

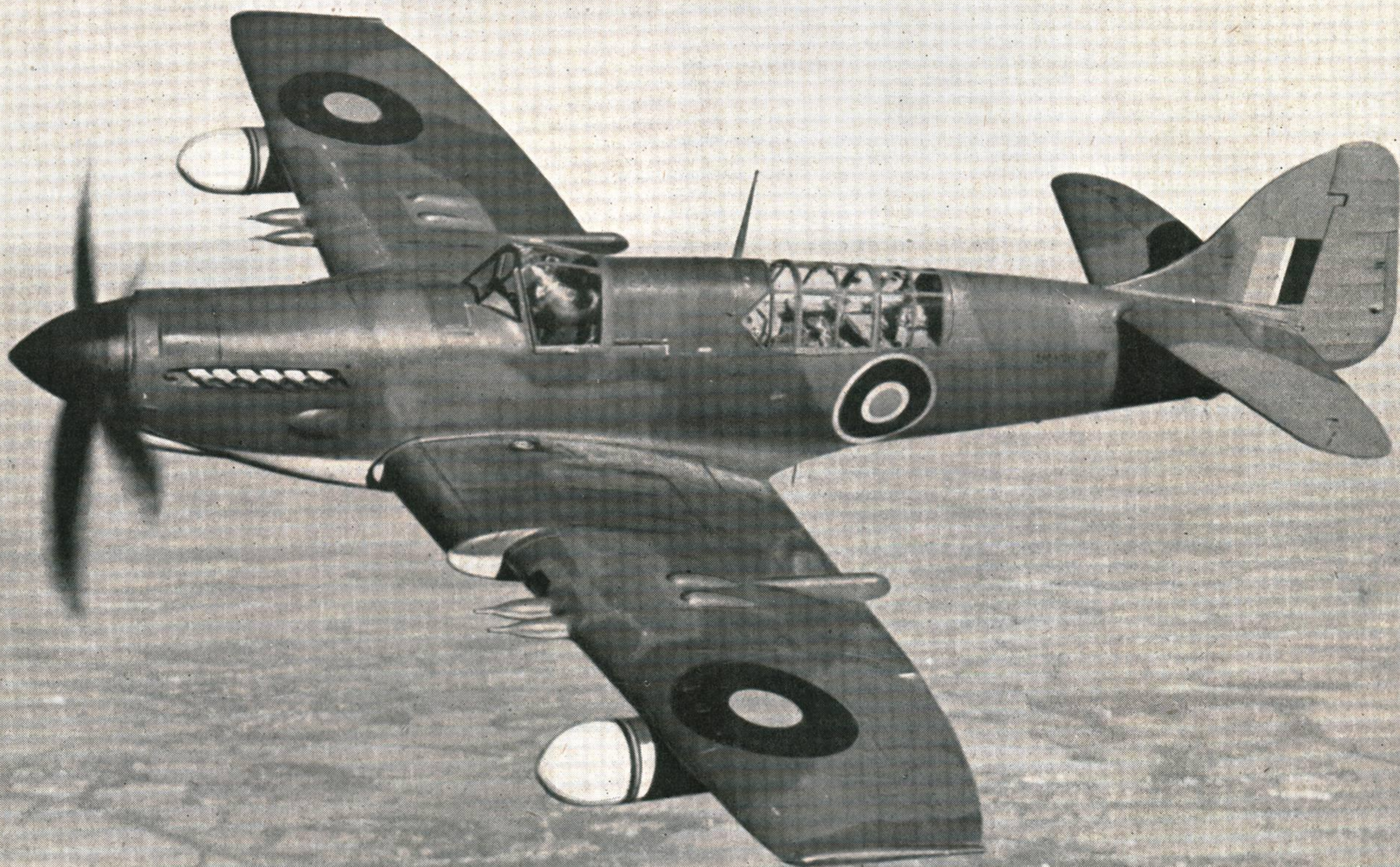
THE INTER



SERVICES

# AIRCRAFT RECOGNITION

*Journal*

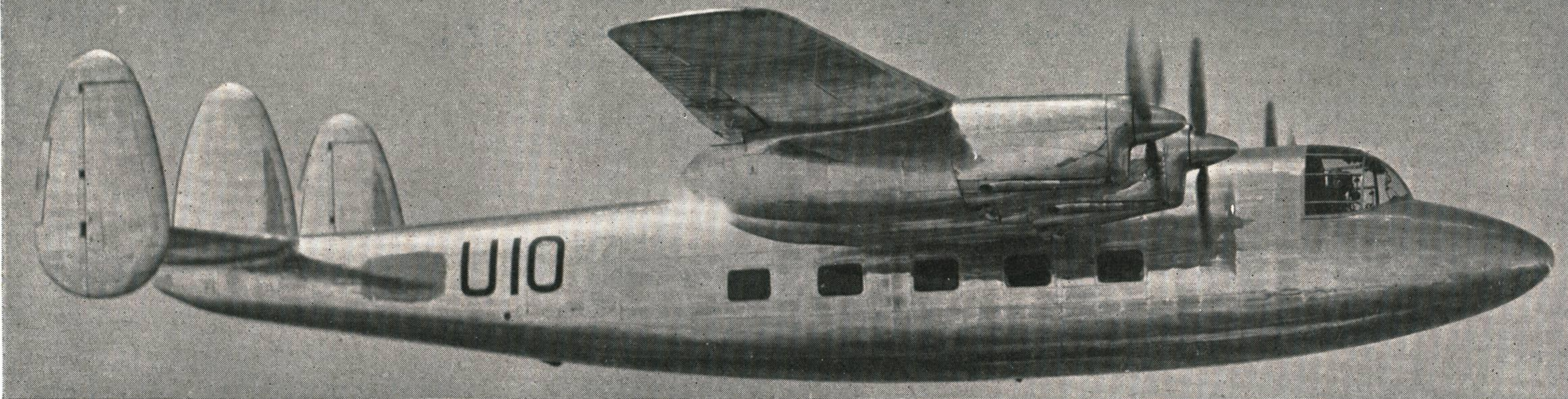


New Series

AUGUST 1946

Volume I. No. 2

# Aircraft in the News



**Miles M.60 Marathon (Brabazon V)**—This 14-20 seater feeder-line type has four Gipsy Queen motors and a top speed of 230 m.p.h. Reversible-pitch propellers facilitate braking and manoeuvring. The high wing will please passengers.



**Tiger Moth Successor?**—The Canadian built D.H.C.-1 Chipmunk is a fully aerobatic, low wing, single Gipsy motor monoplane. Two cockpits in tandem are totally enclosed beneath a high hood. D.H. design is evident in the tail unit.



