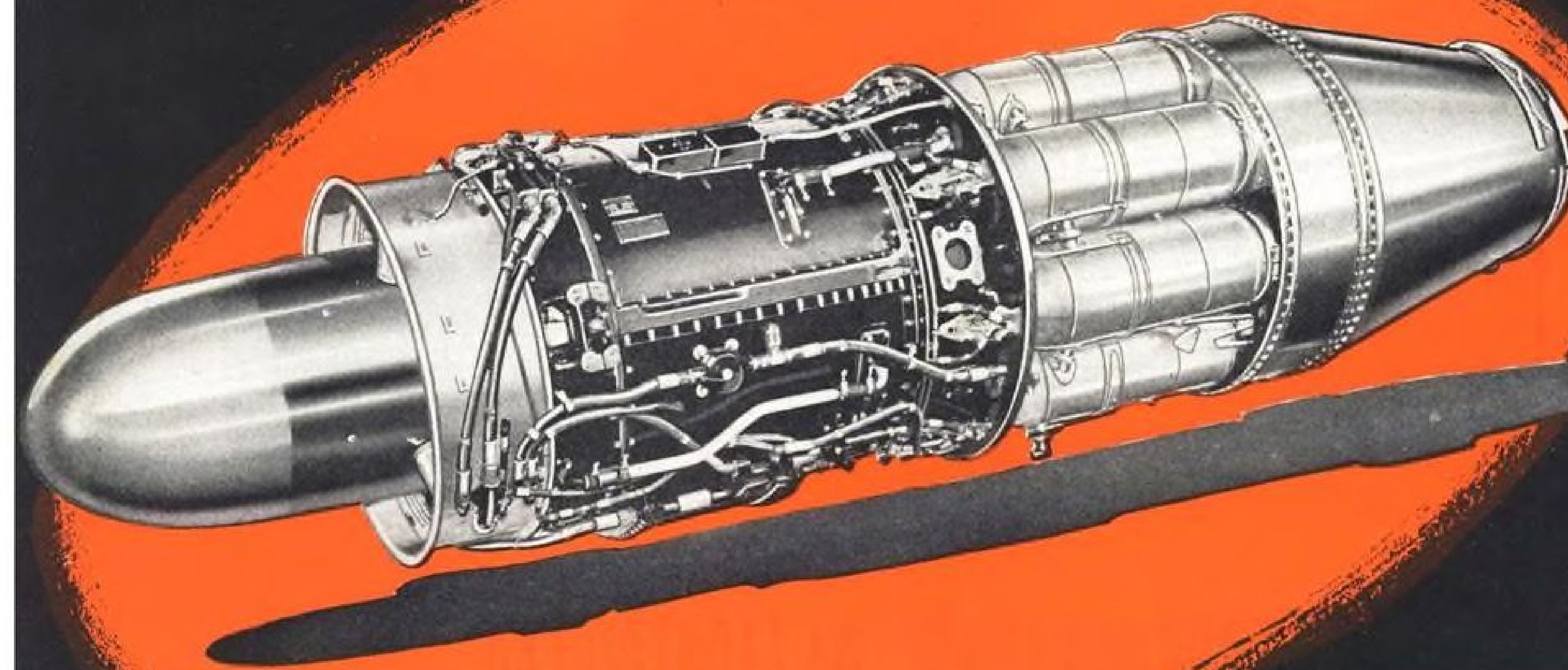
For flying jackets and suits (51-989):
L. W. Foster Sportswear Co., Inc., Philadelphia, on a bid of \$897,039.

For cable (51-1005):
Companies sharing: Electric Auto-Lite Co., Wire & Cable div., Port Huron, Mich., on a bid of \$3228.80, and Crescent Insulated Wire & Cable Co., Trenton, N. J., on a bid of \$7095.50.

For hoists (51-1033):
Companies sharing: Ingersoll-Rand Co., Cincinnati, on a bid of \$221.50; Robbins & Myers, Inc., Springfield, O., on a bid of \$3254.25, and Round California Chain Co., South San Francisco, Calif., on a bid of \$1808.

For aircraft engine tanks (51-1056):
Companies sharing: Airquipment Co., Burbank, Calif., on a bid of \$13,187.37, and Superdraulic Corp., Detroit, on a bid of \$21,780.

SHARON STAINLESS HAS WHAT IT TAKES FOR MODERN AIRCRAFT PRODUCTION



Where parts must be light in weight, yet absorb the heavy punishment of high speeds, high temperatures, and corrosive elements, they can be better made of Sharon Stainless Steels.

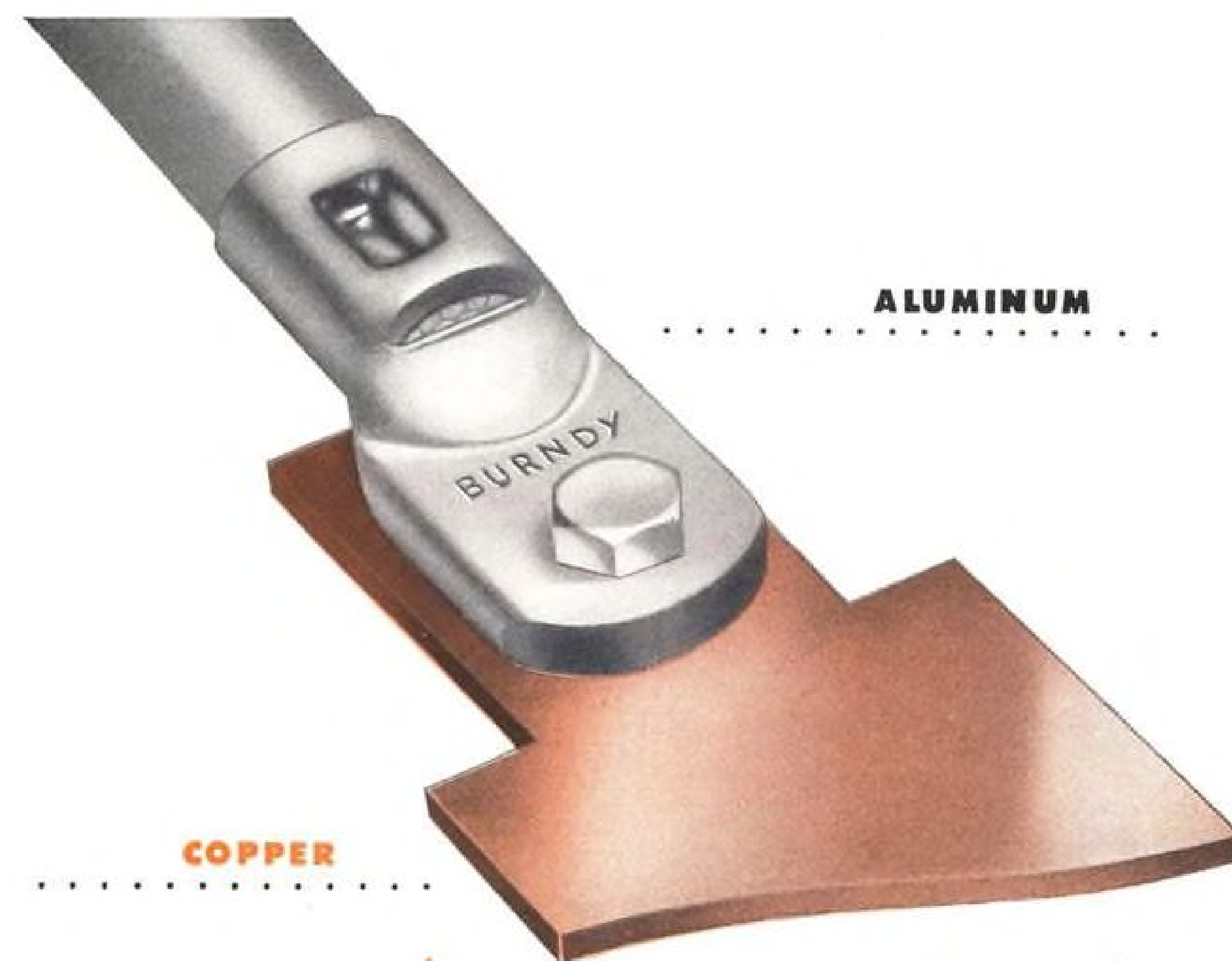
Aircraft manufacturers have fashioned hose clamps, shrouding bands, thermostats, baffles and many other parts from this versatile alloy, because Sharon Stainless has an extremely high strength-to-weight ratio, high heat resistance, low coefficient of expansion, high rust and corrosion resistance, and a constant uniformity unsurpassed in the industry.

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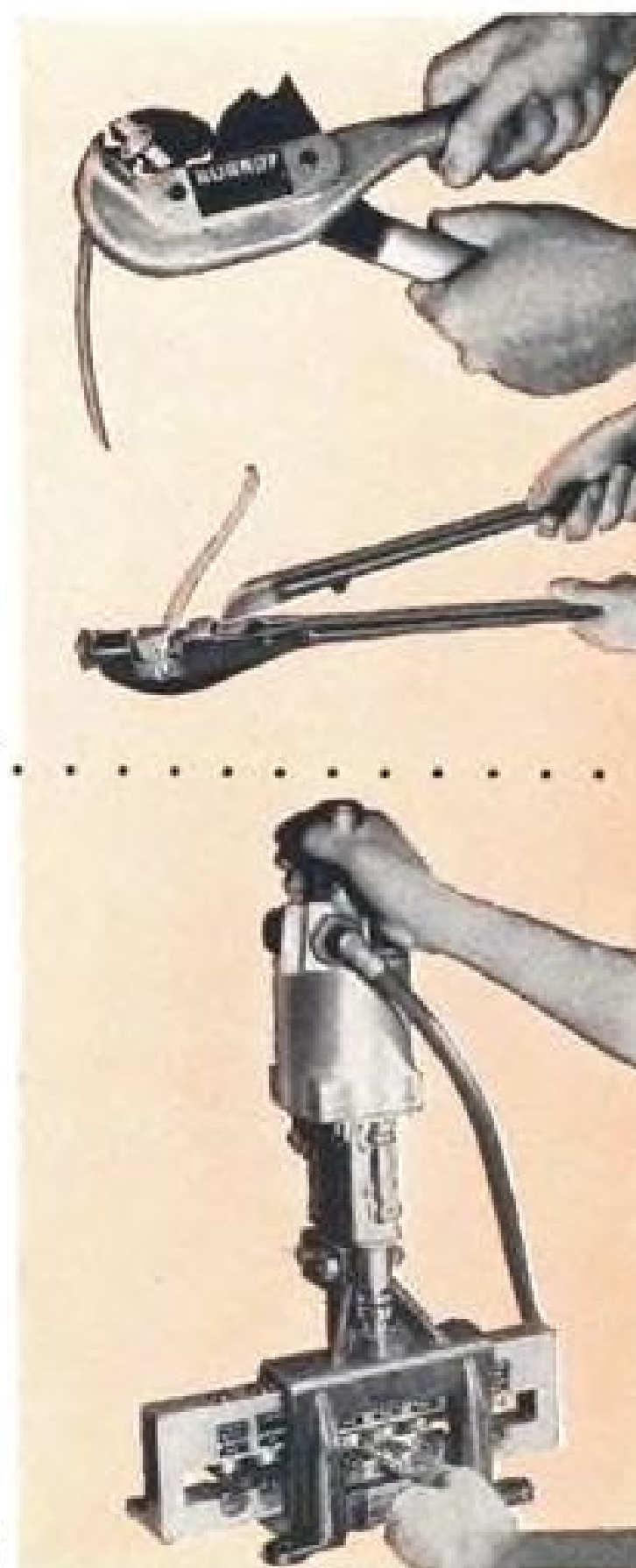
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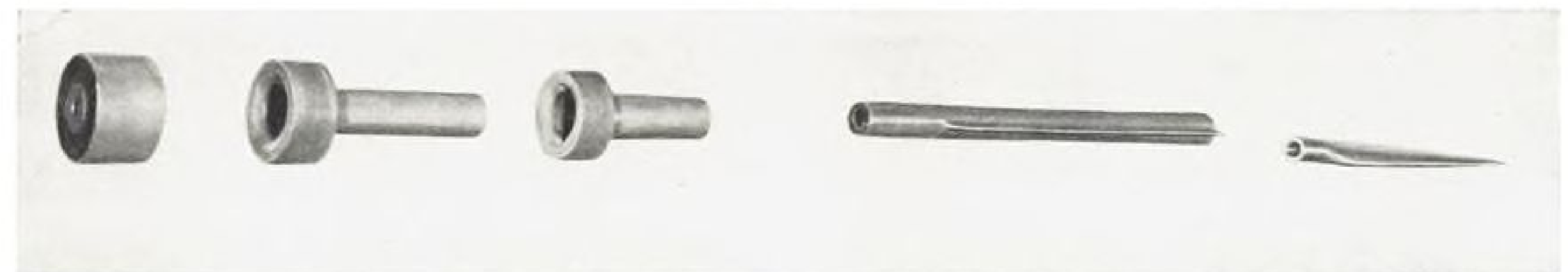
Burndy Canada Ltd., Toronto 8, Ontario

HAND TOOLS

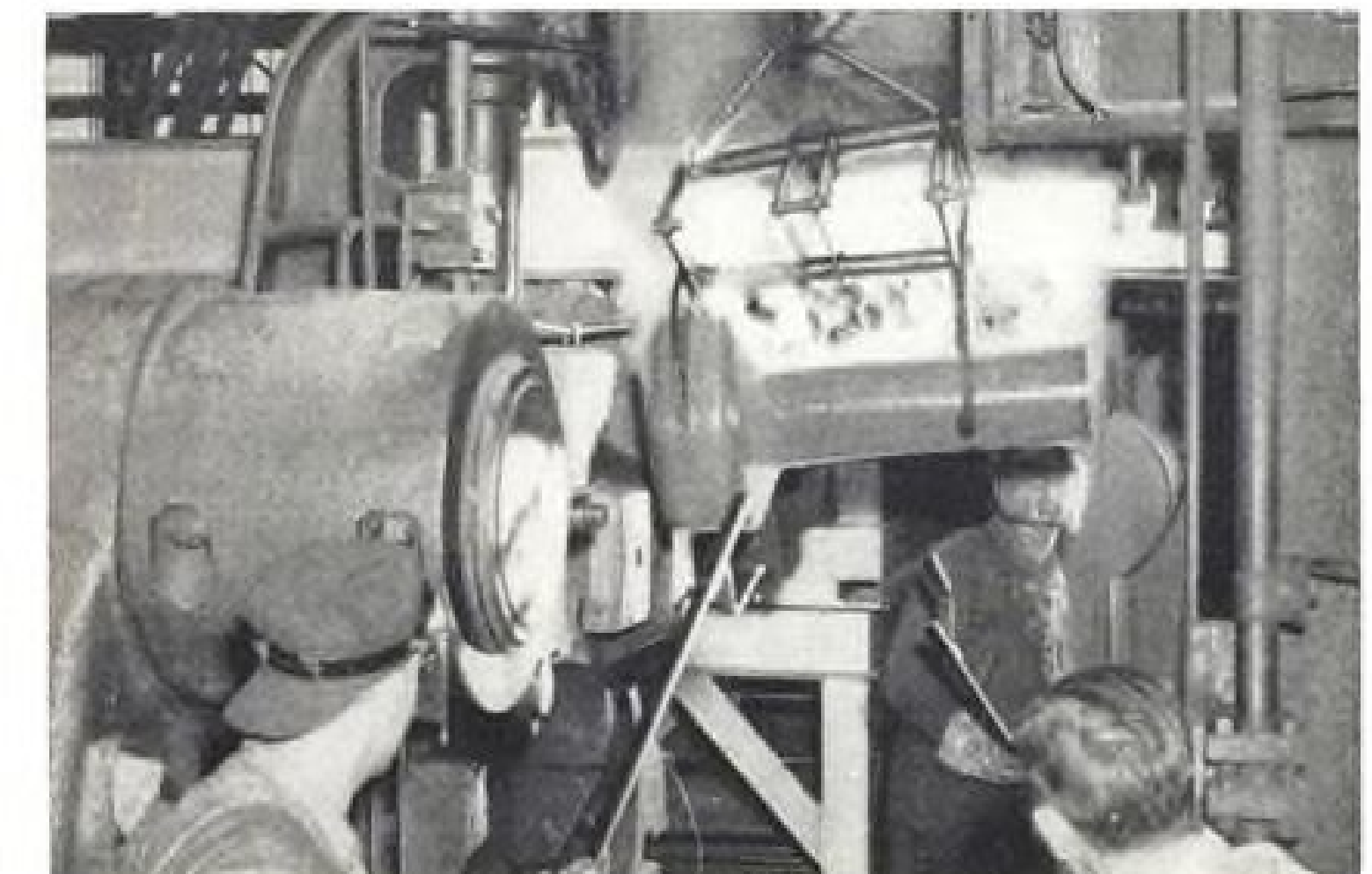


BENCH TOOLS

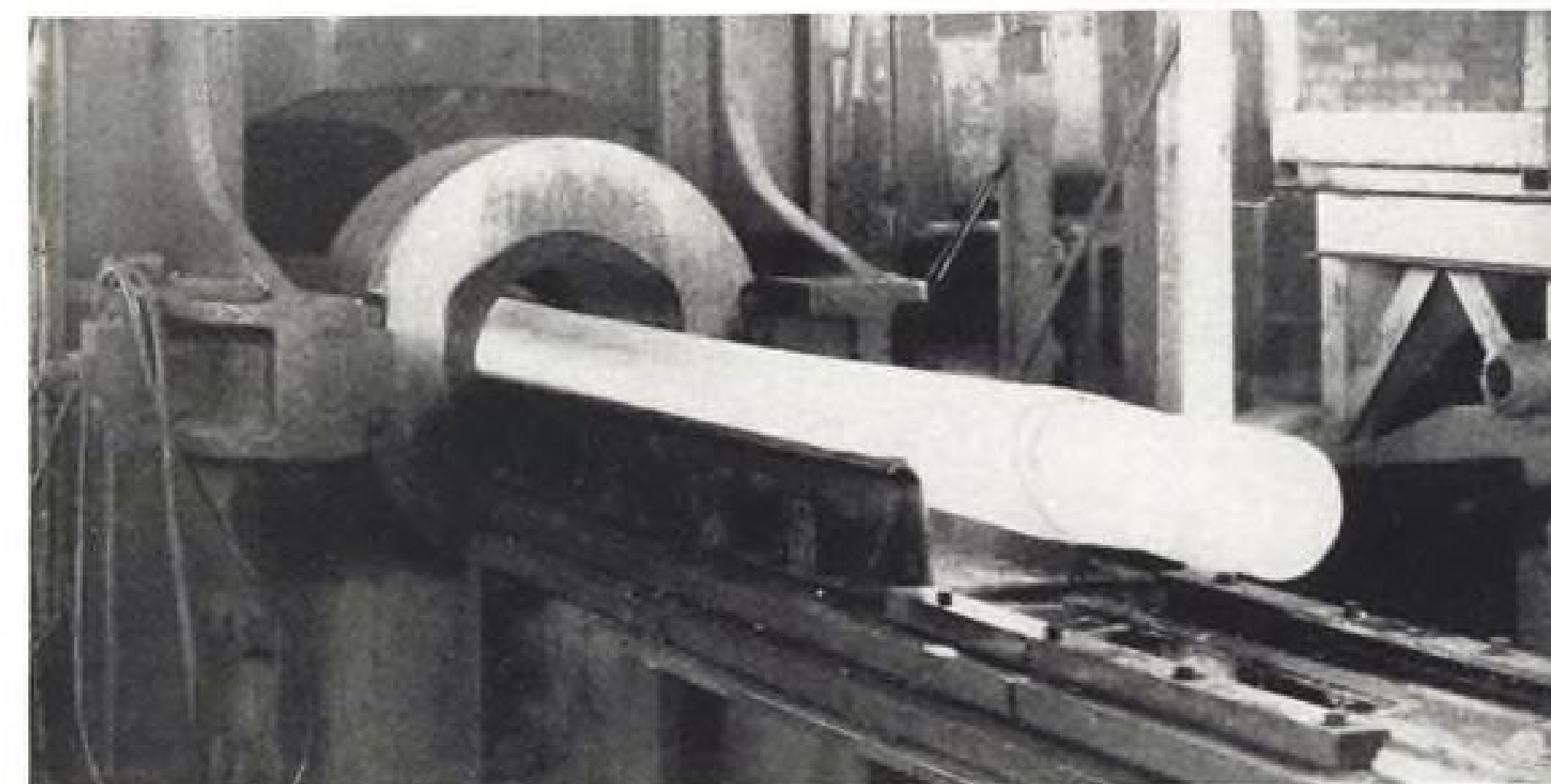
AERONAUTICAL ENGINEERING



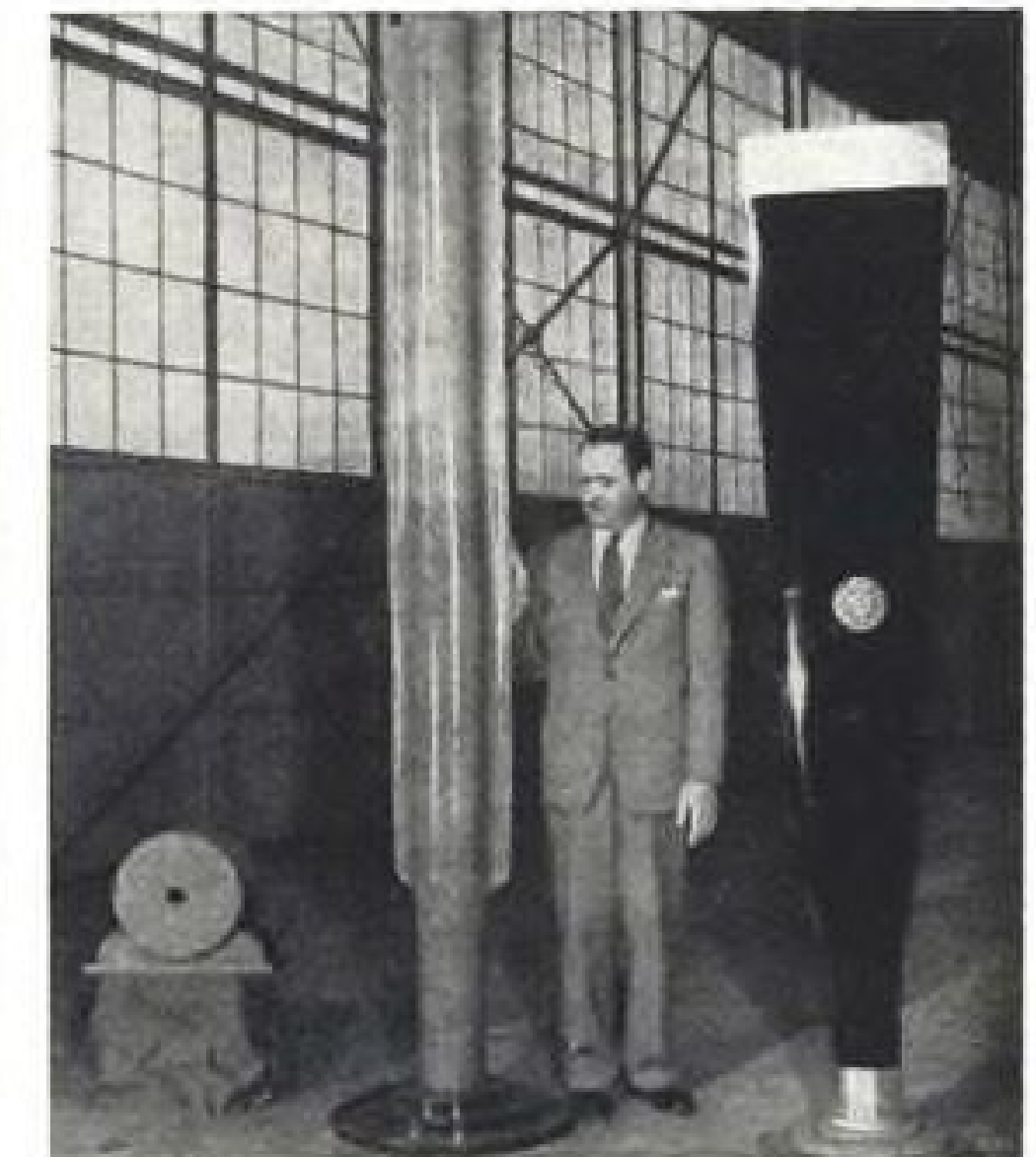
BILLET BECOMES BLADE in the four steps shown from left to right. Original steel billet weighs 400 lb., the blade 200 lb.



WHITE-HOT BILLET goes into 5500-ton press for shank formation. Reheated (right) it goes back for shank expansion and taper.



BLADE TUBE comes out of press after third and final operation. From raw metal to rough now takes minutes instead of hours. Finished blade (right) is formed in a die.



Prop Extrusion Is Production Milestone

Great savings will result from fabrication system developed by AMC with Curtiss-Wright and others.

By Irving Stone

Air Force industrial planners have teamed with private manufacturing enterprise to develop a new mass fabrication technique that marks a milestone in propeller production.

• The achievement: Hot extrusion of one-piece, tapered, hollow steel propeller

blades for highspeed military and commercial aircraft. Advantages include considerable savings in use of strategic chrome-nickel-molybdenum steel and reduced need for skilled labor, expensive and time-consuming machining, and valuable floor space. And the seamless blade is stronger than its welded-steel counterpart.

• The principals: Sponsors of the program are the Air Materiel Command's Manufacturing Methods branch of the Industrial Planning division and the Propeller Laboratory of the Engineering division, teamed with the Propeller division of Curtiss-Wright Corp. Co-operating with Curtiss-Wright in development of the process by aiding with skills, data and tools were: Hydro Press Corp., Ford Motor Car Co., Metcut Research Associates, International Nickel Co., Gerrity-Michigan

ISC QUIETS

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Mfg. Corp., Crucible Steel Co. of America, Upton Furnace Co., Industrial City Boring Co., and Oro Mfg. Co.

• **The equipment:** The rough blade-tube is extruded on a 5500-ton horizontal Loewy press at the AF Development Center, Adrian, Mich. During World War II, this piece of equipment, one of the largest of its kind anywhere, was used to extrude magnesium billets. Finishing of the extruded blade is done at C-W's Caldwell, N. J., plant.

► **Start from Scratch**—The fabricating process was set up from a cold start about 15 months ago. No recorded data were available on the hot extrusion of steel in the complex shapes and taper thickness required for prop blades.

Engineers teamed with metallurgists and came up with a method for extruding the 4330 steel blades. Even at this stage of development, the method needs only 60 percent of manhours consumed for fabrication of the comparable welded steel unit. And as experience with the process is gained and more data accumulated, this figure undoubtedly will be cut.

► **Weight, Strength**—Also, more experience probably will show a way to effect weight saving. Since the process primarily was inaugurated for manufacturing advantages, the weight factor has not been stressed and the present extruded unit weighs about the same as the equivalent welded blade.

But the extruded unit is stronger because the weld is eliminated and a more uniform metallurgical structure is induced with the extrusion process.

The extruded unit starts out as a 400-lb. billet and ends up as a 200-lb.

rough blade. This contrasts sharply with the 750 lb. of plate required for a welded blade of comparable weight. Thus, 750 lb. of material in the extrusion process gives approximately two blades as against one for the same poundage with the welding technique.

