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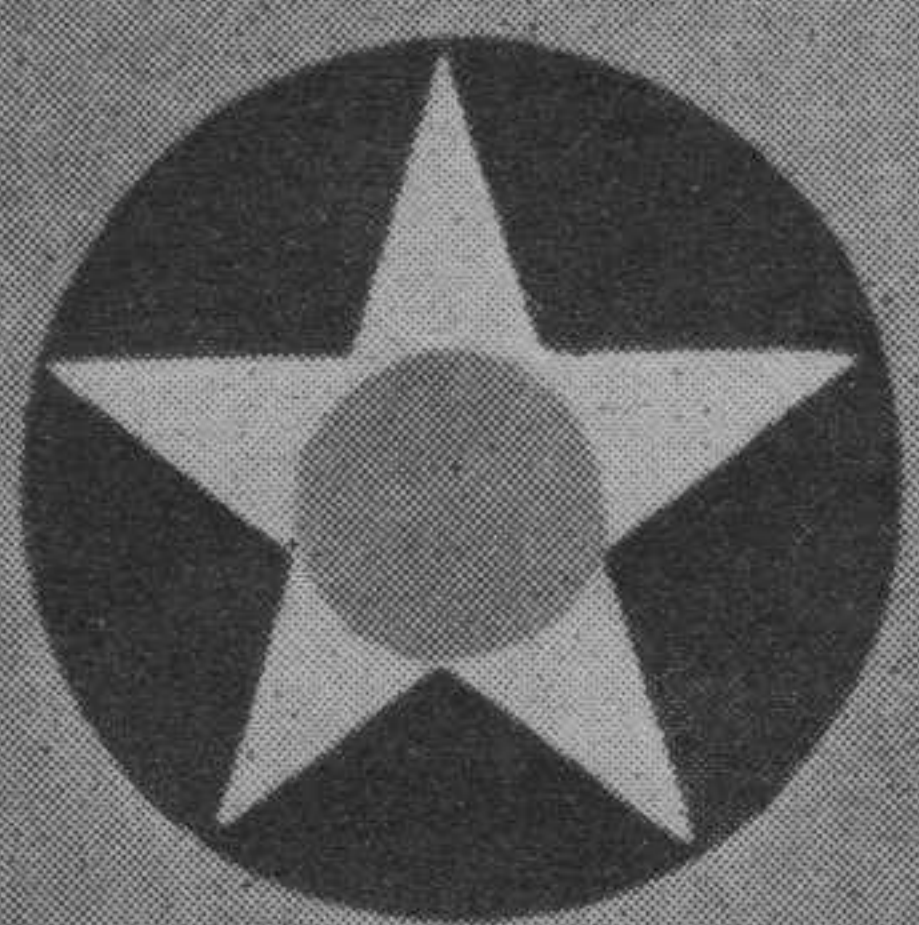
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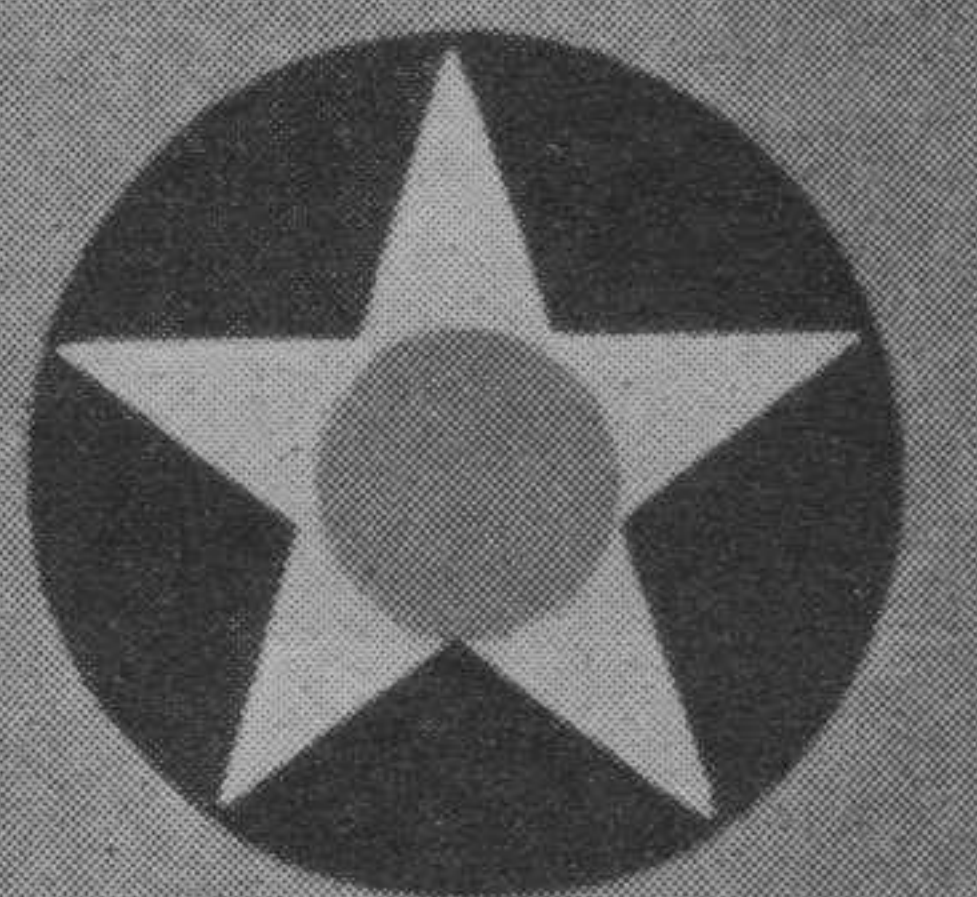
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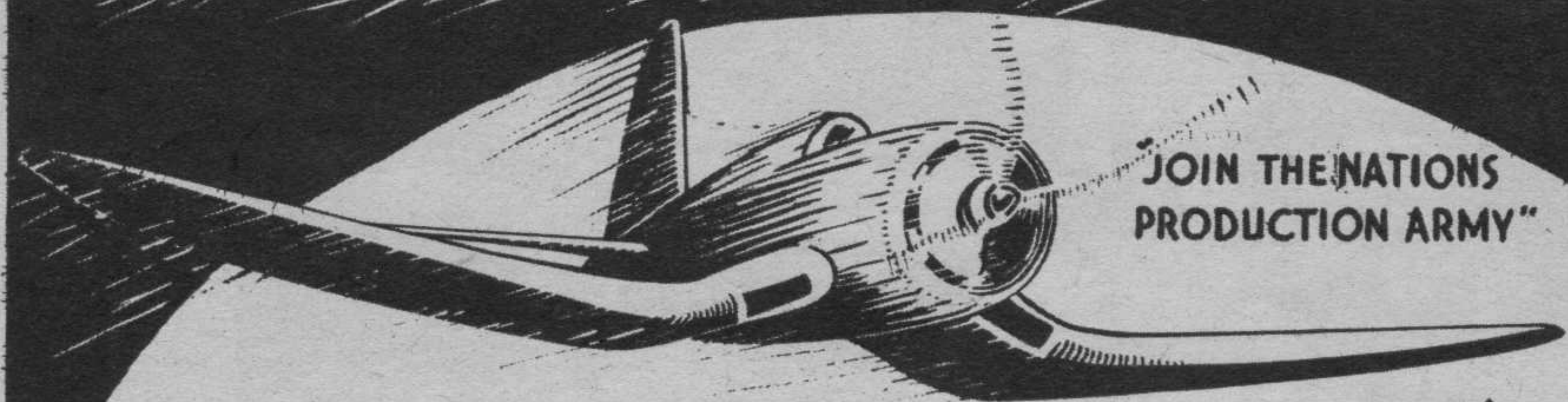
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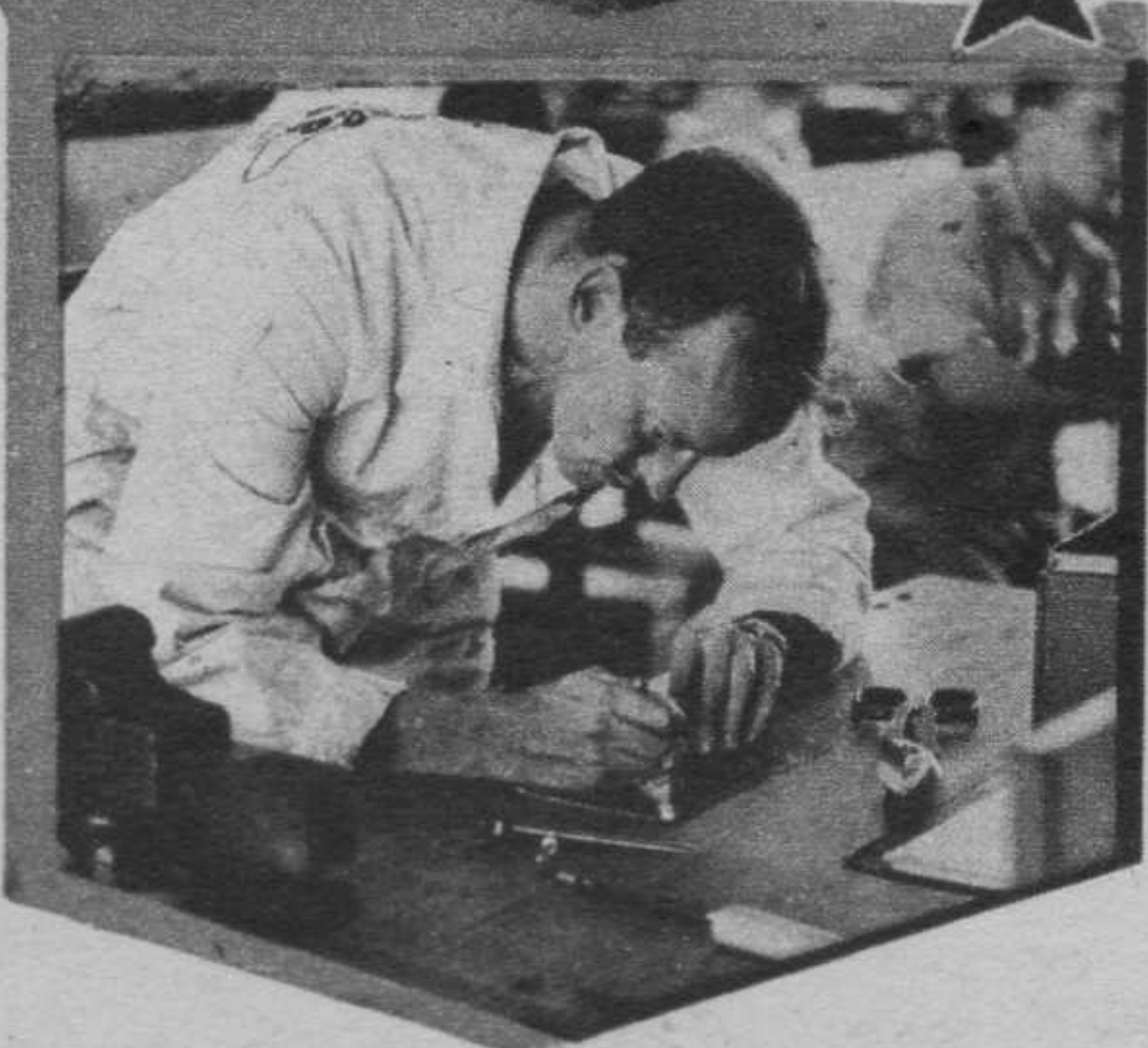
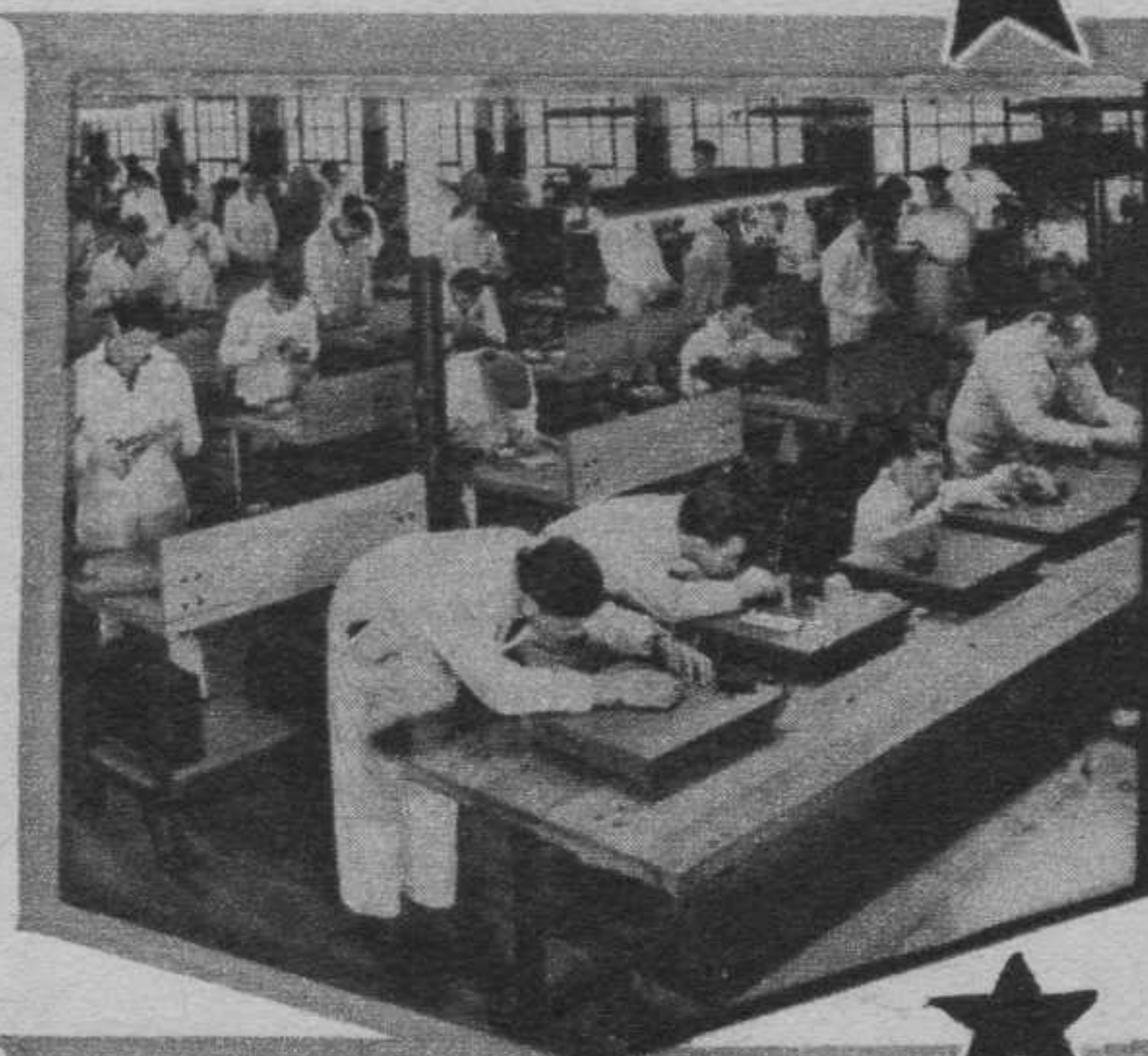
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AIR TRAILS

OCTOBER, 1941

VOLUME XVII NO. 1

15 CENTS PER COPY

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A STREET & SMITH PUBLICATION

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FULL-COLOR COVER PHOTO OF ENGLISH SPITFIRE

BY BRITISH-COMBINE

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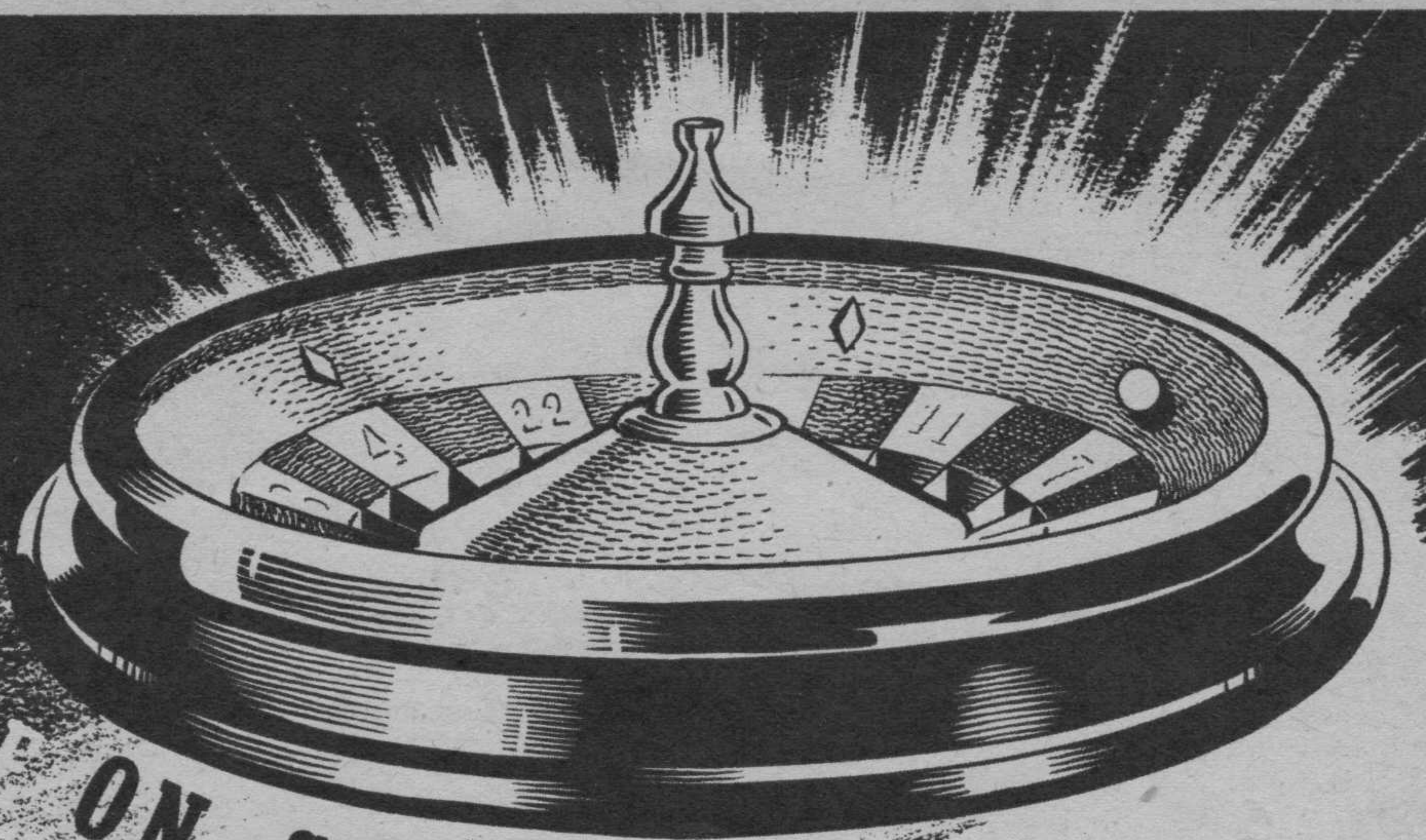
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AT-10

WHAT'S YOUR QUESTION

QUESTION: Could you let me have the addresses of manufacturers who build the following planes: Porterfield Collegiate, Funk, Jensen Sport-Plane, and the Brown L-5? O. L. G., Jr., Avon, Mass.

Answer: The Porterfield Collegiate is made by the Porterfield Aircraft Corp., 2809 E. 14th St., Kansas City, Mo.; the Funk by Akron Aircraft, Inc., 1280 Triplett Blvd., Akron, Ohio; neither the Jensen nor the Brown L-5 is manufactured any longer.

Question: I am inclosing a clipping from a magazine presumably showing the picture of a German Messerschmitt. Can you tell me what is the purpose of the small wooden propeller rigged on the undercarriage fairing? Can its purpose be to generate electricity? L. G., Utica, N. Y.

Answer: The clipping shows a Junkers Ju-87 dive bomber, otherwise known as the Stuka. Undoubtedly you are right. The wooden propeller actuates an electric generator which either charges the storage batteries or produces current for the radio.

Question: Please send me the price, name and address of the manu-

facturer of the Baby Albatross sailplane. I would especially like to know the price of the kit, as I would like to build it at home. C. R., Shawneetown, Ill.

Answer: This sailplane is manufactured by Bowlus Sailplanes, Inc., 13785 Paxton St., San Fernando, Calif. The price of the kit is in the neighborhood of \$400.

Question: Are torpedoes released from a torpedo plane in a dive? If not, can it be done in the dive? D. G., Shaker Heights, Ohio.

Answer: The plane releases its torpedo in a level flight at very low altitude. A torpedo cannot be launched in a dive, as it will go to the bottom; it must hit water as near to level position as possible.

Question: Could you please send me or tell me where I can obtain plans or layouts of Chet Decker's sailplane, the Minimoo? Were they ever published in Air Trails? J. A., Inglewood, Calif.

Answer: Sorry, but plans for the Minimoo have never been published in the magazine, and we doubt that any could be obtained in the U. S. The ship was built in Germany, and the Germans were very reluctant to let the plans out.

Question: In your August issue of Air Trails the Reviewing Stand mentions the book "Preliminary Airplane Design." Would you please give me the address of the Pitman Publishing Corp. which prints this book? S. E., Ben Avon, Pa.

Answer: The Pitman Publishing Corp. is located at 2 West 45th St., New York City.

Question: I would like to know if any plane in Europe has the engine behind the pilot as in the Bell P-39? C. K., Denver, Colo.

Answer: Yes, several European military ships were built with engines behind the pilot. They are the Koolhoven F.K.55, a midwing fighter monoplane built in Holland, and the Westland f7/30, a British single-seat fighter biplane.

Question: Can you tell me what engines the following planes used: World War I Halberstadt, Fokker triplane, deHaviland 5 and the Pfalz? Also, where can I get plans of the less familiar planes of the First World War? R. B., Maywood, Ill.

Answer: The Halberstadt was powered by a water-cooled Mercedes, 180 h. p. engine; the Fokker triplane by an air-cooled rotary Oberursel engine of 80 h. p.; the Pfalz by a 160 h. p. water-cooled Mercedes, and the deHaviland 5 had a 110 h. p. air-cooled Le Rhone rotary. Write to some of the model manufacturers who advertise in Air Trails regarding plans for less familiar World War planes. They may have them.

Question: Could you tell me if the Curtiss A-18 is still a standard ship with the attack division of the army air corps? What are the standard pursuit ships with the army? J. A., Hamilton, Ont., Canada.

Answer: There have not been many A-18 ships built; however, they are still in service. The standard pursuits of the army air corps are the Curtiss P-40, Bell P-39, Lockheed P-38 and the Republic P-43.

Question: Does the landing gear of the Brewster navy fighter retract? What is the horsepower of the Brewster and the Grumman fighters? L. S., San Angelo, Texas.

Answer: Yes, the landing gear of the Brewster navy fighter retracts into the belly of the fuselage. The ship is powered by a Wright-Cyclone engine developing 1100 h. p. for take-off, 800 h. p. in normal flight. The midwing Grumman fighter is powered by a Wright-Cyclone engine of 1,200 h. p.

Question: Would you please give the address of the Garden City Publishing Co.? Where can I buy a copy of the book, "All American Aircraft"? D. G., Fresno, Calif.

Answer: The address of the Garden City Publishing Co. is 14 West 49th St., New York City. You can obtain "All American Aircraft" from Thomas Y. Crowell Co., 432 Fourth Ave., New York City.

Question: Where can I get army plane insignia? What is the address

of the model maker whose picture appears on pages 46-47 of your August issue? J. C., Greensboro, N. C.

Answer: For army plane insignia try writing to Public Relations Dept., Army Air Corps, Washington, D. C. If you want to get in touch with Joe Battaglia, whose picture appeared in our August issue, write to him in care of this magazine.

Question: Where can I obtain the "Book of Modern Airplanes," by Harold H. Booth, and how much does it cost? J. A. McG., Shannon, N. C.

Answer: This book can be purchased from the Garden City Publishing Co., Inc., 14 West 49th St., New York City. The price is \$1.

Question: Could you please give me some information of the following planes: Norway's Marinens M.F. 11, Holland's Koolhoven F.K.58, and the Belgian Renard R.36? J. G., New Iberia, La.

Answer: The M.F.11 is a three-seat reconnaissance biplane with a wing span 50 ft. 6 in., length 38 ft. 1 in. It weighs, empty, 4070 lbs.; fully loaded, 6490 lbs. The top speed is 140 m. p. h., ceiling 16,400 ft. It is powered by a 600 h. p. Siddely Panther engine. The F.K.58 is a single-seat full-cantilever midwing all-metal monoplane fighter with a span of 36 ft., length 28 ft. 6½ in. It weighs, empty, 3,960 lbs.; fully loaded, 5,610 lbs.; has top speed of 310 m. p. h., cruising speed of 280 m. p. h.; ceiling of 34,100 feet. It is powered by an Hispano-Suiza radial air-cooled engine of 1,080 h. p. The R-36 is a low-wing single-seater all-metal fighter having a span of 38 ft. 2 in., length 28 ft. 10 in.; weight, empty, 3,894 lbs.; fully loaded, 5,634 lbs. It has a maximum speed of 313 m. p. h., and is powered by a twelve-cylinder liquid-cooled Hispano-Suiza Cannon-Motor of 910 h. p.

Question: Would you please tell me the designation of the Northrop plane pictured on the inclosed drawing? C. E., Windsor, Conn.

Answer: Your drawing is not very clear. The ship looks like the Northrop 2-E observation plane.

Question: Could you give me the wing area, wing loading, empty gross weights, and type of power plants of the following planes: Consolidated B-24, Lockheed P-38, Grumman Skyrocket, and the Vought Sikorsky XF-4U-1? D. F., Cincinnati, Ohio.

Answer: Most of the information requested by you is restricted. Specifications of the Grumman Skyrocket are not available. The Consolidated B-24 is powered by four Pratt & Whitney twin-row Wasp engines developing 1,200 h. p. each, it has a gross weight of 40,000 lbs, and a range of approximately 3,000 miles. The Lockheed P-38 has a gross weight of 13,500 lbs., carries 360 gallons of gasoline and is powered by two liquid-cooled V-12 Allison engines of 1,150 h. p. each. The XF4U-1 has a gross weight of around 9,000 lbs. and is powered by a Pratt & Whitney double Wasp developing 1,850 h. p.

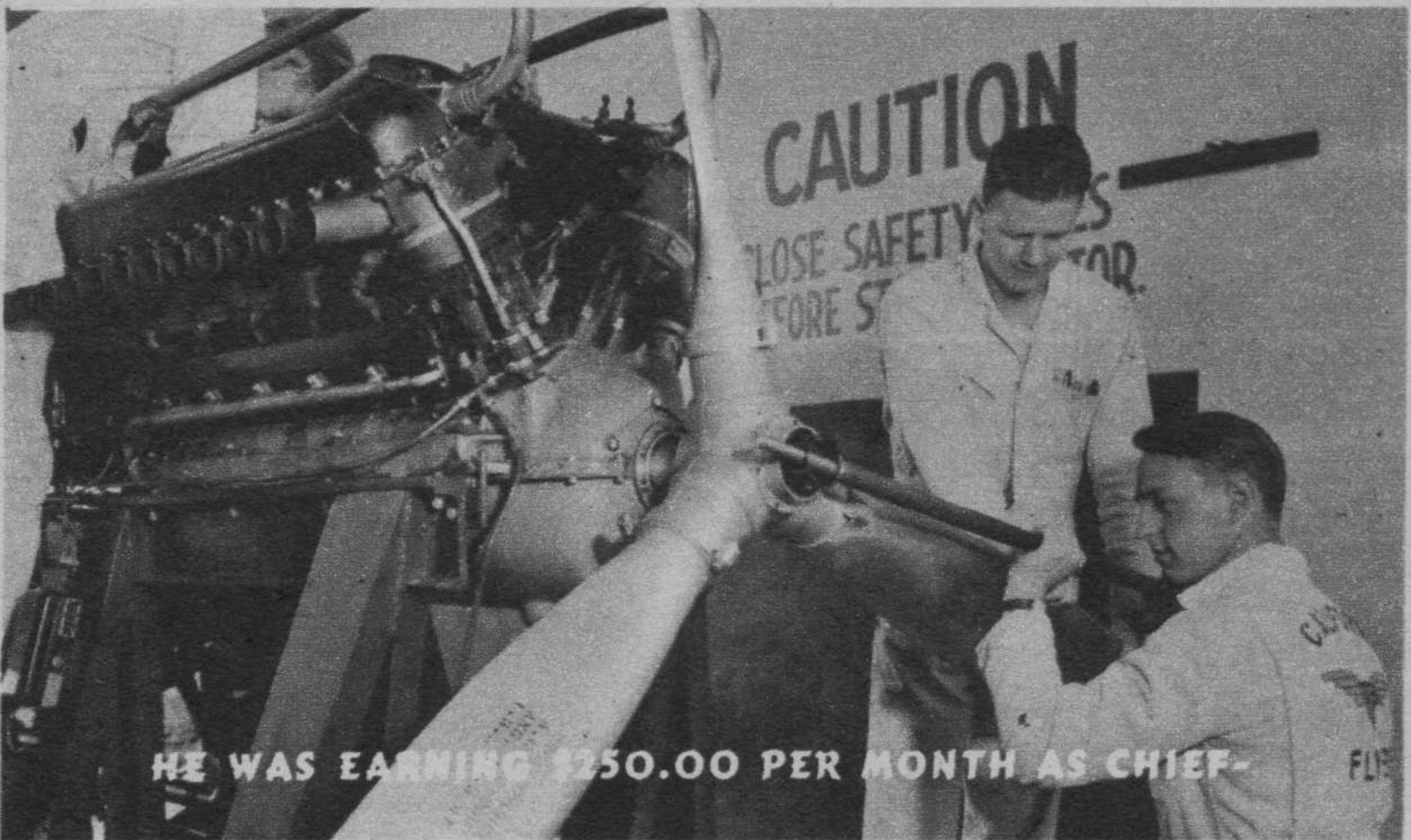
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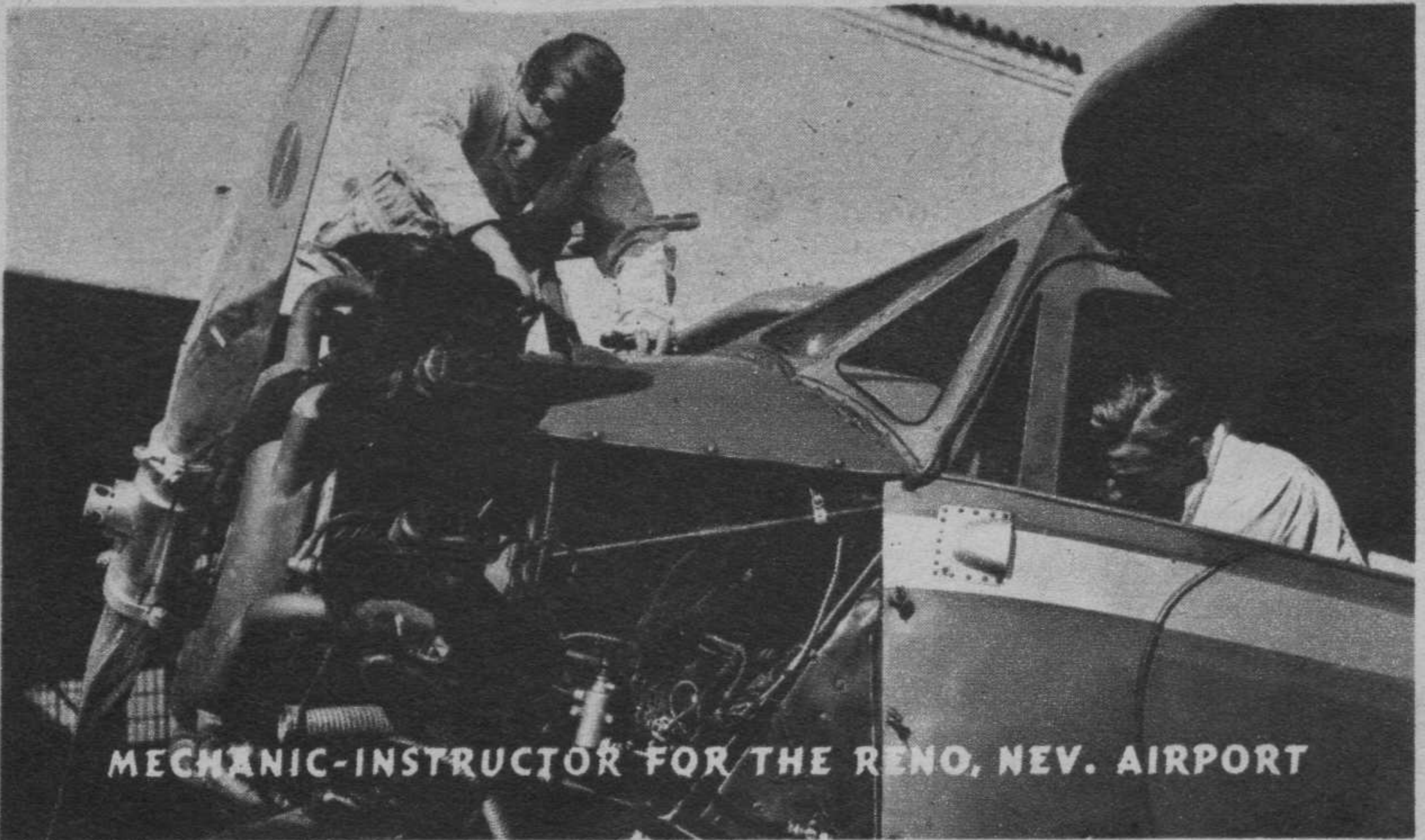
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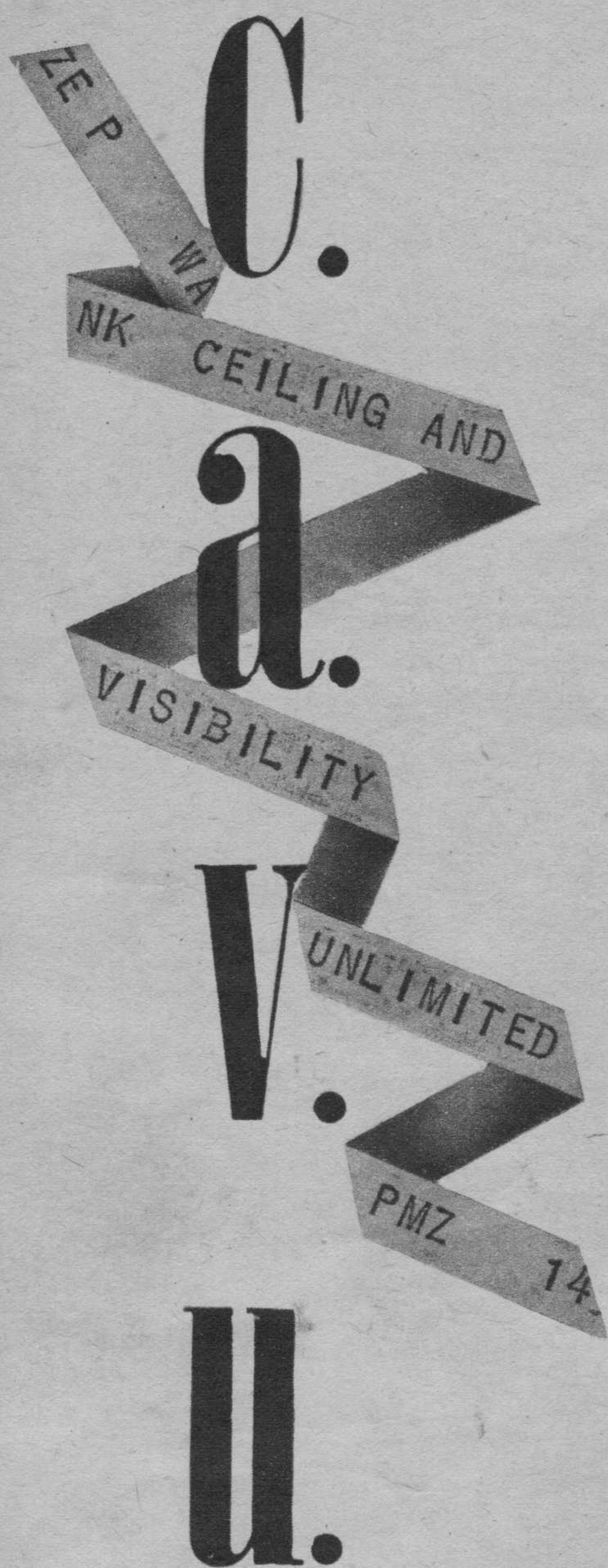
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We scan the aeronautical horizon and report our personal findings.