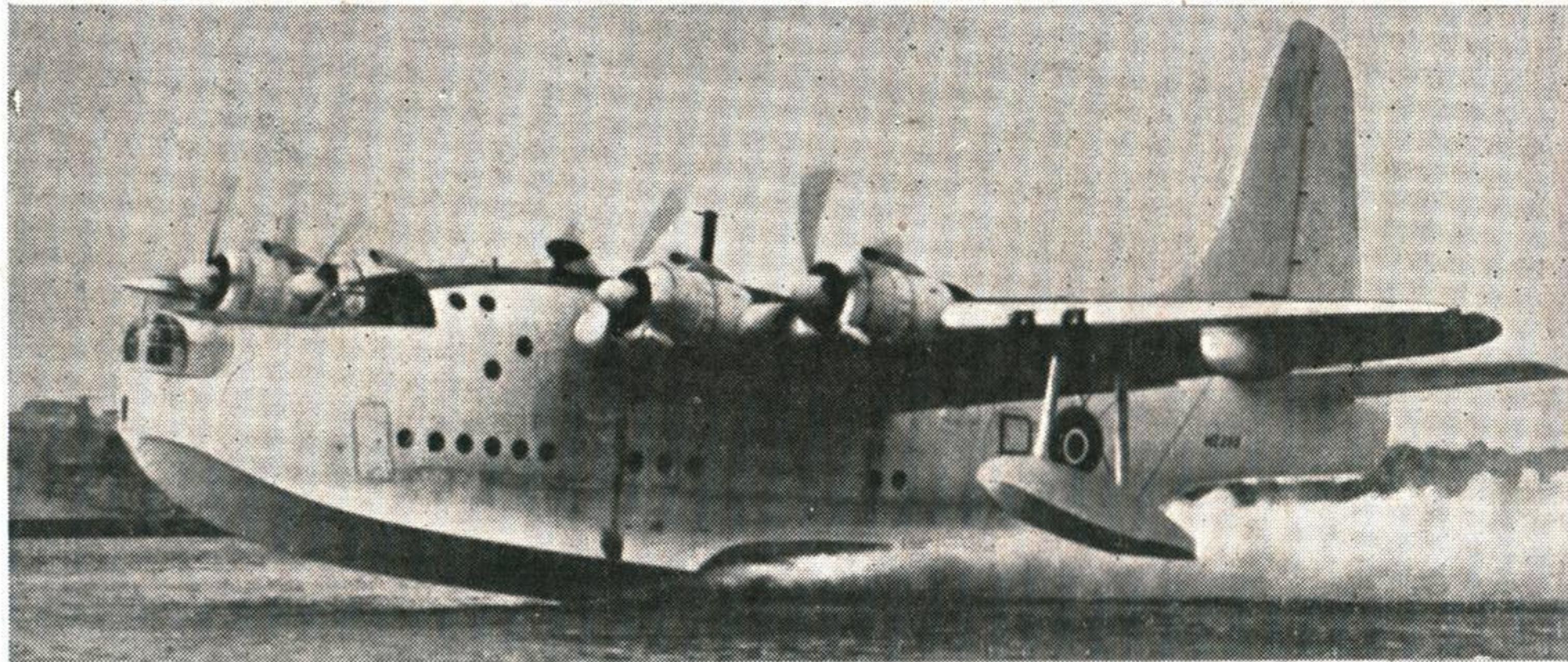
**Handley Page Halton**—Developed from the Halifax C.VIII, the Halton may now be seen flying in B.O.A.C. colours. The aircraft illustrated is owned by the Maharajah Gaekwar of Baroda.



**Abiding Annie**—The Avro XIX is developed from the Anson. Refinements include more power, hydraulically retracting undercarriage and a deeper fuselage. Recognitionally, it is practically unaltered.

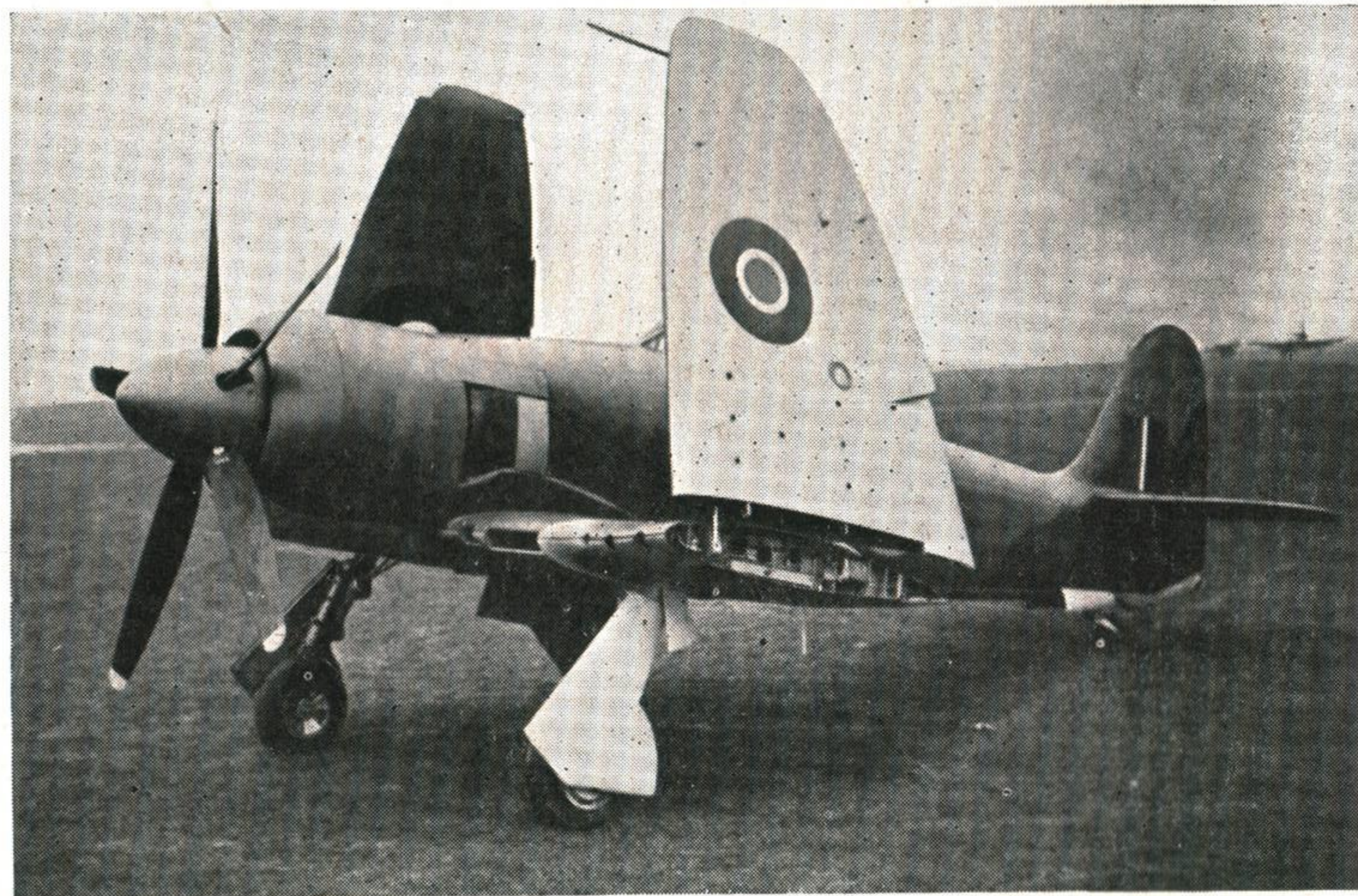


**Bristol Wayfarer**—This bulky transport, belonging to Channel Island Airways, is seen here on passage to the Islands. Note rectangular windows—those on the Freighter are circular. The fixed undercarriage and angular surfaces facilitate Recognition and simplify production and maintenance.