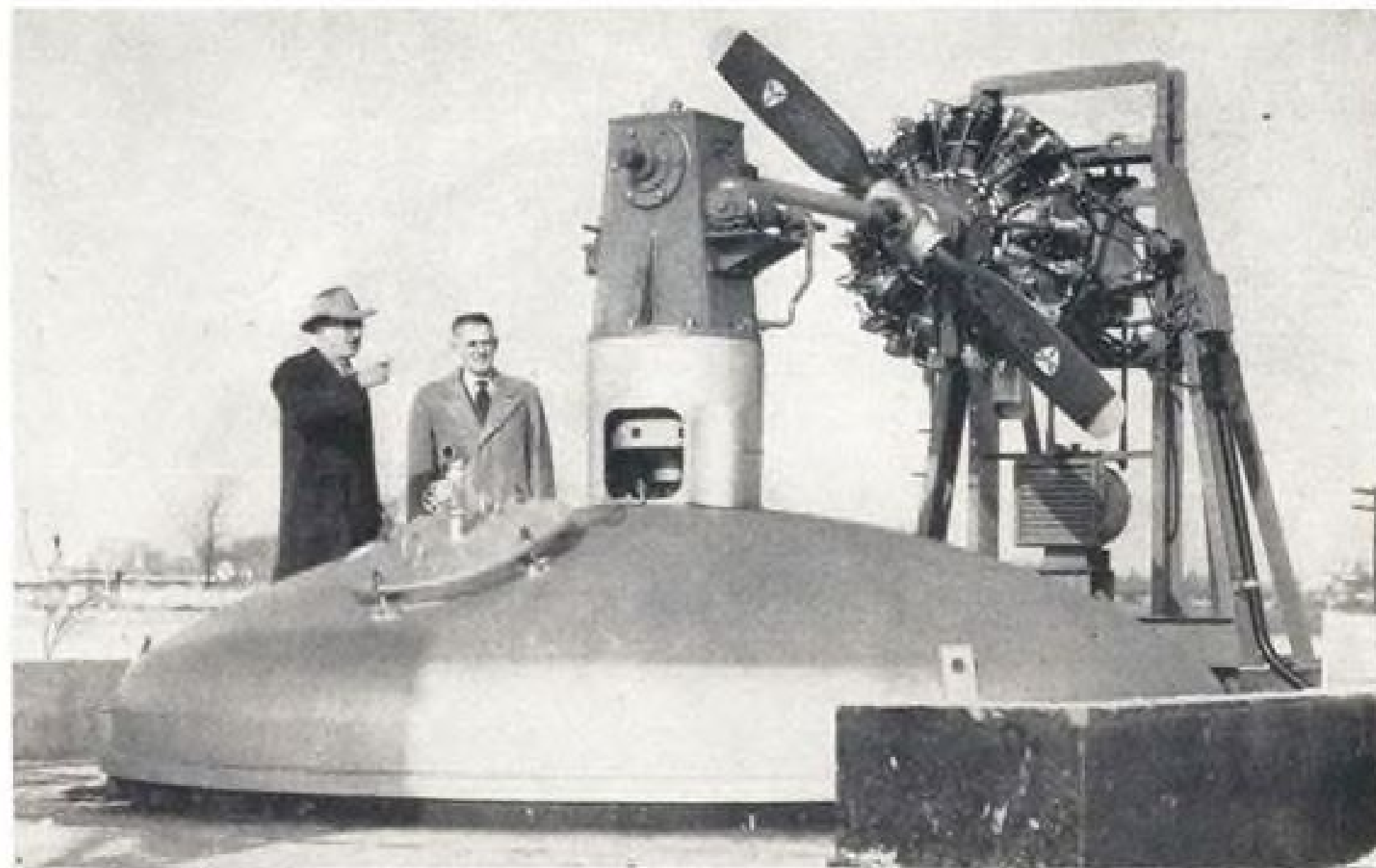
The billet is preheated in a salt bath furnace prior to the first extrusion step. This salt bath heating gives wetting for good heat transfer; and the salt prevents scale formation on the billet and lengthens die life by acting as a lubricant.

► **Three Simple Steps**—White hot from the salt bath, the billet is extruded in the press to give a semi-finished shank section, longer than that actually required, on the forward portion of the billet.

The T-shaped piece is reheated for the second extrusion step, which tapers the shank by expanding the inner portion with mandrel and pressure from both ends.

In the third and final step in the extrusion process the unformed portion of the billet is extruded into a rough-tube shape, with the already-formed shank emerging first from the press. This operation takes less than 1 min. The tube portion of the rough blade is a tapered cylindrical section with "ears" or ridges (which become the leading and trailing edges), running from shank to tip at diametrically opposite points. Taper in the extrusion process is controlled by the relative positions of mandrel and die. Only about .015 in. of material is left on the tube for finishing.

► **Taper Data**—Thickness of the rough



SUBMERGED SPINNER

Propeller spin pit nearing completion at AeroProducts division of General Motors Corp. will be used for mechanical high-speed rotation tests of new prop designs. Right-angle gear box at top of shaft transmits power of P&WA R-985 engine to test

prop below ground level. Propeller on engine serves as load, cooling fan and governor. Chamber can be evacuated to reduce aerodynamic loading on test prop, enabling high rotational speeds to be reached with little power expenditure.

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...with elbow swivel nut
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Resistoflex now makes available the latest and long-awaited improvement in aircraft hose fitting design. Proved in jet and gas turbine engine service for over two years, this development offers you the advantages of hose fittings produced from aluminum forgings.

This construction allows smaller bend radii, and so saves space. Forged aluminum not only provides uniform, peak strength but also savings in weight. It assures extra resistance to fatigue. Machined with true internal bends, Resistoflex fittings minimize turbulence.

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Teamwork...

Once Again Pratt & Whitney Teams with Other Industries to Increase Aircraft Engine Production



★ IN WORLD WAR II, Pratt & Whitney Aircraft pioneered the system of licensing the automotive industry to help increase the output of its aircraft engines. So successful was this system that Pratt & Whitney, with its licensees, produced half the total horsepower used to power Allied combat aircraft during World War II.

IN THE PRESENT EMERGENCY, Pratt & Whitney Aircraft again is first to share its hard-earned engine knowledge in the common interests of national defense.

LAST SEPTEMBER, Pratt & Whitney licensed the Ford Motor Company to build the Wasp Major engine, currently in use on the B-36, B-50 and other long range Air Force and Navy Aircraft.

IN DECEMBER, the Chrysler Corporation was brought in as a licensee to build the J-48 Turbo-Wasp, which powers some of the fastest Air Force and Navy jet fighters.

STILL OTHER licensing arrangements are in the planning stage.

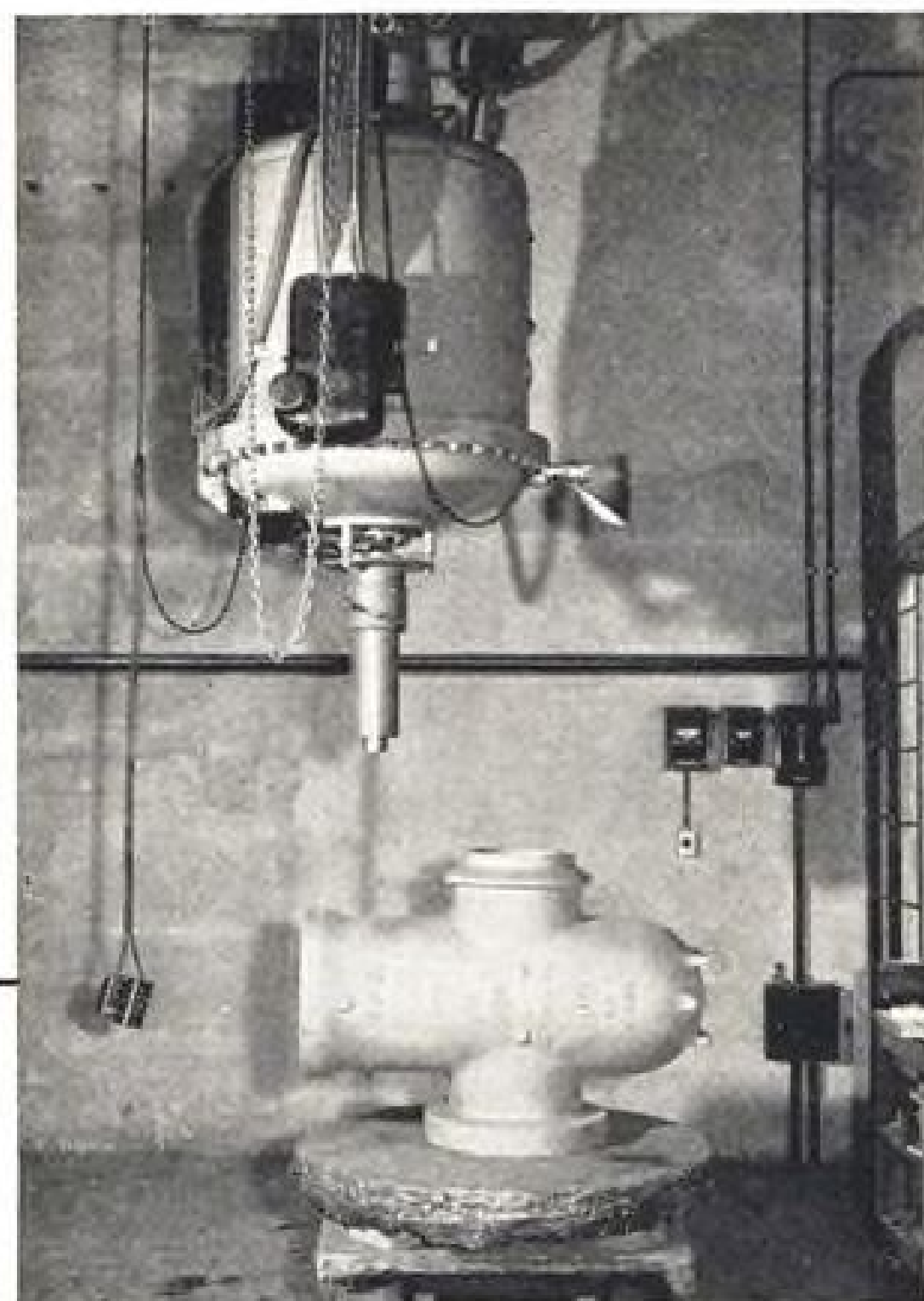
UNDER THESE LICENSING AGREEMENTS, Pratt & Whitney Aircraft—at no profit to itself—is already placing its own engineering and production experience at the disposal of Ford, Chrysler and others. They, in turn, will put their extensive manufacturing know-how to work on the task of increasing still further the expanding production of these vitally-needed engines.

THIS IS A typically American example of teamwork between industry and the Armed Forces in the common interest of the nation.

Pratt & Whitney Aircraft



ONE OF THE FOUR DIVISIONS OF
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ALLOY AND STEEL



extruded tube at the shank end is about 0.25 in., tapering to approximately .090 at the tip.

Ears at the shank end are about 1.25 in. wide by 0.50 in. thick, running to about 0.75 by 0.50 in. at the tip section.

This dimensional relationship gives the approximate taper desired for the finished blade.

► **Final Forming**—The tube is hydraulically pressed at the Caldwell plant in two steps to produce the final shape. First, it is cold formed to give roughly an elliptical shape. Then, in another forming operation it goes into the blade-configuration die at a high temperature.

Nitrogen at a pressure of 1100 psi. is maintained within the blade in the forming operation to force the material in close contact with the die.

Blade finishing operations are similar to those now used. Only major machining is that performed on the shank.

The blade is essentially rectangular in planform, wider at the tip section. The tip is closed by welding or by a strip of injection-molded rubber. A rubber rib is run through the center of the blade for about 3 ft. back from the tip to prevent oil canning. Tip closure with rubber seems more promising than with welding.

► **Sizes Made**—Length of blades that can be fabricated presently at Adrian run to 9½ ft. One, designed for Pratt & Whitney's R-4360 VDT engine, was fabricated in an 8½-ft. length, the largest so far made by the extrusion process. This blade, extended to 9 ft., will be used on the P&W T-34 turboprop-powered Douglas YC-124B.

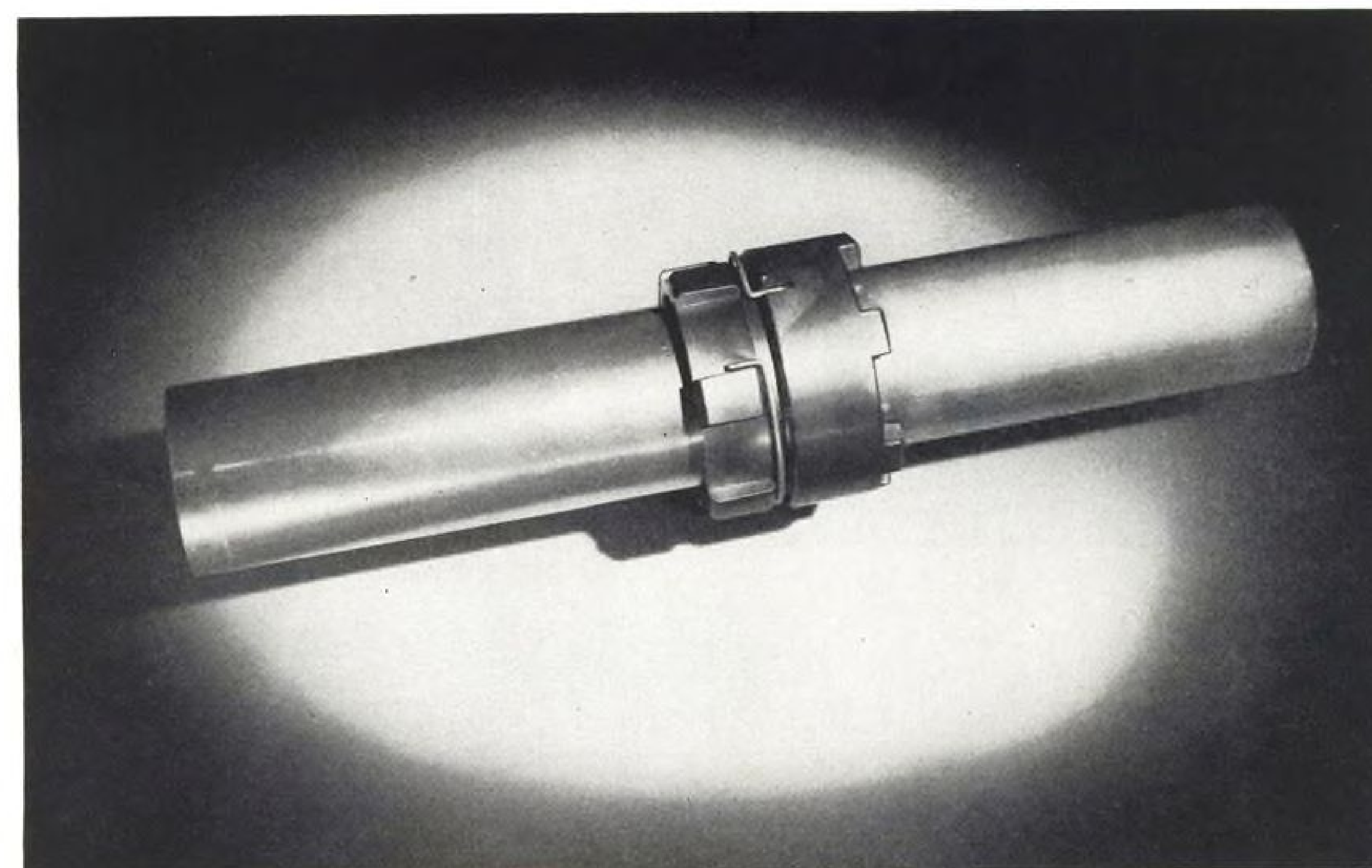
C-W technicians say that they can extrude props for any of the current applications, except the unit used on the B-36, which is wider than those that have been made with the new process. Press capacity is limited by a maximum cross-section that can be extruded.

A pilot production run is going through the Adrian facility now. Another batch, right behind this run, will follow under an Air Force order and will be sized to be suitable for the B-50 and the C-124A.

A prototype article for the Navy will be fabricated later this year, with two applications possible—on a Grumman anti-submarine warfare plane and a Goodyear ASW blimp.

► **Commercial Use**—It would appear likely that C-W also will push the extruded blade for service test in the very near future in another large field of propeller usage—commercial transports. Chances are that the planes will be Constellations and Stratocruisers and that foreign operators also will be interested.

C-W will use the extrusion blade for its Turboelectric series in all three categories — subsonic, transonic and



Having pipe coupling difficulties?

THE FR PIPE CONNECTOR provides . . .

PRESSURE RESISTANCE

Pressures of up to 500 p.s.i. can be accommodated.

TEMPERATURE RESISTANCE

By changing the seal to suit each individual requirement, a wide range of temperatures can be accommodated.

FLEXIBILITY

The flexible nature of the seal insures a satisfactory joint regardless of a reasonable degree of pipe malalignment.

TENSILE STRENGTH

Subjected to a tensile load, under pressure, an extension of .48" was obtained without failure.

VIBRATION RESISTANCE

The connector has remained leakproof after 500 hours of continuous vibration under test.

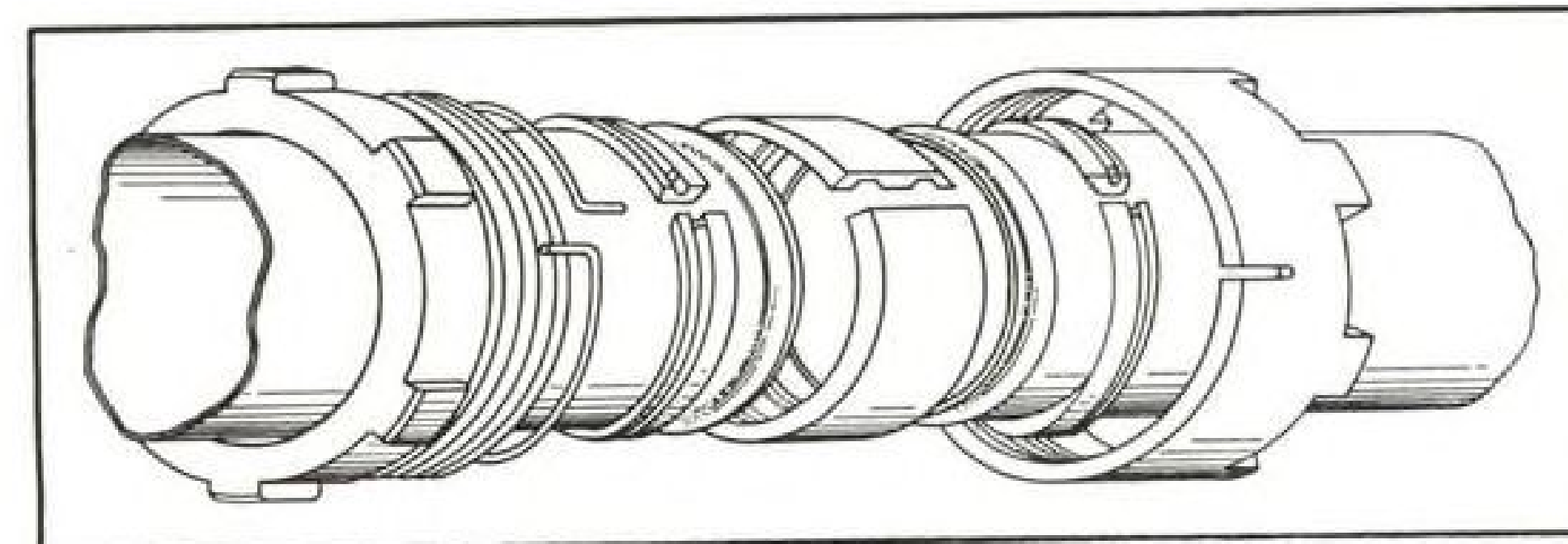
LOW WEIGHT

The connector is lighter than comparable sizes of hose and pipe clip joints.

The FR Pipe Connector was designed to fill the need for a safe, reliable method of joining rigid pipes which must accommodate high pressures. It is specially suitable for pipes of large diameter, as used in pressure refueling systems, but, by virtue of its low weight, flexibility and

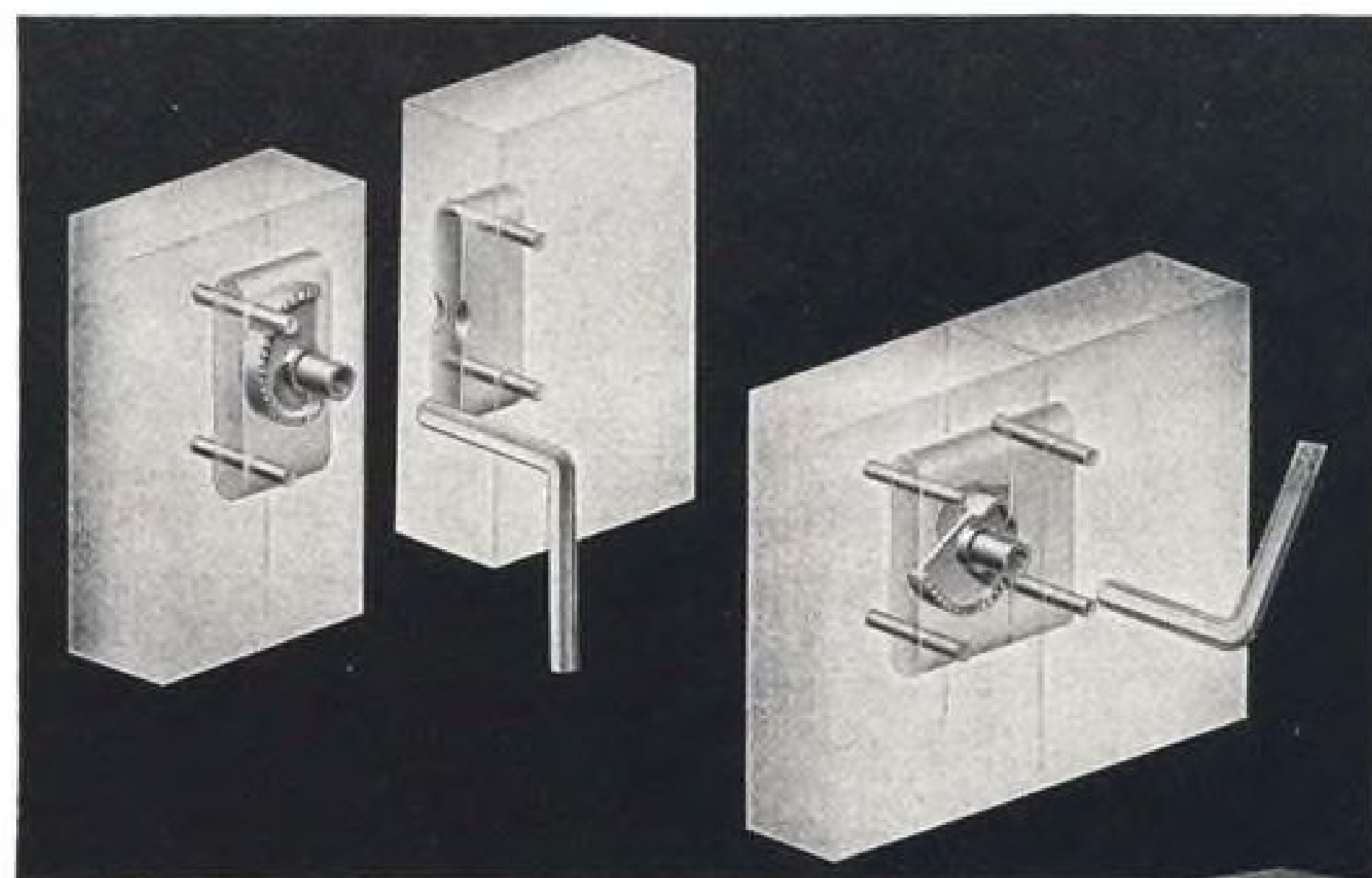
simple application, without the need for special end fittings, it also finds a ready use in oil, coolant, hot air and other such installations.

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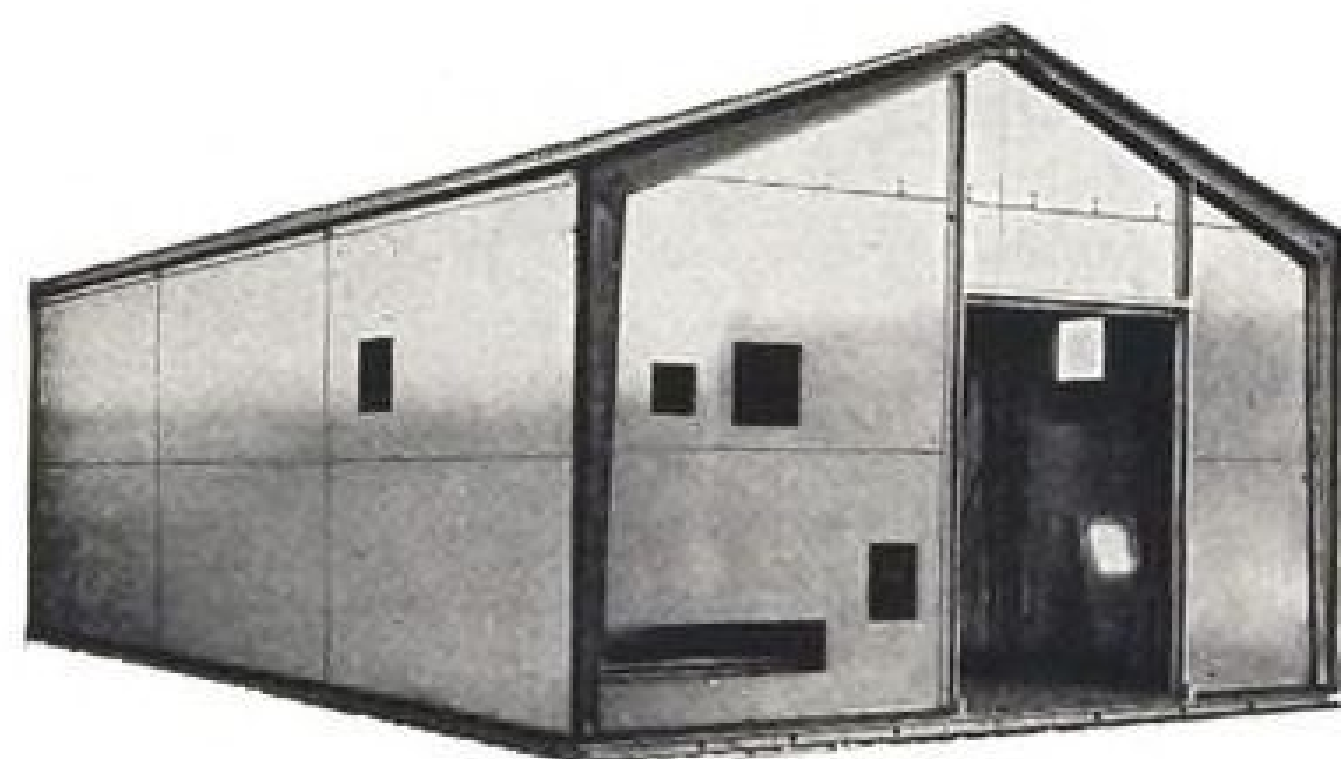
Serrated, tapered cam in male component engages lip of female. Panels are drawn tightly together when cam is turned by hex wrench, screwdriver, or any hand tool.

Lightweight air transport shipping containers, with Roto-Lock Fasteners, knock down quickly for easy return shipment.



PHOTO. COURTESY UNITED STATES PLYWOOD CORPORATION

New Roto-Lock Fasteners Solve Demountable Panel Problems



This portable shelter is made of honeycomb panels developed by the U. S. Plywood Corporation. All panels are attached with Simmons Roto-Lock Fasteners. Portable buildings are also being planned for alert hangars and maintenance hangars for fighter aircraft.

Panels of any material—equipped with the new Simmons Roto-Lock—can be fastened quickly and securely either at right angles or butt joint. No skill is required—just turn the tapered cam to lock, then turn again to unlock. Check these features of Roto-Lock...

1. Roto-Lock exerts sufficient pressure to form airtight and watertight seal when gaskets are used between panels. Carries high-tension loads as well as heavy shear loads—providing a completely structural, insulated connection.
2. Recesses completely into panels—no protruding parts.
3. Will fasten in seriously misaligned conditions—locks in any semi-open position.
4. No springs or delicate mechanical parts which may be affected by severe temperature conditions or field service.

Portable shelters, air freight and cold-storage shipping containers, walk-in coolers, demountable furniture, scaffolding, and many other designs where demountability is desirable, are using this versatile fastener. All are illustrated in our literature. Write for your copy today.

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SPRING-LOCK...
ROTO-LOCK...

supersonic—although small supersonic blades probably will be solid and made by extruding or forging.

► **Flight Trials Soon**—The extruded-blade propeller hasn't yet been flight-tested but trials are not far off. Test stand runs are now being made at C-W's Caldwell facilities and at Wright Field.

C-W has no plans for obtaining a similar size extrusion press for its Caldwell plant. Its schedule calls for continuing to extrude the rough blade at Adrian, then shipping it to Caldwell for forming into blade shape and finishing. The inter-facility shipment doesn't add much to the cost of the blade because most of C-W's raw material suppliers are located in the Midwest, fairly near Adrian.

► **Production Factors**—If the company's volume of propeller orders remains about the same, a few less people will be required because the welding procedure will not be necessary.

With increased volume, as under the present military program, more blades can be turned out with the same plant personnel, whereas without the extruded blade process, the company would have to go outside its present facilities for additional productivity.

Plans are being made to switch from the welded type to the new extruded blade. Changeover probably will be progressive for ultimate replacement on sizes up to about 18 ft. diameter in about two years. All extruded blade production now is for props in the 15-to-18-ft.-diameter class.

Application of the extrusion process is seen feasible for fabrication of other aircraft components such as landing gear struts, helicopter masts and rotor blade spars, and driveshafts.

NACA Reports on Heat Transfer

A new contribution to the literature of heat transfer has been made by the National Advisory Committee for Aeronautics with the publication of Tech. Note 2296 (Turbulent Boundary-Layer Temperature Recovery Factors in Two-Dimensional Supersonic Flow, by Maurice Tucker and Stephen H. Maslen, Lewis Flight Propulsion Lab.).

Surface temperature calculations for a thermally insulated plate in the absence of radiation have been investigated several times for laminar boundary-layer flow. For very low speeds, the temperature recovery factor was found to be a function of laminar Prandtl number only. Later work showed that this low-speed function could also be applied to supersonic laminar boundary-layer flow.