APPARENTLY the light plane is surprising army officials all over the country. For years the advocates of light planes have tried to obtain the ears of army men regarding the usefulness of the standard light plane for messenger, spotting, and observation work in co-operation with the armed forces.

During recent maneuvers in Tennessee and Louisiana, a group of standard light planes consisting of ten Piper Cub trainers, two Aeronca trainers and two Taylorcraft trainers, donated by the manufacturers, pilots included, functioned even better than expected.



All sorts of difficult terrain was encountered, as well as bad weather, overloading with equipment, radios and whatnot, but the Grasshopper Squadron carried on perfectly, making impossible landings and take-offs from hastily prepared strips, roadways, back yards and fields. All these ships were standard models without special equipment, with the exception of two-way radios and army gadgets added for the missions involved.

Upon completion of the first phase of the maneuvers, General Innis P. Swift, in charge, enthusiastically approved them as standard equipment, commenting that they were the best type of message-carrying equipment the army ever had. In one instance the general radioed for one of them and it arrived in twenty minutes; thirty minutes later he received a radio message from headquarters stating that the plane was on its way to him. These planes are not to be part of the regular air corps, but a part of the regular artillery corps or whatever branch they co-operate with, manned by members of that particular unit skilled in its particular duties and problems.

The light-plane manufacturers and their pilots responsible for this splendid showing are to be congratulated.



Soaring pilots are very much like fishermen. On rainy days, when no flying was possible, the administration building on Harris Hill during the National Soaring Contest was always a good place to pick up some interesting yarns. Our soaring editor dropped in there on one such day just in time to hear Johnny Nowak of Michigan tell of an incident which happened to fifteen-year-old Dallas Wise, Jr.

It seems that Junior took off in his father's Franklin glider from Plymouth, Michigan, Gliderport one afternoon. The weather being favorable for soaring, he soon connected with a thermal and was off on a cross-country flight. After he had covered approximately ten miles the thermals petered out and Junior was obliged to seek a landing place. Right below him stretched a sizable airport, young Wise dived for it, and landed on its far end. Stepping out of the cockpit he walked toward the administration building, passing on



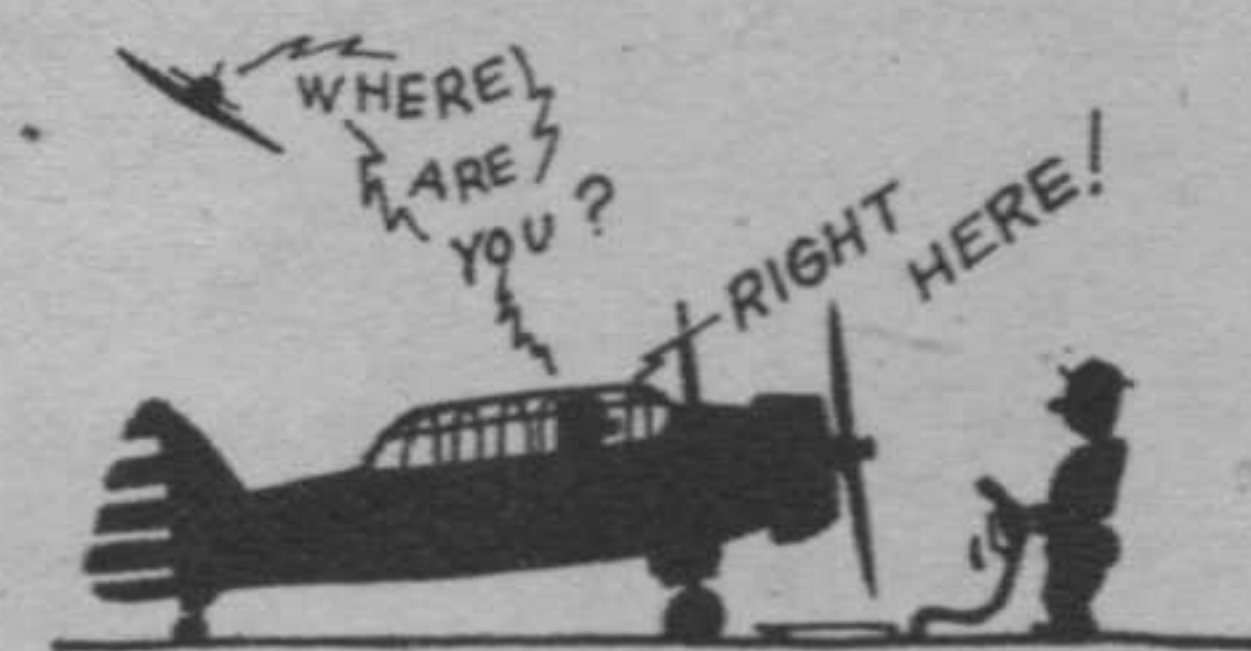
the way a number of camouflaged bombers. As soon as he neared the administration building, a guard grabbed him and demanded to know how come he was roaming around the Ford Airport where important defense work and the arming of British bombers was going on. Imagine the surprise of the guard when Junior calmly told him that he landed on the port in a glider. By that time the officials heard of the incident, and demanded that the glider be shown to them. The young pilot led them to the edge of the field and proudly displayed his Franklin. Dallas, Sr., had to be called in order to identify his son and the ship, and some red tape had to be cut before father and son were permitted to load the glider on the trailer and leave for home. Glider invasions can happen even in the United States!



Just had a letter from our old friend Bink, canine mascot and tail-wheel chaser at Cub-Haven Airport, Lock Haven, Pennsylvania, where the Cubs are made. Seems he's kicking about the cold quarters he had to put up with last winter. Might be a good idea for you airport chaps to give a thought to your mascots. After all, even *airdales* develop tail flutter on cold days with no warm place to sleep. Bink, by the way, is the mascot of Cub Fliers and a mighty good member in good four-legged standing.



Speaking of Lock Haven, while down there the other week we finally soloed—on roller skates. Yup, we were escorted to Hecla Park, fitted out with a seat-pack parachute and sent solo. The straight and level part was fine, but had trouble with banking on the turns. Thanks to plenty of stabilizers consisting of vertical posts about the hall, finally made a 360° of the hall and came in for a one-point landing with the throttle wide open. What we want to know is who had been tampering with the trimming tab on that left skate.



The air corps tells this one:

A flying cadet at Randolph Field, Texas, was slated for special "skull drill" recently after giving flight instruction officers of Class 41-H some bad moments during navigation training flights to nearby Texas cities.

Major H. L. Mace, commander of flight operation, was directing the plane movements by radio when the cadet broadcast that his fuel tanks were empty. Amazed that a student airplane could have been sent out without adequate gasoline supply, Major Mace radioed the cadet to-recheck, and was told the tanks were "practically empty."

Adopting a fatherly tone to keep the cadet from becoming confused, Major Mace said, "Look around and see if you can find a good field to land in."

The cadet did not reply, and Major Mace radioed back for a position report. "Oh, I'm on the ramp in front of Hangar C, here at Randolph Field," was the reply.

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Without obligating me, send details of course checked:

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☐ PRIVATE PILOT ☐ MASTER AIRPLANE & ENGINE MECHANIC

Name.....Age.....

Street Address.....

Town.....State.....

A. T. OCTOBER, 1941

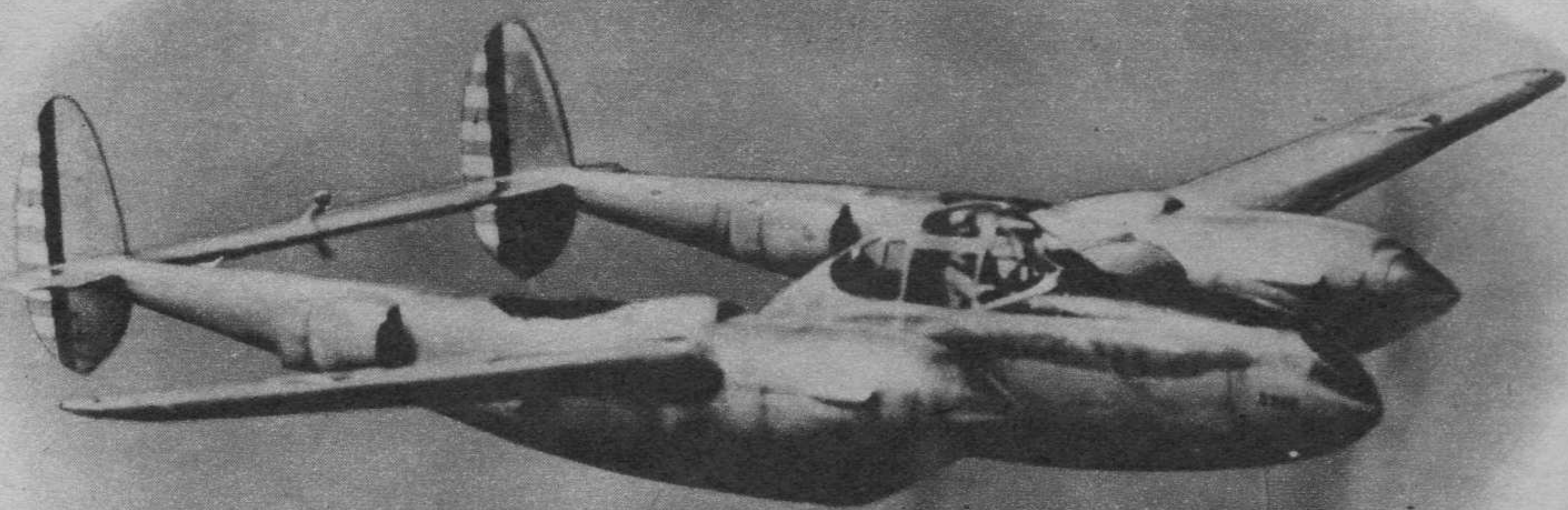


Adventure starts for the employee. After acceptance, new employees must be fingerprinted, photoed, investigated and prove citizenship.



The day begins. The thousands of employees stream through the various checking gates into the particular building where they work.

AROUND THE CLOCK



AT LOCKHEED

SPEED is the keynote at Lockheed. Speed of production and speed of their products. Lockheed's P-38 interceptor for the army air corps and for Great Britain breaks 400 m. p. h. with its two Allison engines. The famed Hudson, of which more than 1,000 have been built for Great Britain, has distinguished itself for ruggedness under fire. Its high speed and all-around performance make it popular with the British. The civil counterpart of the Hudson, the "14," and the similar-looking but newer Lodestar transport are the fastest ships of their type in the world. Based on the Lodestar is the new Ventura bomber for the English.

Lockheed and Vega, the airplane company, its subsidiary, expect to work 50,000 people around the clock for peak production.

Lockheed's streamlined Vega monoplane set new standards for speed and efficiency during the '20s and '30s. Looking forward to the tremendous growth of civil aeronautics after the war, and the immediate stepped-up production of fighting airplanes, Lockheed recently purchased the Burbank Union Air Terminal, one of the nation's largest civil ports. Foreshadowing future civil production are T. W. A. and Pan American orders for forty of the giant four-engined Constellations apiece.

These will be 64-passenger, four-engined planes, with a top of 350 m.p.h., range of 4,000 miles, and a 30,000-foot ceiling. Engines will be 2,500 h.p. Wrights not yet in production. Both cabin and engines will be supercharged. Useful load is sixteen tons. At the moment the priorities situation permits of plans for only three Constellations.

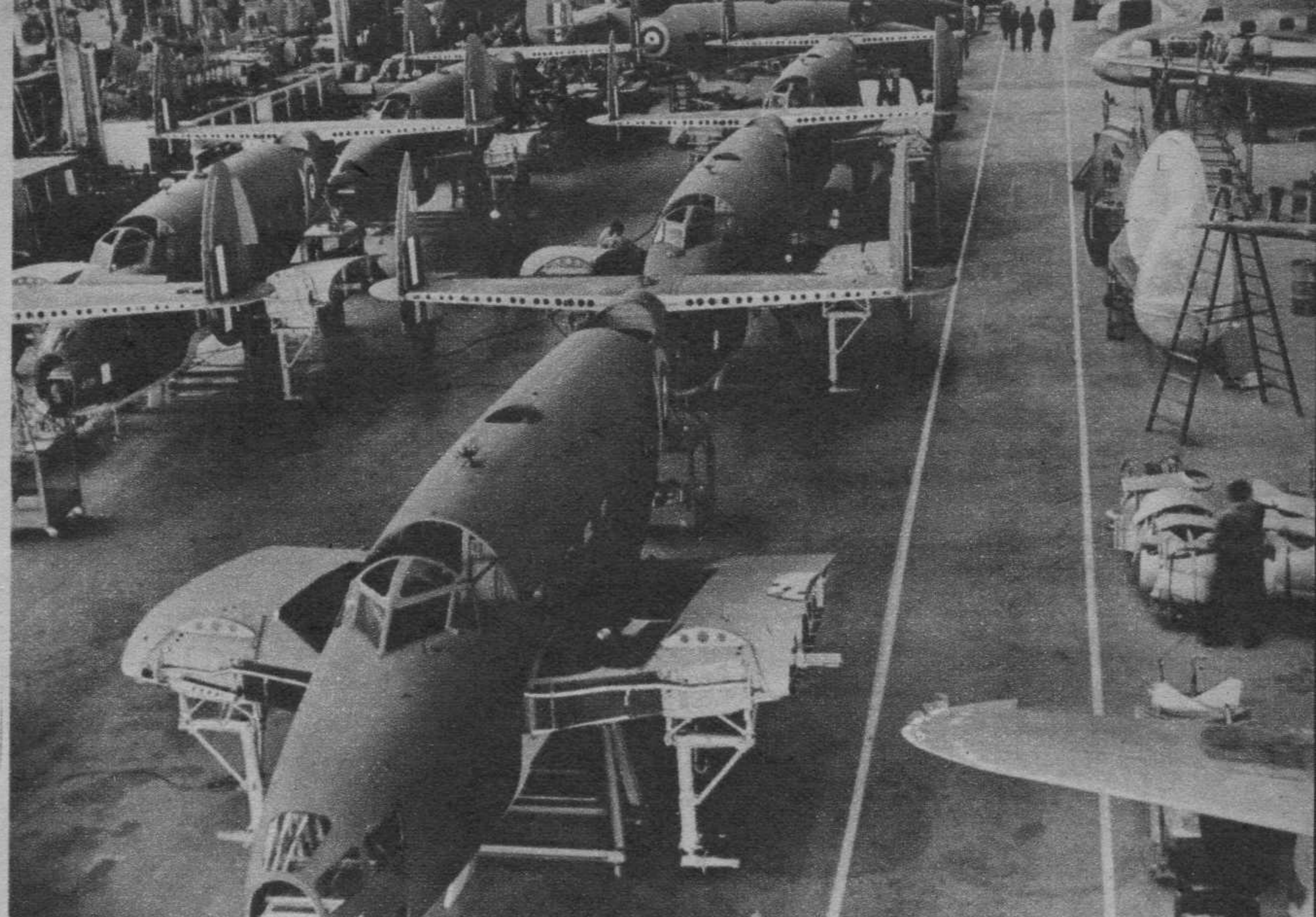
For the moment, the Lockheed motto is "First things first, and the first thing is the P-38."

Above, the P-38 (Lightning to English). Below, crowded factory space moves the Hudsons outdoors under floodlights for final assembly work by a night shift.





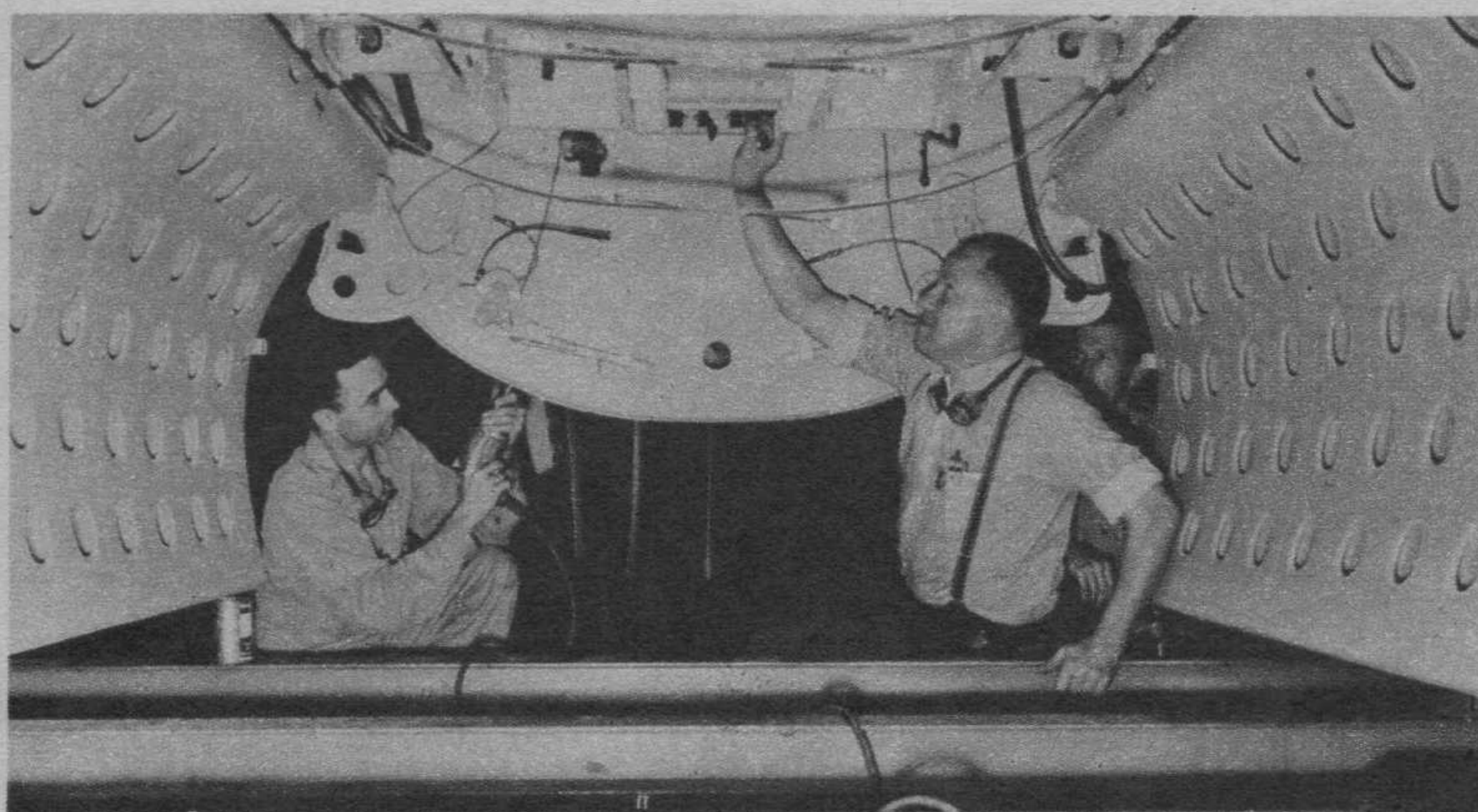
Miracle makers. Here in the drafting rooms of Lockheed originate the plans and specifications for the metal bullets both military and civil that fly under Lockheed trade-mark.



Down the line they come. Lockheed Hudsons in the center and left and Lodestars on the right vie for preference in the race for completion.



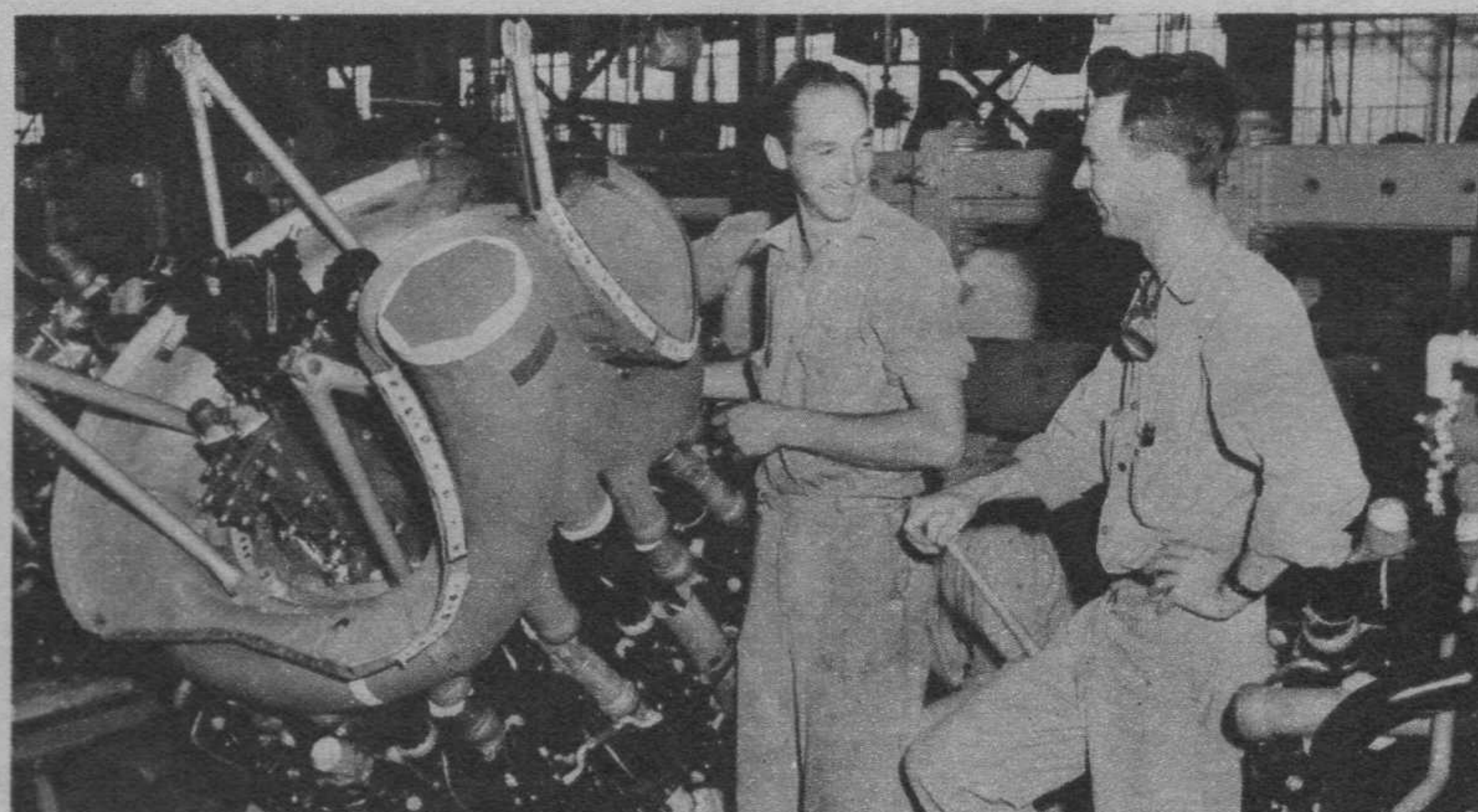
On casters these wing-center sections progress down their individual assembly line. Here a riveting crew fills in its part of the job.



Open Sesame. These experts check the operation and production of the bomb bay doors of Lockheed bomber before ship moves along the line.