**Short Seaford**.—A reconnaissance bomber of typical Short boat pattern. It differs from earlier Sunderlands in a larger fin and fairing, dihedral in the tailplane and an "arched" second step. As a civil transport it becomes the Solent (see silhouettes on back cover).

**Batting Along**—The D.H. 108 Swallow is a model for research into the behaviour of swept-back wings at varying speeds. The information gained will assist in the design of the D.H.106 (Brabazon IV) tailless air liner. As a precaution, anti-spin parachutes are carried in wing-tip containers. The D.H.106 will have prop-jets or turbo-jets which will give it a top speed around 550 m.p.h. It will weigh 33½ tons.



**Folding Fury**—The Sea Fury is made finally shipshape by the addition of power-folding wings. They hinge outboard of the guns. Like other Naval novelties, they add weight, but the Sea Fury retains a splendid high-level performance.

THE INTER



SERVICES

# AIRCRAFT RECOGNITION JOURNAL

(NEW SERIES)

**N**EVER, since the pioneer days of flying, has aviation presented as colourful a picture as it does today. Development has been accelerated by the needs of war and more progress has been made in the last five years than in the previous thirty.

Jet propulsion has revolutionized performance almost overnight and, for the first time, aero engine development is ahead of the airframe. And then, no sooner had we accepted the jet engine into our scheme of aeronautical achievement than the prop-jet was upon us. The design of "flying-wing" aircraft, with and without jets, is proceeding steadily; helicopters, also with and without jets, surprise us no more; piston engines are now turning out more than three thousand horse-power and, to take full advantage of that power, contra-rotating propellers are in standard use. Reversible-pitch propellers are here to shorten landing runs and facilitate taxiing manoeuvres. "Normal" aircraft, both new and old, civil and military, large and small, are still with us and flying in their thousands all over the world. The subject is always new, always changing—never a dull moment! To keep up with it and to maintain an efficient standard in Aircraft Recognition, constant interest is a "must".

In this issue of the Journal, the pictures range from old timers which are still flying, to new aircraft illustrating the latest trends of aeronautical endeavour. In their choosing, we have aimed at presenting the immense variety of wondrous shapes and elegant forms which may be seen in the skies. If seen, they should be known. You cannot be expected to know them all—yet. But study them conscientiously and regularly and in time, you *will* know them, brother—you will.

## NEWS ITEMS

The Avro XXII (Brabazon III) is ultimately to replace the Tudor II. In place of the Merlin motors, four gas turbines are to be fitted. The cabin is to be pressurized for flights up to 35,000 ft. The total weight of the aeroplane will be approximately 40 tons.

The Vickers V.C.II (Brabazon IIB) is similar to the Viking, but will have two prop-jets or two gas turbines instead of radials. It is under construction and is expected to fly next year. If it does, it bids fair to being the first civil jet job to go into service.

An experimental flying-wing fighter, the Northrop XP-79 is made entirely of magnesium and has two Westinghouse gas turbines, giving a combined thrust of only 2,800 lbs. It has a four wheeled "bedstead" undercarriage and a span of 38 ft.

Lancastrians may be seen flying with two Nene turbo-jets replacing the outer Merlins. Two aircraft only are earmarked for this experiment.

The new Miles M.37 Martinet trainer has a permanently raised rear seat and a bubble hood over it, in place of the more conventional rising seat and sliding hood. This provides the instructor with an excellent view, and the Recognition student with some welcome help.

The Handley Page Hermes II has 13 feet added to the fuselage length, increasing its passenger capacity to 64. The Hermes III, with the same airframe, will have Bristol Theseus prop-jets, giving a cruising speed of 355 m.p.h.

Saunders Roe are working on an advanced design of flying boat fighter. A conventional air frame, with high wing and single fin and rudder, houses a Metropolitan-Vickers gas turbine in each wing-root, the air intake being in the nose; wing tip floats retract. The top speed will be over 400 m.p.h.

**EDITORIAL NOTE:** Owing to the non-availability of raw materials, the first two issues of the Journal are printed on a lightweight paper. It is hoped that No. 3, and all subsequent issues, will be printed on a considerably thicker paper, comparable with that used for the Journal in the past.