Existing analyses for turbulent boundary-layer flow are limited to the case of

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constant fluid properties. The method of analysis presented in TN 2296 is an extension of one particular analysis to the case of supersonic turbulent boundary-layer flow.

► **Assumption**—In their presentation, Tucker and Maslen make use of a simplified model of the boundary-layer flow for the turbulent case. The turbulent Prandtl number was assumed constant along any section of the boundary layer, and equal in value to the laminar Prandtl number at the surface. Velocity profile was approximated by a power law. Presence of the laminar sublayer was not considered except for the evaluation of the surface Prandtl number.

Based on these conditions, the temperature recovery factor in turbulent flow was shown to decrease with increasing Mach number. For example, at a Mach number of 10, the recovery factor was about 5 percent lower than the limiting Mach value at zero.

Recovery factor also increased with an increase in Reynolds number, as in the low-speed cases, but this effect was, in general, of secondary importance.

An approximate formula is presented for estimation of the recovery factor which represents computed results within 1 percent, according to the Tech. Note.

Aero Slide Rule Developed at Douglas

Douglas Aircraft testing division technicians have developed a new slide rule for on-the-spot answers to common aeronautical problems.

Perfect as an aid for engineers and pilots, the rule carries conventional C, D, and A scales and 20 other computing arrangements peculiar to aviation.

With this 6 x 1 3/32 x 3/32-in. device, Douglas reports that it is possible to determine at a glance the Mach number, true and indicated airspeeds, density altitude, temperature rise and many other aeronautical functions.

Performance may be calculated in miles per hour or knots without reference to conversion tables.

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Report is that white surfaces have black, needle-sharp scales; markings are theoretically accurate to .0001 in., and that light metal core maintains accuracy in heat and cold.

Originally developed by Douglas' A. A. Mahoff and his associates, the unit, known as Sky Rule, is being manufactured and sold by Picket & Eckel, Inc., 5 S. Wabash Ave., Chicago, Ill. Price is \$10.85 for rule, leather pocket case and pocket-size instructional manual.

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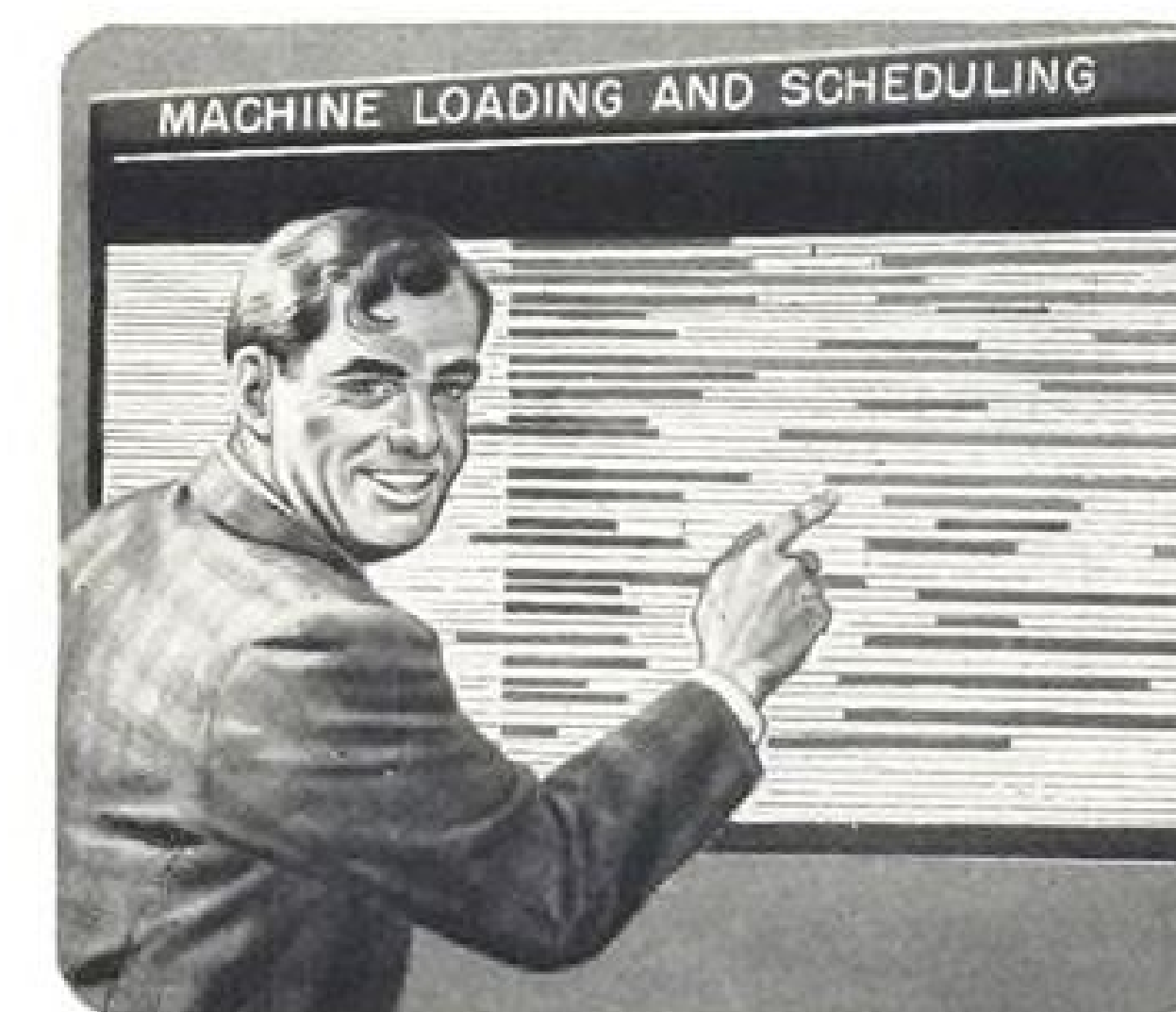
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Reactions Studied In Radar Reading

Radar-screen interpretation studies at the Air Force School of Aviation Medicine, Randolph AFB, Tex., may be setting a pattern for training commercial transport crews when radar becomes operational equipment on the airlines.

The studies are being made to promote better aerial navigation and bombing.

Under the current phase of the school's program untrained airmen are taken on simulated, long flights over strange territory to check on stimulus and human factors incident to radar observation.

From these studies AF psychologists hope to identify and analyze essential perceptual factors involved in reading a radar screen.

► **Who Sees What**—The stimulus factors are those sources which induce visual perceptions, such as physical characteristics of the radar equipment, the terrain, degree of brightness, complexity of target, and consistency of pips on the screen.

The human factors cover visual acuity, perceptual skill, eye movement and other factors bearing on proficiency in interpretation of the radar image.

Aim of the process is to determine why one observer interprets radar pictures more accurately than another and why misinterpretation occurs at all.

► **How It Works**—To avoid sending observers on transcontinental flights, the school uses a trainer which includes a radar scope geared to an antenna system mounted in a frame and subject to movement along any given course over a 6x8-ft. relief map. The map is made to scale, is submerged in 2 in. of water, and includes representations of coastlines, rivers, mountains and cities. A few squares, circles and other specially shaped configurations are scattered about for experiments on form perception and target identification.

Thus, when the antenna system moves across the relief map, usually continent-wide, the trainee sees in the scope the images he would observe if he were flying the course. He gets visual stimuli and perceptions that are practically the same as if he were thousands of feet in the air, viewing some foreign land through a radar scope.

The data gathered serve for scientific evaluation of improvement of radar equipment as well as methods for training observers.

The program is being directed by Maj. Robert B. Payne, head of the school's psychology department, and studies are conducted by its Dr. Siegfried J. Gerathewohl.



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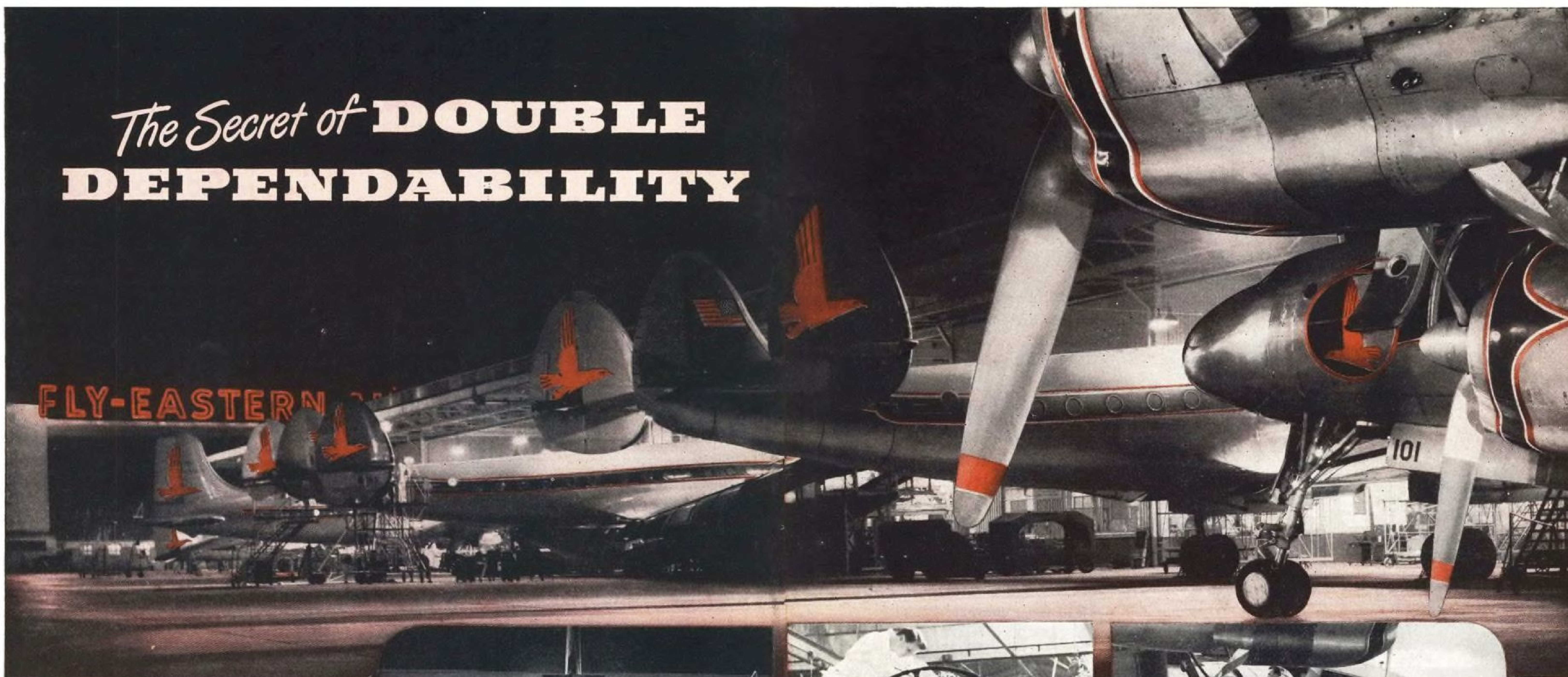
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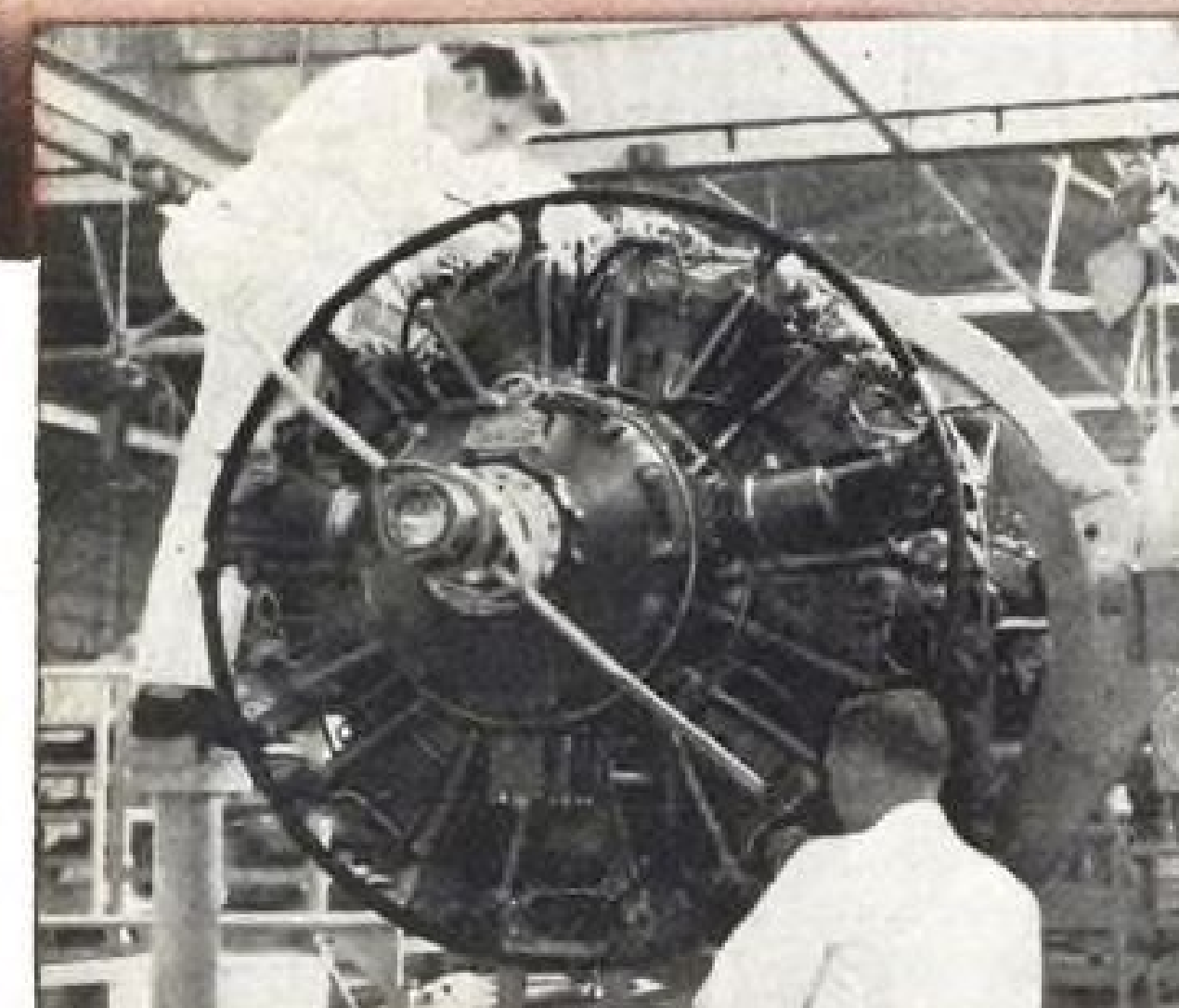


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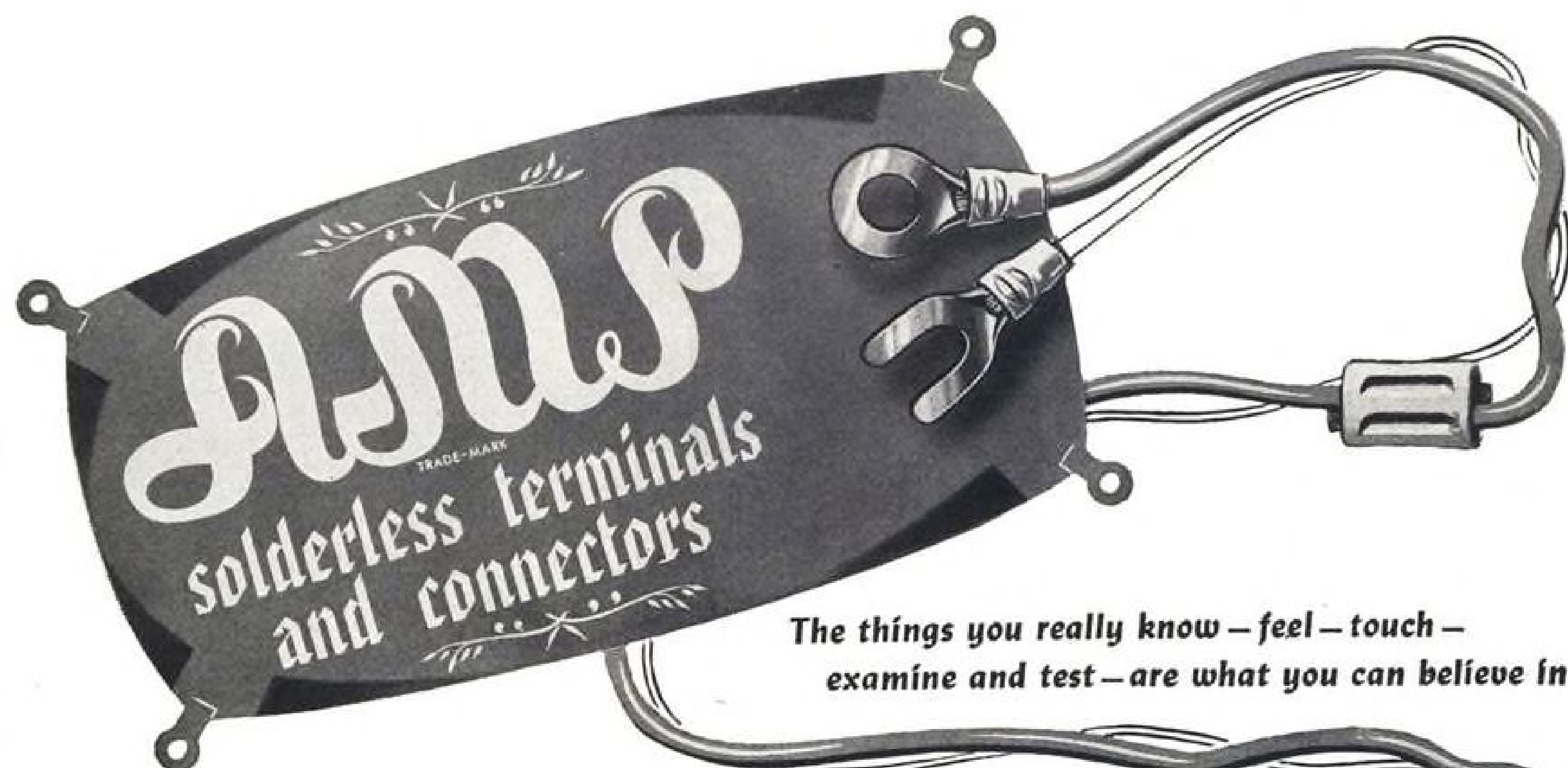


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Laminates

Fiberglas—plastic parts
have many ballistic and
dielectric uses.

By Robert Temple*

The principal interest in reinforced plastics in the Bureau of Aeronautics is in low pressure laminates, primarily based in Fiberglas: Fiberglas, because of superior strength/weight efficiency; low pressure because with Fiberglas, optimum physical properties are achieved at relatively low pressure. In addition, the low tooling cost for low pressure laminate parts is attractive, particularly where production runs may be relatively small and the incidence of design modification may be high.

► **Naval Applications**—Low pressure laminate applications in Naval aircraft fall into four main categories based on physical properties or fabrication characteristics of the material:

- Dielectric applications.
- Lightly stressed, non-structural parts.
- Ballistic applications.
- Parts of complex contours.

Dielectric applications include those where dielectric properties are required, and metallic materials cannot be considered: radomes, and other antennae housing structures such as leading edge sections of wings, stabilizers or fins. Lightly stressed, non-structural parts are those where high rigidity with minimum weight is desired; such as in hatches, doors, fairings, bulkheads, wing-tips and so forth.

Ballistic applications are those which take advantage of the gunfire resistance of low pressure Fiberglas and nylon laminates. Fuel cell support paneling which probably accounted for the greatest volume of low pressure laminates used in Naval aircraft in the last war, is an example of this type of application. The plastic laminate provides a rigid support material for the self-sealing tank that will not splay or flower when punctured by a projectile.

Another type of application based on the ballistic performance of low pressure laminates is flak and fragment armor which is superior on a weight basis to metallic armors. In this connection, it appears that flak-resistant laminates should be considered for aircraft flooring, as well as for housings for instruments and equipment where flak resistance may be achieved as an added feature.

Parts of complex contour include

*Plastics and materials engineer, Navy Bureau of Aeronautics. Paper delivered at Annual Technical Session at Chicago of the Society of the Plastics Industry.

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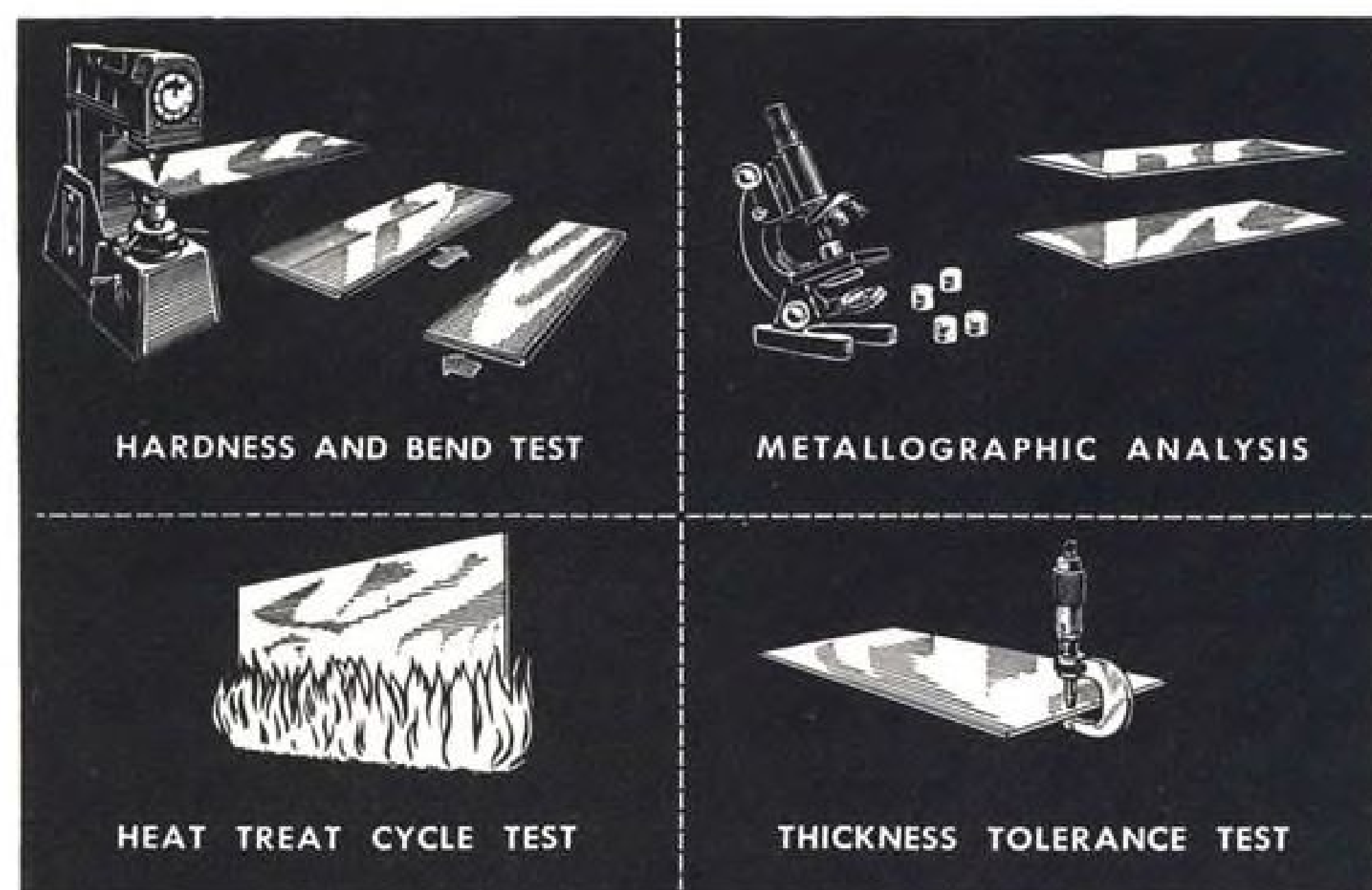
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(3) Heat-Treat Cycle Test to determine hardening and draw characteristics of steel; (4) Thickness Tolerance Test to maintain minute tolerance requirements.

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FASTEST THING IN FASTENINGS

those such as air ducts which are difficult or uneconomical, particularly in limited quantities, to fabricate from metal. Parts in this category are those in which the selection of a low pressure laminate is predicated largely upon the economy of the fabrication process and to a lesser extent upon the intrinsic engineering properties of the material.

► **Potential Applications**—Potential applications, some of which are under development, include battery cases, ammunition boxes and chutes, auxiliary fuel tanks, rocket tubes, parachute drop containers, engine containers, camera cases, oxygen bottles, flak-resistant flooring, bulkheads and equipment housings, and certain classified rocket and missile applications.

Post-forming laminates are extensively used in a variety of lightly stressed applications, such as housings and other shaped parts, where production economy may be achieved by post-forming techniques to produce rugged parts of complex shapes. Post-forming is used most extensively by the West Coast airplane manufacturers (one of whom developed the process). By the end of the last war, the aircraft requirements for post-forming stock amounted to a very substantial volume. It is anticipated that this will again be the case in the aircraft industry.

Some of the conventional high pressure laminate applications in aircraft are: control pulleys, fairleads, spacer blocks, terminal bases, base plates for printed circuits, cases for expendable electronic devices, and other electrical and electronic parts.

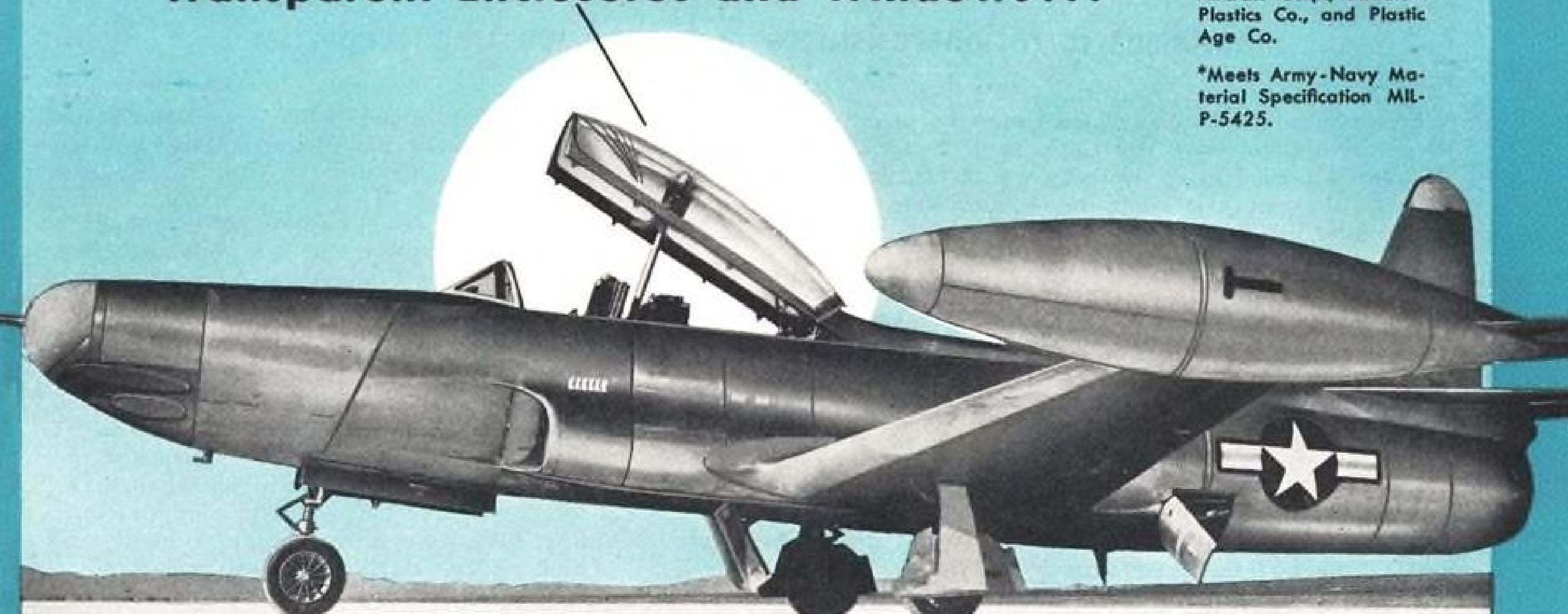
There appears to be a trend away from the use of phenolic laminates for hydraulic parts such as poppet valves, because of past difficulties with dimensional stability. Vulcanized fiber has been used in very substantial quantities for lock-nuts which are employed in great quantities in airplane assembly. However, it is probable that nylon will also be used extensively in this application.

In materials development we need laminates with greater strength at 500 deg. F. and above; and laminates that are intrinsically resistant to high-speed rain impacts at sonic and supersonic speeds.