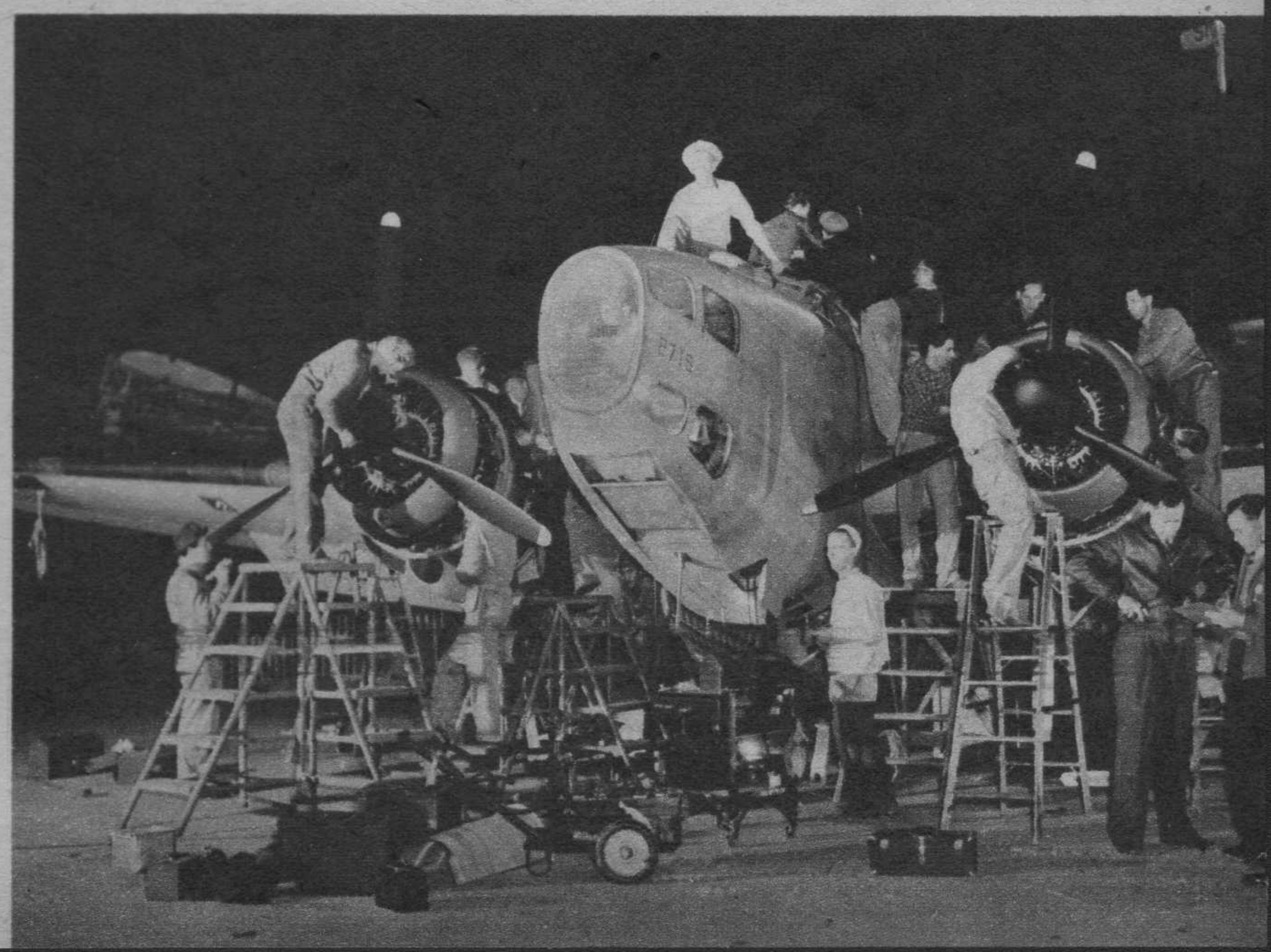
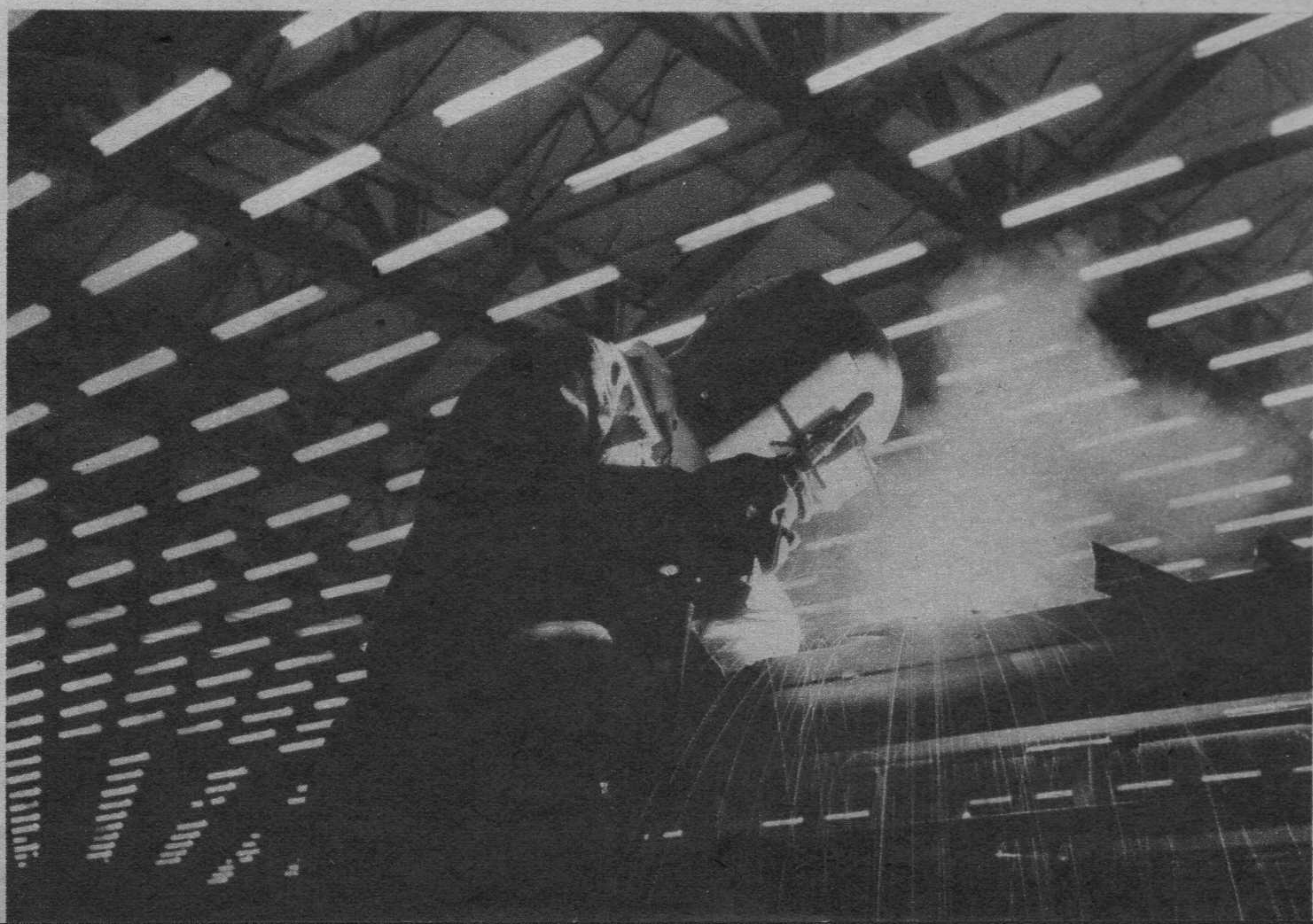


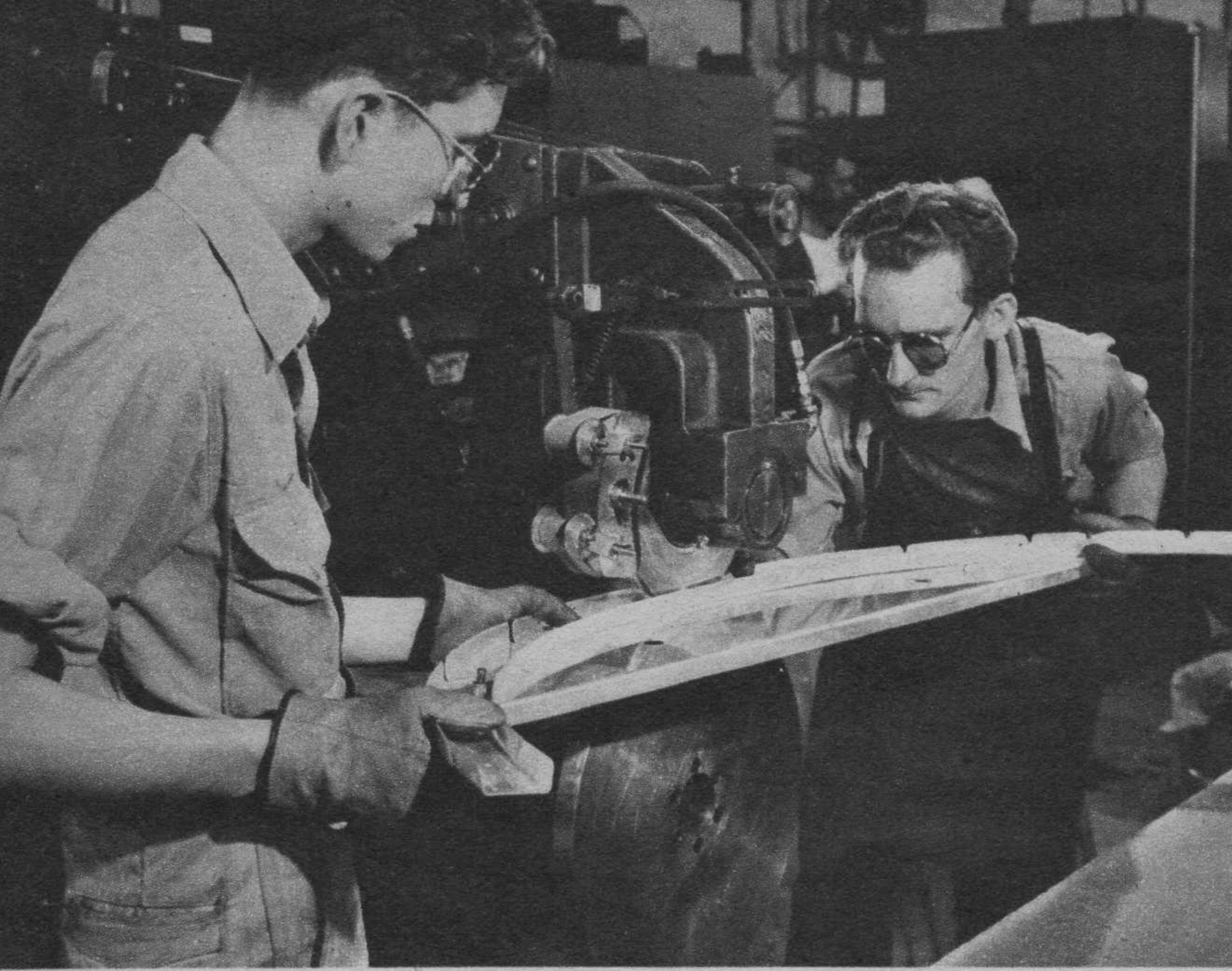
California's weather co-operates with defense and allows huge molds and dies to be worked upon and stored outdoors. Note electric crane.



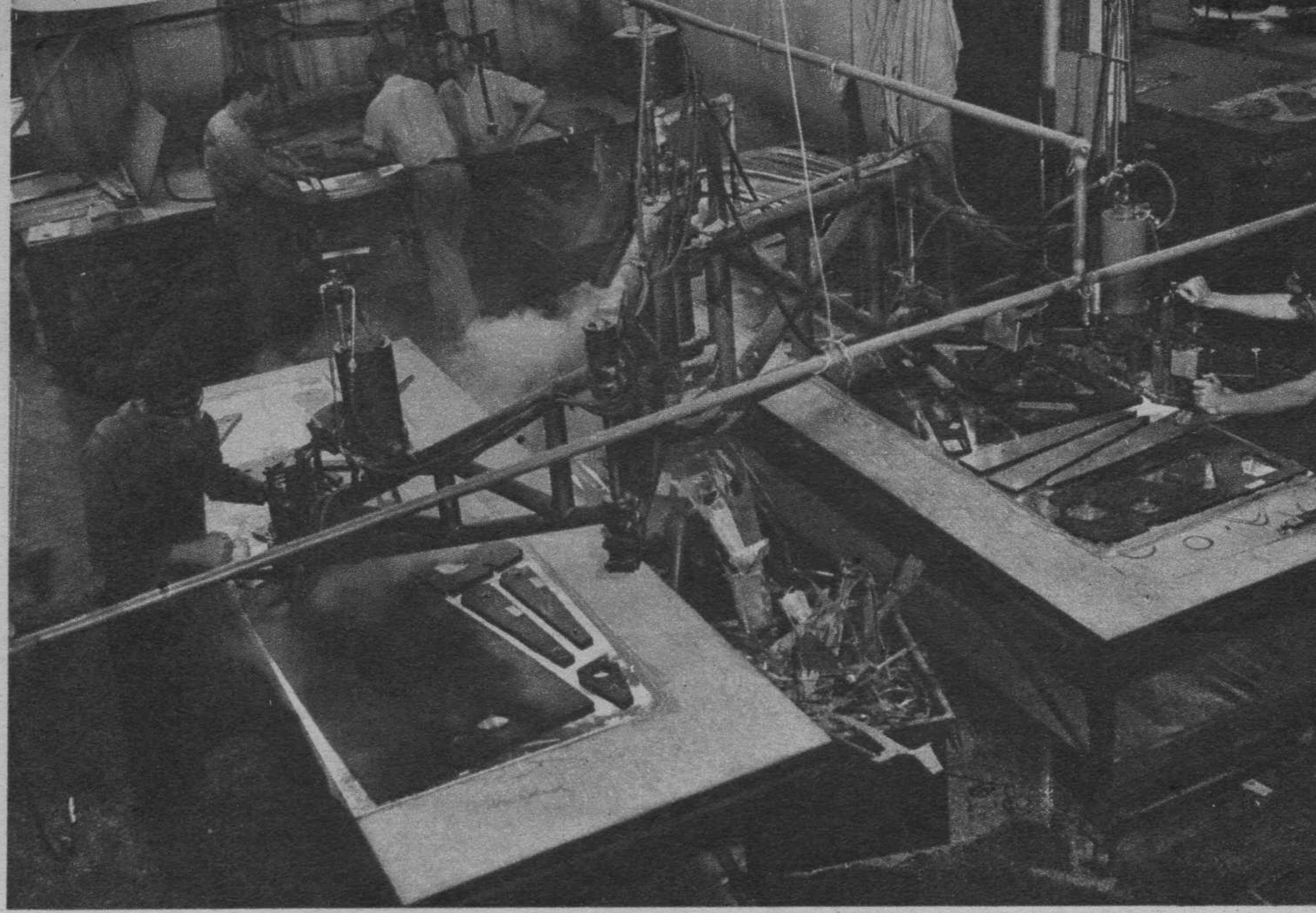
Engine and mount become a unit in this section where the exhaust manifold, mount and engine are all assembled ready for installation on ship.

Modern smithy. This aircraft worker is using electric arc welder in building jig. Bomber gang of the night shift give the final touches to a Lockheed Hudson by arc light.





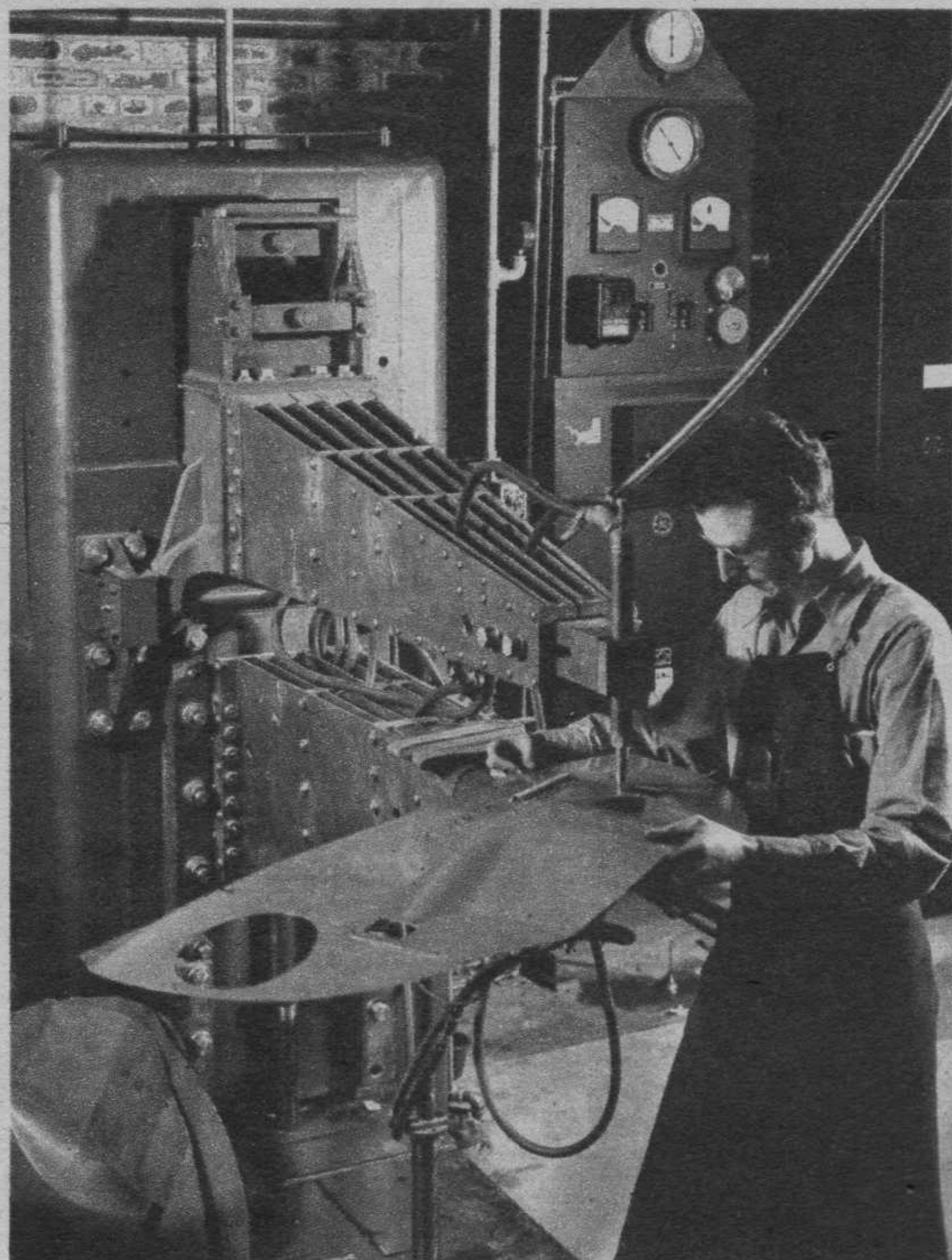
In this special roll spot-welding machine curver members are welded between rolling electrodes. This is for long straight welding runs.



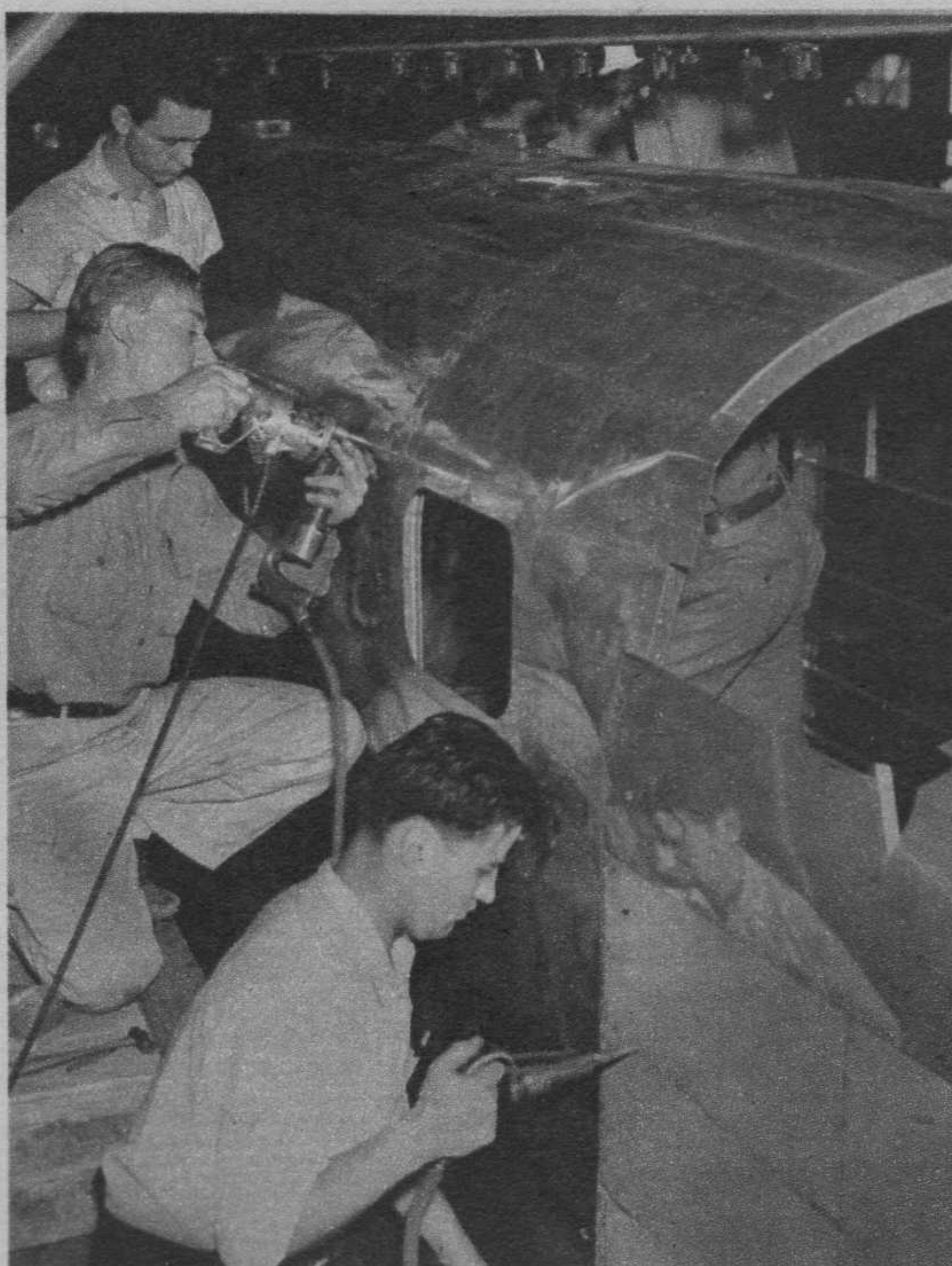
This machine cuts several sheets of duralumin at once. They are bolted to a steel pattern to prevent possible shifting and then are cut by this high-speed electric router.

AROUND THE CLOCK AT LOCKHEED

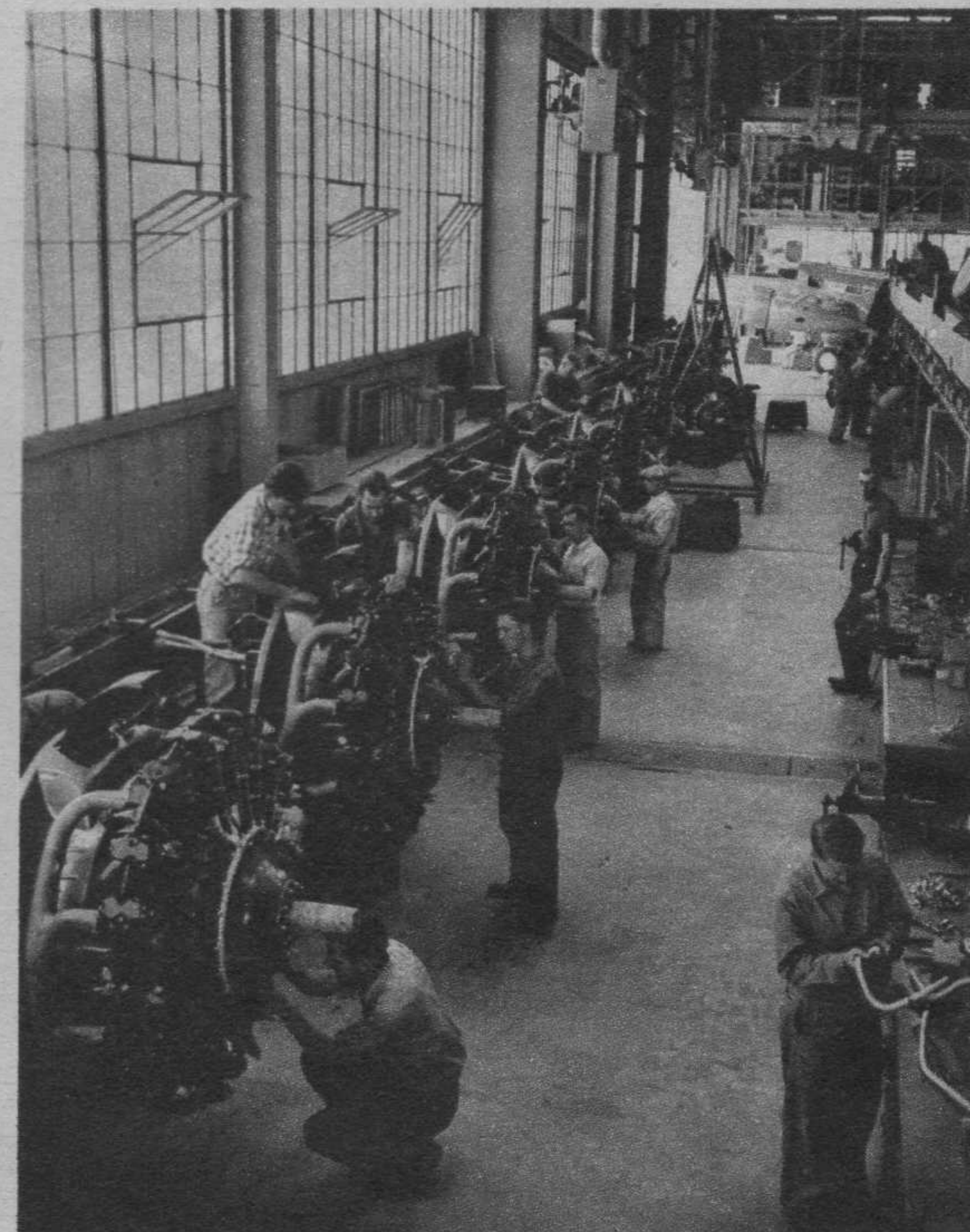
(Continued from preceding page)



This new resistance welder makes possible more perfect electric spot welding in hard-to-reach places.



Covering the subject. These sheet-metal workers apply sheet duralumin cover to the metal framework.



Engine assembly line. Here the wiring and exhaust units of the power plants are attached and checked.

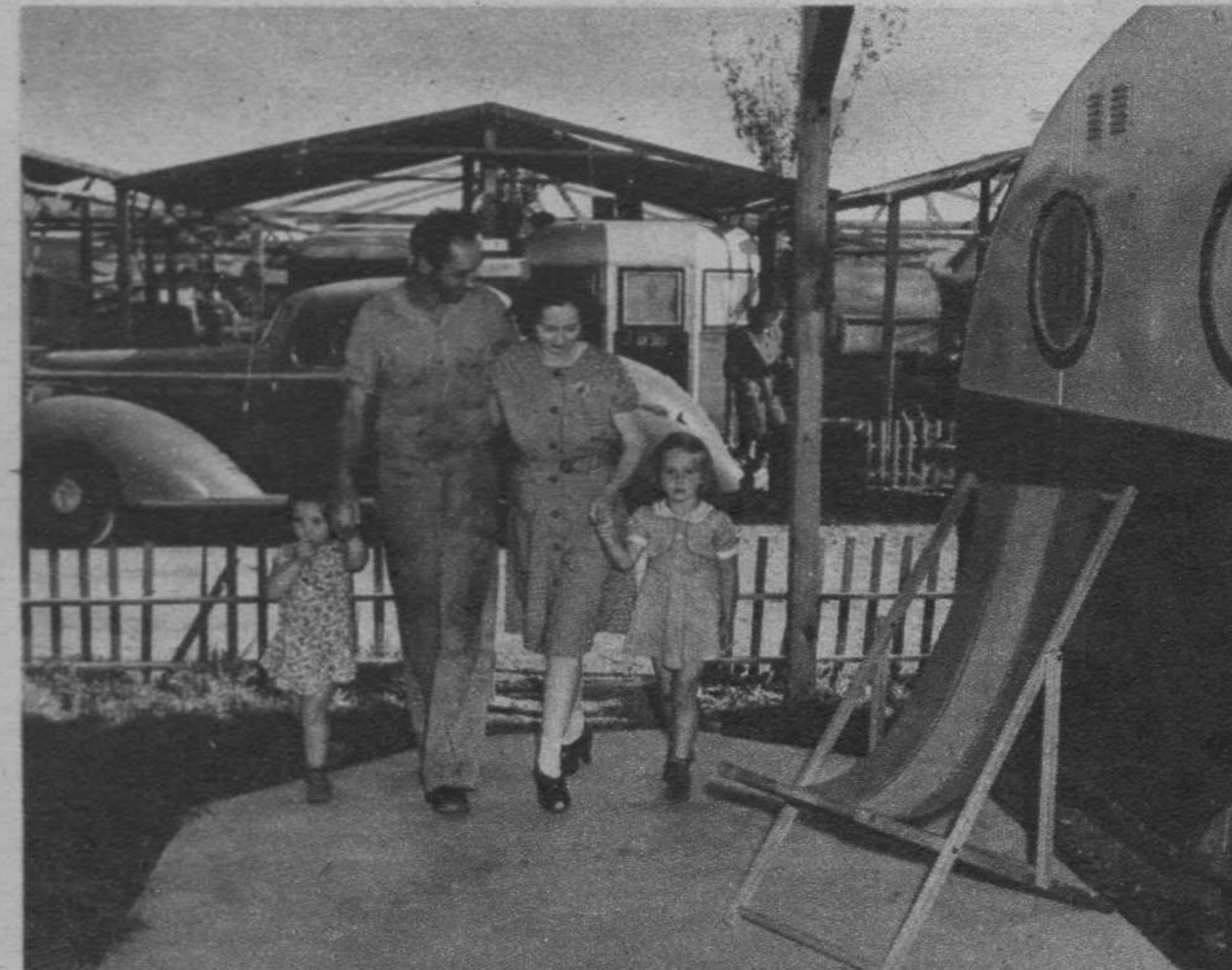
FAMILY LIFE AT THE DEFENSE FRONT



Open-air eatery. Lunch hour furnishes chance for workers to chew and chin.



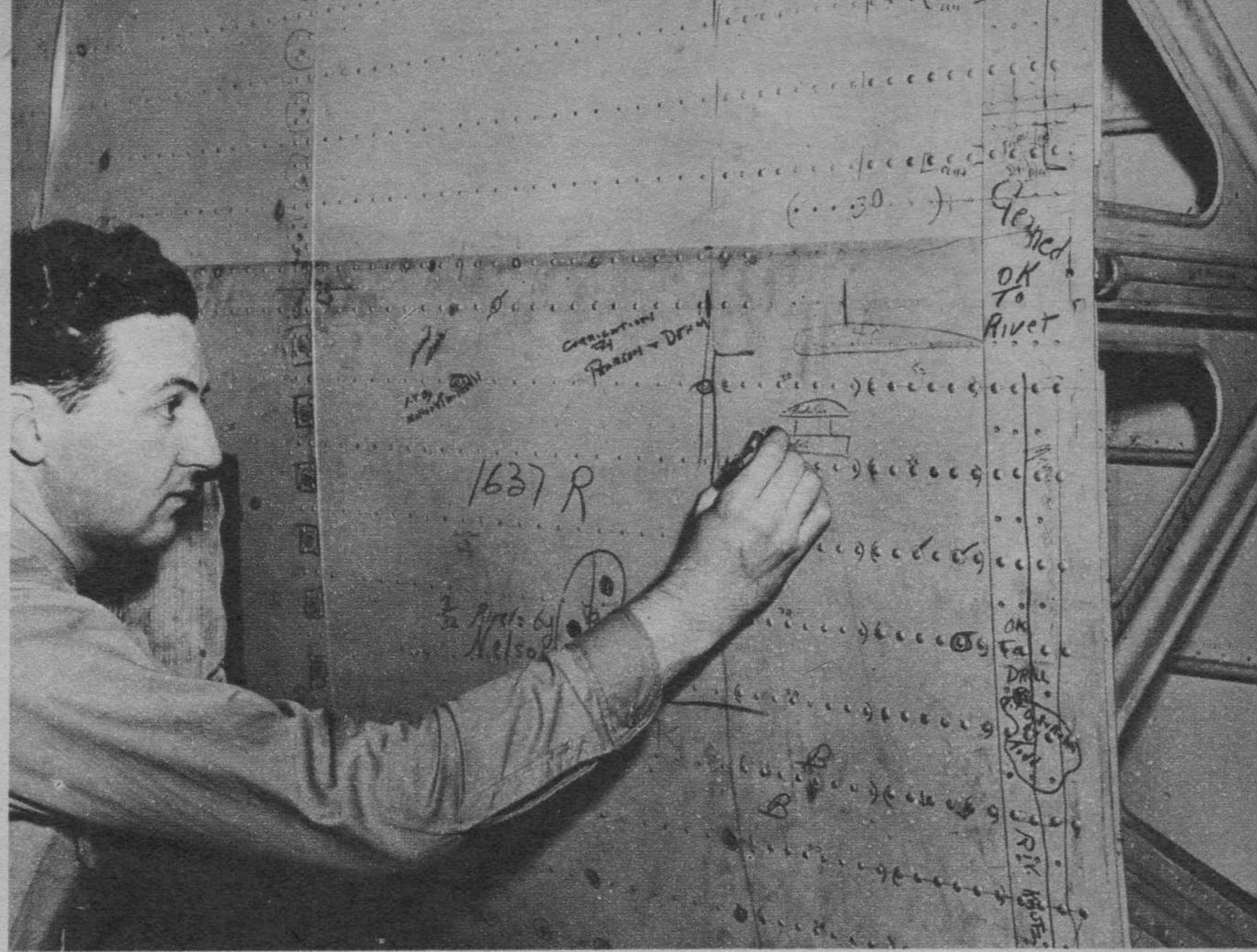
Shift's end. Work over, Joe Employee removes the traces of Lockheed real estate and prepares for leaving the plant.



Well, mom, what happened at home today? Joe's family is one of hundreds living in trailer camps to be near work.



After assembly every part is carefully checked for perfection and compliance with the specifications. Here the tension of a control cable is being very carefully checked.



Every inspector signs right on the job his approval of every operation. Here an inspector is seen in act of initialing approved wing rivets.