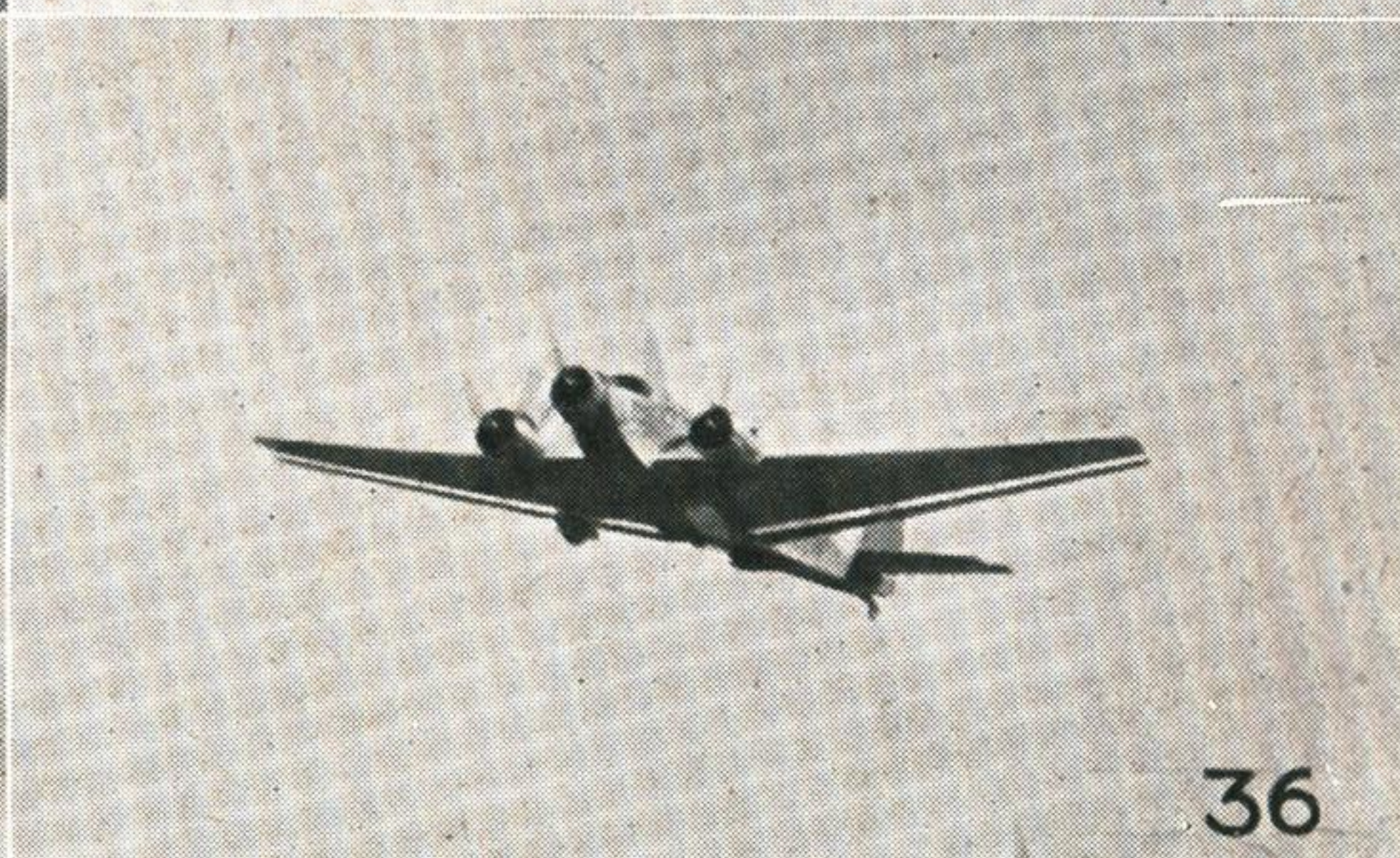
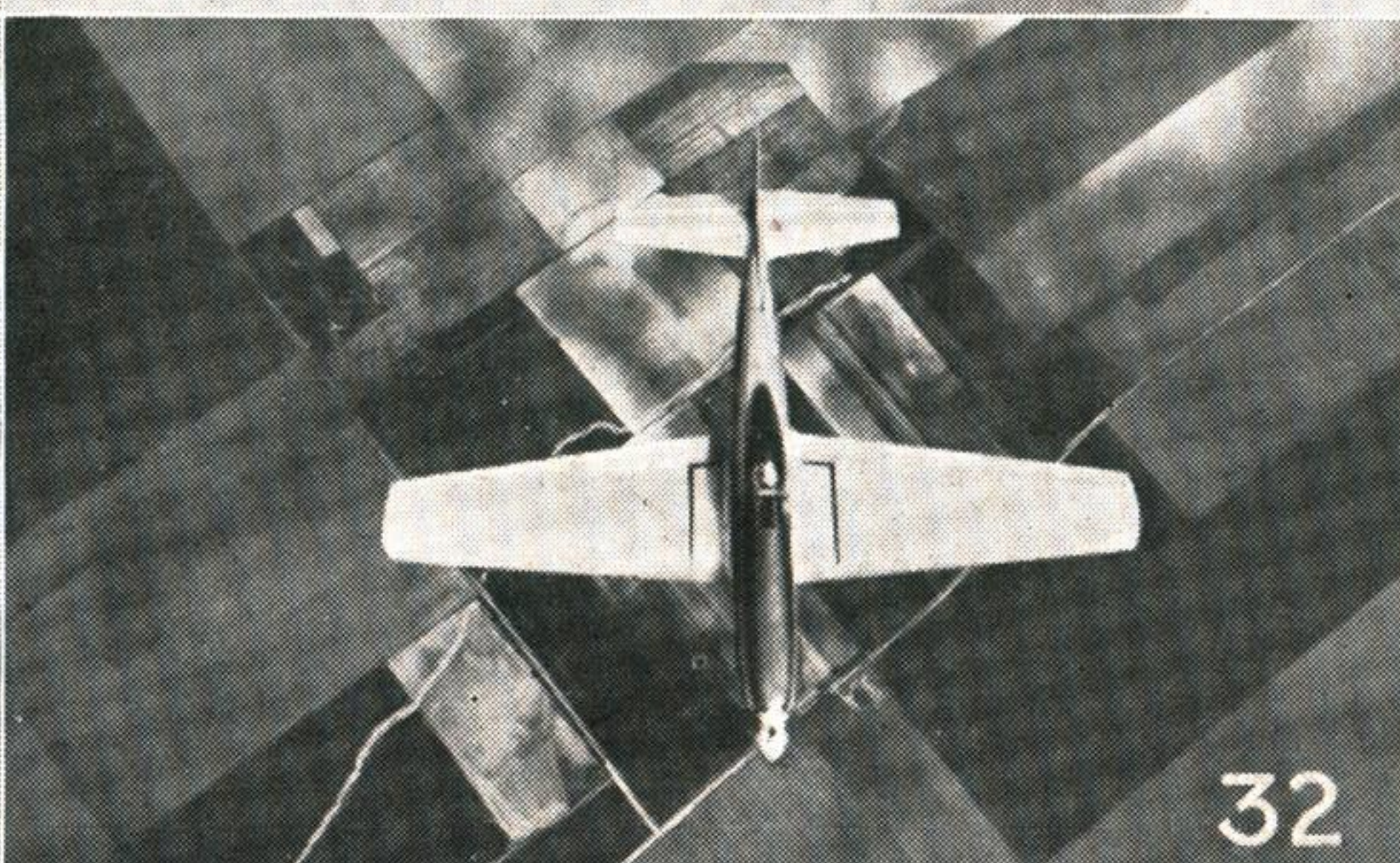