► **BuAer Projects**—The Bureau of Aeronautics has research and development projects involving reinforced plastics with:

- Cornell Aeronautical Laboratory—design and fabrication of a missile wing.
- Brooklyn Polytechnic Institute—development of heat-resistant resins.
- General Textile Mills—design and fabrication of pilots protective helmets.
- Fabric Research Corp.—flak armor investigations.
- National Battery and Exide—design

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Shear Strength: The shear strength of "K" Monel, as determined with .050-in. x .250-in. specimens subjected to double shear, is (full hard, age-hardened) 98,450 psi maximum, with 0.04 in. deflection. The shear strength of "K" Monel rivets, fully age-hardened, is 89,200 psi with ultimate tensile strength of 147,000 psi.

Spring Properties: "K" Monel wire can be cold-drawn and age-hardened to develop 160,000 to 200,000 psi tensile strength. The torsional proportional limit of cold-drawn, age-hardened wire is about 40% of the ultimate tensile strength.

Endurance Limit: In rotating beam tests of polished speci-

mens at room temperature and 10,000 r.p.m., "K" Monel (cold-drawn, age-hardened) showed an endurance limit for 10⁸ cycles of 41,000 to 59,000 psi.

Magnetic Characteristics: "K" and "KR" are non-magnetic under ordinary conditions and remain so at sub-zero temperatures.

Working Characteristics: Both "K" Monel and "KR" Monel may be hot-worked, forged, and cold-worked. "K" Monel may be readily machined in the annealed condition and may be considered commercially machinable at practical rates in other conditions with Brinell hardness of up to 275. "KR" Monel, because of higher carbon content and special thermal treatment, has better machinability than "K" Monel and is recommended for parts requiring more intricate machining. Because of greater hardness, both alloys will take a higher polish than Monel. Both may be joined by the usual welding, brazing, and soldering processes.

Corrosion Resistance: These alloys are highly resistant to attack by most commonly-encountered corrosives, including mineral and organic acids, alkalis, salts, potable and industrial waters, foods, organic compounds, and oxidizing atmospheres at normal and elevated temperatures.

Forms Produced: "K" Monel is supplied in most commonly-used mill forms—rods, hexagons, squares, flats, strip, sheet, seamless tubing, wire, welding materials—and in a variety of finishes and conditions. "KR" Monel is produced in rods, hexagons, squares, hot-rolled and cold-drawn.

Applications: Because these alloys retain their non-magnetic, corrosion-resistant, and high physical qualities at abnormal temperatures, they have been used to advantage in aviation instruments, roller chains for retractable landing gear, controls, springs and contact arms in electrical equipment, in stressed structural members and fastenings.

FURTHER DATA AVAILABLE

A 23-page reference manual, *Engineering Properties of "K" Monel and "KR" Monel*, contains all essential engineering information on these alloys. It is available, free, for your files.

For help on specific metal problems involving corrosion, high temperatures, or fatigue, write directly to Inco's Technical Service, outlining your problems.

THE INTERNATIONAL NICKEL COMPANY, INC.
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EMBLEM OF SERVICE
NICKEL INCO ALLOYS
MONEL® • "R"® MONEL • "K"® MONEL •
"KR"® MONEL • "S"® MONEL
NICKEL • LOW CARBON NICKEL • DURANICKEL®
INCONEL® • INCONEL "X"®

"K" MONEL Effect of temperature on physical properties (Age-hardened condition)						
Test Temperature °F.	Yield Strength (0.20% offset) psi.	Tensile Strength psi.	Elongation in 2 in. per cent	Creep Strength (0.10% in 10,000 hr.) psi.	Hardness (Brinell)	Impact (Charpy) ft.-lb.
-300	160,200	202,000	27	...	...	...
-110	134,600	171,550	17.3	...	36 (Rock. C)	27
Room	111,000	160,000	23.5	...	331	27
200	108,000	150,000	23.5	...	...	...
400	103,000	149,000	24	...	...	...
600	105,000	146,000	23	...	...	...
750	...	...	...	67,000	...	...
800	105,000	124,000	8.5	48,000	302	...
1000	92,000	95,000	3	8,500	255	...
1100	...	...	...	...	229	...
1200	80,000	80,000	1.5	...	...	...
1400	30,000	45,000	8	...	...	...

and the fabrication of cases for batteries.
• Forest Products Lab.—ANC Plastics Panel—design data for ANC-17 Bulletin.
• Naval Air Experimental Station—materials evaluation.
• Naval Air Development Center—radomes development.
• Naval Proving Ground—fuel cell laminates and flak armor.
• Consolidated Aircraft—radome de-icing.

► **How to Sell Them**—How do you do business with the Bureau of Aeronautics for some of their plastic requirements? The Aviation Supply Officer, Philadelphia, procures many stock items by putting them out for bid. The pitch there is to request to be placed on their bidders lists for plastic items.

Probably the most effective sources for business are the airplane and missile prime contractors themselves. Of course, they in turn may refer you to a subcontractor or a sub-sub—even to the fourth echelon—but most of the molded plastic parts that eventuate in the airplane find their way in as a component of some instrument, device, equipment or system.

If you have a hot idea for a new application or new design or an improved material, the Bureau of Aeronautics is eager to know about it. Airplane contractors are also receptive and alert to those new developments. But for routine production business your most effective efforts will be with airplane contractors and their suppliers.

Black Light Used By Lockheed, NAA

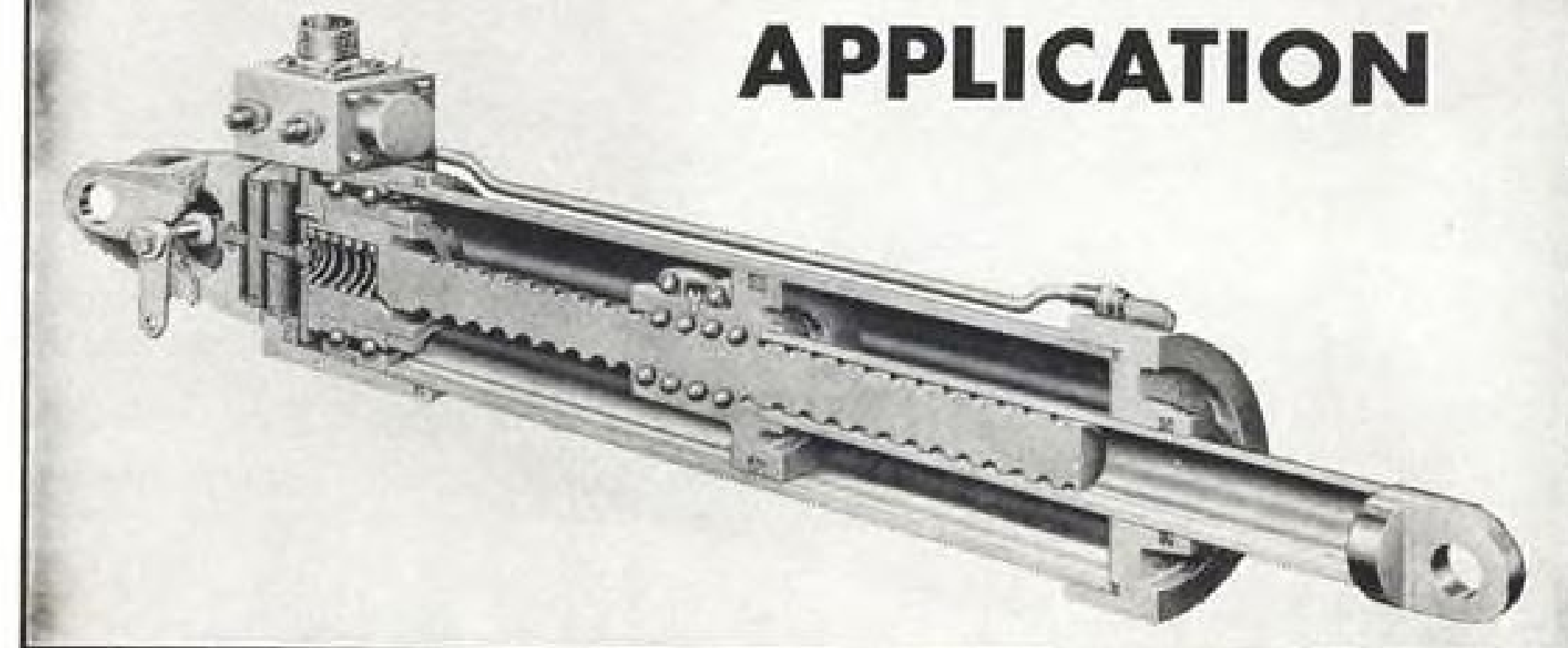
Black light, the invisible ultra-violet ray of scientific crime detection, has been adopted by two aircraft manufacturers in novel techniques.

Lockheed Aircraft Corp. uses ultra-violet illumination to detect fuel system leaks; North American Aviation, Inc. uses it to speed plastics curing.

In Lockheed's application, fluorescent powder is added to standard or test fuels, and then the engine is run long enough to get full circulation of the fuel through the system. Any fuel seepage through leaks will deposit small amounts of the fluorescent powder at the leaks. Ultra-violet light then pinpoints these leaks with brilliant fluorescence.

North American flanks a conveyor system with two banks of 100-watt ultra-violet lamps. Large and small plastic parts move along the conveyor for curing. This technique so far has been limited to polystyrene plastics using light-sensitive catalysts—usually benzoin—for ultra-violet response. Curing times have been reduced in this way from eight hours to two hours and less in some instances.

NEW BALL BEARING SCREW APPLICATION



New Aircraft Actuator Uses Saginaw Ball Nut Screw

This advanced, hydraulic aircraft actuator owes its efficiency and lightweight to its quick-acting Saginaw ball bearing screw and nut. It operates satisfactorily under extremely high loads . . . features emergency power drives and synchronization for two or more units. In the

event of system failure, a mechanical brake locks the actuator. Stroke and thrust are limited only by available flow and pressures.



Numbers show electro-mechanical actuator installations on Banshee jet fighter for (1) main landing gear door, (2) main landing gear, (3) wing fold, and (4) nose landing gear. Operating loads run from 1800 lbs. to 14,000 lbs. Strokes range from 8.4 in. to 19.53 in. All installations use Saginaw's friction-free ball bearing screw and nut.

FRICTION-FREE PRINCIPLE NOW AVAILABLE FOR UNLIMITED USES

The friction-free operation of the Saginaw ball bearing screw and nut brings new efficiency to numberless industrial operations. In many cases actuating efficiency is increased more than 90 per cent, while operating costs are reduced as much as two-thirds.

The Saginaw ball bearing screw and nut makes possible the use of smaller motor drives with less horsepower. It permits faster operation with less heat generated, and allows rapid forward or reverse action with minimum wear and friction. Compact design for simple lubrication; remarkably low maintenance.

SAGINAW DESIGNS EACH APPLICATION TO SPECIAL ORDER

Each application is treated as an individual design; Saginaw makes no off-

the-shelf sales. Manufacturing facilities are geared to meet any desired production rate—large or small—and deliveries are scheduled to meet customer requirements.

Saginaw puts 38 years of gear building experience behind every product it makes; has one of the largest and most highly trained staffs of engineering, designing and manufacturing gear specialists in the country.

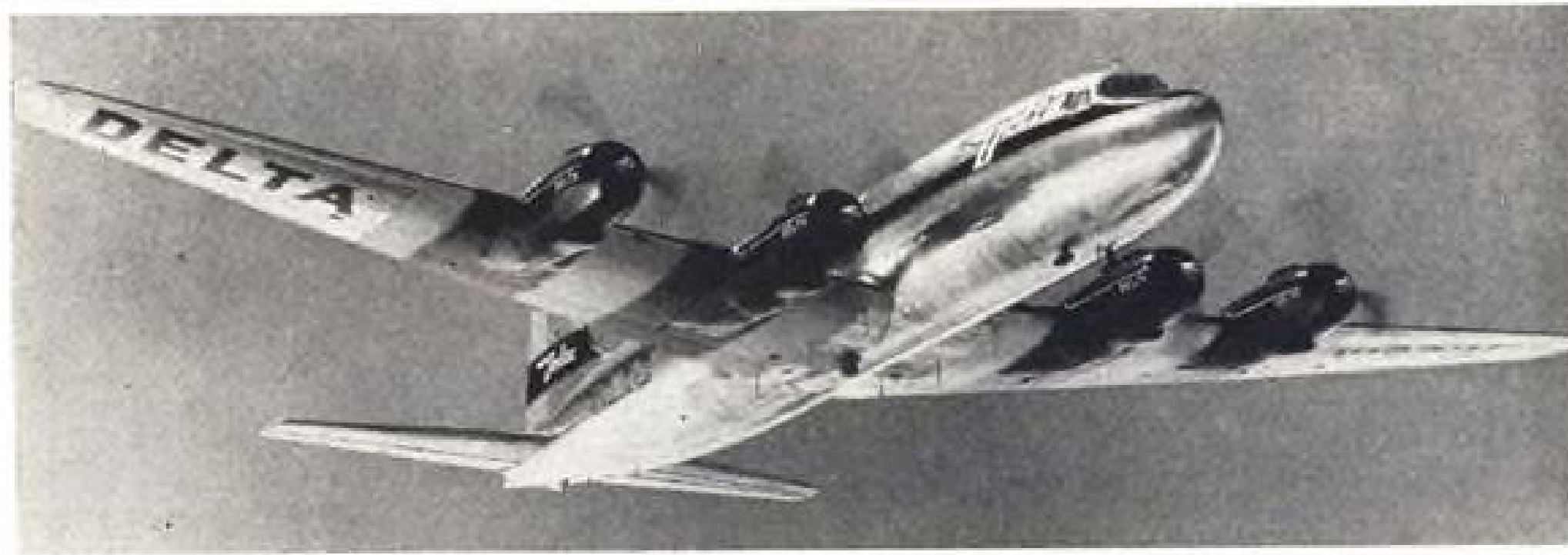
INSTALLATIONS FOR BALL BEARING SCREWS COVER EVERY FIELD OF INDUSTRY

Present industries using the product include aircraft, machine tool, automotive, farm machinery, boat building. It is widely employed in truck trailers, adjustable beds, lifting jacks and countless other actuating devices. Complete engineering facilities are available to give prompt attention to customer problems.

Saginaw
STEERING GEAR DIVISION
General Motors Corporation, Saginaw, Michigan

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STEERING GEARS AND LINKAGES • PROPELLER SHAFTS • TRANSMISSION CONTROLS • TURN SIGNALS • DIESEL ENGINE PARTS • BALL BEARING SCREW AND NUT ASSEMBLIES • AUTOMOBILE JACKS

EQUIPMENT



How Delta Speeds the Work

Mechanics at on-line stations help carry maintenance burden; it's good for morale as well as costs.

By George L. Christian

Atlanta—Farming out of production jobs to on-line stations is proving a boon to Delta Air Lines. Maintenance costs are dropping, on-line employee morale rising.

The idea hatched as a result of the extra maintenance burden imposed on Delta's shops when new DC-6s were acquired. Who could absorb the additional overhaul load? On-line station mechanics were the answer. Busy as beavers when trouble developed at their station, the men were idle for most of the flights, which go through without incident.

► **Idle No More**—The carrier decided to put this idle time to work. Being kept busy pleased the mechanics. Moreover their efforts would alleviate the increased work load at the main overhaul base at Atlanta.

To make certain that the men were thoroughly checked out on their duties, they were brought to Atlanta for indoctrination. Then the necessary equipment for the jobs to be performed was sent to the line stations.

This is the way Delta allocated the work:

- **Spark plug overhaul**—Cincinnati. Turn-out is about 100 plugs a day.
- **Control cable fitting**—New Orleans. Station averages 70 cables a month.
- **Seat belt assembly**—Shreveport. Output is 100 belts a month.
- **Flex hose construction**—Charleston.

Parts are shipped direct from station to store room in Atlanta when stocks run low.

Latest addition is Birmingham which clamored for means to pass spare time; they will rebuild engine oil screens.

Estimated yearly savings for the entire program: \$30,000.

► **Management Speaks**—In an interview, C. E. Woolman, the airline's

president, assured AVIATION WEEK that the structure of his organization was flexible enough to accommodate sudden expansion should emergency conditions dictate. He pointed with pride to the rapid and effective manner in which Delta swallowed strangle-sized contracts for the military during the last war. He predicted that Delta could do it again, only better, and with no disruption of his staff or facilities.

Woolman revealed that recent talks between himself and Lockheed Aircraft Corp. President Robert Gross and other Lockheed officials had resulted in an agreement that basically the same wage would be maintained at the soon-to-be-reactivated Marietta bomber plant as the prevailing aircraft labor wage of the area. This is to avoid unnecessary disruption of labor supply when Lockheed gets the huge installation into operation.



SPARK PLUG overhaul keeps Cincinnati on-line mechanics busy, speeds maintenance.

► **H-Bomb Boom**—The vast H-bomb project the government is building in the vicinity of Augusta should be a boon to Delta's traffic, according to Woolman. With Augusta only 51 min. by air from Atlanta, Delta's added traffic should further boost that city towards becoming one of the major airline centers of the South.

When asked what Delta's major problems were, C. H. Dolson, vice president—operations, replied: "As an airline, none." This answer was indicative of the aggressive spirit throughout the airline.

Dolson spoke of Delta's evaluation of the Eclipse-Pioneer Flight Path Control, an instrument which automatically ties the ILS glide path and localizer beams into the automatic pilot allowing the latter to fly the plane to the lowest minimums without any human assistance (AVIATION WEEK July 17, 1950). He expressed satisfaction with the instrument and feels that it will aid immeasurably in making completely automatic approaches feasible. But Dolson asks: Are ground installations reliable enough at present?

► **New Look**—The first Delta DC-3 is well along to acquiring the snappy new look to which the airline's entire fleet will be converted (AVIATION WEEK Feb. 19).

Before undertaking the nose-to-tail refurbishing, Delta conducted a survey of over 400 passengers who flew in a prototype conversion as it circulated over its system. Of the passengers polled, 87 percent reacted favorably. Sample opinions:

	Yes	No
Air Stairs		
Like them?	377	9
Two rows of seats in pairs		
Got enough room?	302	75
Foam rubber seats		
Like the new cushions?	374	6
Warm air heating		
Tell me if you like it	323	3
New hydraulic system		
Like my act?	336	0
Two-cabin effect		
Think it's an improvement? ..	362	1
Self-service baggage optional		
Tell me if you like it	361	10

The prototype had 28 seats but the final conversion has only 26, to afford more coat-hanging space.

A clever modification of the Air Stair door consists of hinging the middle step and attaching the front with two Dzus fasteners. The opening provides a quick and easy means of inspecting the door latching mechanism. Door operating controls are simplicity itself. A small tin can acts as hydraulic reservoir supplying fluid to an electric motor-driven pump which used to actuate a Globe Swift's landing gear. Provision has also been made for manual opera-

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These strategically located overhaul shops maintain, at all times, adequate stocks of approved parts for the expected maintenance and overhaul requirements of Pratt & Whitney Aircraft engines within their territories.



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Pratt & Whitney Aircraft

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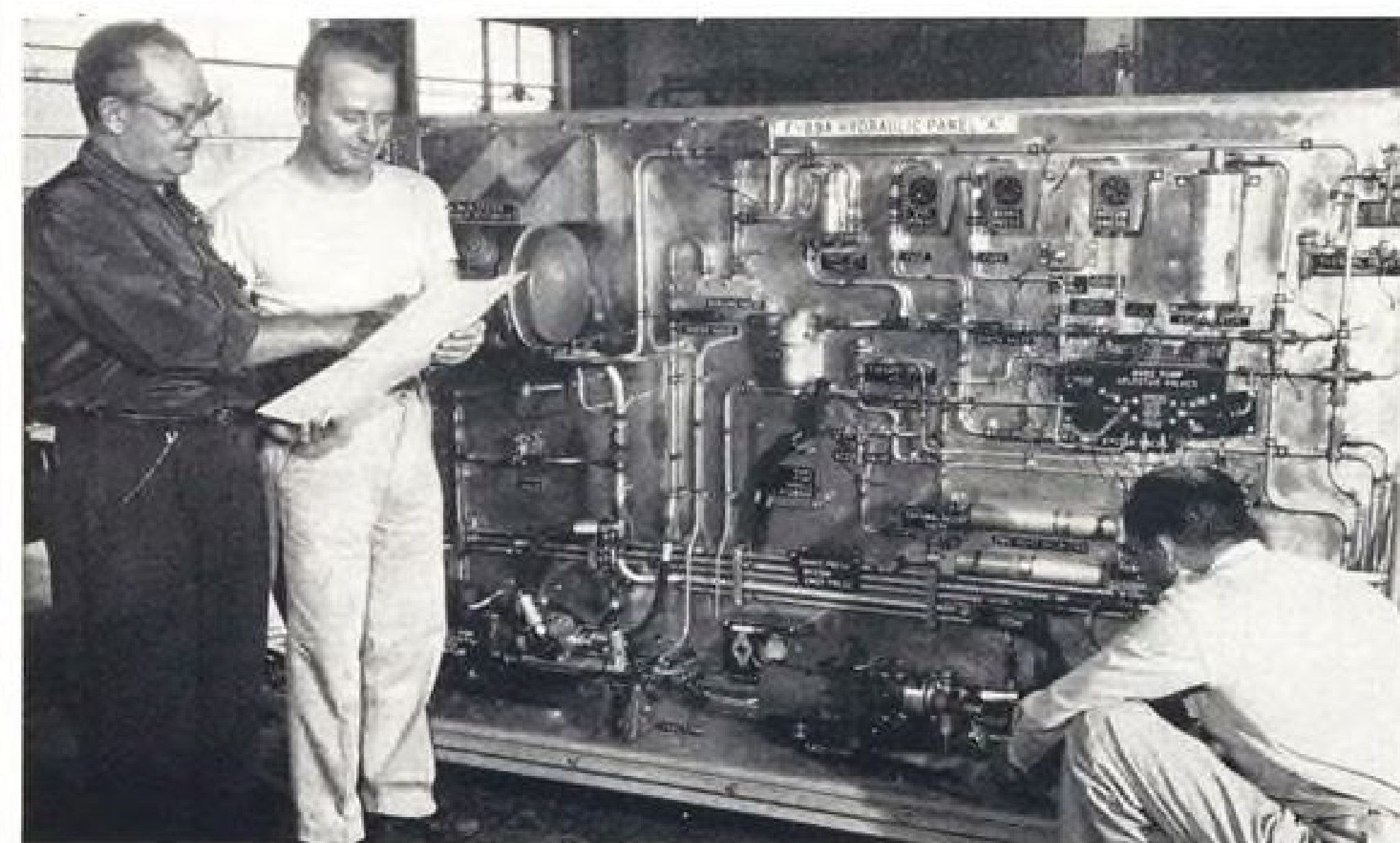
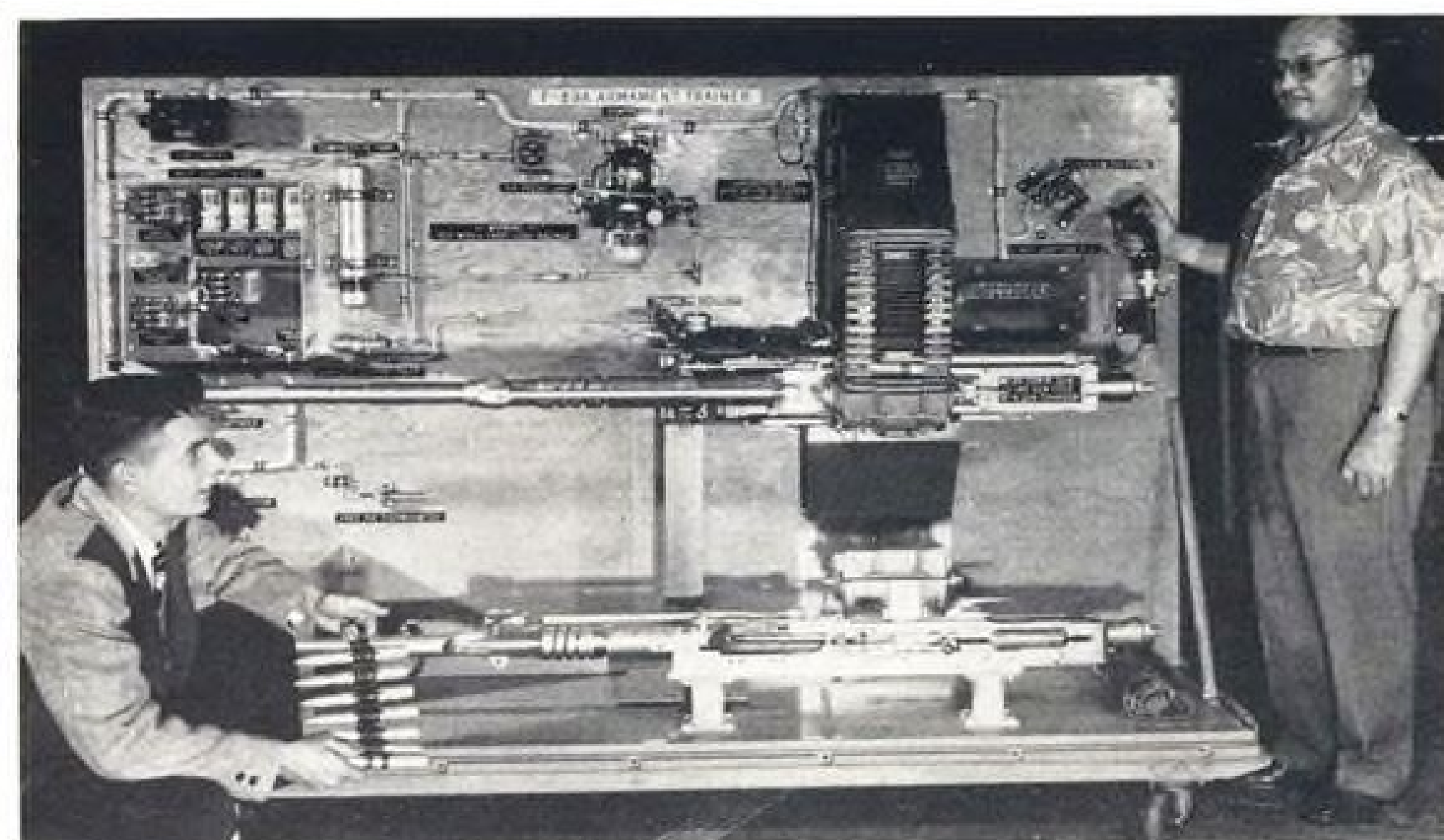
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F-89 System Mockups Aid AF

Northrop-designed and -built system mock-ups will be used by USAF to indoctrinate ground personnel in the intricacies of the company's newest all-weather interceptor, the F-89 Scorpion.

The "Flying Classrooms" demonstrate graphically and accurately the operation of armament, instrument, seat

ejection, hydraulic fuel, landing gear, air conditioning and other systems. They will be flown from base to base for transition training of mechanics unfamiliar with the speedy ship.

Scorpions are being produced in undisclosed numbers by Northrop for the USAF.