Peace and war. Two production lines in the 600-foot final assembly hangar show on the left the Lodestar transports and on the right the Hudson bombers. These

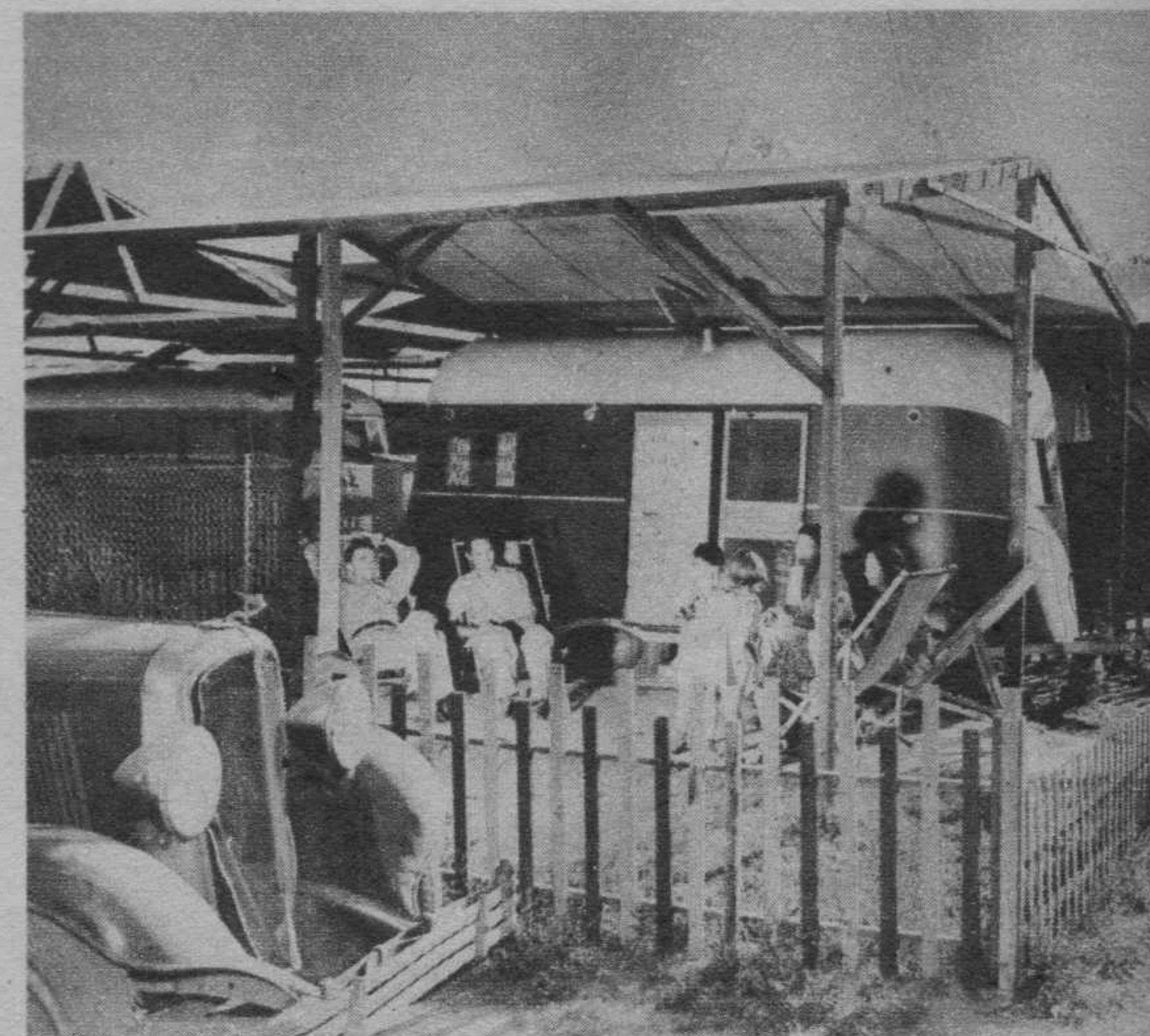
two lines and their respective lesser assembly lines for parts keep more than ten thousand employees working on continuous round-the-clock schedule.



What's cooking? Plenty, from the look on Joe's face. There's nothing like good eats after a big day at the plant.



Homework for all. Mom does embroidery, the youngsters catch up on stuff, and Joe learns more about his job.



Back-fence gossip as neighbors drop in just after supper. S'long, Joel



BLIMPS ON GUARD

BY Lieut. Comm. R. F. TYLER, U. S. N.

The commander of the K-2 takes you on a practice flight out over the Atlantic, demonstrating just how blimps would be valuable to us in case of war.

Note: The opinions or assertions contained herein are the private ones of the writer and are not to be construed as official or reflecting the views of the navy department or the naval service at large.

ALMOST two hours had passed since the rise of the sun, but still you couldn't see it. The clouds were heavy gray masses that filled the sky from horizon to horizon, racked and tumbled by a biting breeze born among the icebergs. The Atlantic, a hundred miles offshore, was a waste of sullen green swells and dirty white scud, and as lonesome as the moan of a whistling buoy in the night.

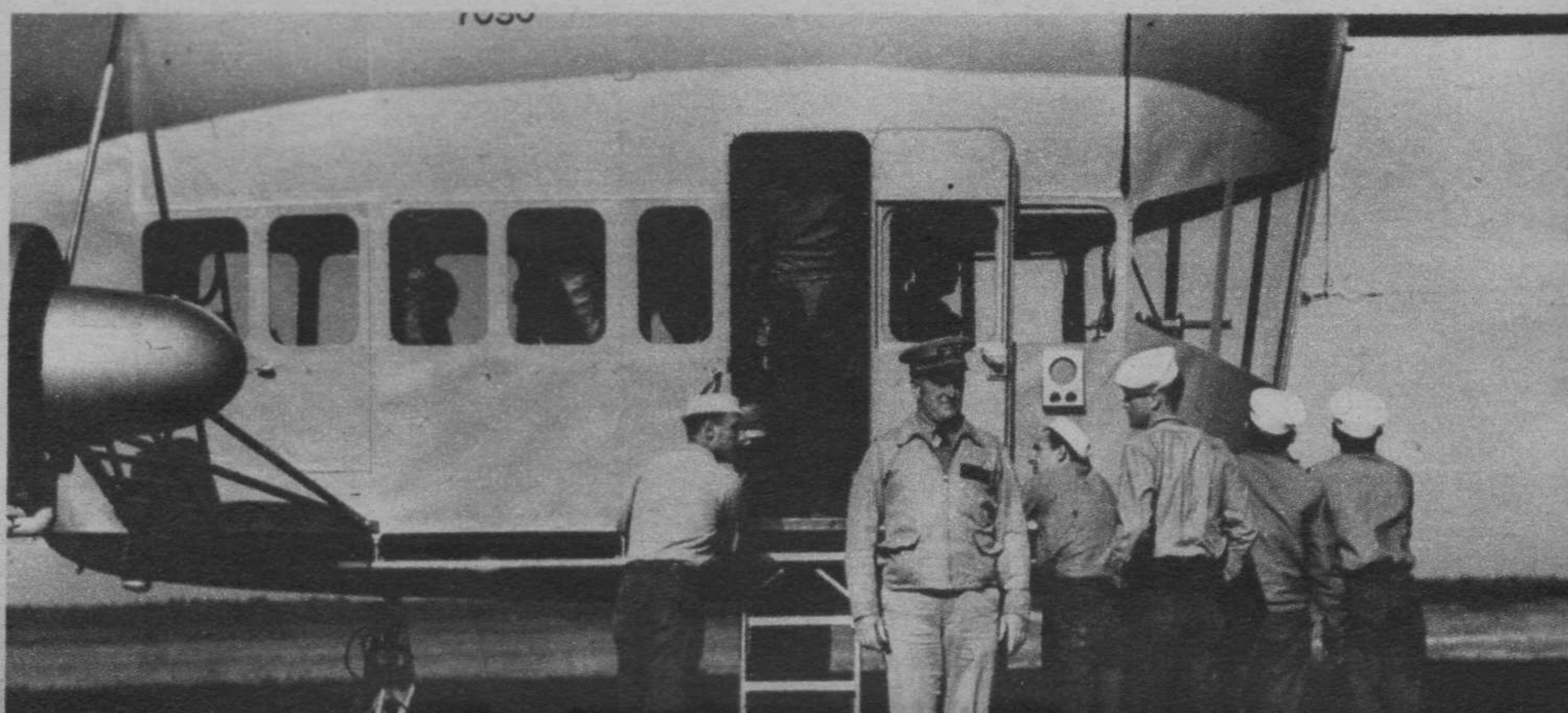
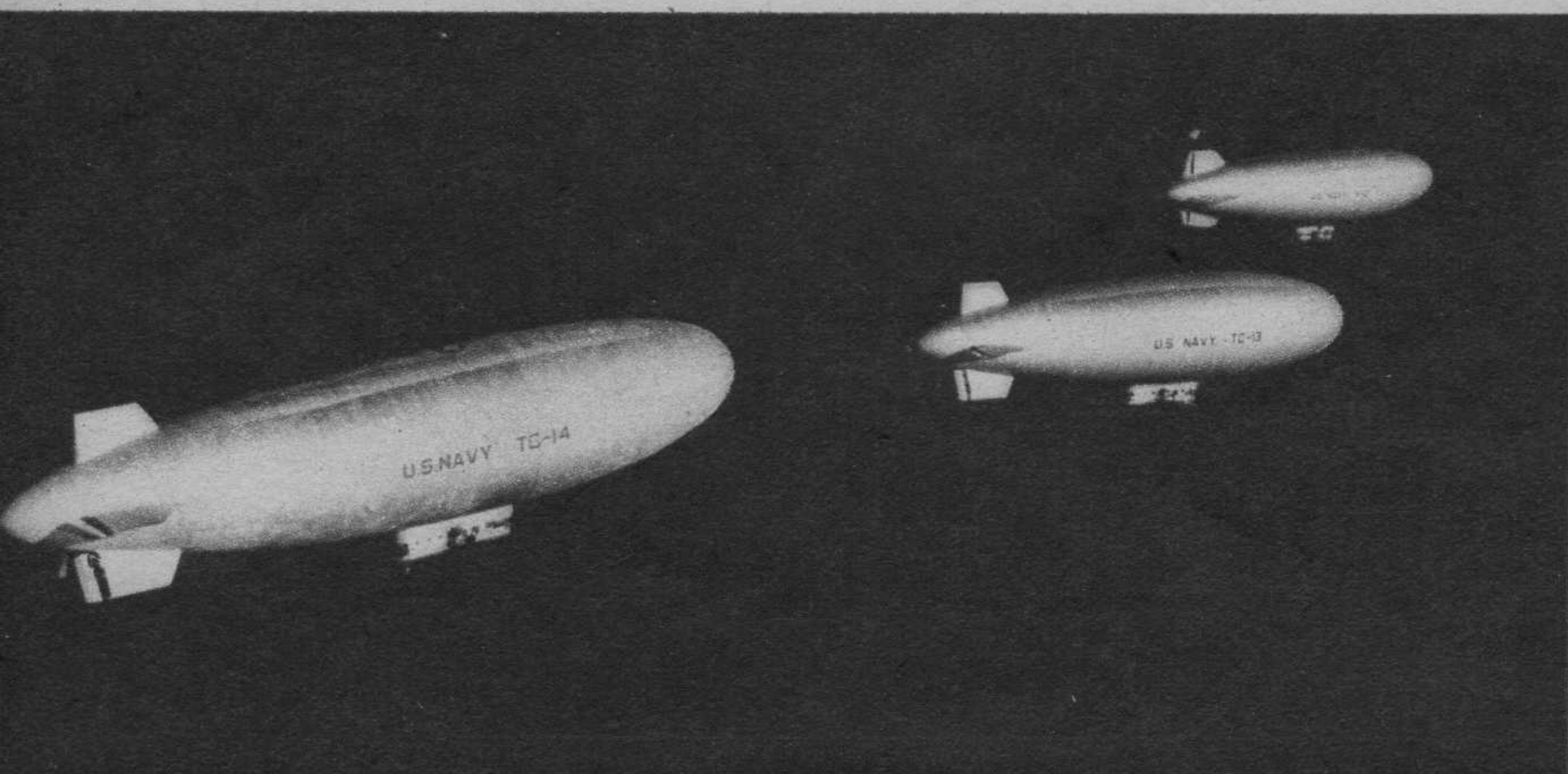
The freighter was on course for Philadelphia, her blunt bows shouldering stubbornly through the unfriendly combers, her rusty plates streaming spume after every lunge. She was heavy with cargo, low in the water, and couldn't have been logging more than ten knots; if she sighted land by nightfall she'd be doing well.

Both of the figures on the bridge were in oilskins, but the mate wore an old cap with a visor and had a pair of binoculars slung around his neck on a thong. These last he was using to scan the murky horizon with concentrated intentness, holding them steady over the forepeak for a minute at a time, and doubtless cursing the limited visibility. Suddenly he stiffened,



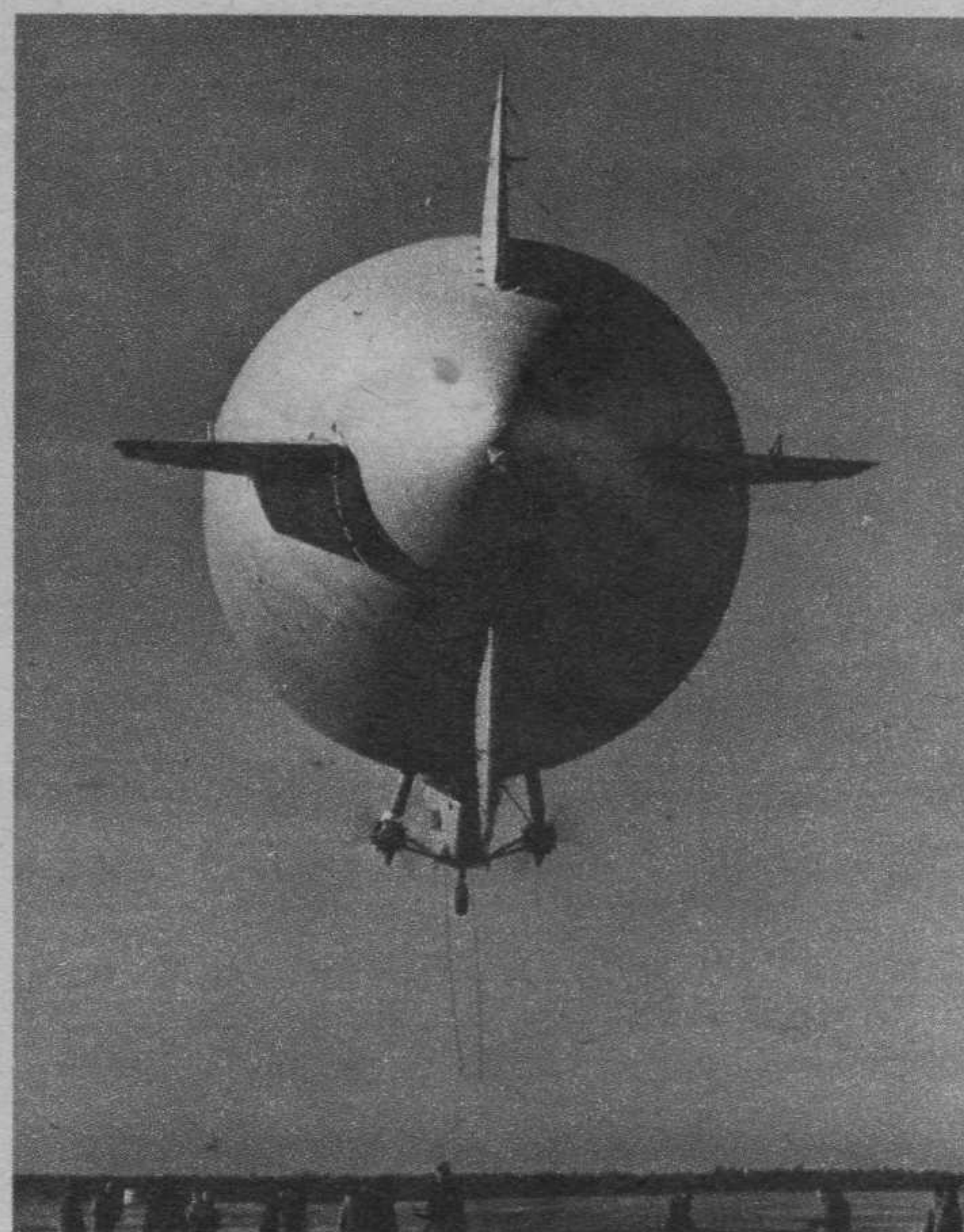
Navy blimp patrol. Three blimps prepare to go their separate ways on all-day patrol as far as 75 miles offshore. In war they would spot mines and submarines.

The author and the good ship K-2, a nonrigid of 400,000-cubic-foot helium capacity. The blimp's duration, ability to hover, and 8-man crew make it effective for coast patrol.





The crew awaits the take-off signal. Engines are warmed up as the blimp strains at the portable mooring mast.



anchors aweigh! Navy blimp takes off at Lakehurst. Trailing lines held by ground crew.



On patrol. Blimps spotted many submarines in last war, were effective convoy escorts.

bracing himself as the ship rolled out of a trough. The glasses swung hastily from one side to the other; then they dropped from his hand to stop with a jerk at the end of the strap. He lifted an arm to point, and his mouth opened wide with surprise.

He needed no binoculars to see what he was now pointing at, though it had not drawn his attention before. He had noticed first the faint hum of throttled motors; now, looming abruptly out of the scudding clouds, he saw a shape like a huge silver sausage. The nose was bluntly conical, and where the tail tapered were four flat fins symmetrically arranged; underneath was something like a streamlined blister with a row of windows all around.

But all that is how things must have seemed on board the freighter, the way we looked to them as we floated out of the clouds. Aboard the blimp, I slid open one of the windows and picked up a megaphone. From a height of a hundred feet my voice carried easily. "Ahoy!" I yelled. "What ship is that?"

At first I couldn't understand the mate's reply. I thought for a minute he was using a strange tongue, and asked the ensign at my side if he had the foreign-language vocabularies handy. But then the mate ducked into the wheelhouse and reappeared with a megaphone of his own. His shout came loud and clear, with a marked Scandinavian accent. First the name of the ship, the registry; then, "Out of Recife, bound for Philly!"

I asked several more questions, noting his replies on a special log sheet and checking them against a naval information chart. Then I waved the megaphone at him. "Respects of the navy—and the best of luck!"

A second figure in a peaked cap, hastily buttoning his oilskins about him, came up a ladder to the tramp's bridge; that would be the captain. I could see the mate pointing in my direction, reporting the unexpected hail. The captain seized the megaphone. "Are we at war?" he bawled at the top of his lungs.

I grinned as I shouted back: "No! Routine practice flight!"

The two Pratt & Whitney engines mounted outside on either side of the gondola, which had been turning up just enough to hover the K-2 into the wind over the freighter's position, now revved up under opened throttle. Our nose lifted, and the blimp rose in a gentle curve toward its previous course until the bulk of the envelope was nearly hidden in the cloud layer, only the observation ports remaining down in the clear.

Looking back down at the bridge of the lumbering steamer, I could see the two officers staring after us. The mate was gesturing; I could almost guess what he was saying.

"A fine chance we'd have of getting anywhere near an American harbor if we were an enemy mine planter, huh!" And the captain's response; I'd almost bet on that, too: "I thought they'd chucked all them things in the dust bin since the last one burned up—what is it, the *Hindenburg*?"

There are doubtless many others who suffer from that same misapprehension; that the series of airship disas- (Turn to page 28)



Ship's navigator carefully plots each ocean patrol flight to cover maximum area. Blimps can carry depth charges to drop on submarines.



Forty winks are snatched by one crew member as blimp continues its slow patrol over the ocean. Blimps have heated cabin and electric stove.

SECRET AGENTS OF THE AIR CORPS

BY JOHN R. HOYT

Get vital information, transmit it to proper places, keep mum—that's the job of G-2 men.

MAJOR X of the army air corps, and a member of G-2, was being interviewed. A veteran of both aviation and the army's rapidly expanding Intelligence Service, Major X spoke at great length—and said nothing.

"But," the reporter complained, "you haven't told me anything yet. How about spies? Where does your information come from? What are the Nazis doing?"

"Son," replied the major, "if your eyes were half as good as your curiosity you would have the key to G-2 in your hands. G-2 is the second section of the general staff—Intelligence. It is a unit that functions as well as it does because its members (like myself) don't tell everything they know. That is the key to it, and an excellent example of how G-2 works. We see a lot, find out all we can, and tell nothing!"

The major tried to give the impression that working for G-2 was as unvaried, uninteresting and lacking in melodrama as driving a mule team. But according to the best-sellers, anyone in the Intelligence Service, and especially aviation, has his hands full nowadays. And after a while it came out; the reporter merely kept quiet and let the major weave the background for a story.

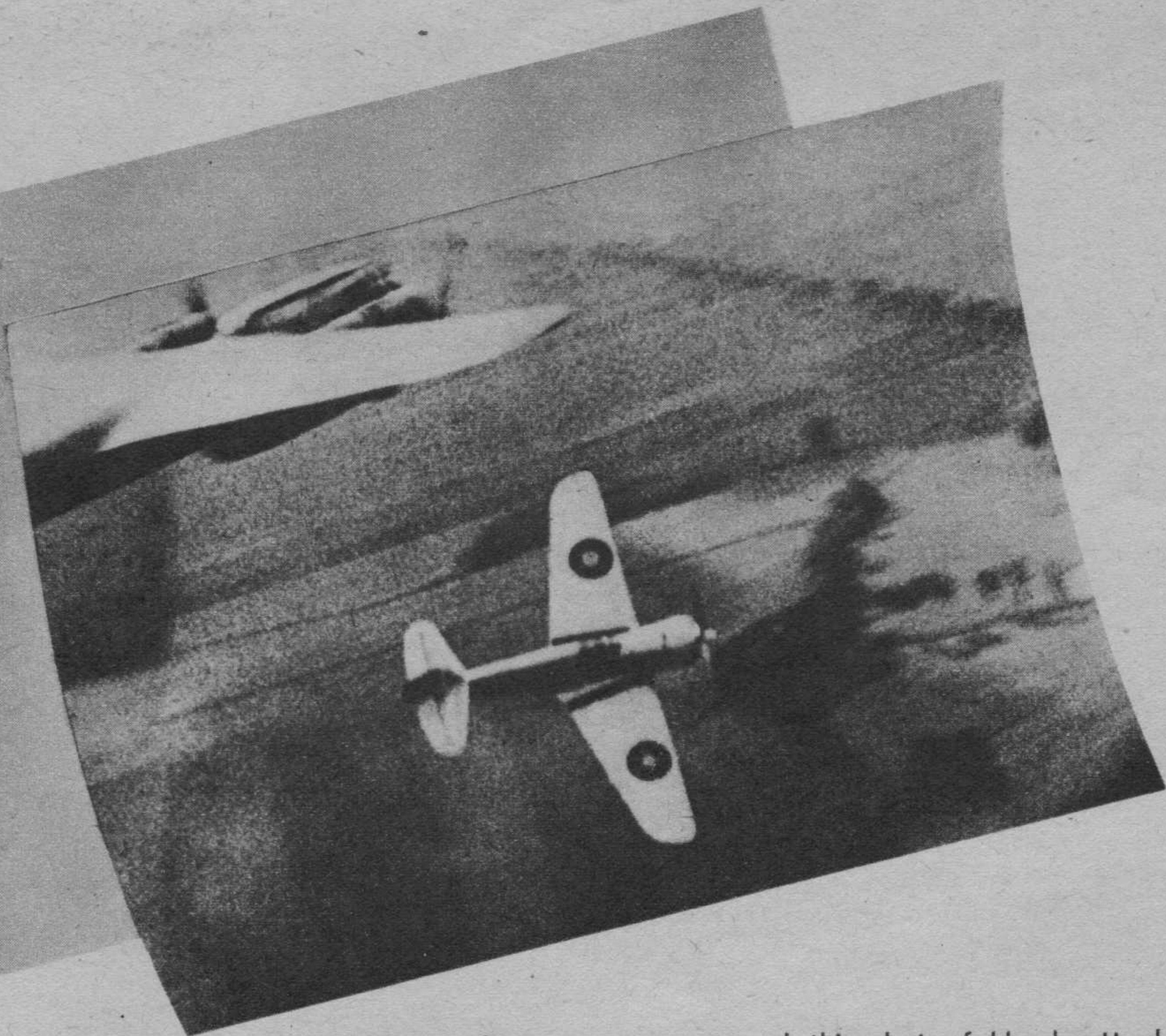
To begin with there are more persons employed in G-2 of the general staff today than there were in the whole office of the chief of air corps five years ago! And today G-2, as the Intelligence

division is called, is expanding so rapidly that officers in the war department itself cannot keep up with the picture. Expansion is going on, new men are taken in, vital information is uncovered. And there the work begins; just getting the information isn't so hard—it's keeping it and disseminating it that is difficult.

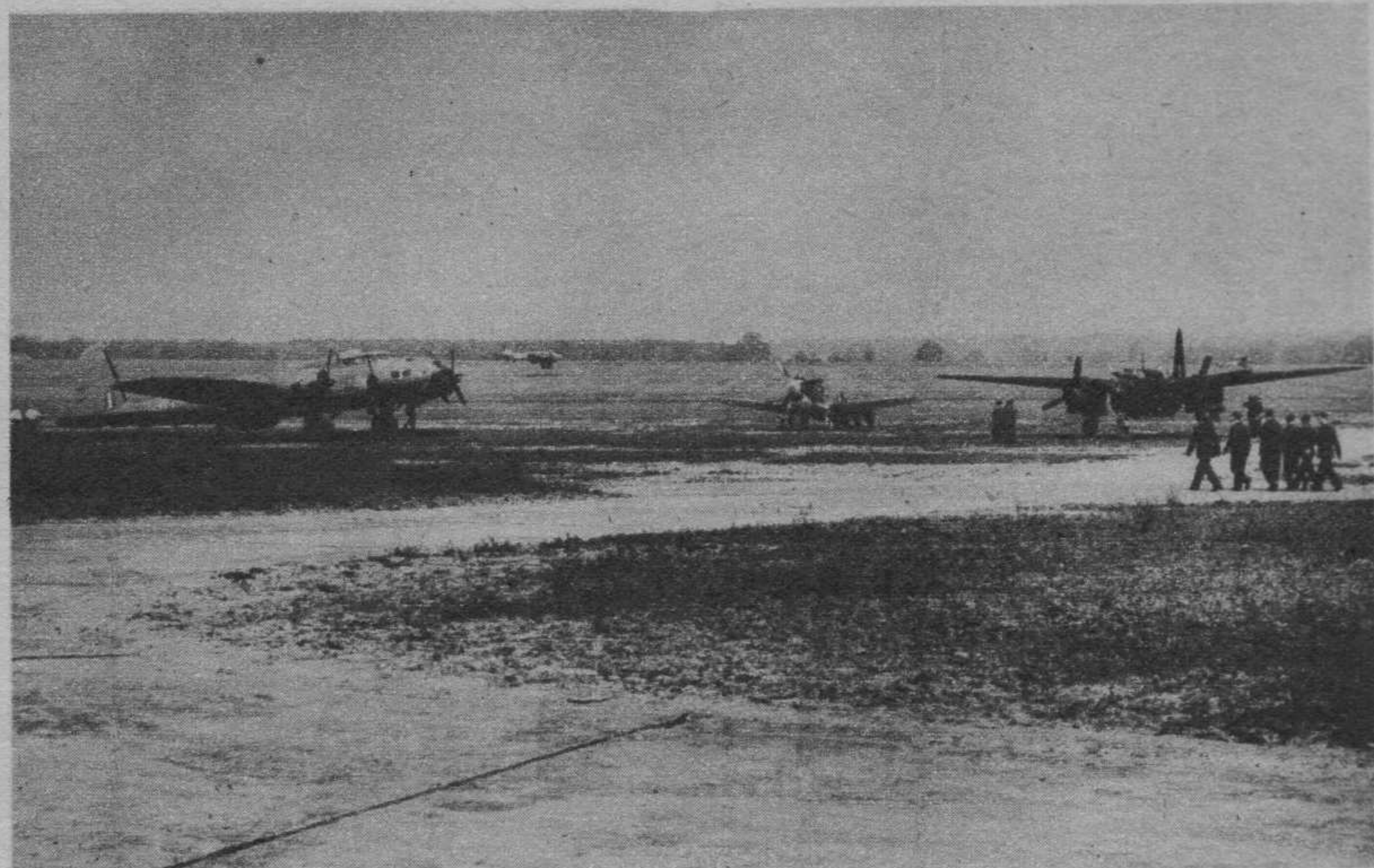
For example, G-2 wants to know all it can about foreign pilots, their planes, and how they accomplish their missions. During the week of April 25th, fourteen combat pilots of the United States air force landed in Britain as observers. Those pilots were expert in handling the P-40 pursuit, and ostensibly were going to demonstrate the craft to the British. But in the main they were observing foreign planes, pilots, and tactics—how the Nazis conducted themselves in the air, what their methods were and how they flew.

Of course, G-2 wants its information firsthand, and wants it authentic. But the idea of sending United States pilots abroad to tangle with a Nazi plane, as they were certain to do if they flew over spots where they could observe accurately, was fraught with danger. Sooner or later several pilots would be shot down, the news would reach the papers, and a tense international situation might immediately develop.

This question was brought up during the interview with Major X. The major didn't reply for a moment, and (*Turn to page 29*)



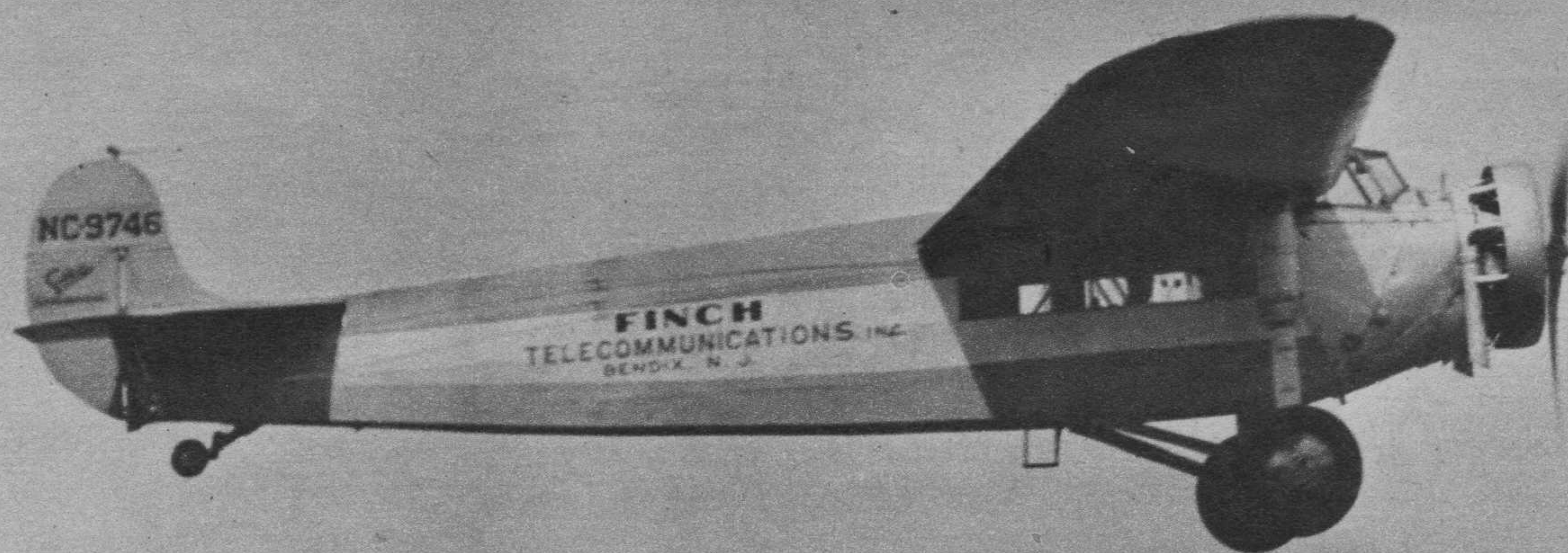
German censor passed this shot of Hawk attacking Dorniers. U. S. observers report performance.



American "secret agent" pilots test and use American equipment in England to find out shortcomings and get essential information back home.



Ships like this Vultee Vanguard for the British must be evaluated for speed, maneuverability, armament and armor, all in our own interests.



Off for a test. Pilot and Chief Engineer Frank R. Brick take up the especially equipped Fokker monoplane.