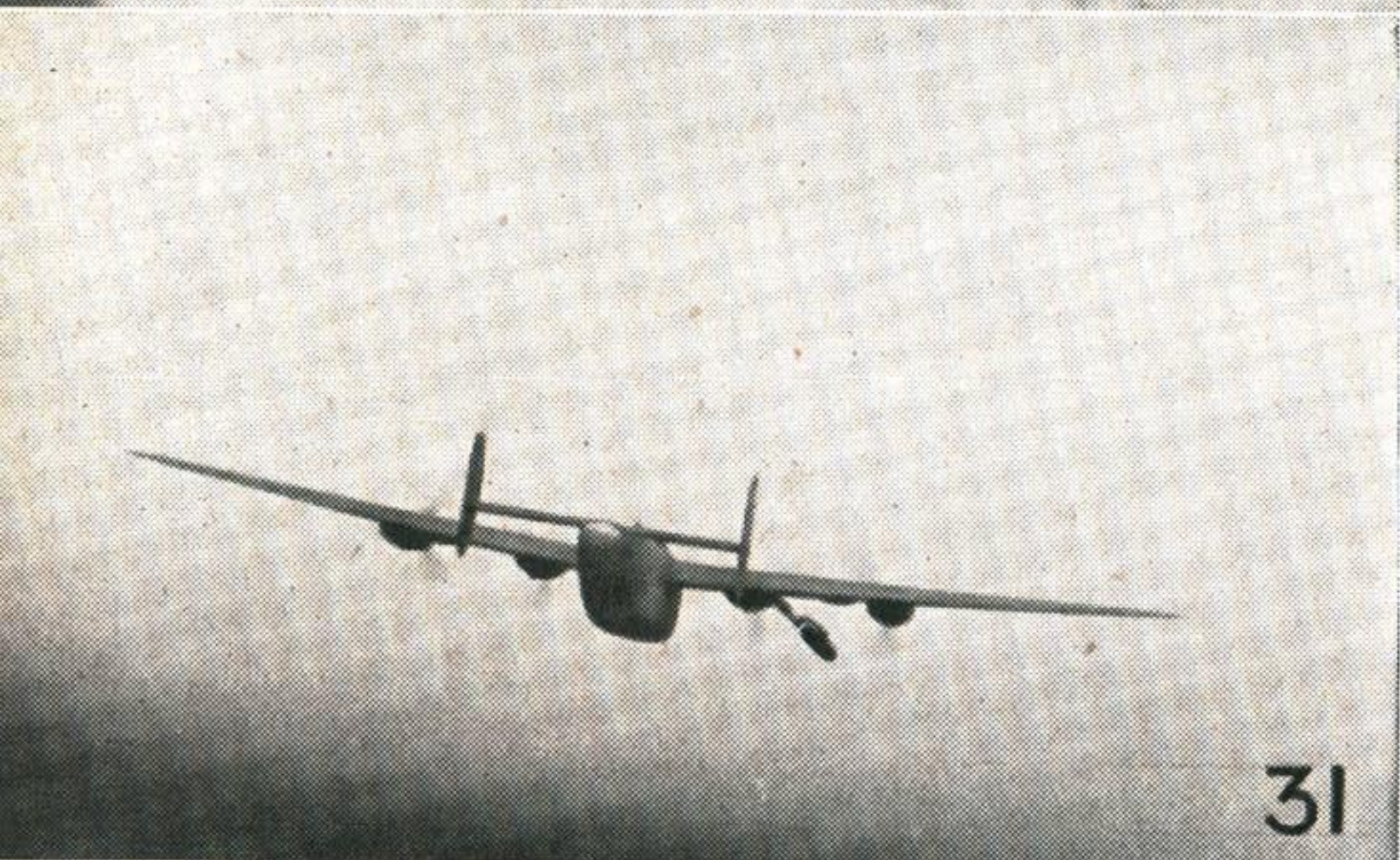
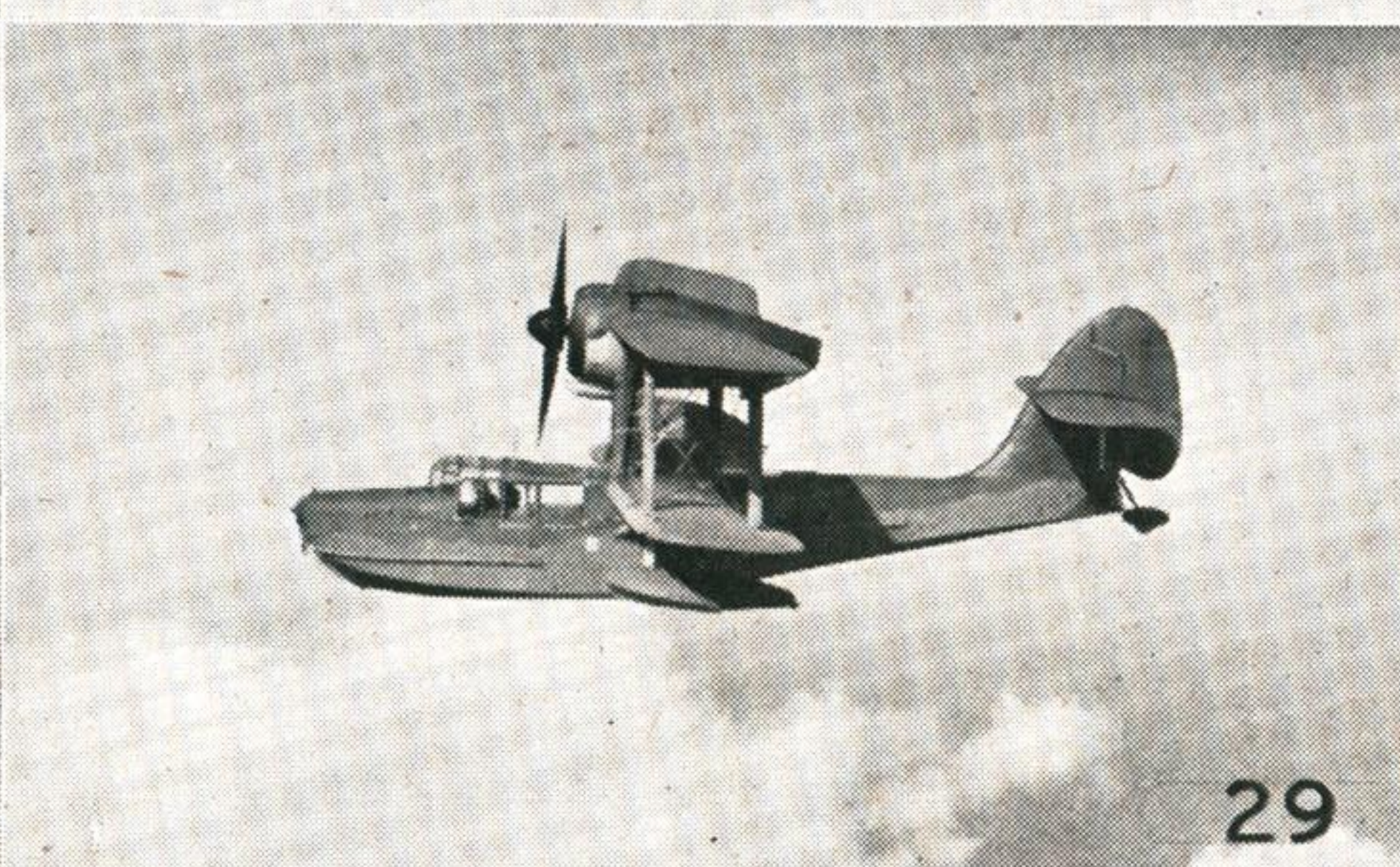