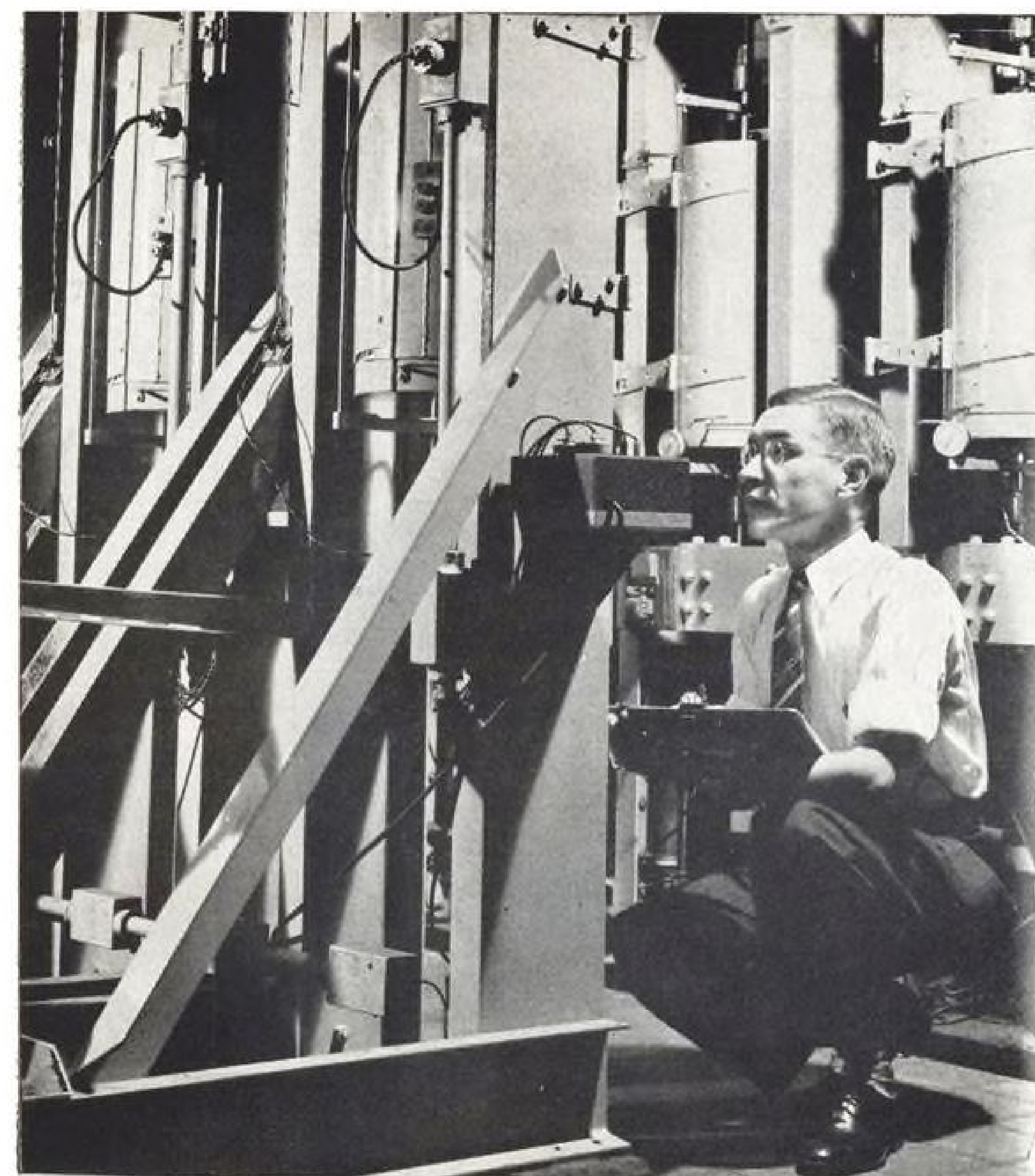
tion. The entire mechanism is installed in the buffet area adjacent to the door and is readily accessible for maintenance.

A modification of the DC-3 hydraulic system with the pump selector valve removed and two check valves installed allows both pumps to feed the system simultaneously. Result is noticeably faster landing gear retraction.

► **Wheels & Brakes**—Here is how Delta is going to equip its fleet with wheels and brakes. It is starting immediately to install the "Wave Type" Goodyear wheel on DC-6s. Part number is 9540505. Current DC-6 magnesium wheel will be mounted on DC-4s as

their wheels wear out. When the stock of DC-6 wheels run out, the 4s will also be equipped with the wave type, giving standardization between the two types of planes.

• **Brake status:** DC-6B single disc Goodyear brakes go on DC-6s. DC-6 single disc brakes go on DC-4s. DC-4 multiple disc brakes will be disposed of. Super DC-3 brakes will go on rejuvenated DC-3s. Money-saving idea is use of new, heavy type $\frac{7}{8}$ -in. brake discs on DC-6s until they are worn to the minimum limit of approximately .750 in. Discs will then be transferred to DC-4 brakes which use same units, only thinner. The discs may then wear down



FLIGHTMETAL *Imagineering* measures the creep of a fighter's skin

Exactly how much will an aluminum alloy stretch under a certain load at a certain temperature? That's the kind of flightmetal data designers must have to meet today's ever-mounting demands on aircraft performance. Alcoa research works constantly to produce the facts they need.

Shown above is a battery of creep testing machines used by Alcoa development engineers to measure aluminum alloy stretch under load at temperatures up to 600° F. It's only a small part of the specialized facilities which keep Alcoa technical information complete and up-to-date.

Whatever your problem, we always welcome an opportunity to pool our experience and knowledge with yours in the interests of *Flightmetal Imagineering*.

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Ask ALCOA for the Flightmetal Training Aids you need

Alcoa's complete library of design and fabricating information is available now to help you train employees—add to your own know-how. What manuals or films do you need?

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Describes methods, alloy characteristics.
65 pages.

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68 pages.

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137 pages.

Alcoa Aluminum and Its Alloys. Properties, tolerances, sizes.
178 pages.

Designing with Magnesium.
Covers specification, fabricating methods.
329 pages.



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More motor per pound

in this completely new design

Now you can have a lightweight, continuous-duty, explosion-proof motor. This new construction in integral horsepower ratings represents another Westinghouse first in the Aviation Industry.

This revolutionary d-c motor is completely self-contained. No ducts or other external ventilation equipment is required. Special flame arrester design provides complete protection and permits continuous-duty operation . . . with only a slight increase in weight over corresponding open, self-ventilated motors.

These direct drive motors cover a range from 1 to 4 horsepower and weigh from 20 to 28

pounds. They are available with standard AND mounting pads or with special mountings. Radio noise filters are installed. This new design has been explosion-proof tested according to USAF specifications.

Look into this new motor. Call your nearest Westinghouse Office or write Westinghouse Electric Corporation, Aircraft Department, Lima, O.

J-03004



YOU CAN BE SURE.. IF IT'S
Westinghouse

**AVIATION
EQUIPMENT**

to .550 in. before they must be removed from the brakes.

► **Here & There**—G. J. Dye, Delta's superintendent of maintenance, made the following observations:

- **Plexiglas II**—Maintenance is negligible on DC-6 windows now that care is taken to keep cleaning fluids away from the panels.

- **Spark plugs**—Champion R37S-1 plugs are used exclusively on all engines and are changed at 300 hr. Plugs are reconditioned until they become unusable.

- **Skydrol**—DC-6 cabin supercharger drives are being converted to use Skydrol fluid. The airline expects better service and reduced maintenance. Skydrol-resistant nylon paint is used in the supercharger areas to avoid constant repainting. Cost of \$25 per gal. prohibits use of this special paint in non-essential areas.

- **Vickers wafers**—Vickers hydraulic pump wafer kits are being installed on all DC-4 and -6 aircraft.

- **Laminated Formica**—Black and white laminated Formica placards with instructions neatly and legibly engraved through the outer black surface are replacing easily worn and torn decals. One, placed in a prominent position in the cockpit of DC-4 coach planes, admonishes: "Watch your language, the passengers can hear what you say." Passengers sit close to the cockpit on coaches.

- **Instrument boxes**—In the first month that instrument shipping boxes were used to transport units from line stations to main base and vice-versa, instrument damage plummeted 50 percent. Made of 3-in. five-ply wood, sides, top and bottom of the interior are lined with 2-in. foam rubber pads leaving a space in the middle just large enough for an instrument to fit snugly.

- **Turn & Bank**—Two Eclipse-Pioneer electrically driven turn and bank indicators mounted on DC-6s have given excellent service since installation. The units present no maintenance problems and have proved to be very accurate instruments. Their overhaul period now is 2500 hr.

- **MDIs**—Delta's instrument shop maintains the Bendix Fluxgate Master Direction Indicators and transmitters to very close tolerances. Result is that they can interchange any MDI with any transmitter, thereby eliminating necessity of calibrating a particular MDI to a given transmitter. Result is flexibility of component replacement and reduction in ground delays.

That Delta is a healthy airline is indicated by these comparative percentage figures, 1949 vs. 1950: increase in revenue passenger miles—18.2 percent; freight ton miles—up 42.3 percent, net profit after taxes jumped from \$639,440 to \$815,751.

**SUPER
DC-3**



Photos: Courtesy
Douglas Aircraft
Company and
United Air Lines

DC-6



**UNITED
377**



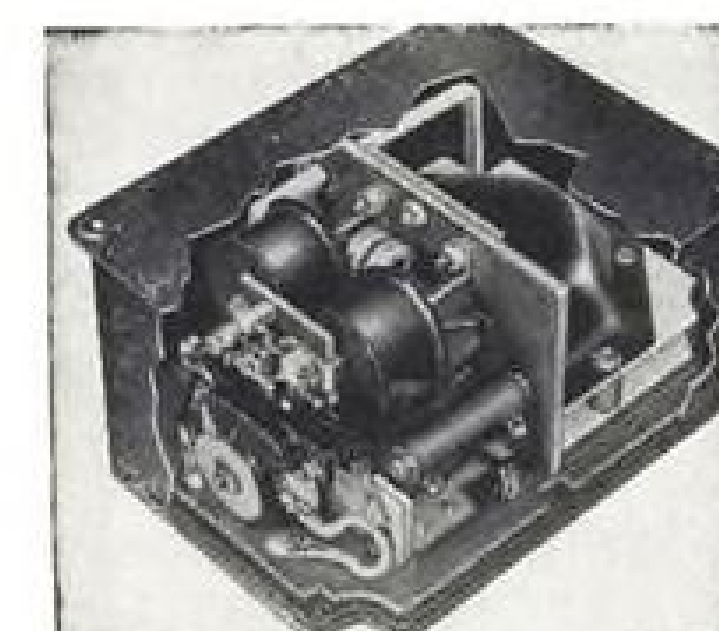
**... all are equipped with the new Hartman
400-ampere high interrupting capacity cutouts**

Modern wide speed range generators of large aircraft—designed to meet heavy load demands of electronic devices and other equipment formerly actuated by non-electrical means—pose unusually difficult control problems.

For example, 28-volt generators can produce up to 175 volts if a short circuit applies full field at high rpm as on takeoff. In addition to being able to interrupt these high voltages from sea level to 50,000 feet, control relays must also give trouble-free operation through thousands of cycles at rated capacity . . . must withstand wide temperature ranges, dust, humidity, vibration, acceleration and shock.

These new Hartman Reverse Current Cutouts have an interrupting capacity greatly in excess of all requirements under all conditions. That's why today manufacturers and operators are turning to these new cutouts for use on new and existing aircraft.

So if your problem involves d-c controls, turn it over to Hartman where it will be analyzed, engineered and produced with an efficiency that comes from nearly half a century of specialization.



New Hartman 400-Ampere 28 Volt Reverse Current Cutout (A-750D)



New Hartman 400-Ampere 28 Volt Contactor for aircraft with panelized systems (A-751D)

A-3864

the Hartman Electrical Mfg. co.

"D-C CONTROL HEADQUARTERS"

MANSFIELD, OHIO

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to MELETRON pressure actuated SWITCHES

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"We replaced the fuel, oil and water injection pressure warning switches on our Convairliners with Meletrons. Results have been excellent."

HARRISON W. HOLZAPFEL
Engineering Manager,
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While there are other switches that meet specifications, the performance records of MELETRON switches stand unchallenged.



Today, MELETRON products are solving new, challenging problems. May we tell you how and why? Write today.

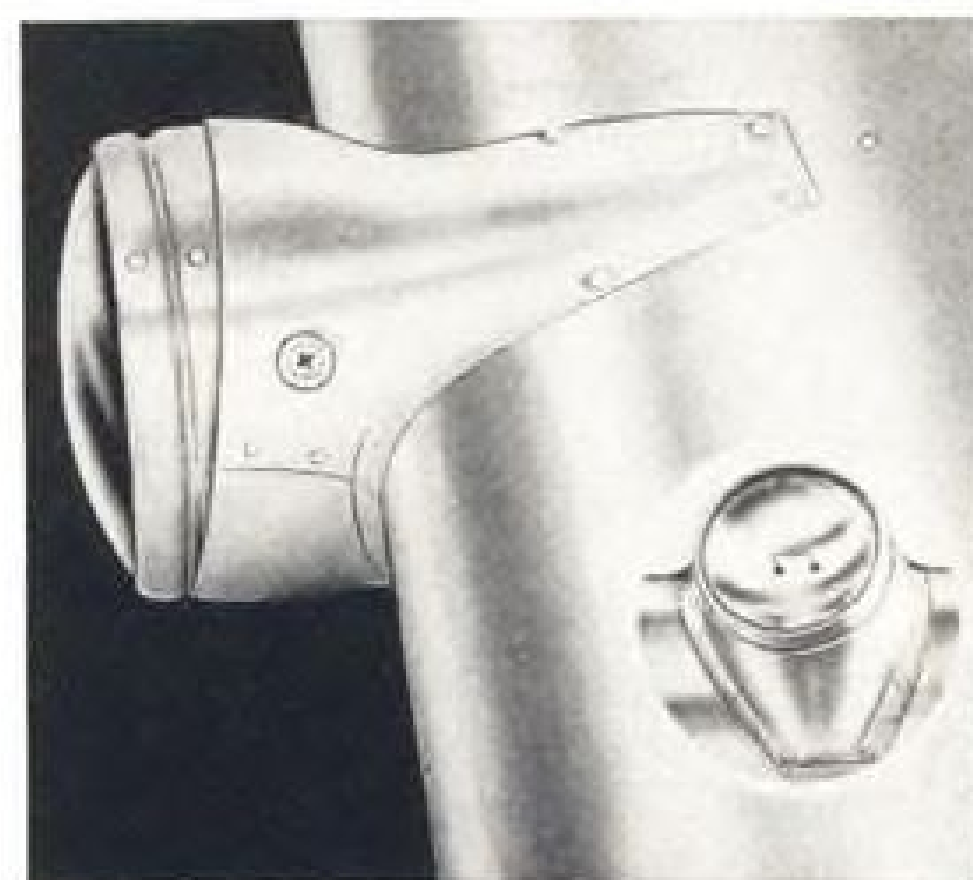
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Los Angeles 38, Calif.



New Landing and Taxi Light Pair

A new, twin landing-light taxi-light combination for small and medium non-transport-type aircraft has just been announced.

The "Wing-Lites" are being marketed by Aviation Accessories, Inc., P.O. Box 4178, Ft. Worth, Tex., who describes them as high in efficiency and low in cost and weight.

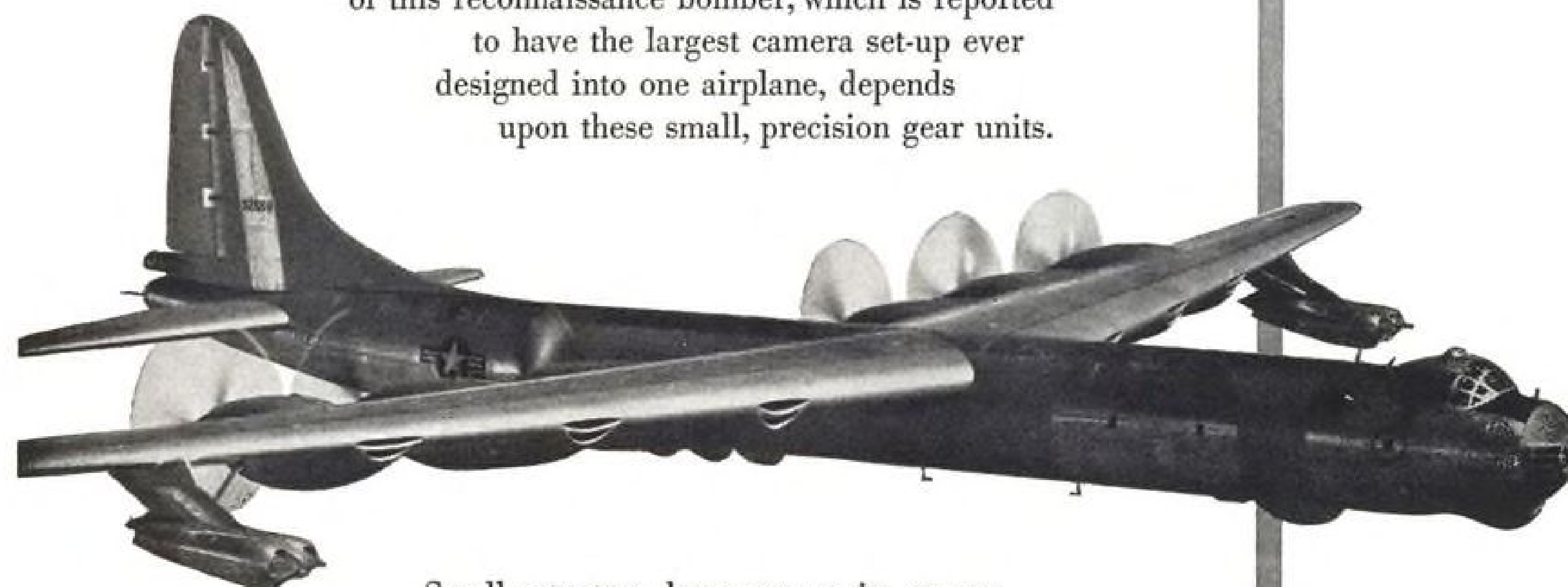
The \$37.50 kit consists of one GE clear lens sealed beam landing light, with a 3-min. continuous burning limit; a diffused lens taxi all-purpose light, capable of long periods of illumination, two AN-type toggle switches and two rubber mounting grommets. Lights require 10 amp. at 12v.; total weight is 28 oz.

The firm recommends that the landing light be mounted on the left wing leading edge beyond the propeller arc and the taxi light at an equivalent distance on the right wing. Standard wiring practice should be followed, the wire being installed through wing inspection openings. The metal housings which fair over the leading edge of the wing may be fitted to almost any metal or fabric-covered airfoil found on light-to medium-weight planes. The manufacturer claims that flight tests conducted with an 8-A Luscombe showed that there was no loss of airspeed due to installation of the lights. The frontal area of the landing-taxi pair is negligible.

A simple external adjustment has been provided to position the light patterns.

Western Gears "Open and Close Her Eyes"

Camera doors of the giant new Convair RB-36 are operated by nine Western Gear actuators, of the type shown here. Thus, the photographic effectiveness of this reconnaissance bomber, which is reported to have the largest camera set-up ever designed into one airplane, depends upon these small, precision gear units.



Small actuators, large gear units, or any type of geared product for ground or air-borne use — properly designed, manufactured, and tested — are available from Western Gear Works, backed by fifty years of gearmaking experience.

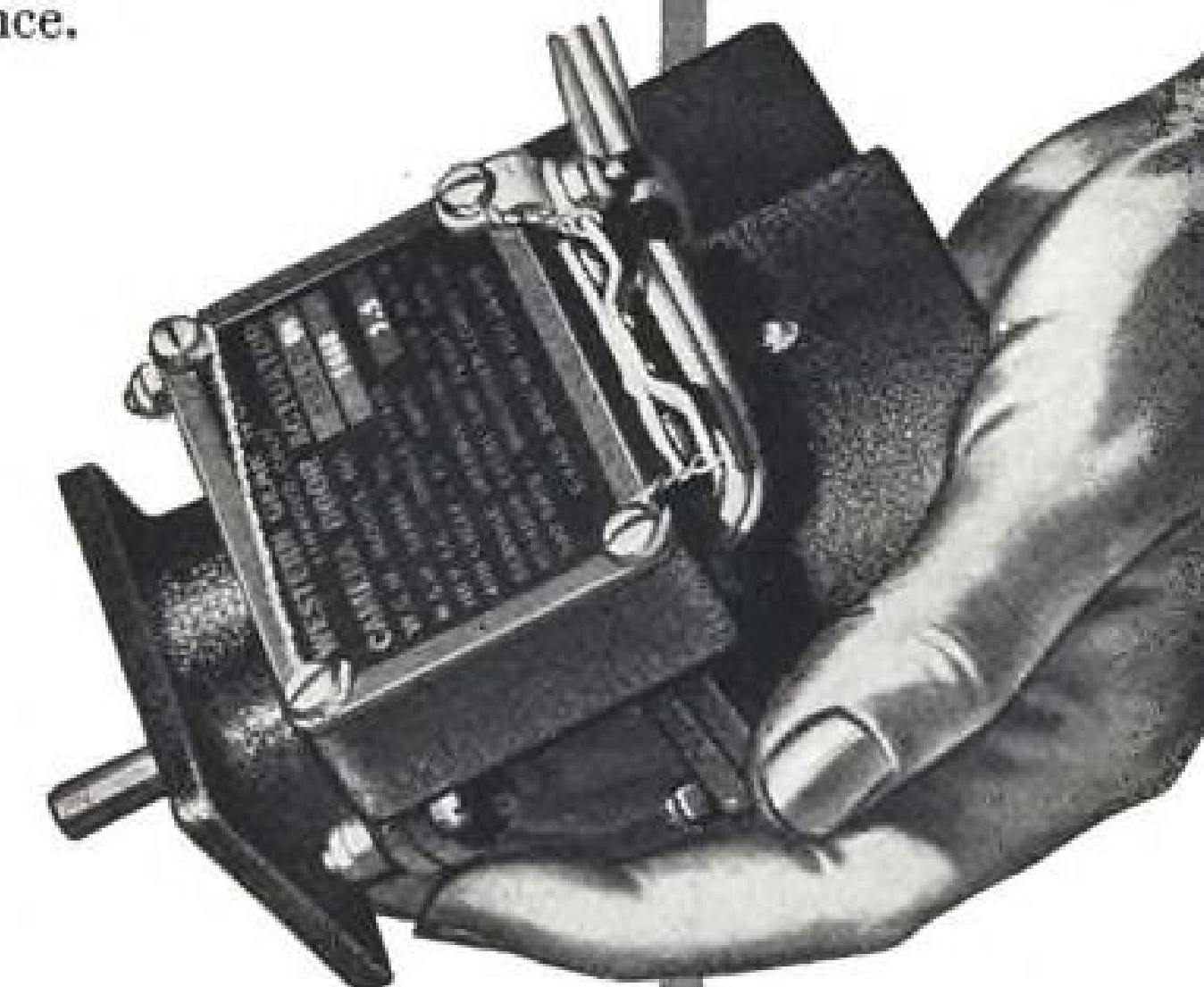
These camera-door actuators for the Convair RB-36 incorporate a triple-reduction spur-gear train with 96:1 ratio, provision for handcranking, torque-limiting clutch, and external adjustment of limit switches. Designed for operation in temperatures ranging from plus 160° F to minus 65° F.

For further information, or for copies of Actuator Bulletin 4811 or Aircraft Equipment Bulletin 4801, write Western Gear Works, P. O. Box 192, Lynwood, Los Angeles County, California.

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HIGH FREQUENCY...JET or TURBO JET!

Bendix approaches each new ignition problem with an open mind. The particular type of ignition system to be recommended is decided upon solely on the basis of meeting individual requirements for economy, performance and dependability. Because of this completely objective and unbiased viewpoint, the aviation industry recognizes Bendix as the one source uniquely qualified to plan and produce ignition equipment to meet every operating condition.

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Bendix
AVIATION CORPORATION

Overhaul Period Set For Stratos Blower

Stratos cabin superchargers currently being installed on Pan American World Airways fleet of Constellations (AVIATION WEEK Jan. 29) have been approved for a 2000-hr. overhaul period by the Civil Aeronautics Administration, according to the manufacturer of the unit.

The model S60-5A blowers are a product of the Stratos division, Fairchild Engine and Airplane Corp., Farmingdale, L. I., N. Y. Those purchased by PanAm are almost identical to the Model S60-5 installed in American Airlines' fleet of Convair 240s. Four Air France Model 749 Connies mount the Stratos units, which also are being installed in new Connies purchased by Avianca.

Stratos expects the superchargers in PAA's Constellations to save enough to pay for themselves in approximately 15 months.

Long Engine Life For P&W R-4360

The 1274th Air Transport Squadron's Heavy Transport Training Unit based at Kelly AFB has operated a Pratt & Whitney R-4360 engine 1000:20 hr. without so much as a cylinder change.

The engine was mounted in the number two position on a C-97A Boeing Stratofreighter. The plane made 1033 landings and as many takeoffs in that time plus many other simulated landings.



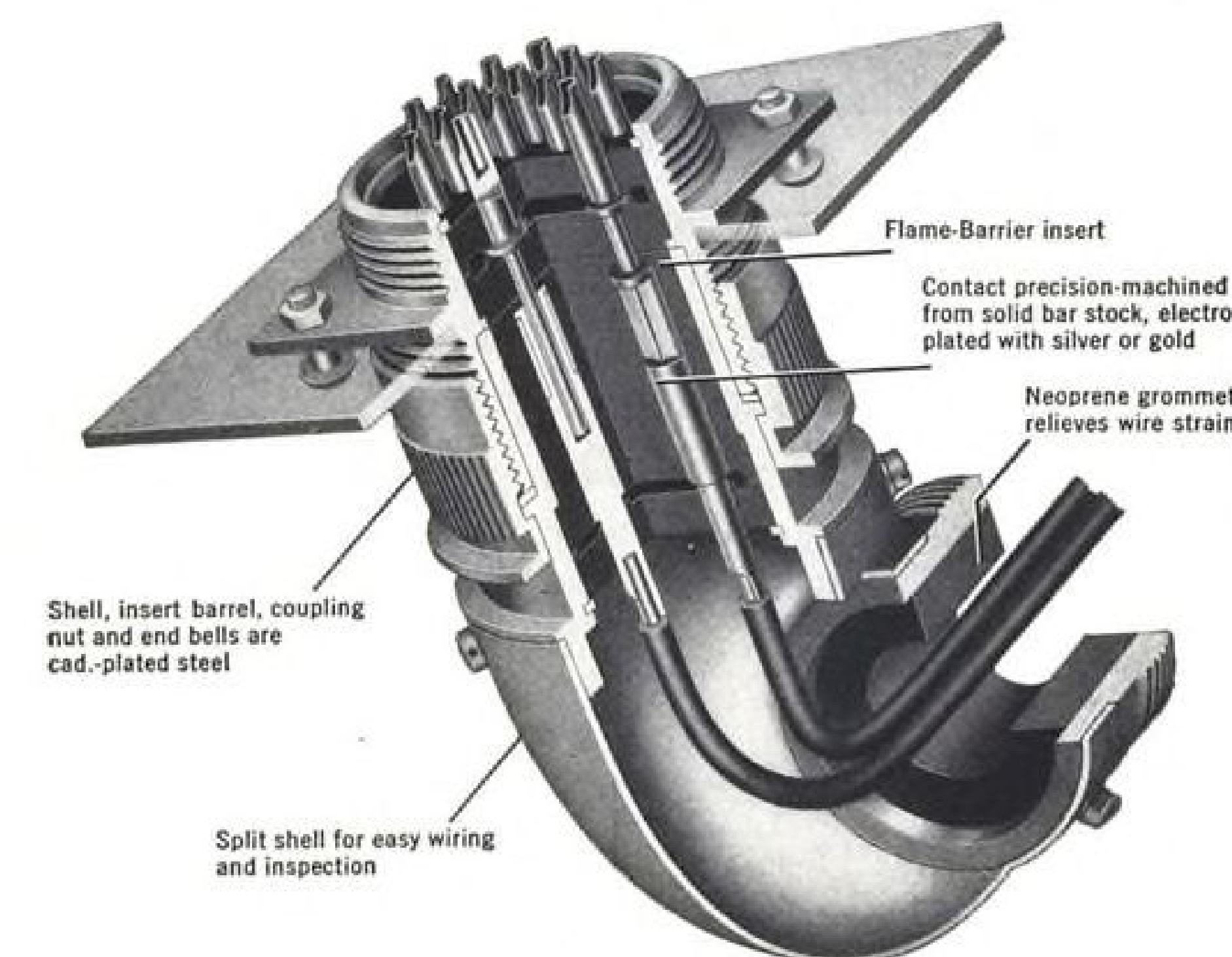
COOLING THE B-36 BRAIN

Box being wheeled into the —65 deg. F. cold room is the General Electric "brain" for remote control of the defense gun turret systems used on B-36 and B-50 bombers. Unit is tested in the cold room to assure correct operation before shipment.