RADIOED MAPS IN CODE

Equipped with this radio facsimile unit, planes can now transmit secret drawings of enemy territory, moves, etc.



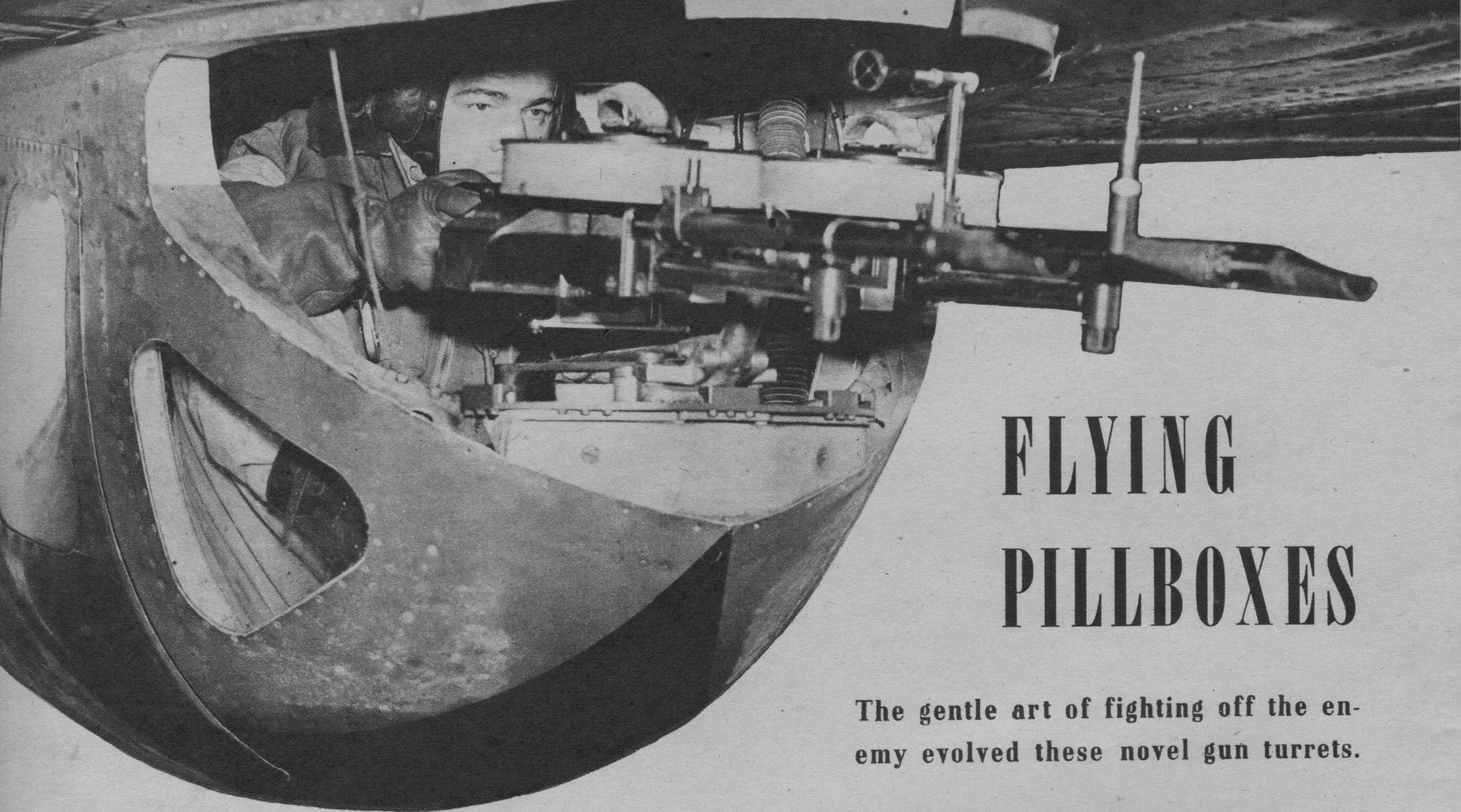
Over enemy terrain the observer draws location of troop placements, guns, depots, in black on map of section outlined in red. Red does not transmit, so enemy cannot know meaning of marks.

Red-outlined map with marks is placed in transmitter and sent on a special wave length to headquarters.

At headquarters the officer takes coded information from machine. Other officer has red map outline on celluloid.

Solution. Weird markings placed under map outline complete the information picture.

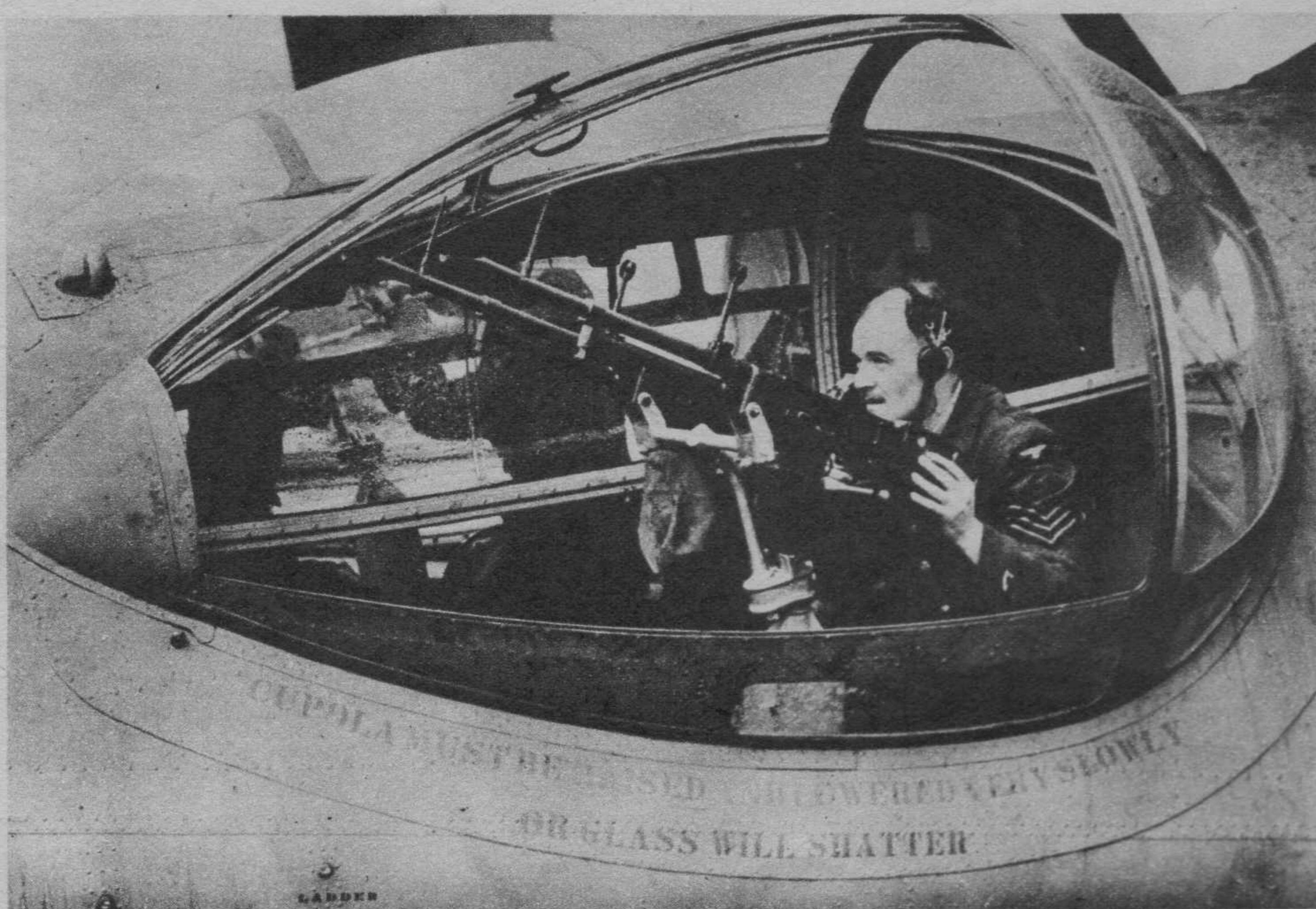




FLYING PILLBOXES

The gentle art of fighting off the enemy evolved these novel gun turrets.

"Dustbin" beneath Handley-Page Hampden houses a two-gun sentinel, firing under tail.



Ready for all comers. Rear gunners on Consolidated PBY-5s (Catalina in England) man two sets of these swivel-mounted machine guns. Huge blisters designed on basis of war findings.

Famous multigun power-operated turret on Defiant night fighter can train its guns up or to the side at right angles against strongest slipstream. This crew has thirteen victories.



Aimed by remote control, machine gun in tricky turret on Beaufort torpedo-bomber gives increased protection.

Daniel Boone, twentieth century. Even machine guns need servicing. This gunner cleans tail guns on Whitley bomber.



○ Army, Navy, or Marine Corps Field
(for civil aircraft use only in emergency)

⚓ Seaplane Base
(with complete facilities)

HI X Marked High Explosive Area

★ Rotating Beacon
(with course lights)

⚙ Commercial or Municipal Airport

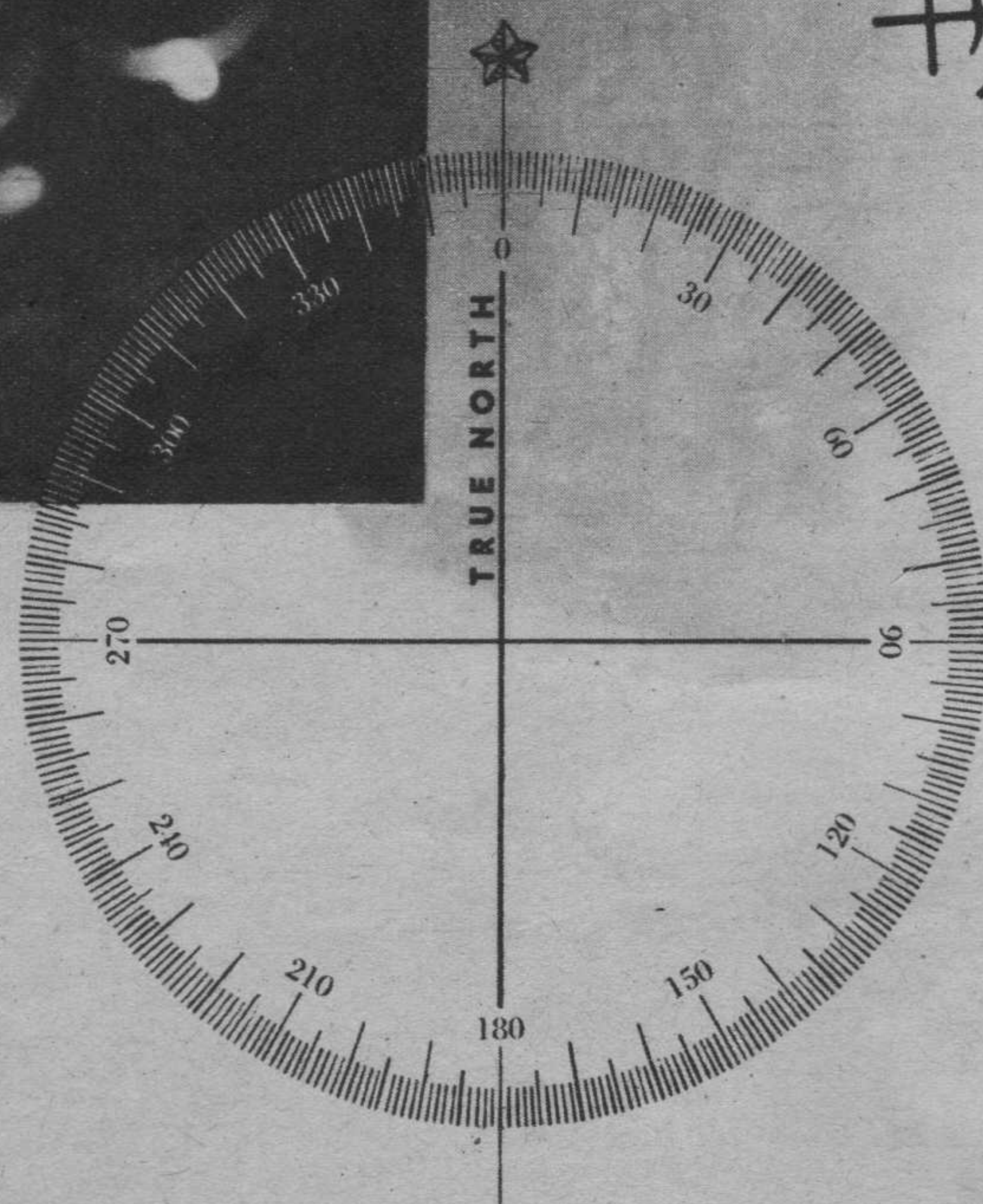
🚒 Forest Ranger Station

🛢 Oil Well Derricks
(general location)

🚢 Mooring Mast

🌿 Swamp

⚡ Mine



YOU CAN'T MISS IT!

BY IDELL DURRETT HAYS

—at least you shouldn't, with the complete and detailed air charts available today. This is their story.

WHEN George Jackson, proud possessor of commercial license No. 95475, decides to fly from Kansas City to Cheyenne, the first thing he needs is an airplane.

But the second thing is a map.

Without a map, he cannot follow a true course—cannot even chart one.

Uncle Jim, starting out on his vacation, drives his car into the most convenient filling station, gets a highway map and, with the added aid of mileposts, winds his way easily across the continent to his favorite fishing haunt, checking his route as he goes. Travel to him is bounded only by space. When his gasoline supply gives out, he stops.

But when George's gasoline gauge registers empty, he spins. His travel is bounded by both space and time. To conserve gasoline and minutes, he must map a flight course before leaving the ground, calculating the shortest distance between Kansas City and Cheyenne with regard to topography, wind, deviation, et cetera. There are no signposts along the airlines, so detailed maps showing landmarks and approved landing fields are the more important.

Upon the accuracy of his charts, and the skill with which he utilizes them in course mapping, keeping "located" while in flight and gauging safe altitudes for flying, may depend George's life, as he balances time and fuel against distance and weather.

The job of turning out these highly specialized, flight-checked aeronautical charts has, since their first appearance, been delegated, by the Air Commerce Act of 1926, to the United States Coast and Geodetic Survey, a scientific service bureau of the department of commerce.

For more than one hundred years, the survey has handled capably the printing of similar nautical charts for sea use. When the new need arose, the government turned to them once more.

In the fifteen years since their institution, the charts have had to keep up with—and therefore reflect the progress of—one of the world's fastest-advancing industries. They have done so, the sale of them going up steadily—and now exceeding that of nautical charts.

Of course, it is possible for a flier to follow an ordinary automobile map, or even, as in the case of Downwind, friend of Smilin' Jack in the funny paper, a geography atlas. Back in early days of mail carrying, when pilots became lost, they descended to low altitudes, found a herd of cattle and flew over them. If the cattle stampeded, the fliers knew they were off the air lane; if the cattle were "conditioned" to the motors, the pilots were on course.

Army fliers tell stories about hedge-hopping, "flying the telephone poles," dropping low to read the town's name on the water tank, or using the "iron compass"— (Turn to page 26)

I GET MY PRIVATE

The old story of learning to fly that's always new—told by a traveling salesman.

BY WALTER E. EDWARDS



Don't worry, it's strong enough to hold you even if you are big. Bill, left, assures Walter that the rugged training plane can really take it.



Down-the-hose directions. Instructor Bill Turso, left, uses combination hand and voice signals in flight. Here he and Walter test Gosport tube.



Bill gave me plenty of tips on air maps on how NOT to get lost on my first cross-country solo.

Mine! The signed log book making me a Private Pilot is handed over by Inspector Copeland.



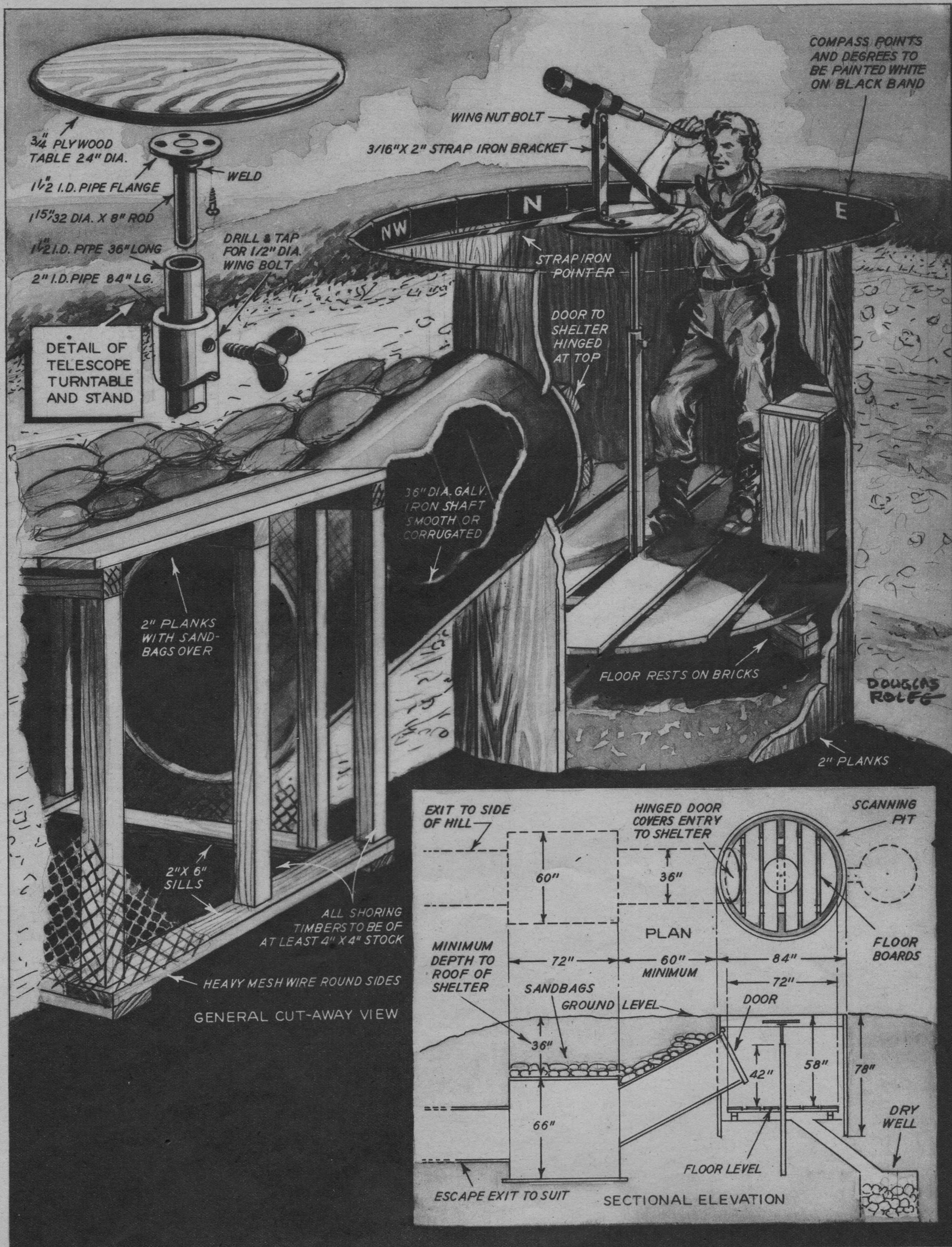
YOU have never heard *this* one about a traveling salesman! Selling steel for a big company has its ups and downs. But even if you are on the "up," in Bridgeport, Stamford, Hartford or New York, you can always look up and see those lucky devils flying in planes go still higher. So, living in Garden City, I decided one week end to step over to Roosevelt Field and have a look-see. . . .

Well, there I was, a registered student, a contract in my jeans, waiting for the first dual hop. Had never been up before. It wasn't bad. (That fellow Bill Turso sure can fly—he's got five thousand hours.) Sure, the first hop wasn't bad—but that's because I finally got down. Gentle reader, remember, if you are interested, I went into this business as cold as a nude Eskimo. From the gunning of the throttle on the take-off to the three-point (thank Heaven) landing, I was scared. Being fundamentally a little reckless by nature, I have since been glad of this original fright as I think it has made me a more careful pilot. That too-true observation of Horace Greeley, "Your hindsight is better than your foresight by a damn sight," can never be applied to a pilot. If your foresight isn't good, you'll never be around to figure out your hindsight.

My knowledge of aviation was nil. Thus my decision to attend a Grade A school. Roosevelt Aviation School, I knew, offered a first-class ground school as well as proper equipment for flying. The curriculum I obtained, the equipment I saw, and the men I met, sold me on my first visit. In the ground school I learned that a pilot's problems are not all with his ship. Meteorology, navigation and civil air regulations must be as integral a part of a pilot's make-up as his co-ordination of stick and rudder. Mr. Cappe, fondly known as Cap, has a way of presenting adiabatic rate, radius of action, and why you can't take a number (Turn to page 31)

AIR DEFENSE NOTE BOOK

No. 1—Home-made spotter's post for civilian aircraft warning service.



Set six feet in ground, this post can be made from easily obtainable materials. Dry well for drainage on right; safety shelter with escape exit on left.

ELMIRA MEET

BY ALEXIS DAWYDOFF



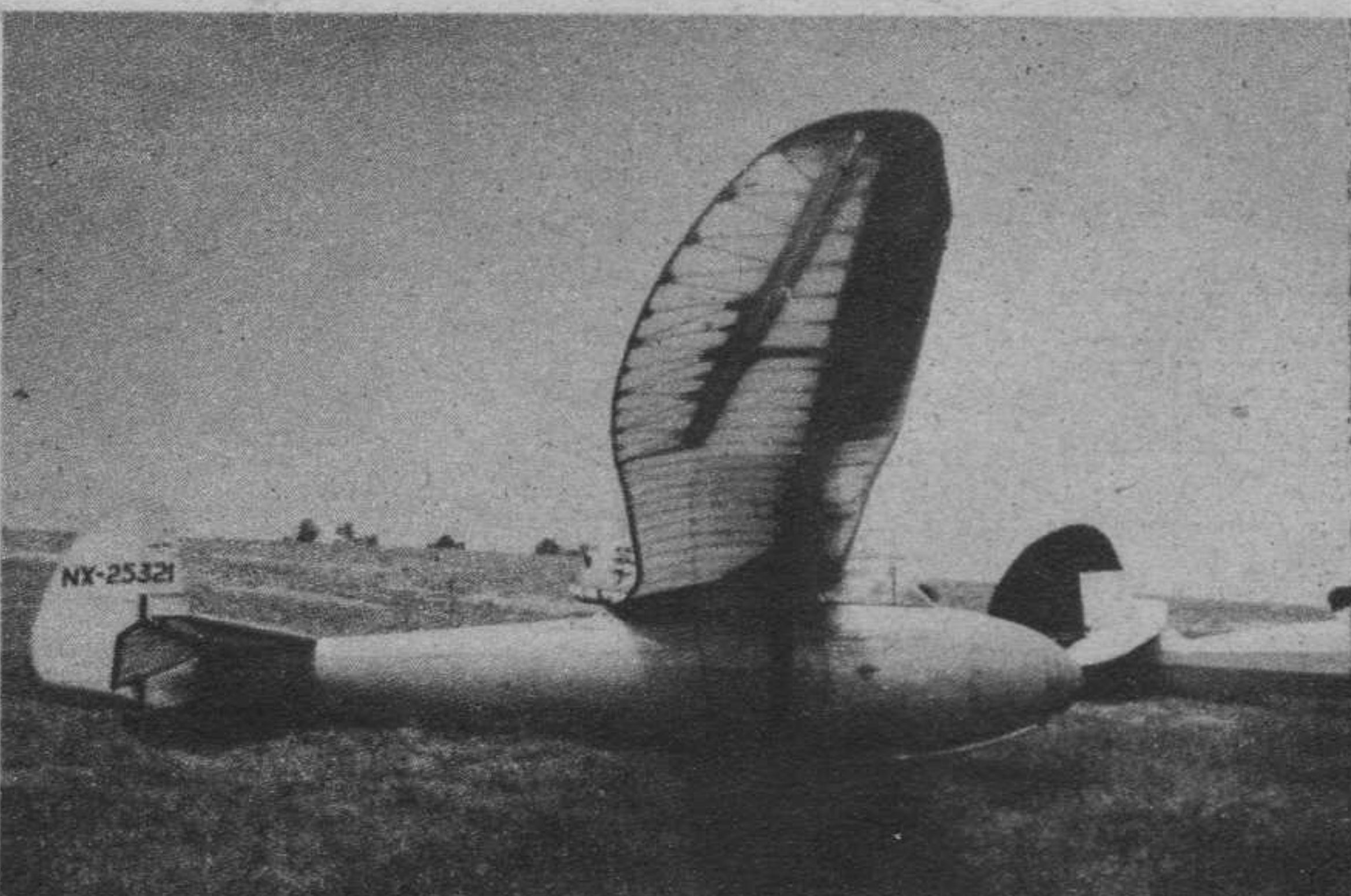
Famous field. This shows the beautiful rolling hills and valleys about Harris Hill.



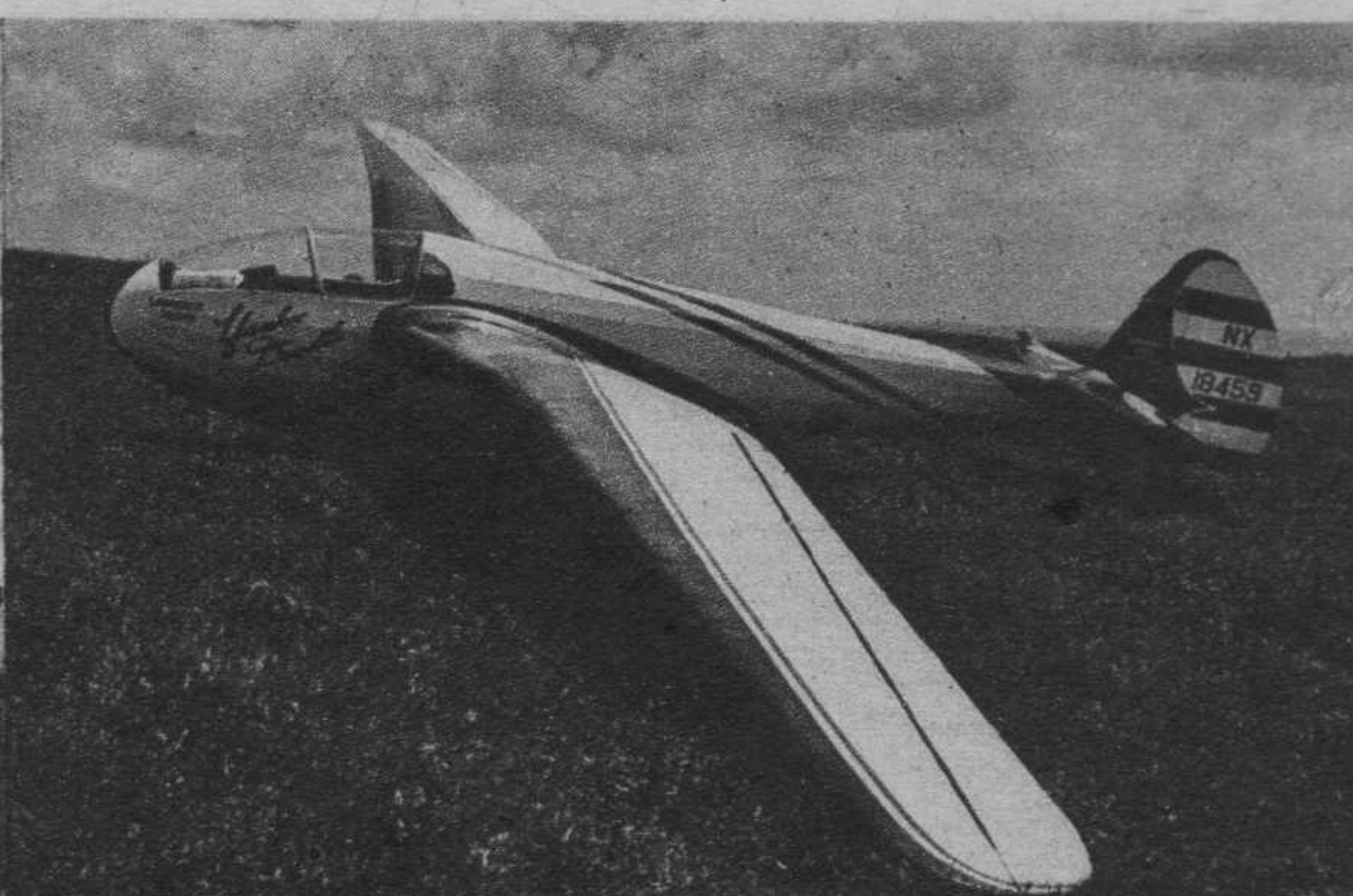
Maj. Gen. Arnold, Evans Trophy, and donor, Edward Evans.

"Military" was the word at this year's Twelfth National Soaring Contest. Here's what happened.

TWO narrow-winged sailplanes soared silently in tight formation over the sun-baked top of Harris Hill. Both landed simultaneously, holding their positions, and rolled up to grandstands crowded with people. One of these motorless craft bore the insignia of the army air corps with the lettering AAC-TG-2 (Army Air Corps Training Glider 2) painted on the fuselage below the pilot's cockpit. Flown by Major Frederic Dent, Jr., the first army Silver "C" soaring pilot, this ship set the tenor of the Twelfth National Soaring Contest held in Elmira, N. Y., from June 28th to July 13th.



Canadian Kite. The McGill University's Kirby Kite came down from Toronto to participate in contest.



Fancy Flier. Lawrence Institute of Technology's high-performance Yankee Doodle did aerobatics well.



Polish participant. The Orlik sailplane drew plenty of attention from both pilots and spectators.

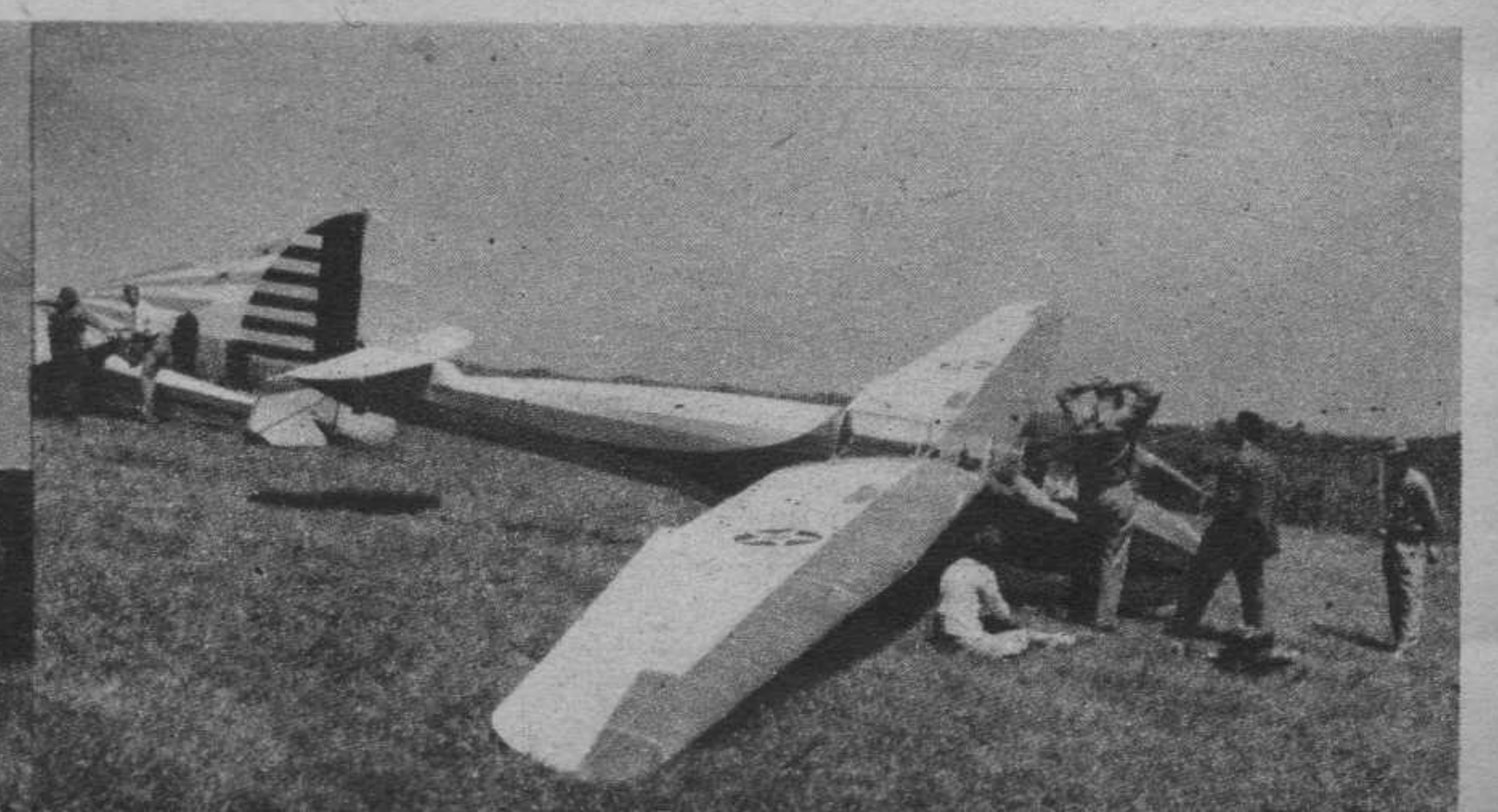
Frank Schellhorn of the Airhoppers about to give his famous blue toque a spin in the sleek blue Kirby Kite.