### "THERE WILL ALWAYS BE A SPITFIRE!"

The Spitfire 22 is perhaps symbolic of that great family of fighters which rendered incalculable service throughout the War. Ever increasing power was packed beneath its sleek cowlings and although in many ways its external appearance has altered, the elegant lines and fine proportions remain, and in the minds of all Recognition devotees, "There will always be a Spitfire!"

# ELEMENTARY SPOTTING

Recognition Test No. 4



# U.S. Activities

1. **DOUGLAS DC-6**—Developed from the well-known Skymaster, the DC-6 carries 52 passengers, has a top speed in excess of 300 m.p.h. and a range up to 5,000 miles. The fuselage is longer and the flying surfaces are more angular. U.S. Army designation XC-112.

2. **REPUBLIC XP-84 THUNDERJET**—A new U.S. Army turbo-jet fighter now on test, with a layout similar to the experimental Gloster E.28/39. The top speed is 590 m.p.h., the span of 36 ft. 5 ins. being slightly less than the fuselage length.

3. **DOUGLAS GLOBEMASTER (U.S. Army C-74)**—This enormous passenger aircraft has 173 ft. span, high aspect ratio wings, with prominent flap guides. Unusual feature is the two "bug eye" cockpit canopies on the nose.

4. **MARTIN XB7M-1 MAULER**—This U.S. Navy single seat torpedo-dive-bomber has interleaving dive brakes opening above and below the wing, forming the trailing edge when closed.