Here's why those in the know

—demand

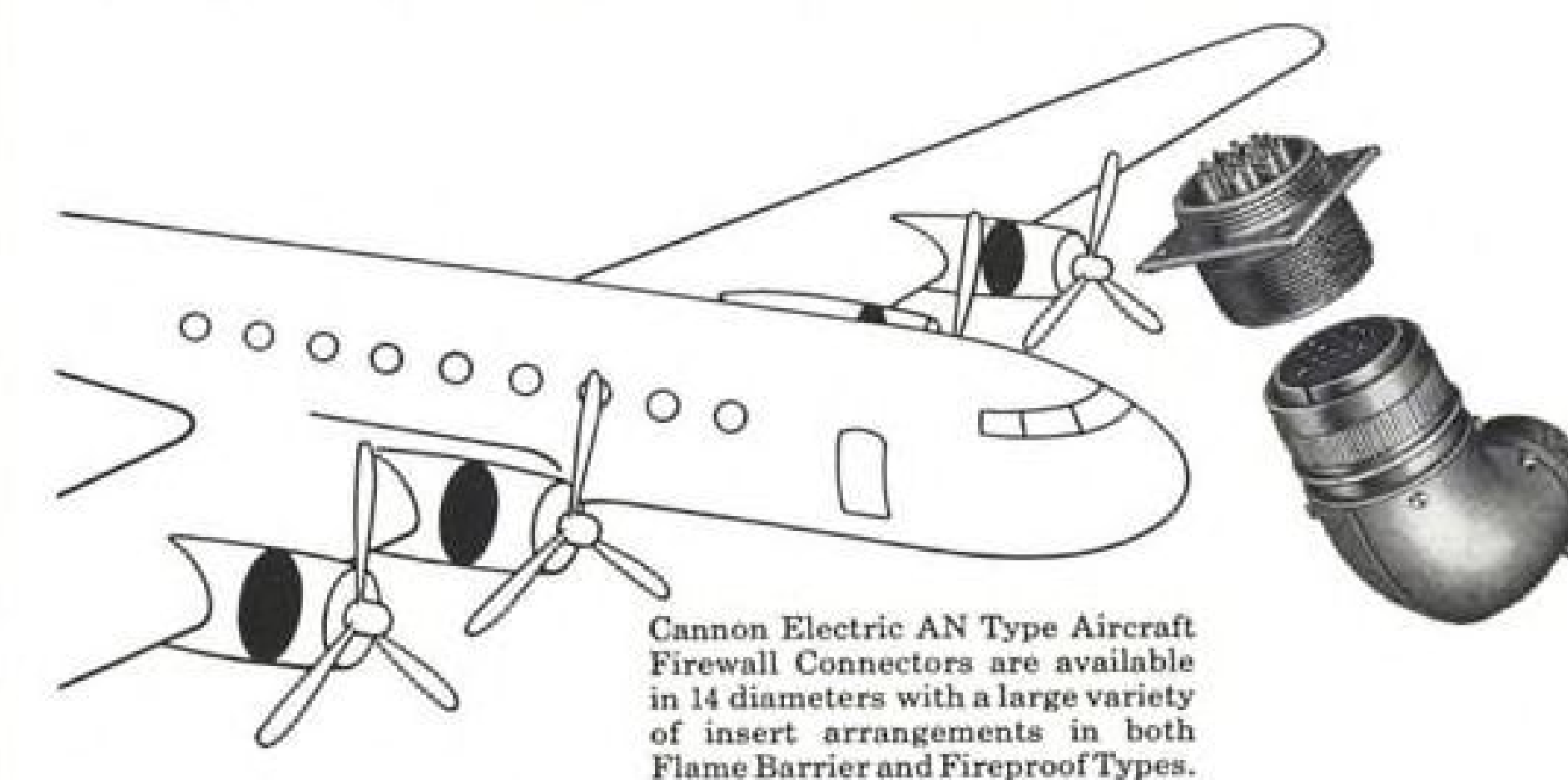
**CANNON
PLUGS**



Here is another example of the care Cannon Electric takes in developing a connector for specialized use. This is the Firewall Connector to prevent the spread of a possible aircraft engine fire through the bulkhead into wing sections.

Illustration shows Flame Barrier type with phenolic insert and contacts having solder cups. Shell must resist an open flame of 2000° F for 20 minutes. Electric circuits not required to remain active.

The Fireproof continuous service type is similar in appearance, but has crimp-on type contacts in fireproof insert material. Must carry rated DC current under open flame of 2000° F for five minutes and withstand vibration of 1/4" double amplitude at 2000 cycles per minute. Designed for aircraft, this connector has other applications where the going is tough. For further information request Cannon Electric Firewall Bulletin.



Cannon Electric AN Type Aircraft Firewall Connectors are available in 14 diameters with a large variety of insert arrangements in both Flame Barrier and Fireproof Types.

CANNON ELECTRIC

Since 1915

Los Angeles 31, California

REPRESENTATIVES IN PRINCIPAL CITIES

In Canada and British Empire: Cannon Electric Co., Ltd., Toronto 13, Ontario. World Export (Excepting British Empire): Frazer & Hansen, 301 Clay Street, San Francisco, California.

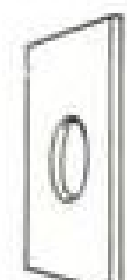
DILL LOK-SKRU

•• THE BLIND
Anchor Nut
or
Rivet

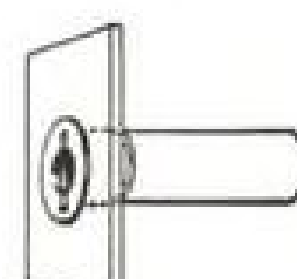
Complete
Installation
in Seconds



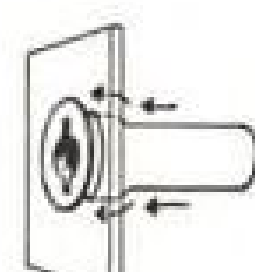
1 Drill one (1) hole.



2 Insert Lok-Skru with either Hand or Power Lok-Skru Tool.



3 With Lok-Skru Tool draw barrel over shoulder of Lok-Skru and flush with metal. This provides a Blind Anchor Nut for Secondary Attachments.



4 TO FASTEN ATTACHMENTS insert standard Machine Screw through hole in attachment and into Lok-Skru. As machine screw is tightened into Lok-Skru it is securely locked by means of the "Specially Crimped" locking-end of the Lok-Skru.



Crimped internal threads of Lok-Skru provide secure locking device for attachment screw.



THE AVIATION STANDARD

for Screw Locking Anchor Nut Uses and Metal to Metal Fastening.

Write for Folder

Handy information on the many uses and application of Lok-Skrus in airplane construction with complete data on types and sizes.



THE DILL MANUFACTURING COMPANY

FACTORY 700 East 82nd St. Cleveland 3, Ohio
BRANCH 1011 S. Flower St. Los Angeles 15, Calif.

NEW AVIATION PRODUCTS

Missile, Plane Relay

A line of miniature dc. relays designed both as "expendables" for brief periods of high performance in missiles and for permanent, reliable service under extreme operating conditions in jet aircraft is being marketed by Struthers-Dunn, Inc.

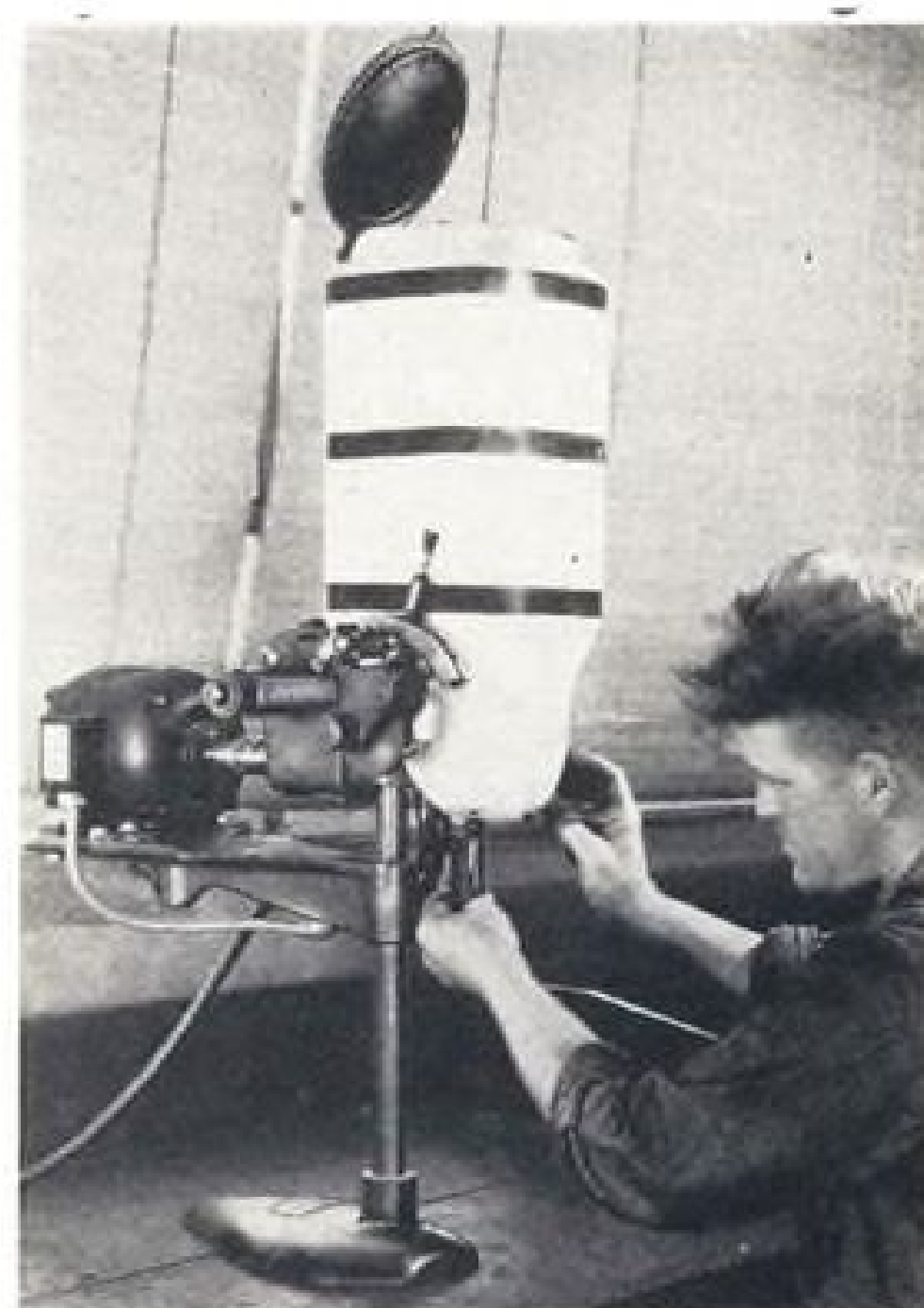
The units weigh about 3 oz. and are being produced in a Type A style for operation in ambient temperatures up to 392F. (200C.) and Type B for use in ambient temperatures limited to 185F. (85C.). They are available with contact arrangements up to six pole-double throw and are designed to meet USAF Specification MIL-R-5757.

The hermetically sealed relays have a highly efficient rotating type of magnetic structure and balanced parts designed to permit steady contact operation during 10G vibration or shocks of 50G, according to the company.

Palladium contacts are nominally rated 2 amp. at 28v. dc. non-inductive on permanent installations. For expendable operations, such as in guided missiles, contact rating may be increased to 12 amp. non-inductive if the number of times the relay is operated does not exceed 50 to 100. Time of operation is less than .005 sec. With sealed containers, relays measure 1 1/4 in. in diameter and 1 1/2 in. in length. Address: 150 N. 13 St., Philadelphia 7.

ducts which convey exhaust gases from jet engines, piston engines and other equipment undergoing tests in simulated altitude conditions.

The joints are made of stainless steel and are used for working pressures from standard to 65 lb. at a temperature from -50 to 65F.



Feeds Waxes

A metering pump for hot waxes and cements designed to meet a wide variety of applications is being marketed by Edward E. Robinson, Inc.

The device can be used for filling electrolytic capacitor cases with bonding compound, transformers with potting compound, weatherproof sockets with filler wax, enclosing miniature rectifiers with molded wax cases, filling selenium rectifiers with sealing compound, and similar purposes.

It is a variable discharge spur gear pump equipped with a single-revolution clutch. When the clutch lever is depressed, spur gears are driven by motor through a pawl and ratchet mechanism. The device can be operated by non-skilled personnel. The amount of wax discharged per cycle can be easily adjusted and automatic timing devices can be attached to the pump for specific requirements. A bronze 1 1/2-gal. tank is mounted over the metering section of the unit. Thermostatically controlled strip and cartridge heaters are provided around the tank, in the gear housing and at the nozzle to produce controlled temperatures up to 450F. This is for materials that require heat to produce fluid consistency.

Various nozzles are available to meet different filling requirements. The



Mammoth Joint

This is the largest expansion joint ever made, according to the builders, Zallea Bros. Co., Wilmington, Del.

Eight of these huge joints, 13 ft. in diameter, are being used in a wind-tunnel project at the Lewis Flight Propulsion Laboratory in Cleveland, according to Zallea. They are installed in the header between the primary and secondary coolers in the altitude exhaust

maker says the unit forcibly ejects materials with an accuracy of ± 3 percent, can be operated at high speed— $\frac{1}{3}$ sec. per ejection. Variable discharge can be changed in two seconds without use of tools. Address: 95 Park Ave., Nutley 10, N. J.

Hardness Tester

Direct reading of metal hardness on the job can be made quickly with the Ernst portable hardness tester, simply by pressing the handgrips on the side of the instrument. No additional calculations or reference to conversion scales is required.

The instrument is designed to test almost all shapes and forms of metal and accurate reading are obtainable on sheet metal as thin as 0.020 in. and round bars above $\frac{1}{8}$ in. in diameter. Direct readings can be made on either Brinell, Rickwell, Diamond Pyramid or Tensile scales. Danger of damaging surfaces of small components being tested is minimized by use of small indentations with a maximum depth of .003 in. and a diameter of .006 in.

The point penetrates the surface of the material under the action of a carefully calibrated helical spring exerting a constant load of 15 1/2 lb. The indenter is forced upwards against the spring load by an amount depending on the hardness of the material. Movement of the indenter forces liquid from a chamber into a capillary tube which encircles the instrument scale and indicates hardness value directly. The tester is distributed by Newage International, Inc., 521 Fifth Ave., New York 17.

ALSO ON THE MARKET

Sub-miniature tantalum capacitors built for long-life and stability over wide range of temperatures are available in nine standard types ranging from 30 mfd. at 6v. to 3.5 mfd. at 75v. dc. Excluding connection leads, they occupy less than 1/10 cu. in. space and are made by Fansteel Metallurgical Corp., N. Chicago, Ill.

Precision potentiometers, in two special types, for use in fuel gauges which measure fuel by weight, now are being produced by the Gamewell Co., Newton, Mass.

Melooz "Defender" comes to the aid of the ladies. It's a new hand truck with adjustable tripod support and a third wheel which enables women workers to push 400-lb. loads without need for lifting or balancing truck. Made by Melooz Mfg. Co., Inc., 4730 Avalon Blvd., Los Angeles 11, Calif.

The "Unseen Hand"



Bristol Automatic Control

GUARDS AIRCRAFT SAFETY
AND OPERATING EFFICIENCY

Leading aircraft manufacturers use Bristol Automatic Precision Control Equipment on fighter planes, bombers and transports.

Products of over 60 years of Bristol pioneering in the field of precision instruments, they have proved their merit under exhaustive flight tests in extreme climates and at high altitudes.

What are your instrument control requirements? Bristol's Aircraft Division is especially geared to design and produce aircraft control devices such as engine temperature controllers, timers, and other electronic and electro-mechanical control devices.

The Bristol Company is a leader in the development of instruments and devices for indicating, recording and automatically controlling temperature, pressure, flow and other fundamental quantities.

With aeronautical development proceeding at a rapid pace, Bristol engineering and production facilities are available to solve your aircraft control problems.

There are Bristol branch offices in 26 principal cities and Bristol factories in Chicago, San Francisco, Toronto and London. Address inquiries to The Bristol Company, Aircraft Equipment Div., at 130 Bristol Rd., Waterbury 20, Conn.



BRISTOL

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LETTERS

A Complaint . . .

In the number of years in which we have read AVIATION WEEK we have ordinarily found them presenting an objective viewpoint. We would therefore like to put the record straight on Mr. Christian's article in the Dec. 11, 1950, issue entitled "PAA's Radio Phone Girdles Globe."

The fact that PanAm is going out of the radio telegraph business does not establish a criterion of air safety for aviation communications nor does it establish the fact that their "Globe Girdling" radio telephone is more to the communications world of 1950 than the whalebone corset was to the Gibson Girl of 1890; i.e., good to look at but very inflexible.

Captain Lynch has previously demonstrated his air safety consciousness before the CAB. He stated on Oct. 19, 1949, that if his plane was one thousand miles from shore with two engines out, directly over the Queen Mary, he would continue his flight with no desire or no attempt at direct communications with this surface vessel below; the Queen Mary carries more potential rescue equipment than could possibly otherwise be made available to his distressed aircraft.

It has been stated that the three primary advantages of radio telephone are: speed of communications, accuracy of message, and volume of information. With the inception of air-ground radio telephone operation, the POMAR (hourly aircraft position report and weather observation) was shortened by more than half. This was to prevent the ground stations from devoting all their time to receiving one plane's POMAR. Even with this eviscerated report, any out-of-ordinary remarks require many repeats and confirmations.

A classic example of this was encountered on a trip from Canton Island to Honolulu on Dec. 10, 1950. There should be relatively little traffic on this portion of PanAm's "globe girdling network" since they operate only two flights a week over this route. However, 15 minutes were required to send and receive an acknowledgment of a six word message. Is this speedy communications? Accuracy? Voluminous information? A successful communications system should be flexible enough to cope with any type of message. ICAO has already recognized the inadequacy of the present type of voice position reports.

Experience has shown that a given frequency can handle ten planes per hour on radio telegraph; only six planes per hour on voice. Bear in mind that the radio telegraph reports contain over twice the information of the voice reports. Are we to infer that PAA believes the written radio telegraph message is less accurate than messages sometimes sent over radio telephone by an operator with an accent surpassing anything heard on modern day radio comedian programs?

It is noteworthy that radio telephone is much more susceptible to jamming by alien interests than radio telegraph and has al-

ready been experienced in the airlift. A good example of the congestion and jamming encountered on the PAA Radio telephone circuit is that experienced on the Airlift between Honolulu and Tokyo. Over half the airlift planes have remained on radio-telegraph. Despite the comparatively small number of planes on voice, delays of an hour or more are not unusual; on Jan. 22, one plane was out of communications in excess of three hours. We do not believe such slipshod type of communications should be tolerated on the airlift or anywhere else.

Fortunately PAA has not been required to prove this method of communications. Proving of voice alone will be accomplished with a real ditching at sea. It is difficult for us to understand how this relay system with inherent built-in delays is superior to the time-tried and tested method of direct communications. A method of communications which eliminates the possibility of direct contact on the International Distress Frequency is not compatible with the United States' continued advance in commercial aviation.

We are unable to visualize a pilot sending his position and full particulars of his distress in a smoke-filled cockpit with his head enclosed in a full-face oxygen mask. Are PanAm's passengers and flight crew members more expendable than those of the Armed Forces?

According to OATC at LaGuardia, subsequent to Pan American's change from radio telegraph to voice, their position report delays jumped to over 2000% greater than their nearest competitor over the same route who was still using radio telegraph. Is this efficiency?

We have no quarrel with PanAm's statement that this "globe girdling" network could not have been achieved without the active cooperation of interested government bureaus.

PAA's claim concerning the employment of ex-FROs is also open to question. Pan American had over four hundred flight radio officers.

During the past two years less than twelve of these displaced employees have been given other jobs in PAA. Less than twenty-five have found employment with Aeronautical Radio, Inc. Today Flight Radio Officers of from ten to 20 years experience in the aviation field are being terminated. These men have broad experience in the field of aviation and would fit smoothly and efficiently into any phase of airline operations. Notwithstanding their experience, these men are neither offered nor allowed to take other jobs with PAA. Instead, PAA places large ads in the "help wanted" section of newspapers.

In conclusion we should like to clarify our position. We are not advocating one type of communications to the exclusion of another. We believe we should have the best system of communications possible. We believe any efficient air-ground communications system must of necessity include and utilize direct communications.

We believe passengers and crewmen flying the broad expanses of the oceans are entitled to the greatest probability of survival that is possible. Domestic flights have emergency communication facilities and emergency landing facilities practically every hundred miles. In trans-ocean flights the water is the emergency field and the ships at sea are the only direct communications with immediate help. The obvious and only answer to this at the present time is radio-telegraph communication on the international distress frequency by a skilled operator.

We believe our continued leadership and advance in the commercial aviation field necessitates both radio telegraph and radio telephone on all United States aircraft on international routes.

HUGH W. STATES,
Vice-Chairman International Flight Radio Officers Air Safety Organization
Transport Workers Union of America
Air Transport Division
305 Linden, Room #9
South San Francisco, Calif.

. . . And a Reply

Your courtesy in providing me with an opportunity to examine Mr. States' comments on your Mr. Christian's article on voice radio is greatly appreciated; and I have this to say:

We cannot agree with any of Mr. States' criticisms because they are half truths, twisted to achieve an impression of proving what Mr. States is unable to prove.

For example: He appears to deliberately misquote a statement of mine before the CAB. My testimony is a matter of public record and available for all to read.

Mr. States is nearly half right when he contends half the Pacific airlift planes have remained on radio telegraph. In August, 1950, there were 66 airline aircraft under U. S. registry operating on the airlift. Of these 40 were operated by scheduled airlines; 26 by nonskeds. All the scheduled carriers used radio telephone. *Only the nonskeds used radio telegraph!* Is the safety record of the nonskeds a criterion for evaluating radio telegraph? Incidentally, by January, 1951, two of the largest nonskeds had made contracts with Aeronautical Radio for radio telephone service, and were converting to voice.

Mr. States cites isolated instances of delays in transmission. As many, and more, of the same type of delay with radio telegraph can be cited.

Mr. States says ICAO has already recognized the "inadequacy of . . . voice position reports." Fact is: ICAO has accepted and approved voice radio in most areas of the world. ICAO approval of the remaining areas awaits only final installation of required ground equipment.

The balance of Mr. States' criticisms do not warrant the space nor time for sentence by sentence rebuttal because they are so

obviously ill-founded to the informed reader.

Finally, the development of a voice radio system by Pan American World Airways was motivated by two prime considerations: Safety and efficiency. We can only progress and win public confidence by adhering to these two principles. Voice radio was the most carefully inspected technical advance in air-ground communications. It won the approval of the U. S. Government regulatory bodies which have consistently required the maintenance of the highest standards of safety in the world.

CAPT. WALDO W. LYNCH,
Communications Superintendent
Pan American World Airways System
28-19 Bridge Plaza North
Long Island City 1, N. Y.

Chutes & Crashes

The airplane crash of a Seattle-bound transport plane at Riordan, Wash., on Jan. 16, killing all ten persons aboard, again graphically illustrates how backward the airlines are in not providing some method of escape for passengers. Here again the pilot was in trouble for several minutes before he crashed. If his plane had been equipped with parachutes, the entire load would have had plenty of time to bail out.

The use of parachutes on transport airplanes has been turned down time and time again by the CAB and the airlines.

There is no more reason why airplanes should not be equipped with parachutes than in letting ocean-going ships leave port without life preservers and lifeboats.

It is high time for an enraged public to bombard their congressmen with letters asking that this matter be thoroughly investigated. As a matter of fact, Congressman Richards of South Carolina has introduced a bill on this subject into the Congress, but it has never come out of committee.

This needless loss of life is a fine commentary on a country which prides itself so much on scientific advancements!

HENRY W. COMSTOCK,
344 Delaware Ave.,
Buffalo, N. Y.

After receiving the letter above, we asked Mr. Comstock if he is still associated with an advertising agency that has a parachute account, and received the following reply.—ED.

Thank you for your letter of Feb. 7. You are correct in the fact that I am a major partner in the advertising agency of Comstock & Company. Although they are very inactive advertisingwise, at the moment, we do carry the Irving Air Chute account.

However, this subject of parachutes for air transport has been a pet subject of mine for a number of years and I was writing to you simply as an expression of a free citizen on this all important subject. I am firmly convinced that lives are being needlessly lost in a great number of airplane crashes because of an arbitrary and criminally negligent attitude on the part of the CAB and the airlines. Without making this letter lengthy, I hope you will find time to read the attached reprint of an article written by me which appeared in Western Flying some time ago.

HENRY W. COMSTOCK

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Aircraft seats by Aerotherm are in service in thousands of planes of all types. Formerly the Warren McArthur Corporation, this company supplied almost 70% of the seats for military aircraft during World War II. Approved designs and construction form the basis for pilot, navigator and passenger seats, developed to individual specifications.

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Project Engineers for Aerotec and Aerotherm

Aerotec and Aerotherm products for aircraft are project engineered by The Thermix Corporation . . . a company with a background in the application of these products by specialists known to the industry.

Inquiries should be sent to:

THE THERMIX CORPORATION

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DAYTON 3, OHIO Jay Engineering Co. 1517 East 3rd Street	LOS ANGELES 43, CAL. Forsnas Engr. Co. 4545 West 62nd Street	NORWALK, CONN. John S. Hammond, Jr. 394 West Avenue	SEATTLE 4, WASH. J. E. Freeman & Assoc. 219 Central Building	WICHITA 9, KANSAS J. E. Freeman & Assoc. 4913 East Lewis Street
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Opportunities for ELECTRONICS ENGINEERS!

The advance of electronic research and development, especially in the last five years, has been so rapid that a great demand for engineers and technicians has been created. This is especially true at the Martin Company . . . one of the country's leaders in airborne electronic research since before V-J Day . . . with such developments as control systems for guided missiles like the KDM-1 Plover target; the Viking high-altitude research rocket; fire control systems for turrets and much other advanced work still classified under military security.

Martin needs engineers with experience in research and development of radar, television, pulse and display circuits . . . and, in the electro-mechanical field, experienced engineers in armament, servo-mechanisms, electrical work, rocket propulsion and special weapons or systems design.

The Martin Company would like to have a resume of the background of anyone having experience in electro-mechanics or electronics. Such information should be sent to the Employment Manager, The Glenn L. Martin Company, Baltimore 3, Maryland.

Martin Ads Tell Air Power Story

Reaching millions of informed, alert American magazine readers, Martin advertisements like this highlight air power's important role in our country's preparedness program.

Survey after survey has demonstrated that their story-style appearance attracts an extremely high readership and a worthy audience for the facts on this vital question.



MODERN AERIAL WEAPONS depend on electronic experts' little black boxes—circuits, tubes and gadgets that help man overcome his physical limitations in his constant conquest of the Air.



They're putting wings on little black boxes

Many of our new winged weapons are pilotless. But even in today's piloted aircraft, man can't see far enough, can't move fast enough, can't live unaided at the temperatures and pressures he must endure. He needs the assistance of mechanical and electronic senses, muscles and nerves. That's why today's aerial weapons engineering demands a teaming of specialists in skills unheard of a decade ago.

Here at Martin, we call it *systems engineering*. Airframe and power plant, electronic flight and

navigational controls and military armament—all are represented on a Martin engineering team that is designing aircraft as integrated airborne systems.

A Navy Viking high-altitude research rocket, missiles and target drones soaring into the blue. An Air Force XB-51 jet-powered ground support bomber roaring down in a simulated strafing run. A Navy PSM-1 Marlin being readied for sub-hunting duty. A dependable Martin Airliner gaining precious time for vacationist and businessman. All these are products of Martin *systems engineering*—part of a new trend in aeronautical designing that is putting wings on little black boxes—to help man overcome his physical limitations—to help him guard the peace and enjoy it.

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AIR TRANSPORT

Prototype Group Sets Up Program

CAA committee outlines \$2-million test plan for transport types; various phases of work assigned.

Civil Aeronautics Administration's Prototype Advisory Committee has agreed on a \$2-million program for testing four planes.

They are: North American B-45 jet bomber, to determine jet operational problems for commercial service; Convair's Turboliner, for passenger service; Chase C-122 for assault transport, feeder and cargo operations, and a large helicopter, not yet specified.

CAA plans to ask Budget Bureau for funds to get the testing underway promptly. A subcommittee of Air Coordinating Committee is drawing up specifications for the helicopter to be tested. The technical subcommittee of the advisory group will hold its next meeting Apr. 2, 3, and 4.

Meanwhile the committee has made the following specific assignments in preparation for further work on the prototype testing and development program:

- CAA will provide data on cargo and mail volume on feeder routes and growth trend on feeder lines.
- All American airways will provide data on feeder growth.
- Chairman Harold Hoekstra will prepare a summary of methods for increasing the speed of the DC-3 airplane.
- Department of Defense will advise on the desired door size for feeder planes.
- Glenn L. Martin Co. will provide information as to weight penalties and structural problems involved in installing large cargo doors.
- Defense Department will supply information on tests which they have conducted on external pods and internal cargo packs.
- Manufacturers and operators will submit an outline of recommended test data to be obtained in service tests powerplant data.
- Members of the committee will submit estimates on cost and time figures for service testing aircraft such as the North American B-45, Convair Turboliner, Martin 4-0-4, Douglas turbine-powered C-124B cargo plane, etc.
- Chairman will obtain from Air Navigation Development Board information on radio aids, trends and testing desired.
- Department of Defense will supply military specifications covering a medium cargo transport.
- Members will submit available data

for further discussion of higher payloads in lieu of fuel for shorter ranges, with particular reference to structural weight penalties and determination of operating at short ranges with convertibility.

• Members will study alternate high wing and low wing configurations with respect to high and low cargo floors, and prepare information on operational requirements, structure and cost figures.

• ATA will obtain and supply data on Railway Express Agency cargo densities.

• Manufacturers will submit weight and cost data on pressurization of cargo areas, complete vs. partial, for perishable cargos.

• Boeing will supply weight, cost and general information on design of humidification installation for Boeing 377 for further study.

• Manufacturers will provide estimates of direct operating cost of aircraft, and ATA will provide its operating cost formula.

• Seaboard & Western will supply information on a potential market for cargo planes larger than 50,000 lb. payload.



NEW 'B' IN UAL'S BONNET

Donald Douglas (left) happily turns over to United Air Lines' vice president-operations J. A. Herlihy the first Douglas DC-6B to be delivered to any airline. UAL has 14 Bs

on order. The new model differs from the DC-6A in being five feet longer and having room for five more passengers. It has a pressure cabin and reversible pitch props.