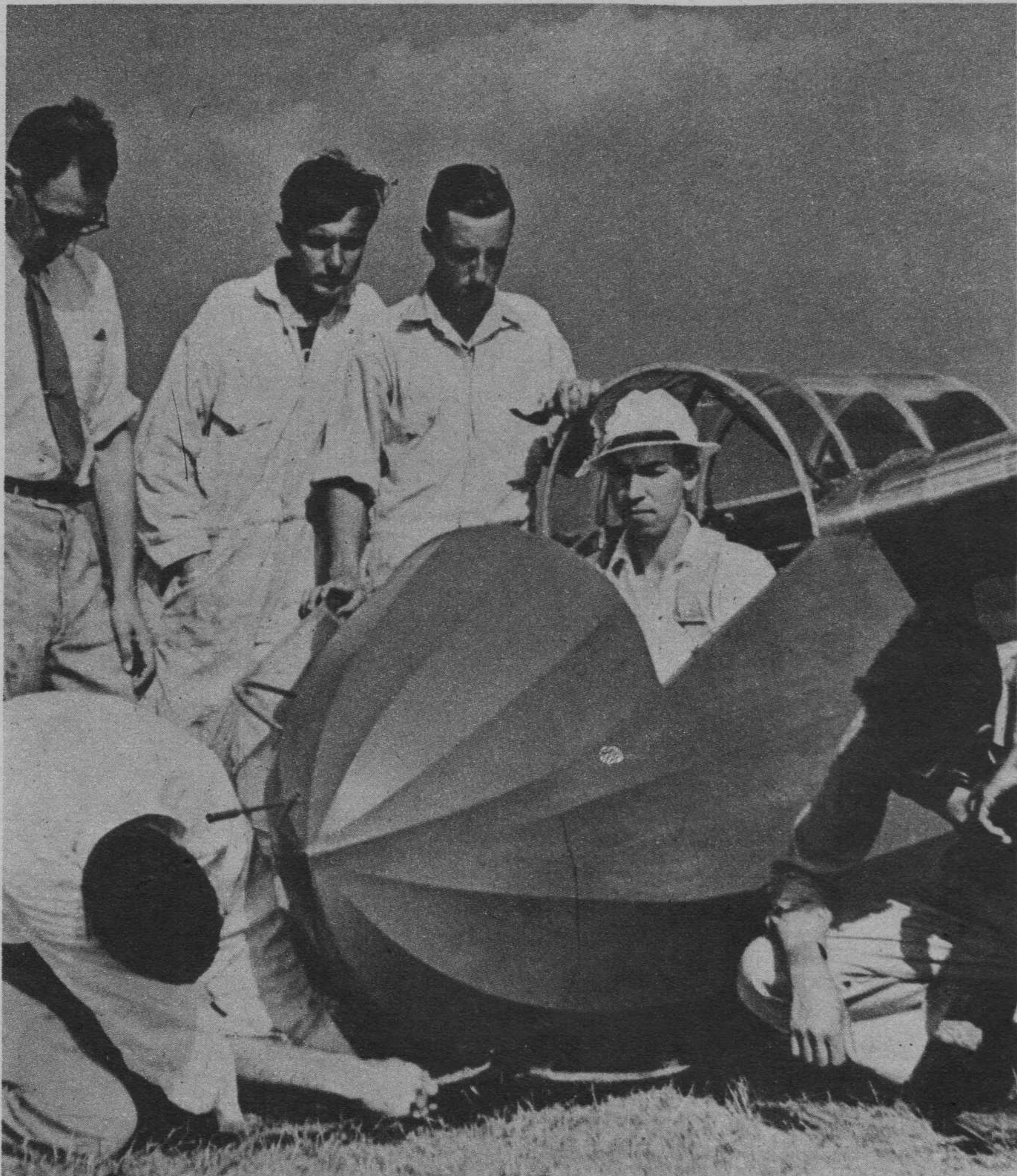


Mr. and Mrs. co-operate. Walter White in cockpit of the Aero I. T. I. is assisted by his wife as crew chief.



The army IS interested. First army sailplane to be purchased for training is Schweizer two-place.

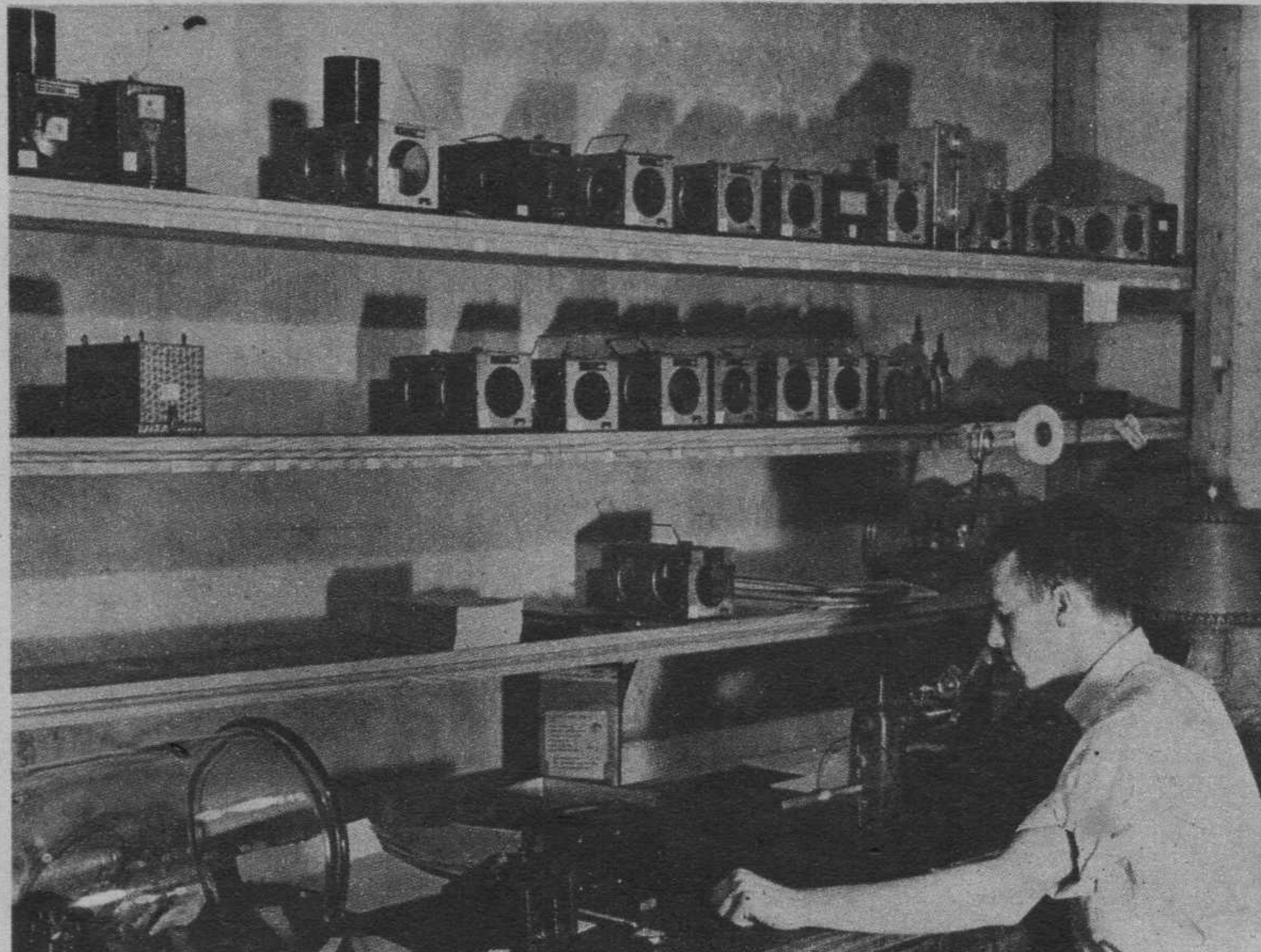




Stanley Smith, winner of the Air Trails Jardur Aviation Chronograph award.

This year the crowds on Harris Hill saw for the first time a military sailplane, forerunner of a number of similar craft now on order by the air corps, and were aware of the presence of a large number of representatives of the military services, all there in the official capacity of observers. Army men included Maj. Gen. H. H. Arnold; Maj. W. S. Lee, representing Maj. Gen. Geo. H. Brett, chief of the army air corps; Maj. J. Beebe, aide to Gen. Arnold; Col. N. N. Grant, surgeon of the army air corps; Lieut. John Watkins, and Maj. Thomas Phillips, veteran soaring pilot. The navy was represented by Lieut. Com. Donald F. Smith and Commander Albert Rice of the Naval Reserve Base, Floyd Bennett Field, and Ensign Robert Buell. Observer for the marine corps was Lieut. Mallory. All these officers were given rides by either Major Dent, flying the army glider, or by Parker Leonard in the Elmira Area Soaring Corp. two-place Schweizer.

C. A. A. guests and observers included Gen. Donald H. Connolly, administrator of civil aeronautics, Washington, D. C.; Earl R. Southree, chief of standards division, Civil Pilots Training Program; Milton Girton, Nelson Shapter and Robert Auburn of the C. A. A. Wan- (Turn to page 32)



Constant checking of barographs assured pilots of accurate flight recordings



Frederic Dent, Jr., air corps major, heads the army training group.

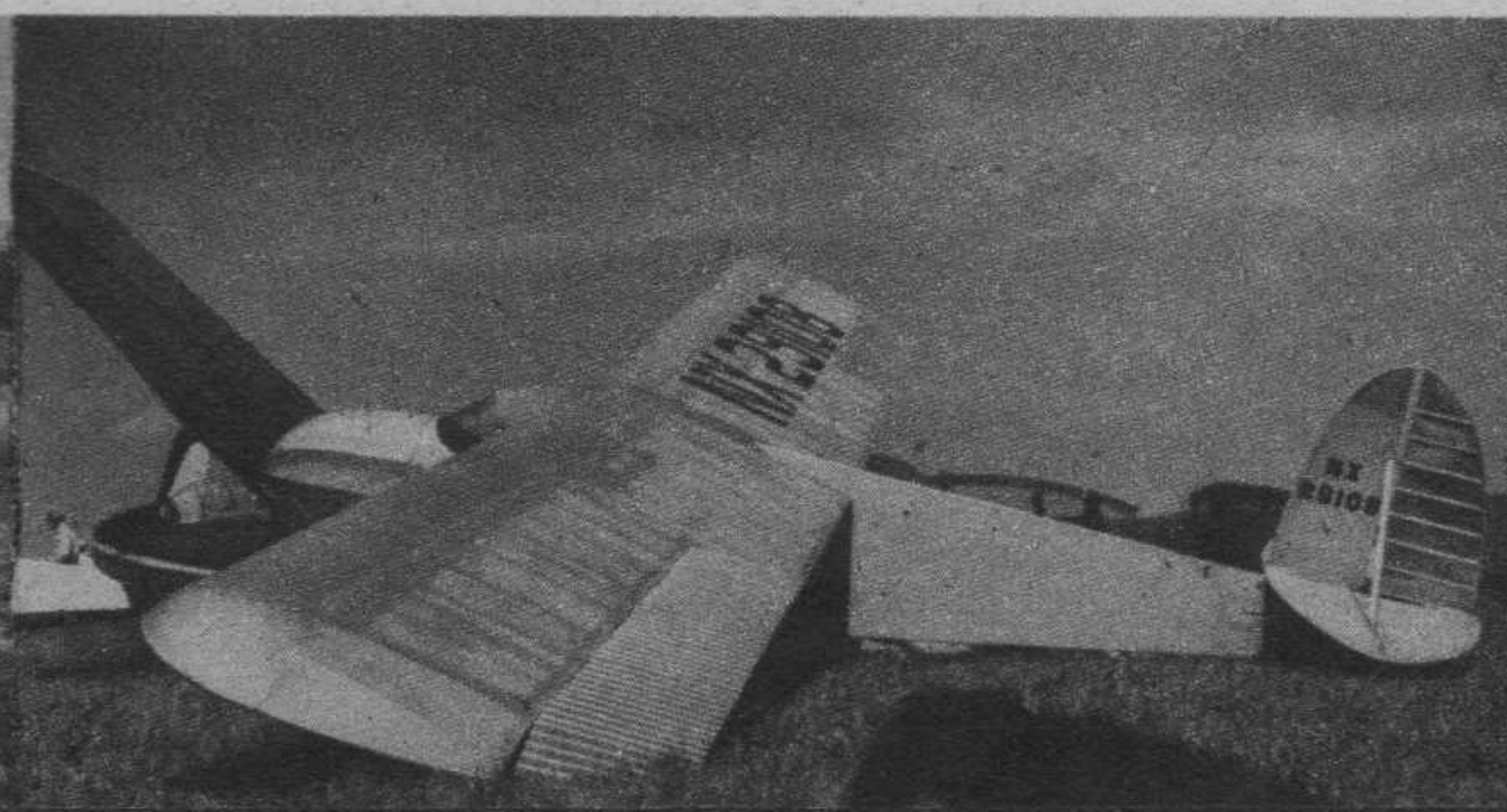
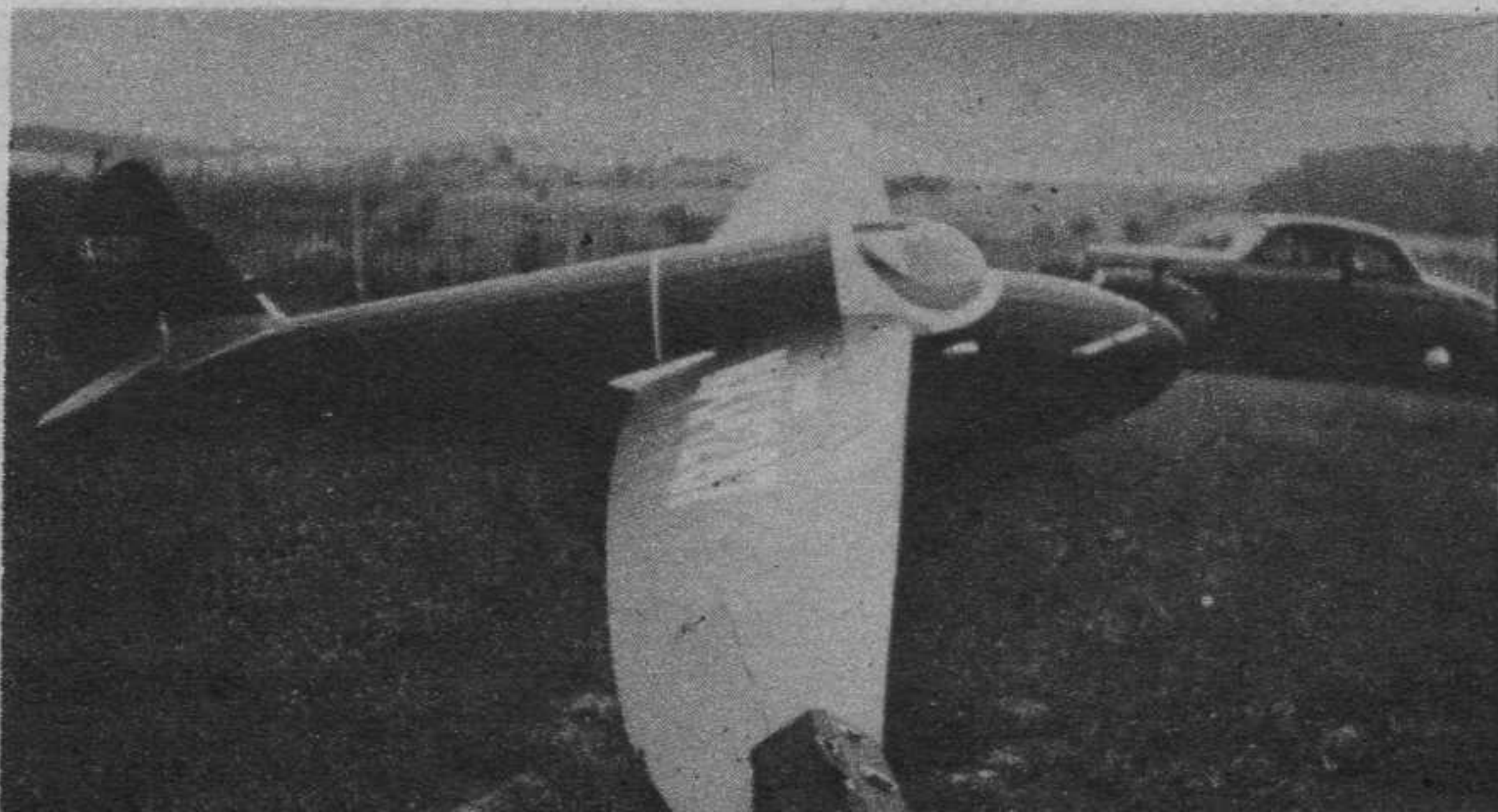


New prexy of Soaring Society of America is veteran pilot Parker Leonard.

The Screaming Wiener won Aviation magazine award for the best new design at the contest.

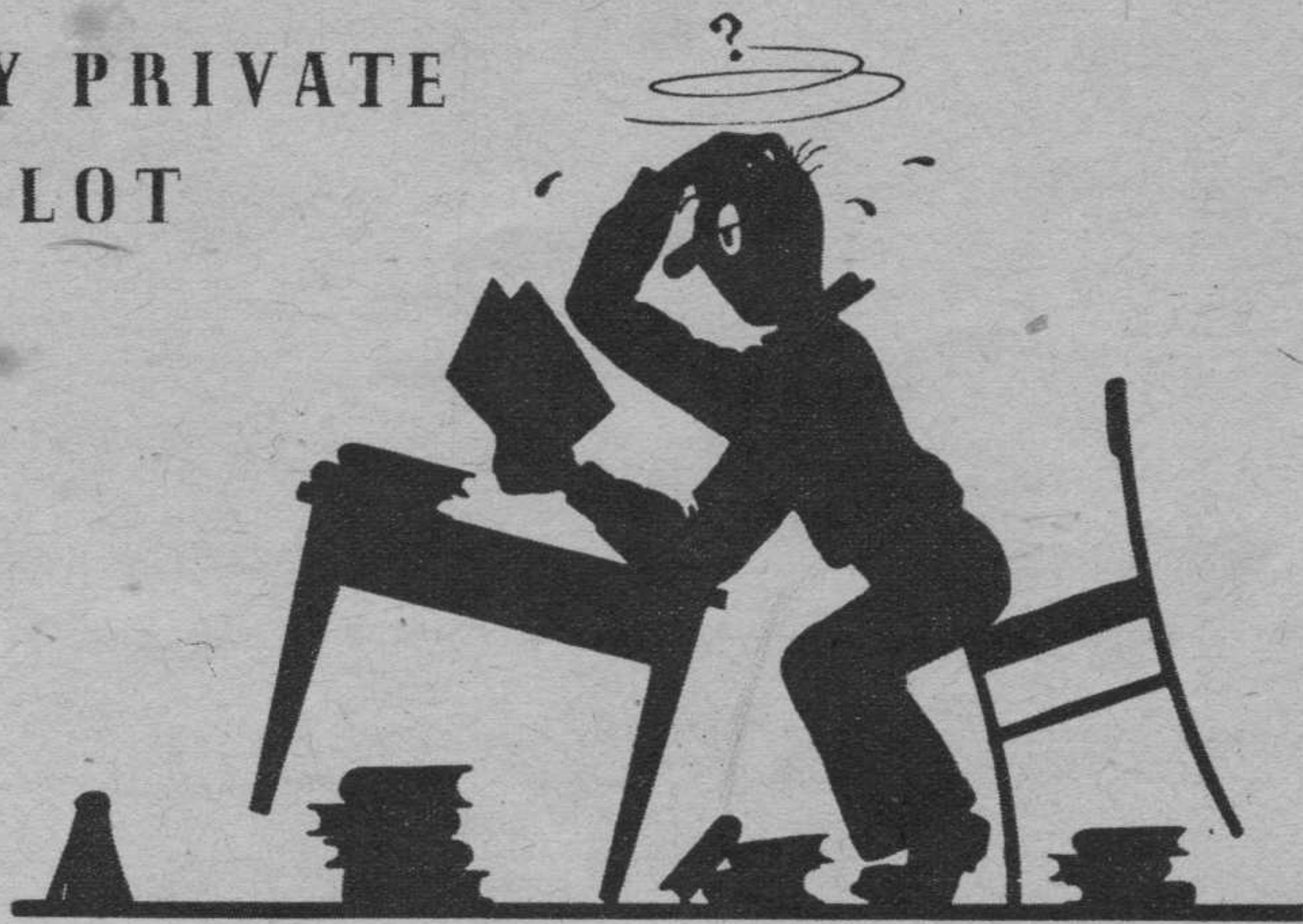
Staten Island ferry. Dick Johnson, 18, flew this Schweizer 182 miles to Staten Island with a passenger.

Another newcomer. The Univ. of Notre Dame's glider performed well. Note corrugated ailerons, rudder.



That's a SILLY RULE

BY PRIVATE
PILOT



"A lot of the C.A.A. requirements for a private license are pure boloney and I can prove it!"

FOR several years pilots have encountered more and more restrictions in private flying. Airports have five-dollar landing fees, tower operators think they own the air, and the least offside movement is a penitentiary offense. With the advent of war there is a possibility of private flying being done away with altogether, but after the war it will be back bigger and better than ever.

At that time there will be a huge aviation industry, a few hundred thousand pilots and a dire need for sensible, adequate legislation. Before this event occurs it might be well to point out a few facts that do not seem worth retaining when that time comes. A lot of the present CAA requirements for a private license are pure boloney, and I can prove it!

To begin with, private flying must be encouraged by sound rules. There is the case of Pilot A, a man of sixty who purchased a light plane in order to commute from Boston to New York. After buying the plane he found that there were no instructors available because they were all busy teaching CPTP students to fly—at the government's expense. At that time, a set of dual controls could not be left in his plane unless they were demonstrating the plane, and it began to appear as though he would never learn to fly.

After he soloed, the CAA changed the rules to the effect that solo pilots could not go more than fifty miles from their airport. Accordingly he took the necessary steps to secure a license; he logged the hours, obtained more flight instruction in order to pass the flight test and tried to study the regulations. On the day scheduled by the CAA inspector he appeared, took the written examination, and failed it.

One of the reasons for his failure was the fact that many questions on the examination were irrelevant. The exam consisted of a hundred questions, half on regulations and half on navigation and meteorology, some of which didn't seem to even remotely concern a private pilot. For example, one question read as follows: "Which of the following instruments is used to find altitude: (1) barometer; (2) barograph; (3) tachometer; (4) anemometer; (5) hygrometer?"

The answer, obviously, is "altimeter," but it was not possible to select that word. In order to have known the answer it would have been necessary to be fairly familiar with at least four of the instruments listed, not one of which is necessary for a private pilot's flying, especially the type of flying that most pilots indulge in—short cross-country hops.

The average private pilot does not know these things and

does not need to know them. The standard of flying may be higher if he does, but then again it may not. If it is the development of private flying that is desired, the average citizen should be encouraged to fly, and such irrelevant questions be deleted from the examination.

The first of the exam—on regulations—also stressed many questions such as "Can a pilot having a Class 2S rating fly a Class 4M plane?" This question seems a bit far-fetched because no private pilot is going to fly a DC-3, and if the examiners want to know if the applicant is aware that he can fly any ship solo, but can carry passengers in only such weights as he is rated in, they should devise the questions accordingly.

The second half of the examination—on meteorology and navigation—is partly essential and partly nonessential. It is well to know some weather, some clouds, and how to read a teletype weather sequence—especially if cross-country work is the type of flying one has in mind. But some of the navigation is hard and of no practical value because it simply cannot be used by the average flier.

As the average pilot will testify, cross-country work is done with an automobile map. The pilot draws a line from his airport to the next one, and gets a good idea of the angle. The mileage is measured off, and the time of arrival computed; he knows that his plane will stay aloft only so long, and tries to reach an airport within that time. The wind is not too essential, because it is not very effective under 15 m. p. h., and in anything stronger than 25 m. p. h. he will not venture to take a Class 1 plane, and probably not a heavier ship. So the wind will make only a slight difference in his calculations.

It is true that a 15 m. p. h. wind would put him fifteen miles off his course at the end of an hour—that is, fifteen miles right, left, short or beyond the estimated point. But because a Class 1 plane flies so slowly it is possible to keep track of roads and towns at all times and make adjustments accordingly. By watching the section lines and flying with them any dub can get from one airport to another.

Of course it is nice to know the compass and to feel competent to use it. But not one pilot in fifty can do that and do it well. Those who think they can may try this problem: Pretend the ceiling is lowering, night coming on, rain is falling, and the gas is running low. Seated in the cockpit of a cabin job you wonder what course you are flying true. The compass reads 137°, the deviation is 5°W and the variation for the locality is 17°E. What is the true course? Time yourself, trying to remember that you have to fly, keep cool, and figure it all out correctly. If it takes fifteen seconds you're a whiz—the average time will be more like a minute or even two minutes. And the correct answer can be found at the end of this article.

The lesson is that navigation on paper and navigation as done by the private pilot are two very different things. The average pilot cannot fly his plane, watch his map, and maintain a compass course within 20°. It is all he can do to keep it within 15°—and if this is the case any precomputation of course is useless. At the end of fifteen minutes most pilots have to correct their course 25° in order to pass over their check point, and from then on it's hit or miss.

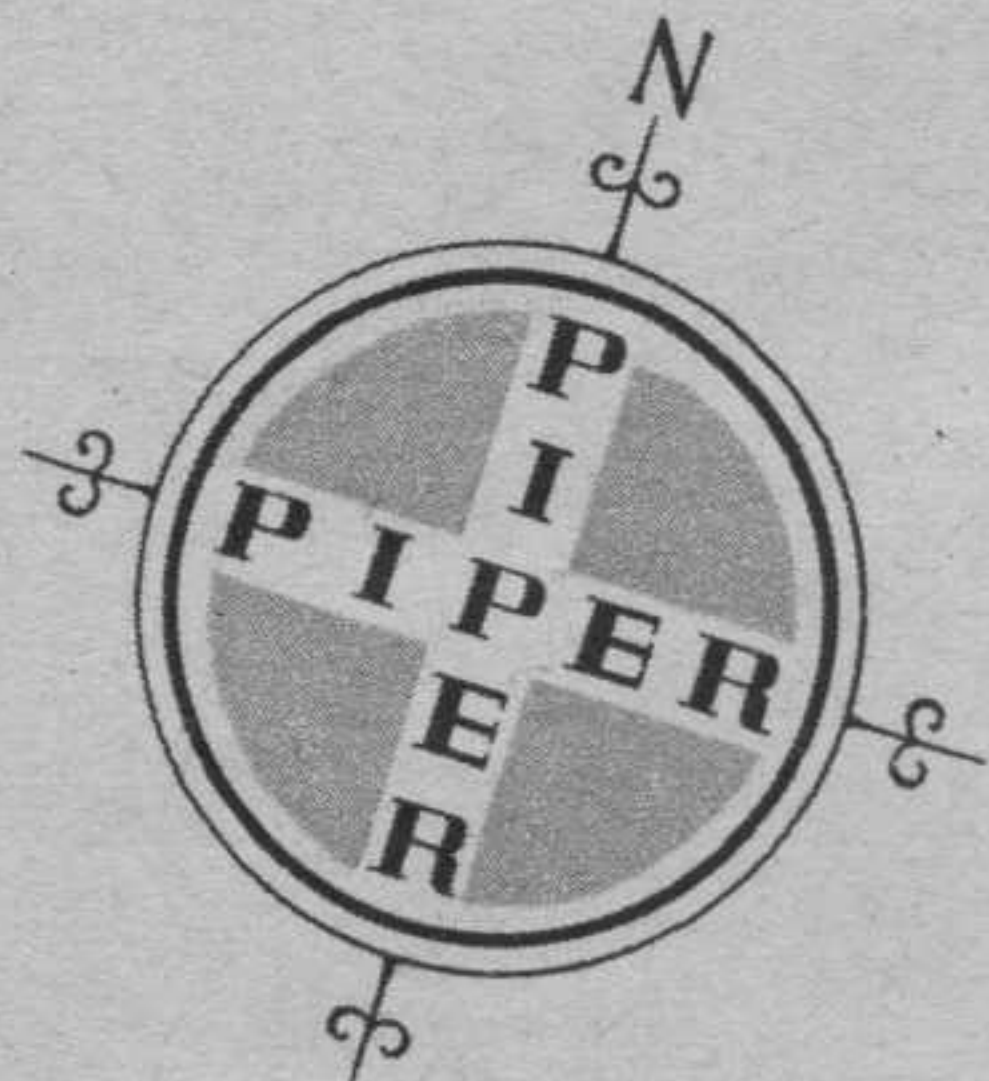
Perhaps the worst point of the whole mess is that fact that an average pilot cannot understand the regulations even if he has a copy in his hands. If this is doubted, pick up a page or two, especially Chapter 60, and start in. The easier an idea can be stated, the harder it is made to read. Some statements are set forth in sentences having four "ands," a "wherefore," a "whereas," and a couple of "provided's." A perfectly enraging feature is the reference, whereby the qualifications are given in paragraph 60.000, and from then on to the end of the chapter any additional qualifications will read "as provided in Paragraph 60.003," and after turning to 60.003 it will refer the reader to 60.002, which will infer that the meaning is in 60.001, but by that time the doctors arrive with a strait jacket—because the light suddenly dawns it was in 60.000 all the time.