ODM Unifies

Rentzel slated to head new mobilization group coordinating transport.

Air transport's place in mobilization became more secure last week when a new Office of Defense Mobilization Committee on Defense Transportation and Storage was created to be headed by CAB Chairman Delos W. Rentzel.

Mobilization Director Charles E. Wilson said the new committee would be assigned "to coordinate land, sea and air transport and the use of storage facilities in the interest of national defense." It will answer only to Wilson.

It is assumed that Rentzel, who is shortly to become Undersecretary of Commerce for Transportation, will continue as chairman of the ODM committee in addition to his new post.

Setting up the single transport mobilization committee was made necessary by split responsibility existing in two transport mobilizing offices with different interests. These are the Defense Transport Administration for Railroads, Highways and Storage, and the Under Secretary of Commerce for Transportation, who handles maritime and air transport primarily. (AVIATION WEEK Mar. 12).

Wilson has attempted to weld this divided responsibility by setting up over both the new Committee on Defense Transportation and Storage.

The committee membership will be

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1 Ideal insulation must be light in weight and bulk.

REFRASIL batt has a surface density of .05 lb. per sq. ft. and a nominal thickness of 3/8 in. Pre-fabricated blanket for typical jet tailpipe is only 1/2 in. thick. REFRASIL is resilient—will not pack down or disintegrate under vibration.

2 Ideal insulation must reduce temperature to safe level for structure and personnel.

REFRASIL pre-fabricated removable blanket with nominal thickness of 1/2 inch, will give a temperature drop from high of 1300° F. to low of 300° F. REFRASIL will withstand sustained exposure to temperatures up to 1800° F. and flash temperatures of 400° F. more, without breakdown.

3 Ideal insulation must be easy to install and remove from equipment.

REFRASIL is available as pre-fabricated removable blankets, preformed to any desirable specifications. Insulating efficiency of REFRASIL Blankets is not affected by frequently repeated removal and installation operations.

90% of JET AIRCRAFT MANUFACTURERS use:

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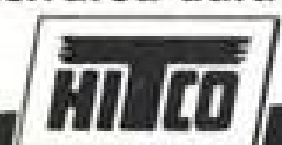
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made up of one representative each, delegated by the Secretaries of State, Treasury, Defense, Interior and Commerce, plus one each named by the Defense Production Administrator and the Defense Transport Administrator.

Reason for the DPA and DTA representations are: DPA has charge of transportation equipment production planning and priorities; DTA represents the Interstate Commerce Commission interests, mainly railroad and trucking business. Presumably, the Commerce Department representative will represent interests of air and maritime.

► **Wait and See**—Despite outward appearances of an equitable industry balance on the committee, observers say much depends on the representatives named by State, Treasury, Defense, Interior, Commerce and DPA. Also, Wilson may later appoint more members to the committee.

► **Administration**—The Office of Defense Mobilization is the top civil mobilization policy and command office. The chain of command in transportation mobilization, now, will be as follows: The new committee on defense transportation, headed by Rentzel, advises Wilson. Advising the committee are mainly two transport groups that do the planning spadework—the Defense Transport Administration and the Commerce Transportation Offices.

Nonsked Role

CAB eases irregulars' regulations as carrier shortage looms.

The nonsked airlines will soon start getting official military contracts to carry passengers and cargo. The Civil Aeronautics Board has given them authority to do this for a trial period of six months.

CAB regulations for civil business of these large irregular carriers will remain essentially as outlined by the board last March in its proposed amendment to Part 291 of the Civil Air Economic Regulations:

Nonsked may make only three trips a month between any two big cities, and still keep his exemption permitting him to fly at all as a "large irregular carrier." The Board has now modified this rule slightly to allow eight trips a month for New York-Puerto Rico and Miami-Puerto Rico, special cases which the CAB considers require extra service.

► **Role of the Nonsked**—In its new policy statement—"The role of the large irregular carrier"—and supplemental statements, the CAB sees the nonsked industry as having two roles:

• **"Innovation,"** that is, pioneering new markets and experimental services as air coach and air freight.
• **Supplemental service,** by which CAB means service that the regular scheduled airlines do not give.

The CAB sees the presently impending equipment shortage as the reason for permitting the nonskeds to get official military business. Says the CAB policy statement: "There is every indication that the need for such services will increase, perhaps to a point where the combined efforts of certificated and irregular air carriers will not meet the demand."

The Board says that in a non-emergency period, the nonskeds will exist only on the three-trips-a-month regulation. To this, the nonskeds answer that no large irregular carrier industry will exist on such thin pickings; therefore the twin roles of the large irregular carriers stated by the Board—"innovation and supplementary service"—would be roles without players.

► **Military Business**—The CAB recognizes two associations of nonskeds for purposes of securing military business. These are: Air Coach Transport Assn., 316 Bond Building, Washington, D. C.; and Independent Military Air Transport Assn., c/o Theodore T. Seamon, Woodward Building, Washington, D. C.

Both associations plan to have representatives at major military bases. They

will deal with military traffic offices. The military traffic service is hastening drawing ground rules to get this plan going. The MTS plans to draw no hard-and-fast rules at first; it will observe how the nonskeds fill its needs, and how the new system operates from day to day.

Meanwhile, the CAB states it will intensify its "program of strict enforcement" of economic and other regulations for the nonskeds, to assure that the military is served only by safe and deserving carriers.

SAS Buying Trend Is to All-U. S. Fleet

Scandinavian Airlines System apparently seems to believe that a U.S. piston-engined "bird" in the hand is worth two of anybody else's in the bush, including the much-touted British turbo-prop and jet airliners. With 49 planes of its present 58-plane fleet made in the U.S., SAS has committed itself to purchase five more Douglas DC-6Bs, to bring its total orders for this type now to seven.

And but for the dollar shortage, the Scandinavian airline combine reportedly would go ahead with plans to replace its DC-3 fleet and six Scandias with 20 Convair-Liners.

The Saab-built airliner is at present in a poor marketing position since its maker is fully occupied on military work for the Swedish Air Force. Lack of a pressure cabin is said to be one of the points weighing against the Scandia.

Apparently the only competition Douglas had was from another American firm—Lockheed. The Super Connie was considered, but the DC-6B won out, probably on the basis of simplify-



DOVE'S-EYE VIEW

De Havilland Dove's window visibility is a big comfort point on this post-war short-hauler. Latest buyer: Wiggins Airways.

ing maintenance problems by keeping the number of types down to a minimum—SAS already operates a dozen DC-6s.

The planes, which will be 52-passenger versions with optional sleepers in the rear of the cabin, will be fitted with Hamilton Standard propellers.

Deliveries are scheduled to be taken during 1952. With spares, this latest purchase will stand SAS approximately \$7 million.

The reorder boosts Douglas' DC-6B total sales to 83 planes—and for the entire DC-6 line, to 261.

Italian Carriers Report Rough Going

Hotter international airline competition is forcing two Italian airlines to the wall, the companies say.

Ali-Flottee Riunite and Alitalia have given notice that financial trouble is making them dismiss a large number of workers and reduce their route services. Local European, not American, lines are giving them most of their trouble.

AFR has stopped Milan-Paris and Milan-Brussels operations, and has changed the daily Milan-Rome service to bi-weekly. AFR is controlled by Fiat.

Alitalia has stopped the Rome-Paris, Rome-Milan-London, and Rome-Catania-Malta-Tripoli services. Thus, Alitalia is operating only Rome-Caracas, Rome-Buenos Aires, and Rome-Mogadiscio. Alitalia is 49-percent British-held and 51-percent Italian government-owned. These companies, blaming foreign competition for their troubles, note that services of foreign airlines have now made Rome's Ciampino Airport second most active in continental Europe.

The Federation of Workers of the Air is pressuring the Italian government to subsidize the airlines again and to limit foreign competition.

American Adds Order For 3 More DC-6Bs

American Airlines is the latest airline to announce it is jumping on the new-equipment bandwagon. American has ordered three more 52-passenger DC-6Bs from Douglas Aircraft Co., bringing total American orders for that plane to 17. All will be delivered this year, at total cost of \$19,000,000.

Showing growth of air freight importance, American will use the DC-6B's increased size for cargo. Seating capacity on American's DC-6Bs will be the same as for the regular DC-6, although the plane is five feet longer and has 1200 more horsepower. Second American

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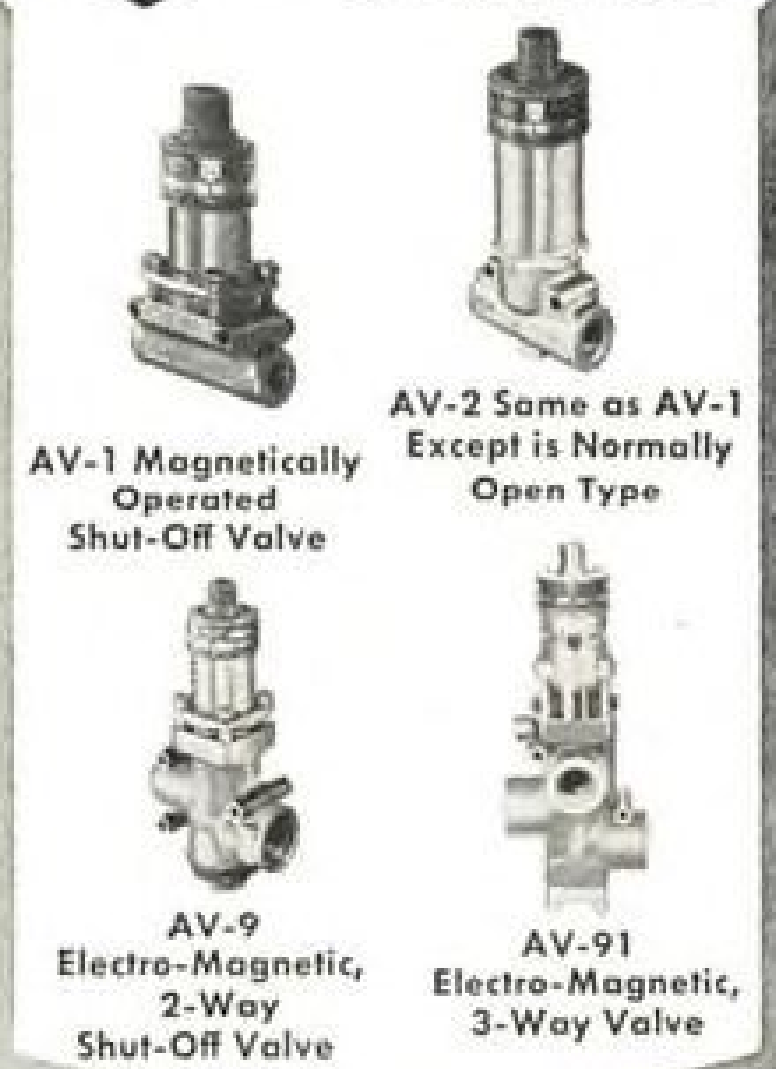


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DC-6B is slated for delivery this week, and a third for next week.

With January airline traffic running an average of 55 percent over last year, airlines have been rushing negotiations to buy more new planes before possible priorities cutbacks. More Douglas DC-6B, Lockheed super Constellation, and Convair-Liner orders are a sure bet for this spring. Airlines are not switching types. They are ordering more improved models of their existing planes.

South Pacific Lures Airlines Too

At least five airlines are now interested in providing service to Tahiti.

One, Tahiti-Hawaii Airways, already has made a roundtrip over the route and proposes monthly operations from now on. Formed as a Hawaii partnership, THA has now a French franchise and will become a French corporation.

Pan American World Airways has gone to CAB with its application for three new routes, connecting the Society Islands with (1) American Samoa, (2) Canton and (3) Honolulu.

A separate PAA application proposes routes from American Samoa to Suva, Canton and Honolulu.

Company Restores Pilot Insurance

Aviation extra premium coverage for pilots and crew members is being restored by Prudential Insurance Co., which discontinued it last July.

Payment of extra premium will insure complete coverage for pilots and crew members who are 35 years old or older and who are not subject to military aviation hazards. Pilots less than that age will be offered full coverage in the "home areas" and coverage in commercial passenger aircraft outside the "home areas."

Complete protection is provided for pilots and crew members on scheduled overseas commercial flights. When such flights become military, rather than commercial, coverage is suspended.

Board Turns Down U. S. Aircoach

Civil Aeronautics Board has denied the application of U. S. Aircoach, large irregular carrier, for individual exemption to operate under the Civil Air Regulations and Part 241 of the Board's economic regulations.

CAB said the nonsked was not operating as an "irregular carrier" but was giving route-type service between Burbank and Oakland and Honolulu.

Grace Seen Enlarging Air Operations

The Pan American-Grace Airways-National Airlines common stock and plane interchange agreement is an entering wedge of W. R. Grace into large-scale international airline operations, industry sources are saying now, after studying the way Pan American was apparently put out of a partnership with the other two.

Braniff International Airways' international routes are next on the list of W. R. Grace, they say.

W. R. Grace and Pan American each own 50 percent of Panagra, with Panagra President Andrew B. Shea holding the balance of power on the nine-man board of directors. Shea is sticking to the National-Panagra interchange at Miami, while Pan American has broken with National on a similar contract and has filed for interchange with Eastern Air Lines after National repudiated the Pan Am-National interchange agreement.

Panagra becomes a direct competitor of Pan American on the Buenos Aires-New York run if CAB approves the National-Panagra interchange this summer. Grace now owns 17 percent of National.

CAB is now studying the Panagra-National and Pan Am-Eastern applications for separate interchange agreements.

Control of Braniff's Houston-Balboa route would give Panagra direct access to the central-southern U. S. market. Dominance of South America air travel is W. R. Grace's aim, according to some observers.

Policy Indication Seen in TTA Ruling

The Civil Aeronautics Board has implied the local service, or feeder, airlines now have more or less permanent certification provided they go on showing some improvement. This is the general interpretation place by observers on the Board's authorizing extension of Trans-Texas Airways' certificate to Mar. 31, 1954.

Trans-Texas got its airway approved substantially as it exists today. Route Segments 1, 3, 4, and 5 go to Mar. 31, 1951. A portion of one segment goes to Mar. 31, 1952; this segment is Mission-McAllen-Edinburg and Brownsville, Tex.

The Board discontinued services to Van Horn, Bay City, Freeport, Stephenville, Coleman and Corsicana, Tex., and the service on the direct Lufkin-Houston segment.

►Pioneer Competition—The Board amended the certificate of Pioneer Air

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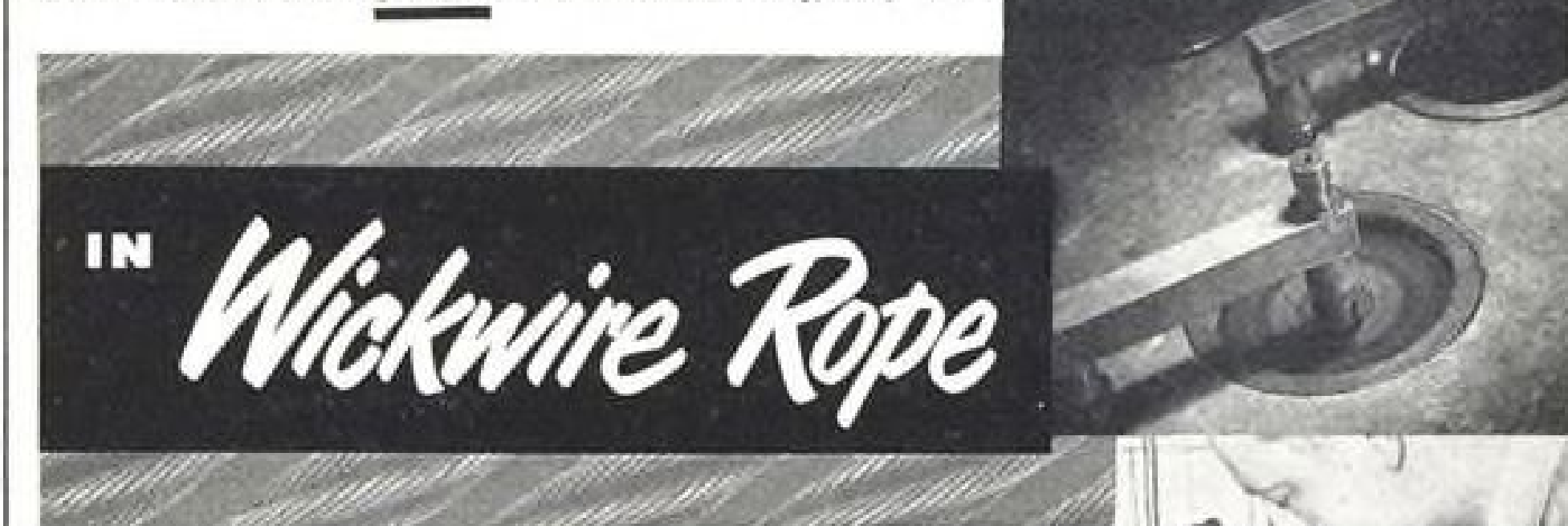
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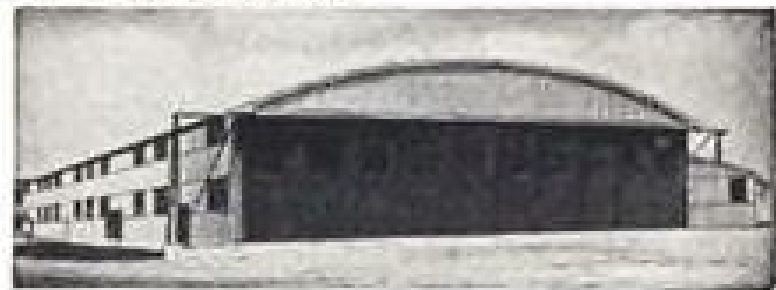
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Trans-Texas already serves those cities, and CAB says there is no need for a competitive service.

SHORTLINES

► **Air Express**—Shipments through New York by air express the first week in February numbered 41,935, almost double the 21,612 of a year ago. . . . For all January, shipments numbered 418,256, up 69 percent.

► **American Airlines**—Only transcontinental airline with routes through Washington, D. C., American is promoting unlimited stop-over privileges there at no extra cost. Mobilization makes this idea sell well with business and military travelers.

► **British Overseas Airways**—BOAC now stops at Zurich en route to the Middle East. This is the line's first entry to Switzerland.

► **Capital Airlines**—Capital's 1950 travel agency business gained a half million dollars—19 percent—over 1949. Company's Constellations are said to be the main reason. . . . Capital plans to buy more Connies when it gets the money. . . . January operating profit of \$36,028 and net profit of \$8342 on gross of \$2,657,375 compares with year-ago net loss of \$145,770 on a gross of \$1,899,464.

► **Flying Tiger Line**—Tiger net profit last quarter was \$356,788 or 47 cents a share on gross of \$3,958,923. . . . Maintenance work sold by the line in the fiscal year to June 30, 1950 came to almost \$1,000,000.

► **International Air Transport Assn.**—Clearing house international traffic transactions in December hit \$15,054,000—second-best month in history. . . . Total in 1950 was \$147,682,000—up ten percent from 1949.

► **KLM Royal Dutch Airlines**—New, specially designed airborne horse stalls now offered by KLM may tap a lucrative market in stables across the world.

► **Los Angeles International Airport**—Air traffic at L. A. in 1950 hit an all-time high in 1950. The 1,348,584 passengers were a 14-percent gain; air mail, 21,557,600 lb., was up 7 percent; air express, 9,882,211 lb., up 12½ percent; air freight 33,591,081 lb., up 11½ percent.

► **Los Angeles Airways**—Helicopter serv-

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SECTION 3

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ice operating expenses in December came to \$1.10 per revenue mile; this compares with \$1.64 expense per mile a year ago. Direct maintenance in December was 13 cents compared with December, 1949's 33 cents. Ground and indirect maintenance at nine cents compared with 21 cents a year ago. Pound miles at 8,578,197 were slightly over December 1949.

► **Mid-Continent Airlines**—January traffic, aided by good weather, gained 48 percent over a year ago to 34,119 passengers, 10,299,266 passenger miles.

► **National Airlines**—January net income was \$270,611 or 27 cents a share, on gross of \$2,450,742.

► **Pan American World Airways**—Passenger traffic on PanAm's Seattle-Alaska runs gained 21 percent northbound and 25 percent southbound in January, compared with a year ago. . . . Company says it thinks CAB could approve the PanAm-Eastern interchange, Miami-New York, within less than three months: "Six months would be, we feel, a long time on this case." Plan calls for 3½ planes a week to make the interchange run; planes today are being ferried deadhead.

► **Philippine Air Lines**—International and inter-island flights of PAL were 99 percent completed in 1950. The DC-6s and DC-4s operating San Francisco-London via Manila completed 99.85 percent of all scheduled flights. Inter-island completions ran 97.76 percent. . . . Local factor of 68 percent compares with 50 percent in 1949 and 54 percent in 1948.

► **Pioneer Air Lines**—Route mileage of Pioneer this month jumped from 9620 miles to 10,722 miles. New schedules include two more daily roundtrips, Dallas-Fort Worth and Abilene, bringing daily total to seven. Feeder says the new schedules result from pressure of heavier traffic demand. . . . Net profit of Pioneer in 1950 was \$133,181, compared with \$126,664 in 1949. . . . Mail revenue declined 24 percent or \$396,132. Mail rate declined from \$20.19 per ton mile to \$12.87, or 36 percent.

► **Trans-Canada Air Lines**—TCA has lengthened its summer excursions on southern services to a 60-day tourist-fare ticket validity. Round trip fare is 1½ the one way fare.

► **Trans World Airlines**—TWA is now using the Lockheed "Speedpak" for exterior cargo carrying on its Constellations. The pod is used on overseas runs when demand suits. Eastern Air Lines has used the Speedpak for some years now.

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AVIATION CALENDAR

Mar. 19-23—Seventh Western Metal Exposition, Oakland Auditorium and Exposition Hall, Oakland, Calif.

Apr. 7-8—Tenth annual Holiday on Wings personal flyers excursion flight to Coronado, Calif., sponsored by Los Angeles Junior Chamber of Commerce.

Apr. 16-18—Society of Automotive Engineers aeronautic and aircraft engine display, Hotel Statler, New York.

Apr. 19-21—Airport Operators Council annual meeting, Hotel Peabody, Memphis, Tenn.

Apr. 23-24—Semi-annual meeting of the Air Industries & Transport Assn. of Canada, Harrison Hot Springs Hotel, Harrison, British Columbia.

Apr. 24—Fourth session on communications by International Civil Aviation Organization, Montreal, P. Q.

Apr. 24-26—ATA annual engineering and maintenance conference, Hotel Drake, Chicago.

Apr. 26-29—1951 annual forum of the American Helicopter Society, including flight demonstrations of representative service copters, Washington, D. C. Chairman is Bartram Kelley, Bell Aircraft Corp., P. O. Box 1, Buffalo 5, N. Y.

May 12-13—Airlines Medical Directors Assn., eighth annual meeting, Hotel Shirley Savoy, Denver, Colo.

May 13-14—Airline Medical Examiners Assn. fourth annual meeting, Hotel Shirley Savoy, Denver, Colo.

May 14-16—Aero Medical Assn. 22nd annual meeting, Hotel Shirley Savoy, Denver, Colo.

May 17-19—Annual convention of the Women's Aeronautical Assn., of the U. S., Little Rock, Ark.

June 11-15—Second annual conference on industrial research, conducted by Columbia University Dept. of Industrial Engineering, New York.

June 13-16—Aviation Writers Assn. convention, Hotel Commodore, N. Y.

June 15-July 1—International aviation display, Grand Palais and Le Bourget Airport, Paris.

June 18-22—Private seminar on organization and operation of company standardization work, to be held by Dr. John Gaillard, Engineering Societies Bldg., New York.

June 18-July 6—Three-week Air Age Institute course, Parks College of Aeronautical Technology of St. Louis University, East St. Louis, Ill.

June 23—1951 British National Air Races, Hatfield Aerodrome, Hertfordshire, for light, heavy craft, and jets. Entry blanks available from National Aeronautic Assn., 1025 Connecticut Ave., N.W., Washington 6. Closing date for receipt of entries is May 1.

June 25-29—1951 summer general meeting of the American Institute of Electrical-Engineering, Royal York Hotel, Toronto.

Sept. 7-11—Third annual Anglo-American Aeronautical Conference, convened jointly by Royal Aeronautical Society and IAS, Brighton, England.

PICTURE CREDITS

9—(Lockheed F-94B, Breda) Howard Lang; (Martin P5M-1) Glenn L. Martin; 14—Allison division; 27—Curtiss-Wright; 33—YAL.

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29	UA-3160	6 "	U3250
95	UA-3160C	6 "	U2051-4
73	UA-6007-CF-DV5	7 "	UA3265
14	UA-6009-S-30	9 "	UB3250-30
11	UA-6012K-S30K	12 "	UB3250-30

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5	8503220	14 inches	
4	8503274	12 "	8504081
32	8503361	14 "	8503113
34	8503429	14 "	8504092
28	8503443	13 "	8503469
26	8503470	13 "	
6	8503800	14 "	8504093
36	8504481	13 "	
11	8504490	12 "	
17	8504491	14 "	8504092
188	8504709	13 "	8503496
399	8504985	14 "	8505334
8	8505153	14 "	
40	8505333	14 "	
32	8505414	13 "	8505071
9	8505420	13 "	
157	8505569	14 "	8504646
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130	8288	Follower Assy.
27953	8427	Screw
30	9030	Bolt
1976	10759	Bolt
1600	11210	Cover
100	11762	Guide
7	26456-2	Bearing
1157	35787-5	Bushing
2174	35787-10	Bushing
39	35807-8	Stud
814	35814	Blower Assy.
3967	35817	Spring
980	35855	Cap
2446	35924	Washers
4200	35932	Gasket
6	37751	Cover
15	37993	Housing Stud
28	38314	Rod Assy. Comp
20	45213	Cover
182	46400E	Liner
30	48346	Cylinder
1	48347	Cylinder
1475	48360	Bearing
53	48362	Shaft
175	48363	Shaft
3	48388	Sump
100	48389	Fitting
209	48390	Retainer
56	48392	Sump
533	48447	Bushing
107	48457	Adapter
76	48458	Bushing
390	48461	Gear
149	48468	Bearing
90	48468B	Bearing
389	48469	Bearing
470	48470	Bearing
75000	51506	Plug
395	54847	Clamp
71	56721	Cover
71	57006	Cover
10	68375	Gear
16	68837	Clamp

PRATT & WHITNEY AIRCRAFT ENGINE PARTS

Quantity	Part No.	Description
78	76236	Gear
5	77453	Housing (Reduction)
565	81397	Tube
100	84183	C/Case Assy.
10736	84185	Cover Assy.
261	84235	Pipe
155	84281	Spacers
1351	84282	Adapter
12	84284	Adapter
1178	84289	Bearing
21	84314	Counter Balance
113	84487	Housing
87	84567-B	Stud
77	84591C	Nose Housing
178	84602	Bracket
251	84687	Pinnon
30	84702	Shroud
397	84752	Bearing

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ELECTRONIC COMPONENTS

Pieces	Part No.	Description
35	RA-10-DB	Receiver
20	TA12B	Transmitter
150	DA-1F	Dynamotor
162	3611-B	Amplifier
35	MR-9B	Control Box
7	AS27A/ARN-5	Antenna
9000	45	Bulb
11000	1667	Bulb
1000	987	Bulb
300	AN3135-1	Bulb
87	MR16D	Filter
97	FT213	Mount
54	FT293	Mount
80	BX42-7	Dynamotor

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Quantity	Part No.	Description
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130	2P771A	Pesco Fuel Pump
300	AN4014	Type D3 Wobble Pump
530	564-2	Pioneer Oil Separator
115	P4CA2A	Parker Primer
80	AN3213-1	Scintilla Ignition Switch
2000	AN3096-4	Light Assembly
800	AN3096-5	Light Assembly
380	AN3096-6	Light Assembly
75	EE-709M2	Air Associates Motor Assy.
1500	AN4078-1	(37D6210) Solenoid
490	AN6203-1	(AA14007B) Accumulator
22	AN5531-1	G.E. Tachometer Generator
30	AN4102-1	(TFD 2100) Thompson Fuel Pump

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TIME FOR BUNDLING—The New Yorker Magazine quotes this from the Philadelphia Inquirer: "The Air Force plane, headed here from Little Rock, Ark., was making an instrument approach in a heavy overcoat when the pilot radioed from over Millville that he had engine trouble." The New Yorker's comment is, "Check the muffler."

FLYING'S SAFER THAN HAVING BABIES—We have cribbed some pretty vital matter for you from Jerry Lederer's Flight Safety Foundation Accident Prevention Bulletin. Next time the Little Woman squawks about your hopping off in an airliner show her this:

"The Journal of the American Medical Assn. takes pride in announcing that for the first time in history the maternal mortality rate for the United States has been pushed slightly below the apparently irreducible minimum of one maternal death per 1000 live births. Womenfolk should realize that their husbands have 100 times more chance of surviving an airline ride than wives have of surviving childbirth since 99,999 out of every 100,000 airline passengers arrive safely."