A final bit of maladjustment is the flight test. This constitutes the last part of the examination, and is given following the written test if the inspector prefers. Interest in aviation is not encouraged by the knowledge that in order (Turn to page 29)

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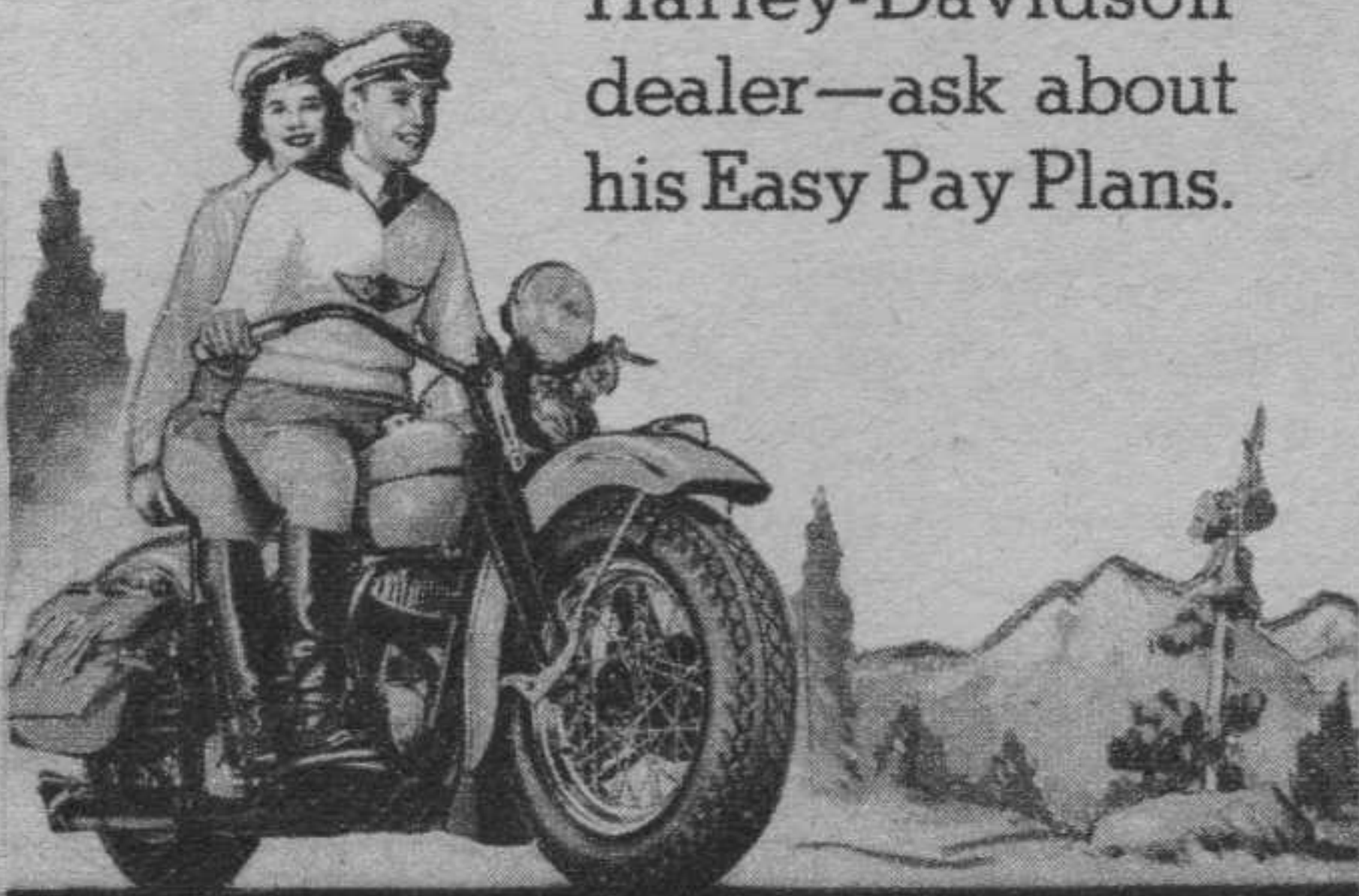
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following the railroad tracks. The latter plan led them astray frequently when they took the wrong fork at the switch. None of the other systems is either safe or sure.

One young lieutenant, stationed at the army air corps' post at Selfridge Field, Michigan, learned his map lesson the hard way. Taking off from his base without a map in the cockpit, he went up for a scrappy dogfight with another young officer. Becoming separated from his companion, he flew around aimlessly, enjoying the stunting and upside-down scenery. This was all familiar country—or so he thought.

But when his gasoline supply became skittishly low and the army field didn't appear, he settled the P-6 in a cornfield. "Which way is Detroit from here?" he inquired, a little sheepishly, of the farmer who walked across the field to the "rescue."

"Right off that way, son," the man replied, nodding south. "About eighty miles."

The lieutenant went into a mental spin. "Eighty miles! Say, what part of Michigan is this?"

The farmer smiled. Then he said, "Canada."

The navy has a story to match that one, dealing with the cocky fellow who, starting off from Kansas City for St. Louis sans chart, was turned around just 180 degrees. When, after fifteen minutes, he looked down and saw the Missouri River flowing west instead of in the right direction, he had to do an about-face!

True sectional air navigation charts omit many details which appear on regulation topographic maps, adding often exaggerated items of greater importance to the flier.

Purpose of the sectional chart is "to aid the pilot in following his course by reference to visible objects; to enable him to re-orient himself after a period of flying by dead reckoning; to serve as a guide when flying by radio navigation; and to furnish a plotting sheet for scaling courses and distances and plotting bearings."

Since the *visible* element is the important one in contact flying, perusal of an air navigation chart shows such identifying markings as "church spire," "highway intersection," "observation tower," "railroad bridge," "racetrack," "reservoir," "military post," "dam," "oil derricks," "coke ovens," "mill," "penitentiary." The maps record both natural and man-made topography.

The chart also contains specific data: times of weather broadcasts in particular regions; danger sections, as for example the "local magnetic attraction" near Colorado Springs due to ore deposits in Pike's Peak; power and frequency of radio ranges; location of radio beacons; and complete aeronautical data furnished by the Civil Aeronautics Administration—accurate locations of airports, auxiliary landing fields, beacon lights, civil airways, and other aids or instructions to air navigation.

The survey lithographs its charts

You Can't Miss It

(Continued from page 19)

in colors—sometimes seventeen to one map—since quick, easy reading is essential if the maps are to be valuable to the pilot who, especially in an open cockpit, does his map following under difficult circumstances. Often he has to compete with darkness, rain or wind, as witness the army pilot who confesses to that old story of the delayed landing because of "wind in the wrong direction." In an open-cockpit plane, on a cross-country, the wind whipped the map out of his hands, ripping it along a jagged course—which route he had to fly, over the strange terrain, using an unnecessary amount of time, fuel and nervous energy!

There are eighty-seven sectional charts, already issued, needed to cover the States (at a scale of 1:500,000—approximately eight miles to the inch). Mounted like a jig-saw puzzle, they map the complete country. On January 1, 1941, they included 30,488 miles of lighted airways, almost 2,500 airports, 3,014 intermediate landing fields, and 2,261 light beacons.

America's maps are conceded by many to be the best. Lieut. G. B. Manly, of the army air service reserve, writes in "Aviation from the Ground Up": "The C. A. A maps are Lambert Conformal projections. They are so accurate that a course from coast to coast—2,450 miles—may be laid out and not be more than a mile off. . . . These charts . . . are so clearly printed and well organized that the fledgeling flier can follow them perfectly with very little practice." Lieut. Manly says he "recently purchased maps all over Europe and bought many different kinds of maps covering most of the area of the world but found none to compare with our own."

At least in one point they have no superiors: to no other series of charts published in this or any other country is the comprehensive field check, used on the sectional charts, accorded. A trained observer, traversing the charted area by air, compares actual terrain features with those represented on his proof copy, deleting unessential landmarks, emphasizing prominent ones, substituting new for old data.

Because of changing man-made topography, such checks are made periodically, so that charts are as up-to-date as is humanly possible. An average flight check requires from fifty to eighty hours in the air, and some fifty thousand square miles are inspected.

Next in importance are the regional charts (at a scale of 1:1,000,000), for use in radio navigation. They were made necessary by higher speed planes with greater range and altitude capabilities and by instrument flying. Since much terrain detail is omitted here, a smaller number of charts is necessary for a single flight, according to Mr. Casper Durgin, hydrographic and geodetic engineer of the survey. They are most suitable for plotting lines of position; seventeen are available now.

Two other type charts are pub-

lished by the survey: the aeronautical charts for radio direction finding at a scale of 1:2,000,000, in series of six, covering the States, for determining course, distance, magnetic variation, location of fields, air-navigation aids, dangers, elevations, and location of plane during flight; and the aeronautical planning charts, at a scale of 1:5,000,000, for planning routes between distant points. (This last named is a chart showing main cities and airports, with contours and gradient tints of elevation and an index of the sectional charts for use in determining necessary maps for any particular flight.)

The subject of aviation maps, however, is bigger than just a consideration of the best flying maps. It encompasses weather maps as well. Weather changes are the only real "signposts of the sky," hence the value of the shifting picture of weather in the clouds. By authority of the Air Commerce Act of 1926, and the Civil Aeronautics Act of 1938, the weather bureau has the responsibility of furnishing meteorological service for aviation "to promote the safety and efficiency of air navigation in the United States and above the high seas."

There are about 550 stations along the civil airways in the States, Alaska and Hawaii, and over 250 stations off the airways, for reporting weather. At approximately 150 airway terminals, qualified meteorologists are on duty twenty-four hours a day. In constant communication by radio and telegraph, their reports are sent out by the Washington, D. C., center, almost up to the minute. These meteorological divisions turn out complete maps every few hours for the guidance of aviators, with the barometric readings, wind velocities, temperatures, and movements of pressure areas at different locations across the United States, clearly marked.

These maps are especially valuable to the long cross-country flier. He can, with little effort, make use of helpful winds and conditions, miss streaks of bad flying weather.

An air-line captain, as he makes the flight plan before the take-off, checks the weather maps with his copilot, allowing for wind deviations, tailwinds, et cetera, learning ahead of time whether he can expect lowering ceilings at Kansas City, rain at Wichita, and whether he must fly at 5,000 or 7,000 feet between Albuquerque and Amarillo.

The map field is still inadequately covered, none the less. Needs of the moment are charts of metropolitan areas such as New York and San Francisco. (At a scale of 1:250,000, including area within 50 miles). Mr. Durgin visions another map dream for the future: charts of principal airports corresponding to marine navigational harbor charts. (At a scale of 1:125,000, including area within eight or ten miles of the airport.) Such charts would be of untold value either to a pilot not familiar with the landing field or a

(Turn to page 28)

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Yet in a country not yet half mapped and with 3,000,000 square miles within its bounds, the completeness and accuracy of aeronautical maps available to the pilot today is surprising.

Erwin Raisz ("General Cartogra-

ters culminating at Lakehurst in 1937 has completely washed out all lighter-than-air progress. With respect to hydrogen-filled rigid dirigibles of the Zeppelin type it is no doubt true. But blimps are something else again, especially when they are filled with noninflammable helium.

The navy does not discourage easily, and there has always been a small but fervent group of officers loyal to lighter-than-air. With certain lessons learned from the failures of the big rigid types, they set to work to develop the blimps, in which the shape of the bag is maintained by the internal pressure of the gas rather than by structural framework. And their work has produced results.

The first big step was the use of helium as the lifting force, thus eliminating the fire hazard. Envelopes were improved, gondolas were inclosed and streamlined, air-cooled motors replaced the old heavier water-cooled types, thus vastly increasing the useful-load capacity. A retractable taxi wheel was added to simplify take-offs and landings, and the use of the mooring mast was perfected, thus simplifying docking and undocking and making it unnecessary to berth the blimp in its hangar after every flight.

The blimp has certainly grown up. The K-2, now in service, is of 400,000 cubic feet volume; the next four of the K series, now under construction, will be closer to 416,000. They carry complete radio equipment, navigating gear, a crew of seven or eight men with an electrically operated galley that never misses a meal, and a comfortably furnished cabin that can be heated in winter from the exhaust manifolds. In addition to regular equipment and fuel, their load capacity is ample to take on machine guns and ammunition and still leave room for a number of depth bombs that can be aimed with deadly accuracy from a ship capable of regulating its speed to any desired figure from zero up to its maximum of seventy-five miles an hour.

But let's finish our routine patrol. All day long we cruised off the Atlantic coast, occasionally at full speed, but generally loafing along to save fuel and to get a good look at what was below us. Every craft sighted meant an entry in our log,

You Can't Miss It

(Continued from page 26)

phy") points out a new use for maps in the aviation world: for passenger convenience and enjoyment. Long ago, railroads and bus companies realized the added interest a map gives, taking their cue from the avid highway map readers. Soon they issued booklets on "Spots of Interest Along Your Way." Air lines, according to Mr. Raisz, are even more aware of the interest-stimulating, educational opportunities of travel, for which planes offer exceptional facilities. Patterns of geology, vegetation and types of farming show up well from the air.

Blimps On Guard

(Continued from page 15)

with positive identification, and we sighted plenty, as we covered more than five hundred miles.

Toward evening we approached the coast through clouds that now had dropped to form a solid layer of mist and drizzling rain. Visibility had fallen to barely a hundred yards, and it was getting dark. Were we worried? Not a bit. Several auxiliary mooring sites were available. Any of these could easily be reached via our radio check system. And at Lakehurst was our hangar.

The blimp's flexibility is ideal for the job of patrolling our well-nigh endless coast lines. Slow speed is a tremendous advantage when it comes to spotting mines, U-boat periscopes, and oil smears which would be difficult to see from a swift-moving plane carrying only one or two observers. At lower speeds the blimp's time in the air can be stretched to forty or fifty hours, and it can hover indefinitely over one spot if necessary.

Even in the World War the records show that the blimps did a real job. They spotted forty-nine submarines and 134 mines in the course of over nine thousand patrols, and can boast that no convoy was ever molested by a submarine while being escorted by a blimp. Those U-boat commanders had a healthy respect for blimps, and they still have.

Why, then, you may ask, aren't the British using them today? For one reason, helium is strictly a U. S. monopoly which no other country in the world has had a chance to experiment with. If they asked us, I suppose we might give, under the provisions of the lend-lease act. But they aren't asking right now, for the second reason, which is that the blimp, for all its virtues, is vulnerable to attack from a hostile airplane. The British have no use for blimps as long as their coastal waters are habitually infested with Heinkels and Messerschmitts.

Our defense problem here, however, is slightly different, and can be expected to remain so. It is conceivable that in case of war enemy planes might approach our shores, but it is almost inconceivable that such planes would be any except the heaviest type of long-range bombers with a mission to carry out and no wish to waste time chasing fugitive blimps around the sky. Pursuit or

Yes, the chart maker's art has always been a hard and busy one. Because aviation has grown so rapidly itself, it has been difficult for the map maker to stay a jump ahead. But since the first international conference of aeronautical charts was held in 1911 at Brussels, he has been working—sketching, designing, drawing, pantographing, lithographing, printing, studying colors and numbers and distances. And now, in a day when flight-checked maps are commonplace necessities to every air-minded person, he must even have wings himself!

attack planes are the ones the blimp must fear, and they have not the range to approach us except from the decks of a carrier. Even assuming such a contingency, the cloud might have a silver lining. One incendiary bullet can destroy a hydrogen-filled dirigible in an instant, but a bag full of helium is a tougher proposition. The blimp might be crippled, forced down to the surface; the crew driven into their rubber lifeboat. But from the first moment its radio would have been warning of the attack, and the loss of one blimp would be a small price to pay for the warning of the presence of those hostile aircraft.

At least that's the way the lighter-than-air officers feel about it. They think that blimps have a specialized but very important role to fill in the protection of our coasts. The proof of this attitude is that the Lakehurst station is being enlarged, other bases are planned for Boston, Norfolk, and San Francisco, and a total of forty-eight nonrigid airships was authorized for eventual construction to complete the L. T. A. nonrigid airship program. . . .

"What the devil are those fellows doing?"

At some distance, the visibility now being improved, I saw another blimp, close down on the water over one of our destroyers, which was lying at anchor. As we passed that way I heard some shouting going on, then a rope was dropped from the gondola. After a minute it came up again with a small object dangling. My first officer gave a snort.

"Looks like a pot of coffee!" he commented sarcastically.

"Coffee?" I exclaimed. Then I understood. That was the G-1, one of the smallest and oldest of the training blimps in the navy service. We feel very, very sorry for the poor lads on the G-1, and often tell them so. Theirs is one of the few ships not equipped with an electric galley. When they want a hot cup of coffee they have to ask a destroyer for it!

But who knows, perhaps our gentle scorn is misplaced. It may turn out that in the aforementioned contingency it will be the G-1 that sights the enemy first, broadcasts the all-important warning. In that case I'll be wishing I had been assigned to the G-1!

That's A Silly Rule!

(Continued from page 24)

to gain a cross-country permit (or a private pilot's certificate) one must spin a plane to the right and left.

Take for example the case of an elderly woman who commenced to fly and who found that flying was the one thing she wanted to do. During the time when solo students were permitted to fly unlimited cross-country flights, she took her plane from the North to the South several times, being in Miami for the air races and having a good time going from airport to airport where the boys were astounded to see a sixty-one-year-old grandmother step out of her airplane.

Then the rules changed. In order to continue her flying—and all she wanted to do was fly across country (because stunts, practicing eights, or becoming a commercial flier never entered her mind)—she found she must have a private pilot's license. Being vigorous and determined, she set out to get the thing.

The written examination was passed by careful boning. The regulations were learned verbatim, and meteorology was easy. Navigation didn't mean much except on paper, but even that was hurdled. But then came the flight test. The first thing required was spins: a spin to the right not less than one turn, and a spin to the left the same way.

The elderly woman detested spins and hated to do them. Nevertheless she went up, spun her plane to the right and let it go three turns before recovering. The left spin was a spiral and so didn't count, and the inspector failed her in the flight test. That meant she had to purchase a few hours of dual instruction before coming back for a flight test.

But back she came, this time letter perfect in spins. However, the inspector asked for steep turns, which according to the CAA must be 70° banks, although it can be proved very easily by any dub that a light plane lacks the horsepower to do a 70° bank. Besides, a turn that steep exerts a load factor of 3G's on both plane and pilot, which is dangerous

Secret Agents Of The Air Corps

(Continued from page 16)

when he did, his eyes were far away. "To date," he said slowly, "our casualties have been few. There were some as a result of an automobile accident and one, as I remember, from a fall. The pilot fell down a flight of stairs."

Let it be cleared up once and for all: There are no international situations created by the men selected to serve in G-2! Each operative has been chosen because of his ability to perform a certain task or mission. Pilots who observe abroad do not tell what they have seen, nor do they divulge for whom they are working. (In fact, no one knows just who is an agent of G-2—but more of that in a moment.) Only after returning to this country are the reports made, and then they are made in person to Colonel Candee of G-2.

in bumpy air and is too much to put on the veins of a person over sixty.

That, meant little or nothing to the inspector. He asked for the turns, although the lady protested she never banked that steeply and probably never would. And because she lost over 200 feet in two complete revolutions, he "busted" her on the check.

The maneuver she could really perform—and the only maneuver that came anywhere close to being a test of her ability to fly across country (and, after all, cross-country work was the part she *should* have been tested on, and which is not tested at all by the CAA!) was the spot landing test. In this she was letter perfect, being able to set the plane down within the 300-foot square with ease. She had had half a dozen forced landings and never bent an axle, which was a record of some kind. She had a good sense of speed and altitude, which is the main thing in spot landings; the part she thought was hooey was the fact that one must fly *over* the spot, then cut downwind at a 45° angle and absolutely turn one's back on the spot. This is contrary to all good sense and smart forced-landing procedure—but that is what the inspector wanted and that is what he got. But it took three flight tests to get the private license.

These are just a part of the conditions that should be modified before private flying gets going again if the war puts a stop to it. Private flying is in for a good-sized boom, with the CPT's 100,000 government-trained pilots, the army and navy hordes, and the other poor dubs who are buying their own time when and if the operators will sell it to them, and providing there is a rated instructor who will teach the maneuvers, senseless though they may seem. At that time there will be a need for good, sensible regulation and stern enforcement of rules. But let's have rules that make some sense and regulations that will encourage John Q. Public to buy a plane—and keep it.

Correct answer to problem: 149° true.

If it is not yet clear what G-2 is, examine this statement by an officer in the public relations division of G-2, who attempted to clear up any doubt on that subject. He said, "This organization has one main purpose: to obtain, evaluate, and disseminate information. To this end we obtain the right kind of men and send them to various places. We are responsible for getting the information, then seeing that it is used in the manner which will achieve the results we want."

"In other words," he was asked, "if the information is not wanted in the newspapers, it doesn't get there?"

The speaker merely smiled a G-2 smile. "Perhaps," he said.

"Isn't that censorship?"

"Certainly not. We merely refuse to divulge information that is re-

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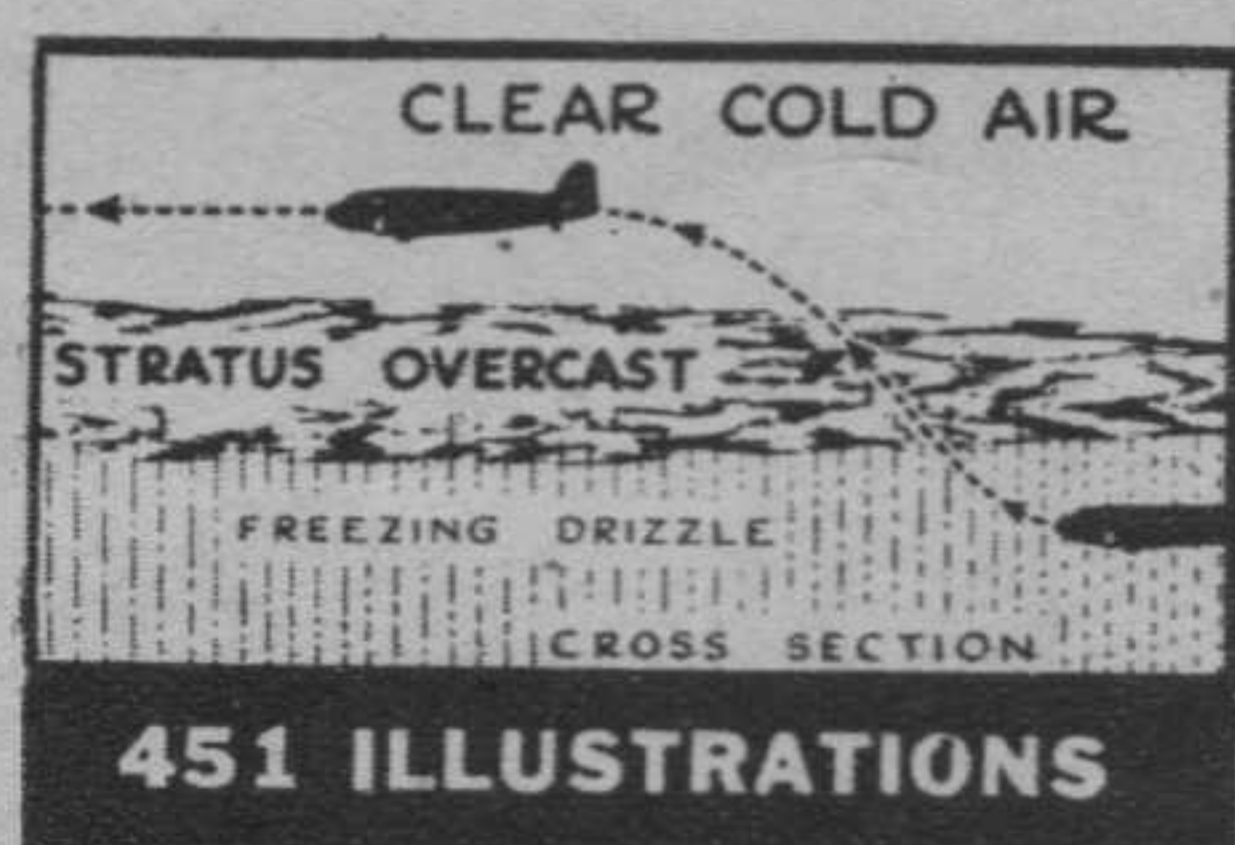
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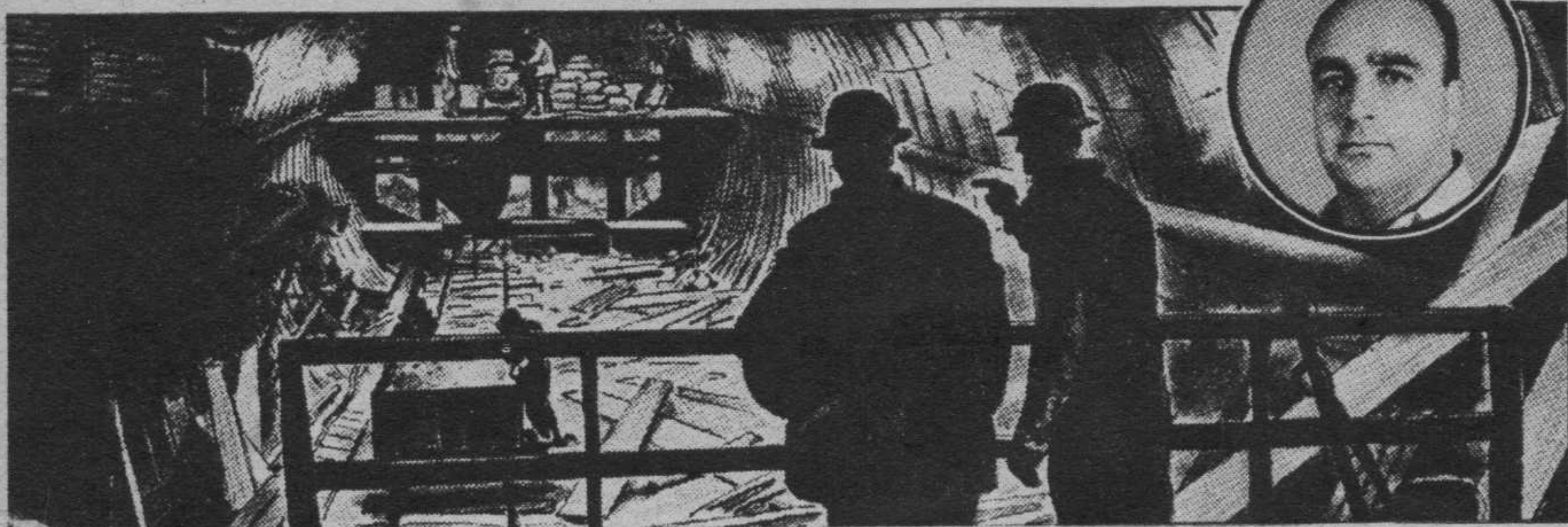
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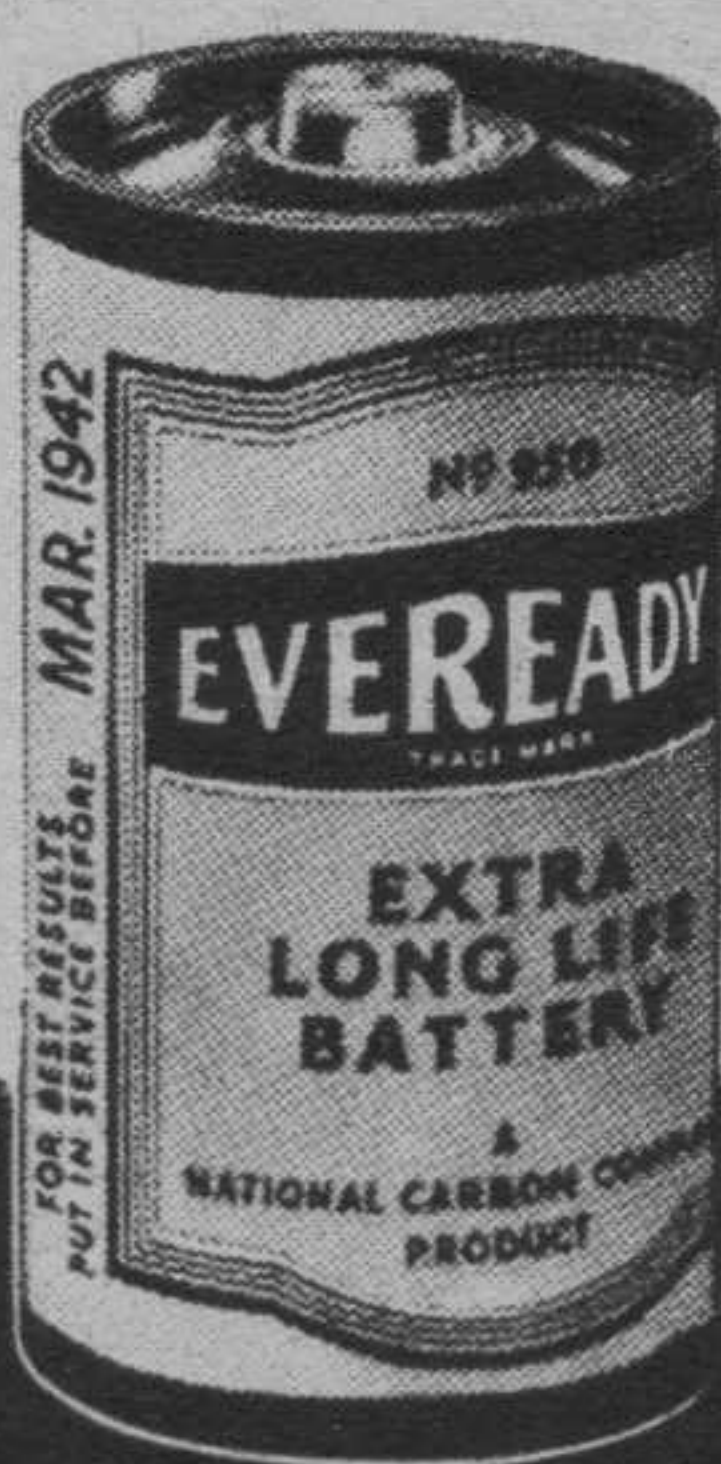
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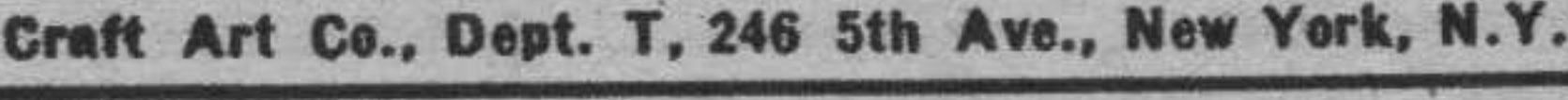
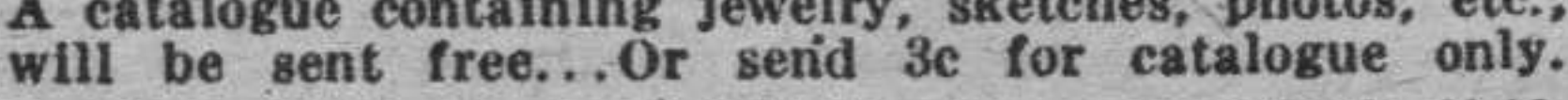
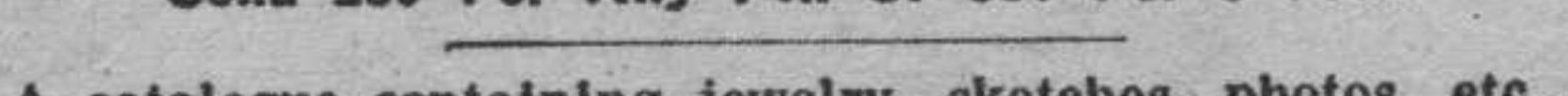
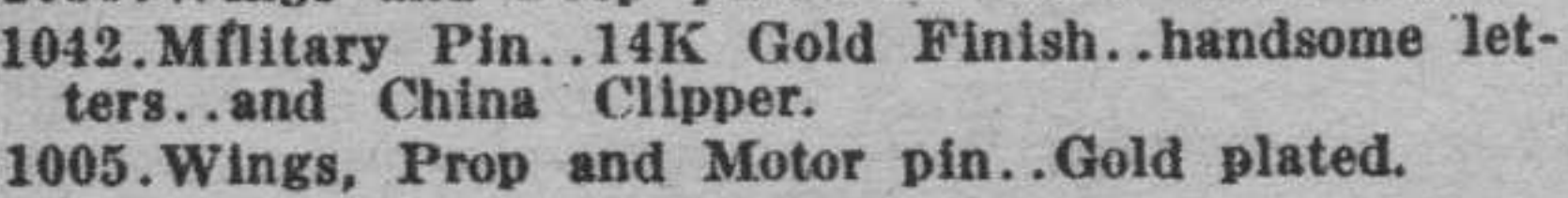
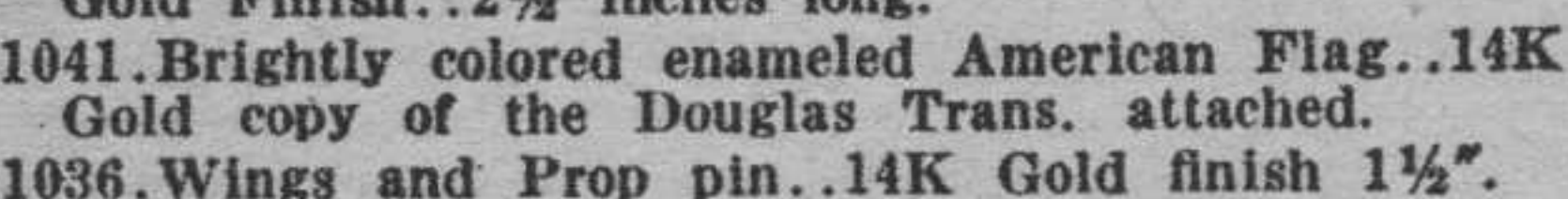
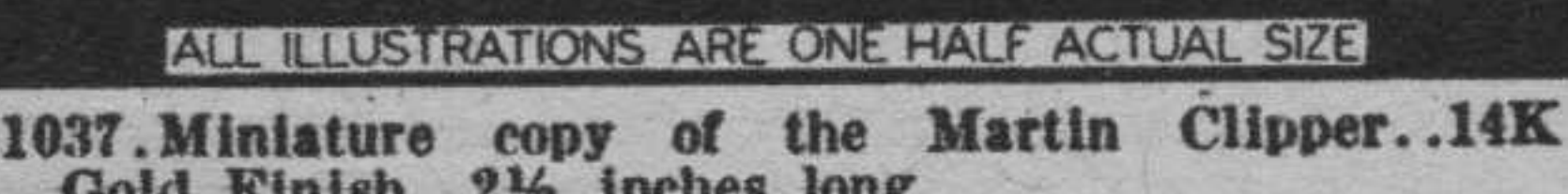
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garded as essential to national welfare. We are organized to protect the country by getting information. G-2 of the army air corps is responsible for the following functions:

"1. The performance of the functions of the second section of the general staff—intelligence of the enemy.