REPORT FROM OUR DENVER G-2 MAN—Stew Faulkner, high-pressure publicity man for Continental Air Lines, was observed surreptitiously purchasing an electric train in a local department store at Christmas time, according to Charles Adams, ex-AVIATION WEEK, who's now in school at Boulder, Col. We also hear Stew whiles away his Sunday mornings going to churches and writes the sermons up for the Monday Denver Post.

PROGRESS NOTE FROM HY—Hy Sheridan says conditions of our world have changed more than us oldsters realize. He was brought up short the other afternoon, overhearing two little girls talking. Mary had just returned from a visit to her grandmother in the country and in the kitchen there she had seen a strange device she was trying to explain. "They call it an egg-beater," Mary said. "It works just like a helicopter."

SCIENCE IS WONDERFUL—Doc Von Flugel pens us a line in something akin to Gregg and Sanskrit. "The latest report of the Thunderstorm Project contains the illuminating information that 'RAIN IS THE OCCURRENCE OF LIQUID WATER.'"

And Herr Doktor was skimming CAA's Flight Assistance Service "Monthly Comments on Aviation Trends" and found this gem: "Thus it (the FAS) aids appreciably in decreasing the hazards of itinerant flight and in improving air safety, long recognized as one of the chief deterrents to the further expansion of private flying." Says the Doktor, "Yes, sir, Air Safety is one thing we've got to get rid off!"

MAYBE THEY WERE TESTING US!—AVIATION WEEK's N. Y. office had an important query on the phone the other day from someone who wanted acutely to know how many pounds of aluminum there are in a B-36. We had a dickens of a time finding out but we did. Then the fellow said he was calling for the Aluminum Company of America.

SUSPENSE WAS TERRIFIC—We've held this one in our files for too long. It was in an air freight ad published here and there by Delta Air Lines:

A talented lassie named Alice
Who danced every night at the Palace
Broke one vital string
But solved everything
With a spare she AirFREIGHTED
From Dallas.

THIS MODERN GENERATION—Molt Taylor, the boss of Aerocar, Inc., at Longview, Wash., already feels his influence in modernizing the nation's humor lore among the rising generation. His flying car is well known in the Longview area, of course, so when a local mother was going through the riddle routine with her 8-year-old offspring the other days she dredged up a few old classics she knew the modern miss couldn't know about. "What has four wheels and flies?" she asked. Quick came the answer: "The Aerocar."

SIGNS OF THE TIMES—Stan Morris, the publicist, sends Doktor Von Flugel the following clipping from a column in the Los Angeles Daily news.

"Some time ago a gentleman at the CAA received a directive stating all mail trays had to be clearly labeled INCOMING and OUTGOING and placed in exact positions, presumably so many inches from the back of the desk, so many inches from the sides. The childish nature of the directive and the implied regimentation somehow titillated his fancy and in a gesture of pixie protest he labeled everything on his desk—PEN, PENCIL, CALENDAR, etc. Now he finds, in amazement, that people around there think it quite natural that a pencil should be so labeled and an ordinary desk calendar called a calendar. Several of them, in fact, have commented on his efficient desk set-up. As a result, he is really disturbed. He fears that one of these days he may receive a new directive ordering everyone in the office to do the same."

—R. H. W.

WHAT'S NEW

Telling the Market

An eight-page descriptive booklet on the Kodak Contour Projector Model 2—used to magnify dimensions, shapes, and surfaces in production or tool making—details makeup and operation and includes a cutaway drawing. Given are some of the special jobs the projector can handle. A price list which includes accessories costs is attached. Write Industrial Optical Sales division, Eastman Kodak Co., Rochester 4, N. Y.

A 62-page ring-bound catalog, Taylor Laminated Plastics, covers vulcanized and phenol fibers, and special laminates, design and machining hints and Taylor Fibre Co. engineering and research facilities. Charts and tables of engineering data are included. Write the company at Norristown, Pa.

Bellows Catalog CMH-113 covers Flexon bellows made by Chicago Metal Hose Corp. in a variety of sizes and metals for applications in control devices and instrumentation. Engineering data are included, as are hints on attachment. Write the maker at Maywood, Ill.

Easy to use charts for computing gage pressure readings on hydraulic presses are available from Perkins Glue Co., Lansdale, Pa. Separate charts have been prepared to cover presses with 8, 10, 12 and 14-in. dia. pistons.

Individual bulletins on gear production methods tell how gear output has been increased, cost reduced, or quality improved in different plants. Available from Michigan Tool Co., 7171 E. McNichols Rd., Detroit 12.

Designed to aid purchasing personnel is new looseleaf binder containing technical data on Guardian aircraft controls, permitting insert of current data as it is issued. Write Guardian Electric Mfg. Co., 1621 W. Walnut St., Chicago 12, Ill. . . . 20-page booklet covering the entire line of Danly die cushions with complete capacity and dimensional data is available from Danly Machine Specialties, Inc., 2100 So. Laramie Ave., Chicago 50. . . . Bulletin 15-14 extensively treats use of industrial instruments in research including stills, spectrometers, continuous gas analyzers, radiation pyrometers, high vacuum gages and force transducers. Write Industrial division, Minneapolis-Honeywell Regulator Co., Philadelphia 44.

Booklet condenses pertinent data on molding with acrylic powders compiled by personnel in Rohm & Haas molding powder department. Available by writing the Plastics department, Rohm & Haas Co., Washington Square 5, Pa.

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EDITORIAL

Security Break? A Case History

Newsweek has written what we hope is the last chapter in the story of "Scoop No. 1211-J." This national news magazine with more than 800,000 circulation has told this last chapter accurately.

It is not often that we can devote so much space to the background on any one story in AVIATION WEEK. But this one, which aroused complaints, needless criticism, and unfounded rumors, is worth going into.

Purely for the record, here in chronological order are important chapters in a case history of one controversial story that appeared in AVIATION WEEK:

West Coast Speculation

Los Angeles Times' able, enterprising Marvin Miles, aviation editor, who in 1947 took AVIATION WEEK's X-1 supersonic flight story off the news service wires and rewrote it under his own by-line, expressed suspicion in his aviation column Feb. 2 after this most recent revelation about a company in his own bailiwick. Said Miles:

Aviation Week's disclosure of the four-engine turboprop swept-wing intercontinental bomber (Model 1211-J) proposed by Douglas gives rise to interesting speculations.

Was the break made deliberately in the face of Air Force classification (probably "secret")?

Or was it a "planned release" planted by the Air Force for propaganda reasons?

Trade publications, with many a direct pipeline into inner Washington circles, have a distinct advantage in gathering information on new developments, proposals, trends, etc. How much of this information they publish is another matter. Nor are their facts always correct.

We admire their go-getting ways but occasionally question the advisability of publishing some stories—unless they're official plants—while we hit the Pentagon with requests for clearance, only to be told: "Clearance denied—project classified."

The AP Story

Washington, Feb. 3—An Air Force spokesman said today an inquiry is being made into publication in an aviation trade magazine of specifications for a possible new four-engined jet bomber of intercontinental range.

The spokesman told a reporter the "Air Force is making its own inquiry of the matter, which has been reported by the Inspector General as a possible violation of security."

He added, however, that "it is Air Force policy for the Inspector General to look into any reports" that might concern security. He added that in this instance it is not known so far whether "there is or is not a violation."

The inquiry is based on an article appearing in the Jan. 29 issue of Aviation Week, which discusses reported specifications by Douglas Aircraft Co. for a new jet bomber. Officials of the magazine could not be reached immediately for comment.

The magazine states the proposed plane design is designated 1211-J; would have a range . . . etc.

From An Editorial Here Feb. 12

" . . . If the Inspector General sends an investigator to us we shall be glad to tell him exactly how a sheet of a Douglas-printed brochure fell into our hands. The tale will remind you of the story recently about the Washington newspaperman who picked up on the street a sheet of waste paper from NACA and found the contents worthy of printing."

What Does Time Mean By This?

Time magazine in its Feb. 26 issue rounded up a piece on bombers and said the latest to be revealed was the Douglas 1211-J, divulged "by AVIATION WEEK, which sometimes annoys the Air Force by describing airplanes that remain on the secret list long after they are being talked about in West Coast bars."

The Newsweek Story, March 12

To its competition, McGraw-Hill's Aviation Week magazine sometimes seems to be more the product of a den of spies than of a staff of highly competent reporters. Even the Air Force has had occasion to question the manner in which Aviation Week collects its frequent scoops on new aircraft.

(When, for instance, Aviation Week revealed that a plane had passed the speed of sound—Newsweek, June 21, 1948—a full-scale investigation proved that the magazine's reporters had done nothing more sinister than ask the proper questions in the right places and then print the answers.)

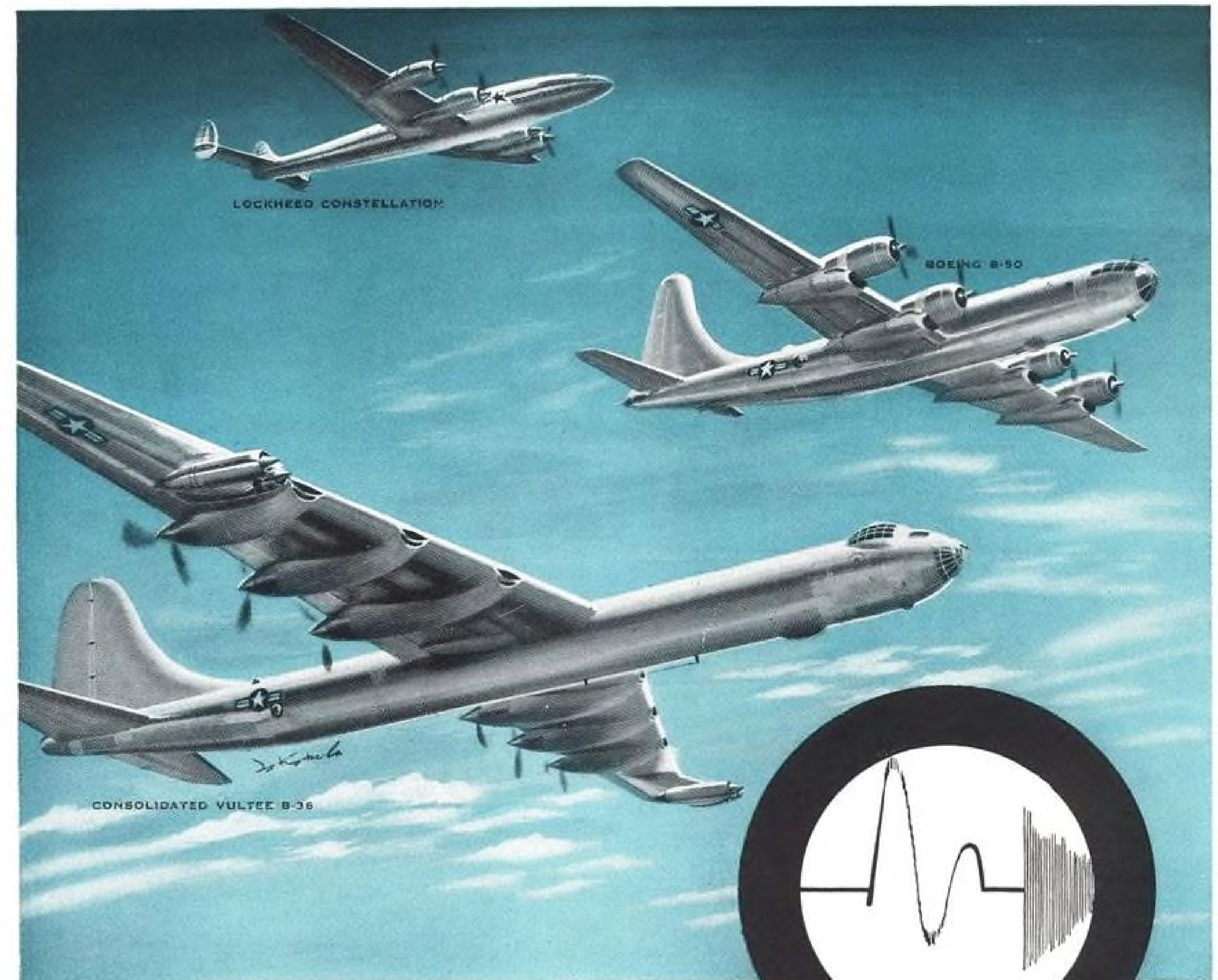
Last week, a perfect example of the magazine's "espionage" operations came to light and, as usual, it boiled down to good reporting. The scoop involved was publication, in its issue of Jan. 29, of a sketch and a full set of specifications of Douglas Aircraft's 1211-J intercontinental bomber, a four-engine giant now in the drawing-board stage.

Even as newspapers picked up the story, some editors growled that Aviation Week must have got the yarn by violating security regulations. The Air Force promptly announced it would probe for the leak. Aviation Week's editor, Robert H. Wood, decided to save it the trouble. Last Tuesday he sent Ben Lee, the writer who had got the 1211-J story, around to talk to Maj. Gen. Joseph F. Carroll, Director of Special Investigations for the Air Force.

Lee's explanation was embarrassingly simple. While walking in a public corridor of the Pentagon, near the Air Force's own public-relations offices, Lee had noticed a fancy airplane picture taped to the front of a message box on one of the Pentagon's fleet of interoffice delivery bikes. Curious, he peeled the picture off. It turned out to be a carelessly misplaced page of a Douglas brochure describing the 1211-J in detail. Nowhere on it was there any mention of secrecy. And, Lee reasoned, if it was proper for display on the basket of a messenger's bike, it was certainly fair game for Aviation Week.

The only mysteries not yet cleared up were (1) Was or wasn't the 1211-J considered worthy of a classification? (2) If it was, how did a messenger get hold of the picture? If it knew these answers, the Air Force wasn't talking.

—Robert H. Wood



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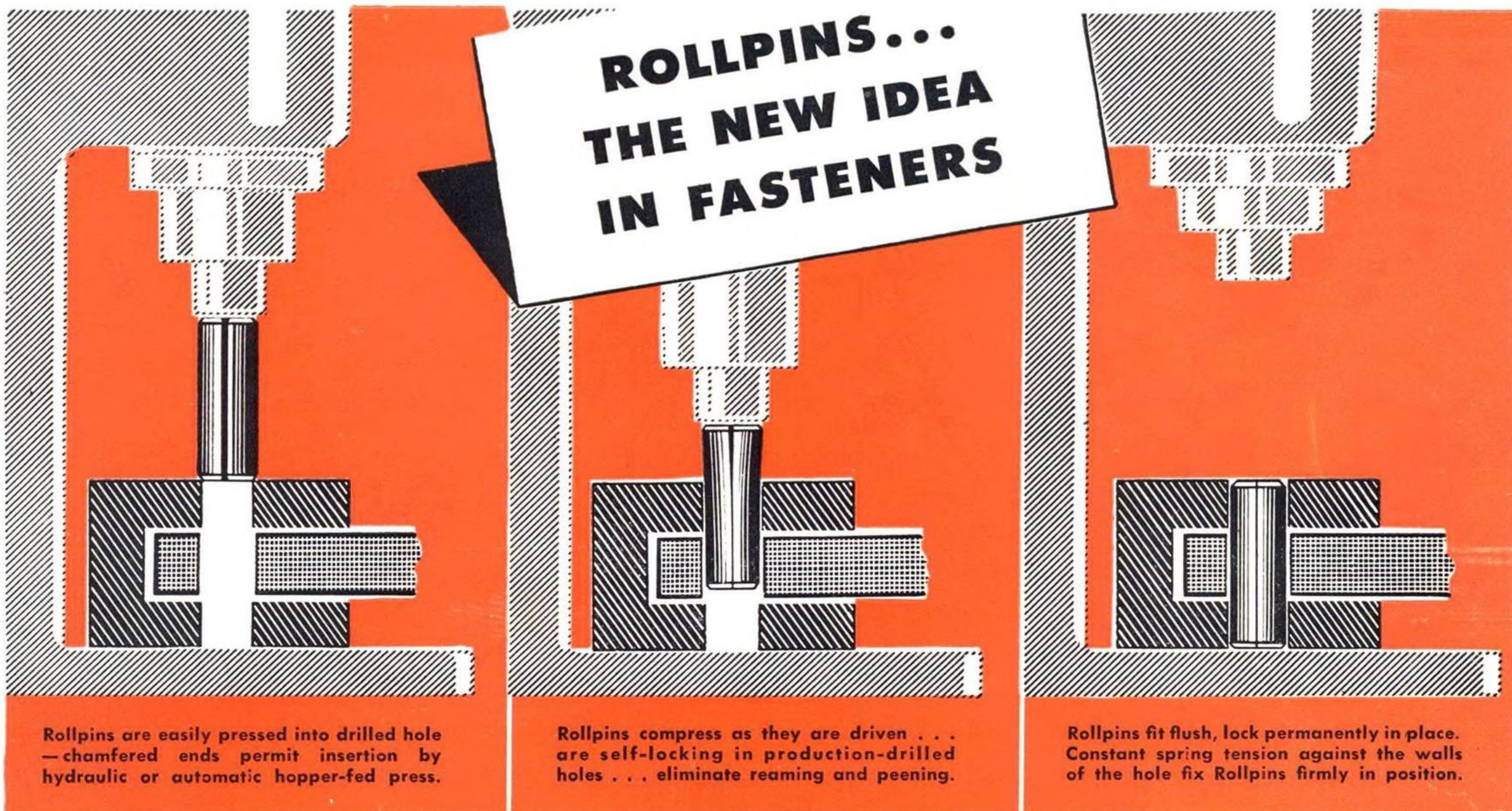
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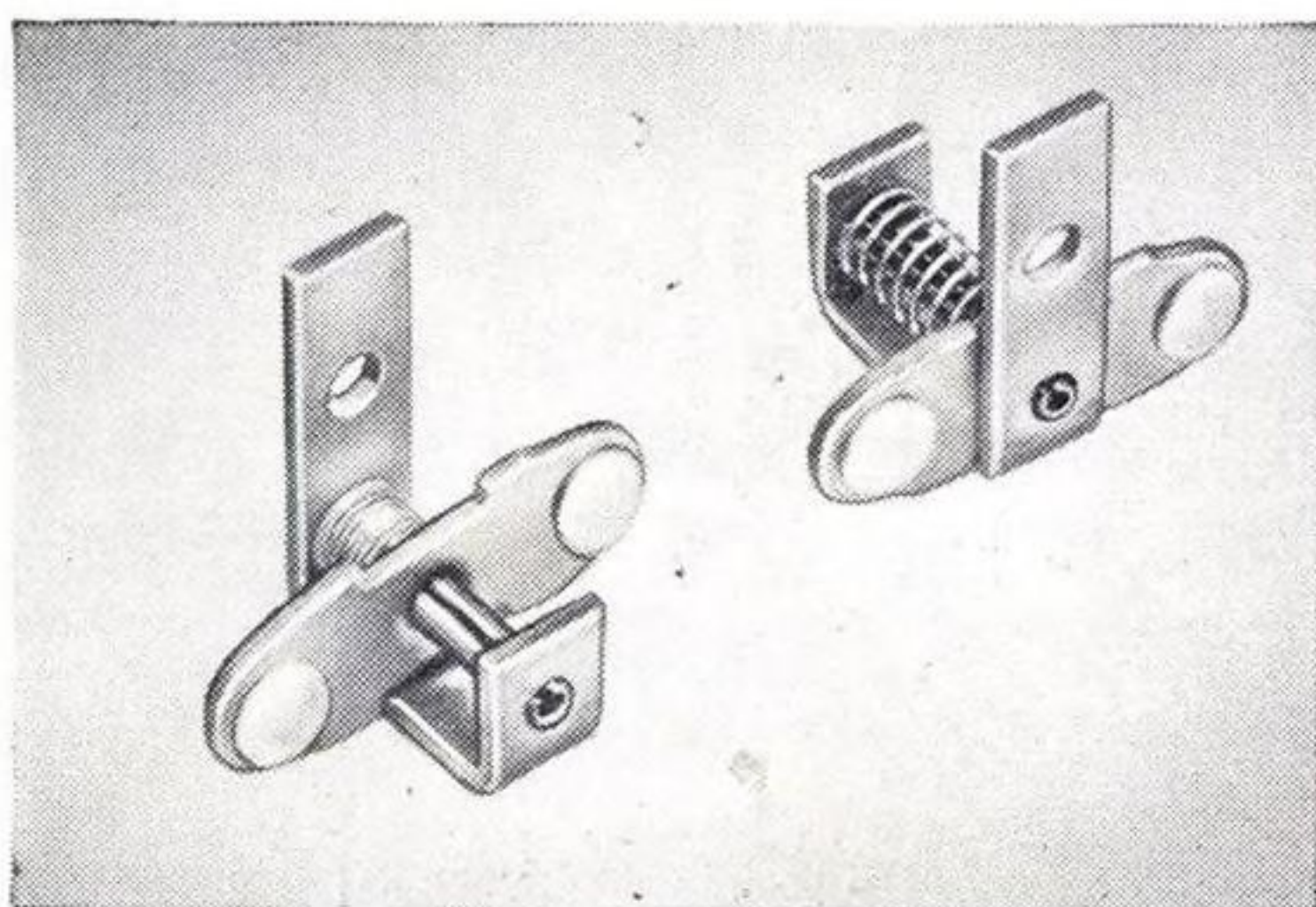
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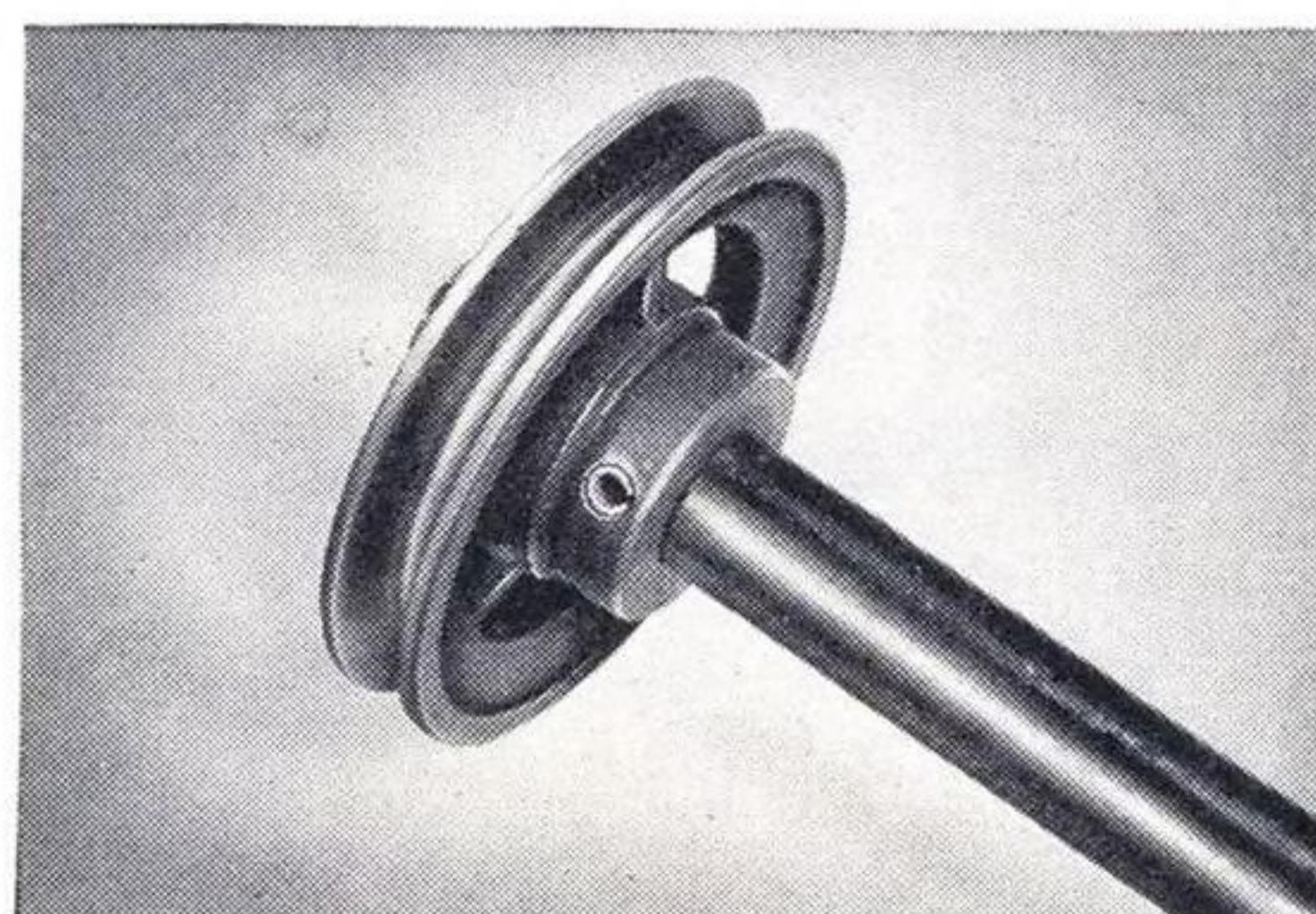
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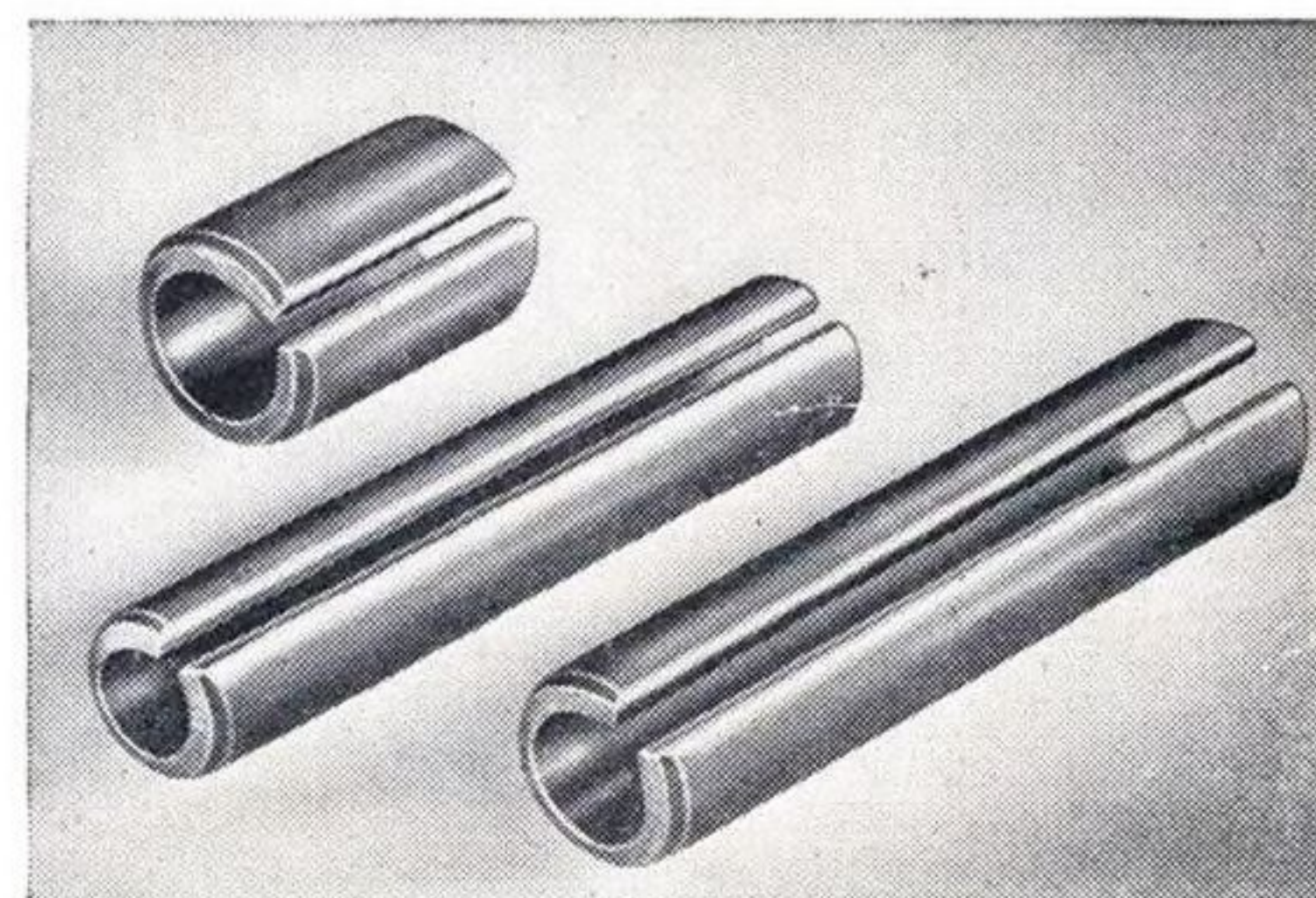
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