"2. Public relations—maintaining morale by the release of pertinent information and the withholding of other information.

"3. Evaluation of war information—a very important task.

"4. Maintaining a liaison with Intelligence divisions of the general staff.

"5. Maintaining the same contact with naval Intelligence.

"6. Providing news letters and information to the general public.

"7. Other assignments. This covers a multitude of things, better left undiscussed.

"You can see yourself that it is a broad field, requiring a huge staff. We have operatives everywhere—"

"As foreign spies?"

The officer paused irritably. "We don't talk about that," he said.

Perhaps that is why G-2 men declare that there is no glamour connected with their work. They have a job to do—a thankless job, with no recognition for a task well done. Major X said, "Write about the public-relations angle—steer clear of the spy stuff, the Mata Hari feature." There is nothing romantic about G-2. So secret must be the assignment of an officer to a mission that his family never knows what he is doing. Men who must tell their wives about everything they do, or who must brag about themselves, seldom are selected for work or for a mission in the Intelligence service. If they happen to be assigned to a task, it may be to serve as a pawn to throw the enemy off guard—a disseminator of misinformation.

One reason why Major X disclaimed a romantic background in G-2 is that each man must hide his light under the proverbial bushel. Each man must curb or disguise that desire within every human's breast to pose as a big shot, a secret agent. Obviously, if everyone knows that Captain Smith is a secret agent, he immediately becomes an agent—but not a secret one! The most crowning success in intrigue and spying is never revealed; it is like running interference for the quarterback, doing all the work and getting none of the glory.

The agents of G-2 abroad are there to perform delicate missions. G-2 must find out how many planes, how many pilots, and what kind of performance the enemy is capable of. They must know the limits and quality of the fuel, the possibility of winning this war on the lack of lubricants and high-octane fuels. We must know the pace and quality of pilot training. Such information can be obtained only by having excellent men placed in key positions abroad, where there is danger every moment—and where there is, as a consequence, romance and glamour never described in the best thriller ever written.

The pilots of G-2, testing the P-40s in England and flying the British planes in combat are examples of heroism without reward. In May there were almost six hundred P-40s in Britain, but only a couple dozen were in use. It was the duty of our pilots to test and use those planes, attempting to find out what points were shortcomings and to get that essential information back home. Such items as speed, armament, armor and maneuverability must be evaluated in order to make American planes superior to those abroad.

That these men make the supreme sacrifice goes without saying. As this is written, a news item one inch long appears in a local newspaper: "Lt. B. . . . killed in the crash of an RAF plane in England." How the papers received this information no one knows; it is evidently a slip on the part of G-2 in letting it out, as ordinarily such an incident would have been attributed to an automobile accident or a bad fall.

In such a colossal organization there are bound to be slips, but they are the exception, not the rule. Officers who talk are quickly detected, especially those who talk under the influence of liquor. "We want men who talk freely when they are drunk," Major X declared. And then added, "About many subjects—none of them being aviation!" Men are chosen only after careful scrutiny and study of the man himself and his record. The selection of an officer for a confidential mission is made only after deliberation and study. He must be able to hold his liquor—in fact, he must be able to talk when he drinks, and talk well. If he can disseminate incorrect information, so much the better.

Of course, for purposes of increasing morale and building up the public-relations angle, only accurate information is given out. But it is the right kind of information, and to this end G-2 wants its officers to inspire enthusiastic articles, to give talks, and to remain forever in the background, getting information, evaluating it, and keeping their mouths shut.

How secretive G-2 is and how quiet its operatives are is illustrated in the following story that Major X related to the inquiring reporter. It seems that a Captain Z was detailed to a squadron for duty, and also to observe for G-2. It was essential that certain information on planes and performance be obtained and sent directly to the Intelligence division instead of being relayed via an intermediary.

Accordingly, Captain Z took his place in the squadron. No one knew or suspected his connection with G-2, not even the commanding officer. Flights were made when enemy planes appeared, and finally a considerable amount of data was obtained. At that time a certain colonel arrived who was also connected with G-2, and who ordered the captain to turn over his data.

Captain Z excused himself from duty and was gone ten days, being with the colonel the meanwhile. At the end of that time, his secret work with G-2 having been concluded, Captain Z returned to his squadron

to find a highly incensed commanding officer.

The C. O. called the captain in to account for his being A. W. O. L.

"What's the idea of A. W. O. L.?" he wanted to know.

The captain apologized. "I'm sorry, sir, but I cannot answer that question. I shall have to take the liberty of referring you to Colonel—"

The commanding officer made a sarcastically disparaging remark about his friend, the colonel, and sent Captain Z to his quarters. Thereafter he regarded Captain Z with deep suspicion, wrote up the incident in the captain's fitness report, and years later had not forgotten the matter. To this day he believes that Captain Z was "snooping," for the purpose of making a report on the capabilities of the C. O. (Needless to say, the colonel caught the fitness

reports and made the proper notations of Captain Z's connections with G-2 thereon.)

According to the public-relations officer in the office of the air corps' G-2, the unit is doing an excellent job and will continue to improve. Already our pilots are learning from observations abroad what one man can and cannot do in modern combat. The marvelous new electric sight is replacing the cumbersome and impossible telescope sight used so long by the navy. The value of maneuverability, higher horsepower, air-versus-liquid cooling, and heavy pilot armor, is pointed out in those secret reports to G-2 of the air corps.

And if you want a job as an undercover agent of G-2, Major X's words hold the key to it all: "Find out all there is to know—and say nothing about it to anyone!"

I Get My Private

(Continued from page 20)

man's hat off flying over Sing Sing, that is guaranteed to keep you awake. Easy stuff like advection fogs, temperature inversions and warm fronts, are taught only after a half hour of practice on spins.

In the meantime, those first thirty minutes were growing. Bill was going through the process of what he likes to call "dishing it out—can you take it?" Dishing it out easylike for that first solo. After that he promised to lay it on heavy. (Perhaps he was mindful of Mr. Hugh Copeland, the director of Roosevelt School, known to all and sundry, surreptitiously, as "Cope." Cope is the fellow whose flight examination and John Hancock finally give you the little piece of paper making you a certificated pilot.)

Dual practice continued at the average of an hour and a half a day. The time drew close for my solo. One beautiful afternoon we were practicing landing and take-offs. After one particularly bad landing, Bill in disgust said, "You're terrible!" "What'll I do?" I crooned meekly. "Fly the blankety-blankety thing yourself," said Bill, climbing out. I must have sat there staring at him for five minutes with my jaws agape. Finally he grinned, and I remembered a story he had told me, and I grinned back and shot her the gun with all the confidence in the world.

This story of Bill's is worth repeating. It concerns an instructor who, in checking out a student, insisted on landing after landing. Each landing was perfect. Yet the instructor would insist on another try. Finally, the student's judgment failed. He came down wheels first and bounced high in the air. After this landing, the instructor left the student, confident he was ready to solo! Upon being questioned, the instructor explained his actions in the matter. He had not known if each perfect landing was a matter of luck or good judgment on the student's part. Even if it were the latter, that judgment might fail, as it actually did. The instructor wanted that failure to occur while he was with the student. Then, if the student's

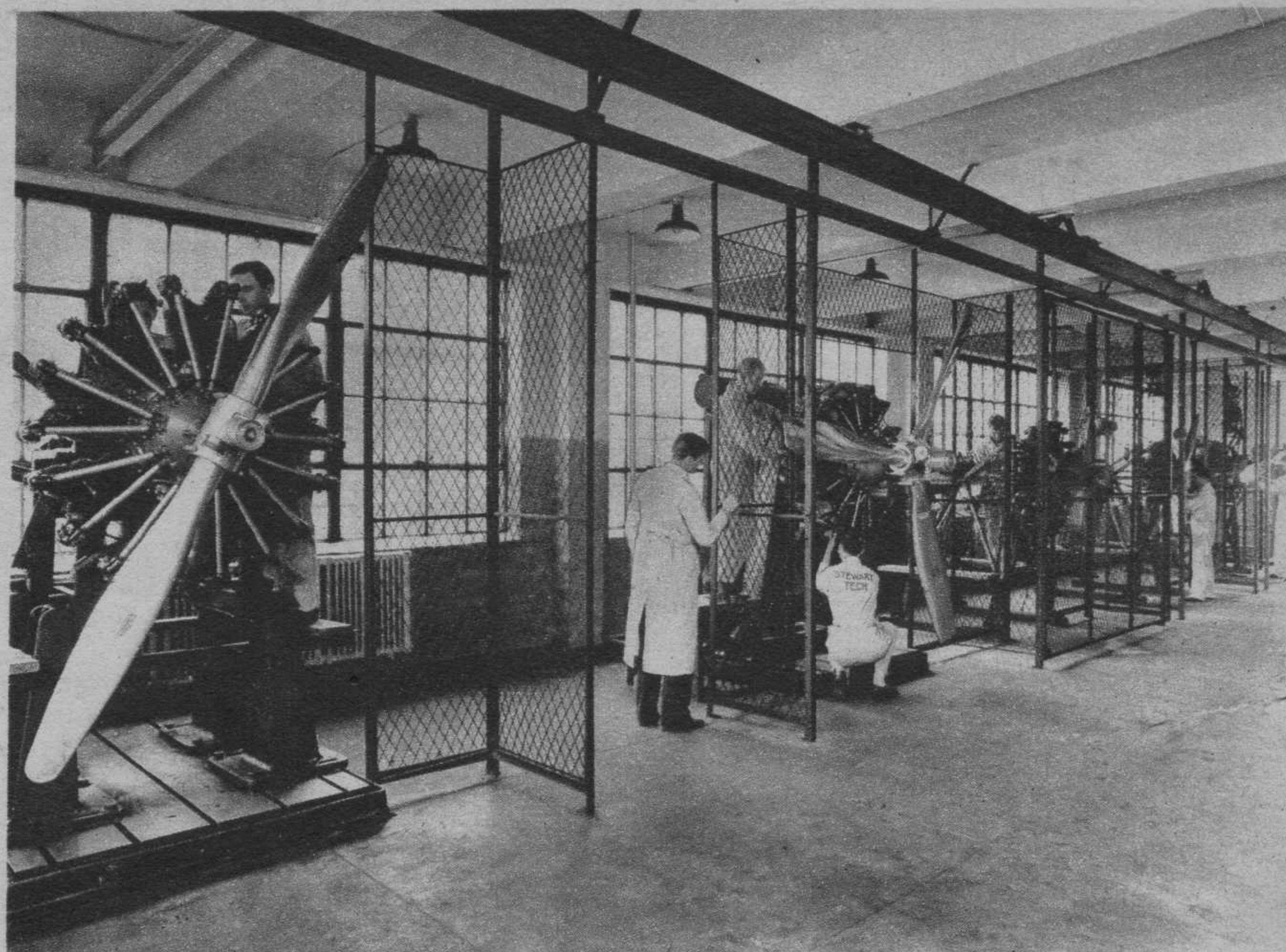
recovery was good, the instructor would be certain of his ability.

My recovery from that particularly bad landing had been excellent!

That first solo was a thrill. But so is every solo. It is not all play. The austere features of Mr. Copeland loom before one's eyes as soon as there is a tendency to play instead of practice. The school curriculum is designed in such a way that when it is followed, it has two distinct advantages. Each maneuver, practiced and perfected, leads to the following maneuver. Also, if a definite formula is followed, time and therefore money are saved.

Come with me on a typical half hour of practice. Climb in and good old Ron, our starter and timekeeper, will give us a twist. Off and closed, Ron. Contact! The Kinner purs. Ron turns around and we taxi to the downwind end of the field, take a good look around, and we're off. We make our boundary turns and climb to two thousand feet over an open field. Here we make 720° power turns at a 70° bank in each direction. Feel that bump—that was our slipstream we hit. Boy, I'm hot today, for a change. Next from 2,100 feet we spiral twice and make a 360° approach to a simulated forced landing. (I hear that's one Cope loves to catch you on.) Don't forget to clear the engine after each turn. Now that we are downstairs, we practice 8's on and 8's around pylons. We've got five minutes to get back. We'll practice co-ordination along the way and end up with a 180° approach spot landing. Here we are. Ron timed us thirty minutes on the nose.

The day of doom arrived. I finally had my thirty-five hours of solo and Hugh Copeland was to give me my flight examination one afternoon. Bill had checked me that morning and he said I was ready. I'd taken my written exam and passed. There was no escape. The sweet and benevolent features of Cope were twisted by my imagination into an ogre resembling all three Fates. My knees beat a tattoo. I argued with Bill that



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I was not ready. Bill got mad for the first time. "Listen," he said, "when you lose confidence in me we are through. Either you take that test or we'll never fly together again. I say you're ready."

You say, unbelieving reader, that you know an exam is bad, but you think it can't be that bad. Pause a moment and reflect. Suppose—and this is a natural assumption—suppose you should fail. Your pride is debased. Your confidence in your ability as a pilot is ruined. And last, but not least, your pocketbook is squeezed, for you must wait thirty days for a re-examination and spend hours of practice. That pride, however, is the cause of your imagination running riot. You've been bragging at home and abroad of your ability as an ace. Fellow students have listened to stories of your prowess in the air. Failure now? Unthinkable!

Mr. Copeland called and postponed our date until five o'clock. I picked up courage, for cumulus clouds were building up in the north and appeared to be growing into cumulo-nimbus. However, five o'clock arrived, and so did Cope. Furthermore, the weather still appeared to be safe. Here we go!

I get my instructions to go up and do spins right and left and then return to the field and do three 180° approach spot landings. Cope and Bill will stand apart on the ground making an imaginary line representing my spot. The spins are easy, but coming in for my first 180° spot, I notice that the cumulo-nimbus clouds are practically on top of me.

In my hurry to get in, I overshoot, am forced to slip, and practically decapitate Cope. They rush out and grab my wings just as the line squall hits and the wind shifts. Well, I figure, that washes me up. But what did you say, Cope? I showed good judgment in coming in fast?

We wait the squall out and Cope and I go up for the rest of the test in beautiful weather.

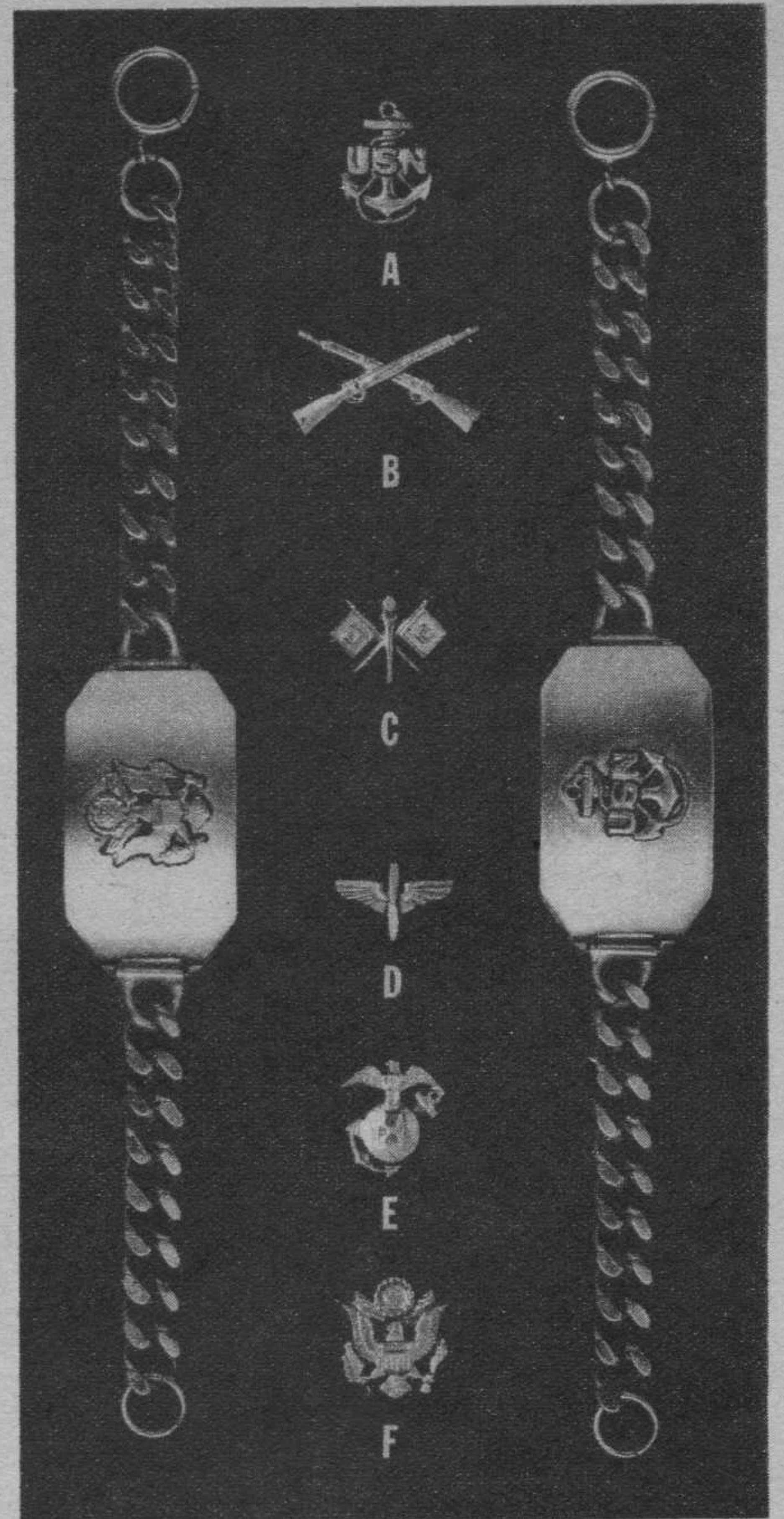
Have you ever been in an argument with a woman? Then you know that regardless of how mad you get, she always has the last word. That's a bad situation—but can you imagine not having any word at all? That's exactly what happens when you use the Gosport system. The instructor or examiner with the mouthpiece does all the talking and you must take it. It seems the motor, the wind and even the gods are against you. The one consolation—you can cuss and be washed clean by the slipstream.

Cope tells me to do this and that. I do this right and sing, that wrong and cuss. In the middle of every maneuver Cope cuts the throttle for forced landings. Finally, "O. K., let's go home," says Cope. I can detect neither pleasure nor displeasure in his voice. We taxi to the line and climb out. I take a peek at Cope's face. That guy ought to make a swell poker player.

"How'd he do?" queries Bill.

"Got a pen, and where's your log book?" retorts Cope. He writes. I tremble. What is it? No! I did!

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CITY STATE

Elmira Meet

(Continued from page 23)

dering over Harris Hill, we also saw Lester Gardner, executive vice president of the Institute of Aeronautical Sciences; State Senator Chauncey B. Hammond, Col. Edward S. Evans, donor of the Evans National Soaring Championship Trophy; Godfrey L. Cabot; Col. J. Carrol Cone, assistant vice president of Pan American Airways; Bernarr MacFadden and many others.

Some of the highlights of the meet were Decker's flight from Elmira to Wapping, Conn., 225 miles—the first time in the history of the national contest that anyone has landed in New England. Stanley Smith, winner of the Air Trails prize, established a new American goal flight record for two-place sailplanes when he and Passenger Robert Kluge flew 73 miles to Scranton, Pa. Lyle Maxey, of Michigan, flying a Midwest sailplane, rose inside a thunderhead to the highest altitude reached during the meet. His altimeter registered over 18,000 feet, but unfortunately the barograph he carried was calibrated for only 14,000 feet. The juvenile entrants proved that tender years are no handicap in flying. Seventeen-year-old Dick Johnson of California flew 182 miles with passenger in his Schweizer two-place from Elmira to Miller Field, Staten Island, N. Y., and Dallas Wise, Jr., who reached his fifteenth birthday last may, gained two legs on his Sil-

ver "C." (Bad weather did not permit young Dallas to make his last flight of 32 miles in order to emerge a full-fledged Silver "C" pilot.)

A total of thirty gliders and seventy-three pilots were entered in this year's contest. As in previous meets, they came from near and far. Canada was represented by the McGill University Glider Club of Toronto, flying a Kirby Kite sailplane. Clubs and organizations included the Harvard Glider Club, Boston, Mass.; M. I. T. Glider Club, Cambridge, Mass.; University of Michigan Glider Club, Ann Arbor, Mich.; Cornell University Glider Club, Ithaca, N. Y.; University of Notre Dame Glider Club, Indiana; Airhoppers Glider Club, New York City; Aero Club Albatross of New Jersey; Elmira Glider Club, Elmira, N. Y.; Hudson Valley Glider Club, Wurtsboro, N. Y.; Detroit Glider Council; Soaring Society of Southern California, and the Eastern States Soaring Association. The total mileage of official distance flights was 3,218 miles; 788 take-offs were made from Harris Hill, 322 from the airport, of which 90 launchings were by airplane tow.

The contest officials were Jay Buxton, director of operations; Leonard Parker, assistant director; Bernard L. Wiggin, meteorologist; Prof. C. W. Terry, barograph chief; R. E. Franklin, Gustave Scheurer and John No-

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CONTEST FLIGHT LOG

June 28th. Contest opened in the afternoon with usual ceremonies, during which a number of prominent visitors welcomed the contestants and stressed the importance of gliding in connection with national defense. No official flights were made, although a number of pilots took off for short hops.

June 29th. Chester Decker flew his Minimoa sailplane 41 miles to Warren Center, Pa.; John Robinson, in the Zanon, 38 miles to Windham Center, Pa.; Dick Johnson in the two-place Schweizer, 7 miles to Appalachian, N. Y.; Lyle Maxey in the Midwest, 27 miles to Ulster, Pa.

June 30th. Chester Decker, 49 miles and 3,660 feet altitude to Whitney Point, N. Y.; William Putnam in the Orlik, 38 miles to Newark Valley, N. Y.; John Robinson, 3,820 feet altitude over Harris Hill.

July 1st. John Robinson, 152 miles and 14,250 feet altitude to Cementon, Pa.; Lyle Maxey, 69 miles and 14,400 feet to Lanesboro, Pa.; John Simpson of Canada in a Kirby Kite, 50 miles to Binghamton, N. Y.; Chester Decker, 49 miles and 6,145 feet altitude to Binghamton, N. Y.; Frank Boggs of California in the Screaming Wiener sailplane, 32 miles to Owego, N. Y.; Wm. Putnam, 51 miles to south of Binghamton, N. Y.

July 2nd. This was Earl Southee Day, celebrated in his honor as a mark of esteem for Earl's untiring efforts in behalf of recognition for the American gliding movement. Gen. Donald H. Connolly, administrator of civil aeronautics, State Senator Hammond, and other officials paid tribute to Mr. Southee's faith and vision in the future of motorless flight.

Chester Decker was the star of the day with his flight of 225 miles to Wapping, Conn., near Hartford, his best altitude being 9,110 feet. John Robinson, Lyman Wiard in the XYZ Wolf, and William Putnam in the Orlik all landed at the Tri-City Airport near Binghamton, N. Y., 42 miles from Elmira. Dick Johnson flew 21 miles to Waverly, N. Y., reaching 4,520 feet.

July 3rd. Stanley Smith in his Schweizer two-place, 42 miles to Tri-City Airport. William Putnam of Detroit, 50 miles to Genesee, Pa. E. Lain in the Midwest, 21 miles to Rathbone, N. Y.

July 4th. Soaring conditions unfavorable. Short flights were made by Johnson, Decker, Maj. Dent, Robinson, Stanley and Lehecka. William Putnam put on a stunting exhibition in the Orlik.

July 5th. John Robinson, 170 miles to Troy, N. Y., altitude 7,230 feet; William Putnam, 129 miles to Dolgeville, N. Y., altitude 7,200 feet; Chester Decker, 160 miles to Schenectady, N. Y., altitude 8,140 feet; Stanley Smith, 53 miles to Trout Run, Pa., altitude 6,450 feet; Dick Johnson, 51 miles to Geneva, N. Y., altitude 5,970 feet; E. Lain, 38 miles to Penn Yan, N. Y., altitude 7,570 feet; Walter White in the Aero I. T. I., 28 miles and 5,420 feet altitude to Perry City, N. Y.; Stanley Corcoran flying his two-place Cinema II reached an altitude of 7,120 feet; Randy Chapman set his goal to Cortland and return, but missed Harris Hill by five miles, landing at Horseheads, N. Y., making a flight of 95 miles. Chapman flew the very fast Lawrence Tech sailplane Yankee Doodle.

July 6th. Poor weather conditions. No official flights made. In the morning a directors' meeting of the Soaring Society of America was held during which the following officers were elected: Parker Leonard, president; Don Hamilton and Jay Buxton, vice presidents; Arthur Schultz, treasurer. The directorate of the S. S. A. consists of all the officers plus Lewin Barringer, Commander Eugene F. McDonald, Helen Montgomery, Chester J. Decker and Dr. W. Klemperer. Robert Stanley and Stan Corcoran were named to the executive committee, and Floyd Sweet, former secretary of the Soaring Society, was elected contest director.

July 7th. No contest flights due to poor weather conditions.

July 8th. John Robinson, 97 miles and 12,150 feet altitude to Leonardsville, N. Y.; Lyman Wiard, 53 miles to Chenango Bridge, N. Y.; William Putnam in the Yankee Doodle, 41 miles to Tri-City Airport; Lyle Maxey, 4,400 feet altitude over Harris Hill.

July 9th. Dick Johnson with Passenger Marion White, 182 miles and 5,550 feet altitude to Miller Field, Staten Island, N. Y.; John Robinson, 114 miles and 4,970 feet altitude to south of Suedberg, N. Y.; William Putnam, 79 miles to Montdale Corners, N. Y., altitude 5,700 feet; Lyle Maxey, 79 miles, 5,400 feet altitude to Wilkes-Barre, Pa.; Lyman Wiard, 53 miles to Auburn Center, Pa.; Stanley Smith and Passenger R. Kluge, goal flight of 73 miles and 5,020 feet altitude to Scranton, Pa.; H. Abrams in ABC sailplane, 43 miles to LeRayville, Pa.; Walter Lob in M. I. T. Franklin, 41 miles to Rumerfield, Pa.; R. Gilder in Harvard Baby Bowlus, 34 miles to Rome, Pa.; A. Ames in Harvard's Schweizer Boomerang utility, 29 miles to Ulster, Pa.; Maurice Waters in the Elmira Glider Club's two-

place Schweizer, 21 miles to Waverly, N. Y.; Dallas Wise, Jr., in his Franklin, stayed up for 6 hours 14 minutes, gaining the first leg on his Silver "C."

July 10th. Robinson, 108 miles to Pulaske, N. Y.; Putnam, 99 miles to Vienna, N. Y.; Stanley Smith, 89 miles and 6,480 feet to Canastota, N. Y.; Alcide Santilli in the Wolf, 30 miles to Ithaca, N. Y.; Dallas Wise, Jr., completed his altitude requirements for Silver "C" with 4,450 feet over American Airline Airport.

July 11th. Only contest flight made by Stanley Smith, who gained 3,280 feet altitude over Harris Hill.

July 12th. No contest flights, due to unfavorable soaring conditions.

July 13th. Robinson, 40 miles to Liberty, Pa.; Stanley Smith took off for Middletown, Pa., missed it by 8 miles, flying a distance of 122 miles. Gen. Arnold, Maj. Lee, Col. Edward S. Evans, Bernarr MacFadden and other notables arrived to participate in the closing ceremony. The contest officially ended at 4 p. m.

BANQUET AND AWARDS

The closing banquet was held at the Mark Twain Hotel. William McGrath of the Eclipse Machine Co. presided as chairman. Principal speakers were Maj. Gen. H. H. Arnold, Bernarr MacFadden, Godfrey L. Cabot, Col. Carrol Cone, Col. Edward S. Evans. Earl R. Southee awarded most of the trophies. Col. Edward S. Evans presented the National Soaring Championship trophy to John Robinson, who became the soaring champion for the second consecutive time. William Putnam of Detroit took second place and Chester Decker of Glen Rock, N. J., third. Decker led the contest until July 7th, but unfortunately was forced out because of his induction under the Selective Service Act. In plain words, the draft got him.

The Warren E. Eaton Memorial Trophy for the most outstanding contribution to the art, sport or science of motorless flight was awarded to Floyd J. Sweet.

Bendix Aviation Corp. distance awards were presented to the following pilots: first, gold trophy and \$500 to Chester Decker; second, silver trophy to Richard Johnson; third, bronze trophy to John Robinson.

Aviation magazine design award for most outstanding American sailplane design at contest to the "Screaming Wiener," designed by the Crown City Glider Club of Pasadena, Calif.

Air Trails magazine flight award, a Jardur Chronograph, to Stanley Smith, engineer of the Bell Aircraft Co., Buffalo, N. Y., for his goal flight with passenger to Scranton, Pa., establishing a new American record.

The Zack Mosley "Smilin' Jack" award, \$25, for landing nearest to Washington, to John Robinson.

The Evans barograph award for greatest altitude made by a Group II pilot, to R. Stevens of the University of Michigan; for greatest distance made by a Group II pilot, to J. Simpson of Canada.

Samuel Willard Silver "C" award: \$25 for the first "C" pilot to complete five hours' duration, to R. Eikenberry, Notre Dame; \$15 for the second, Dallas Wise, Jr., Detroit, Mich.

Columbia Rope award: six special coils of rope to utilities making at least one contest flight, to Harvard Glider Club, Notre Dame Glider Club, M. I. T. Glider Club, University of Michigan Glider Club; Dallas Wise, Jr., and L. Edgar.

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