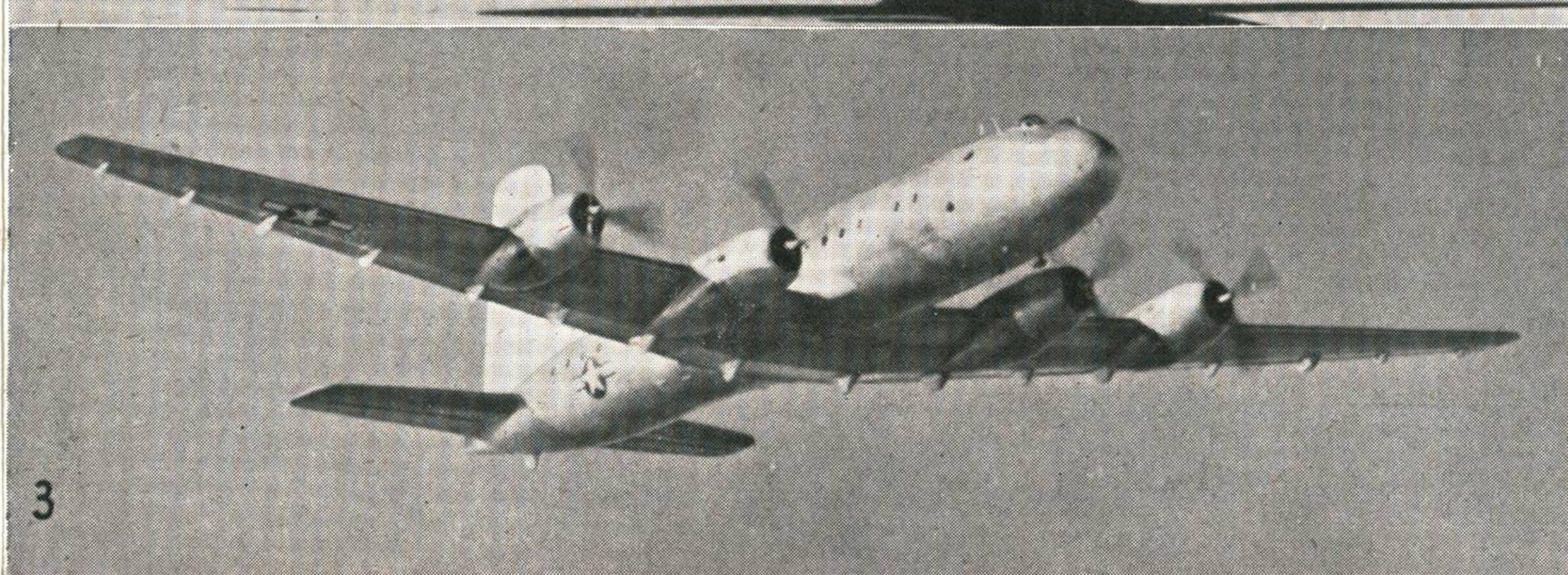
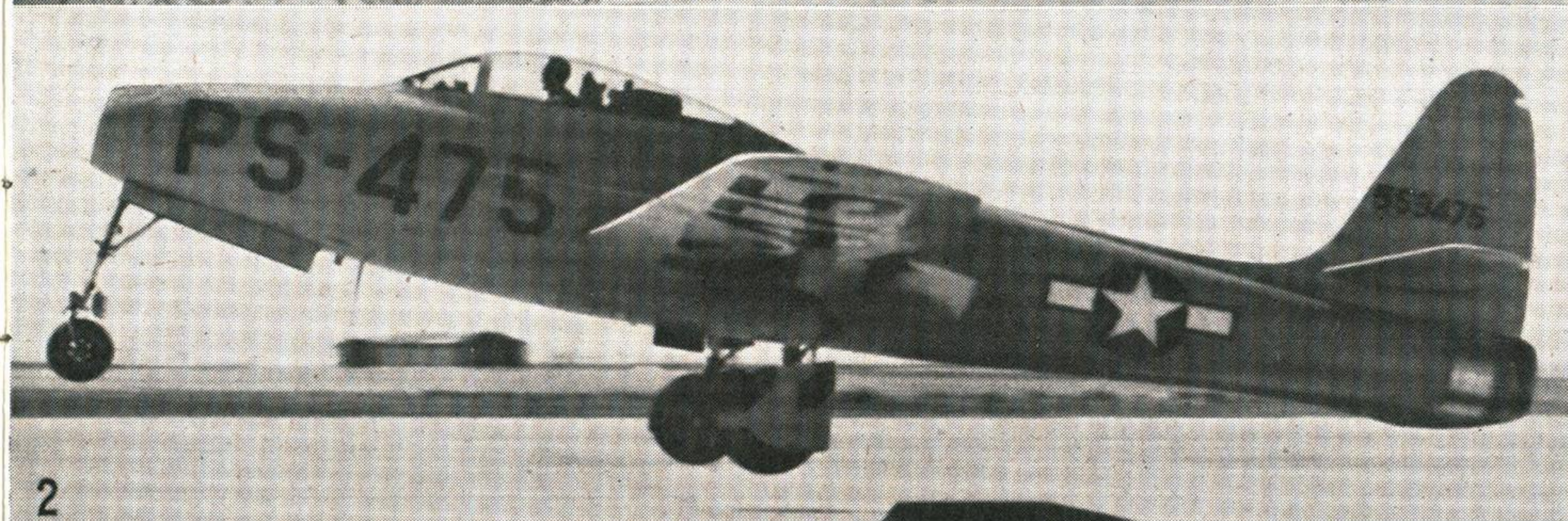
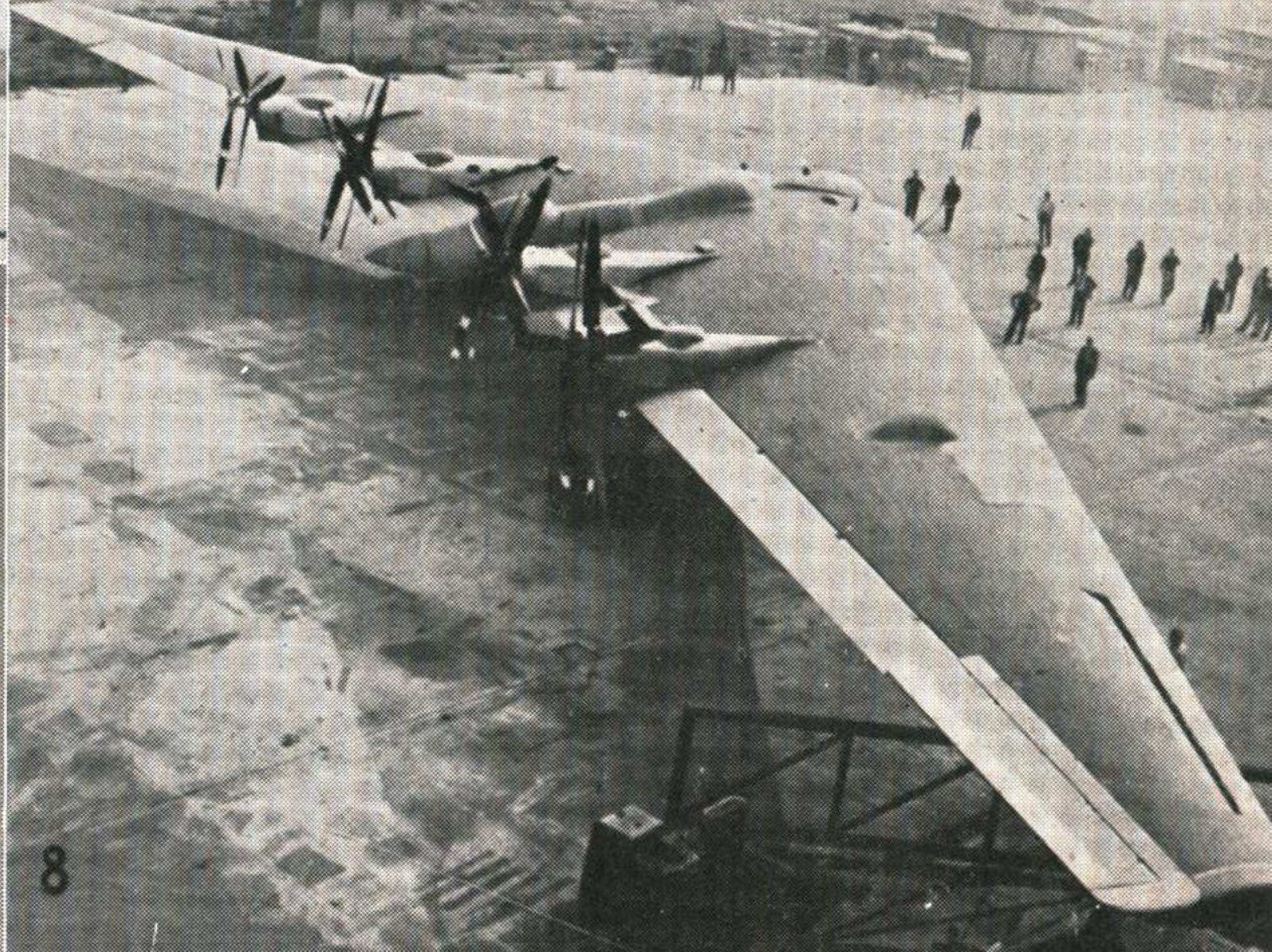
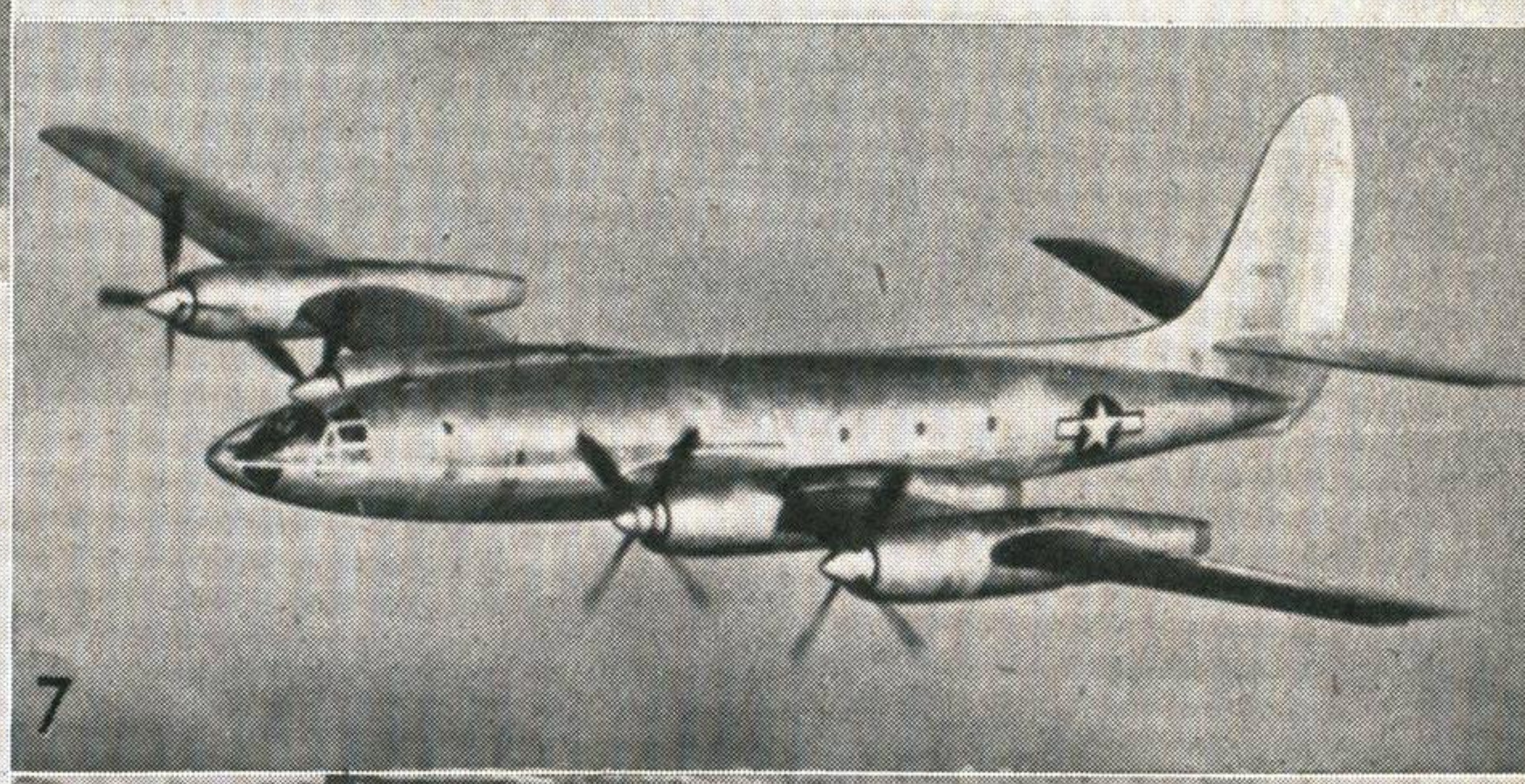
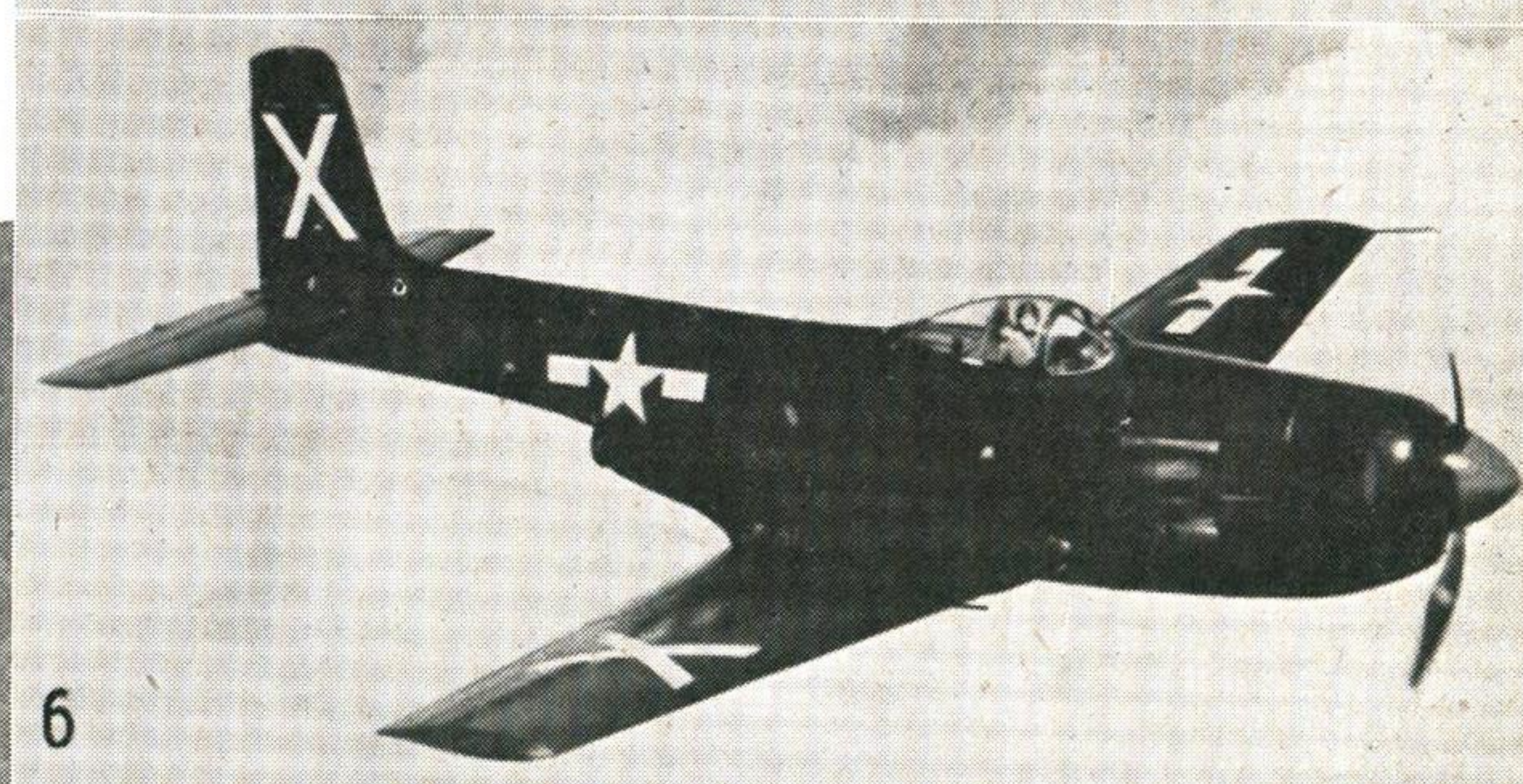
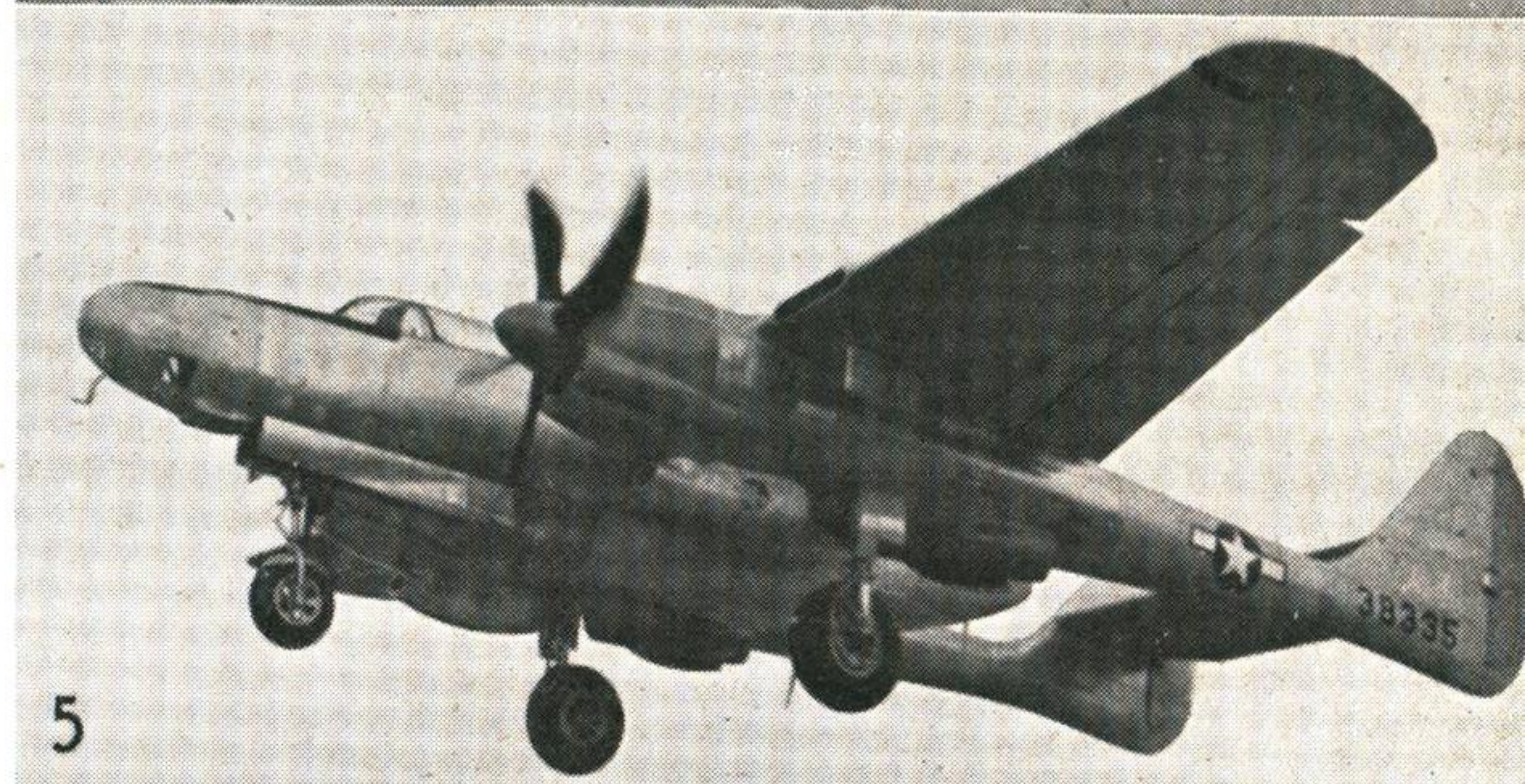
5. **NORTHROP F-15 REPORTER**—With a top speed of 440 m.p.h., the F-15 is a P.R. version of the Black Widow, with extended range. The modified nacelle houses the cameras and a crew of two.

6. **CURTISS F15C-1**—A U.S. Navy prop-jet fighter with the jet orifice positioned in a manner resembling some German projects. The wing and tail surfaces are all squared off.

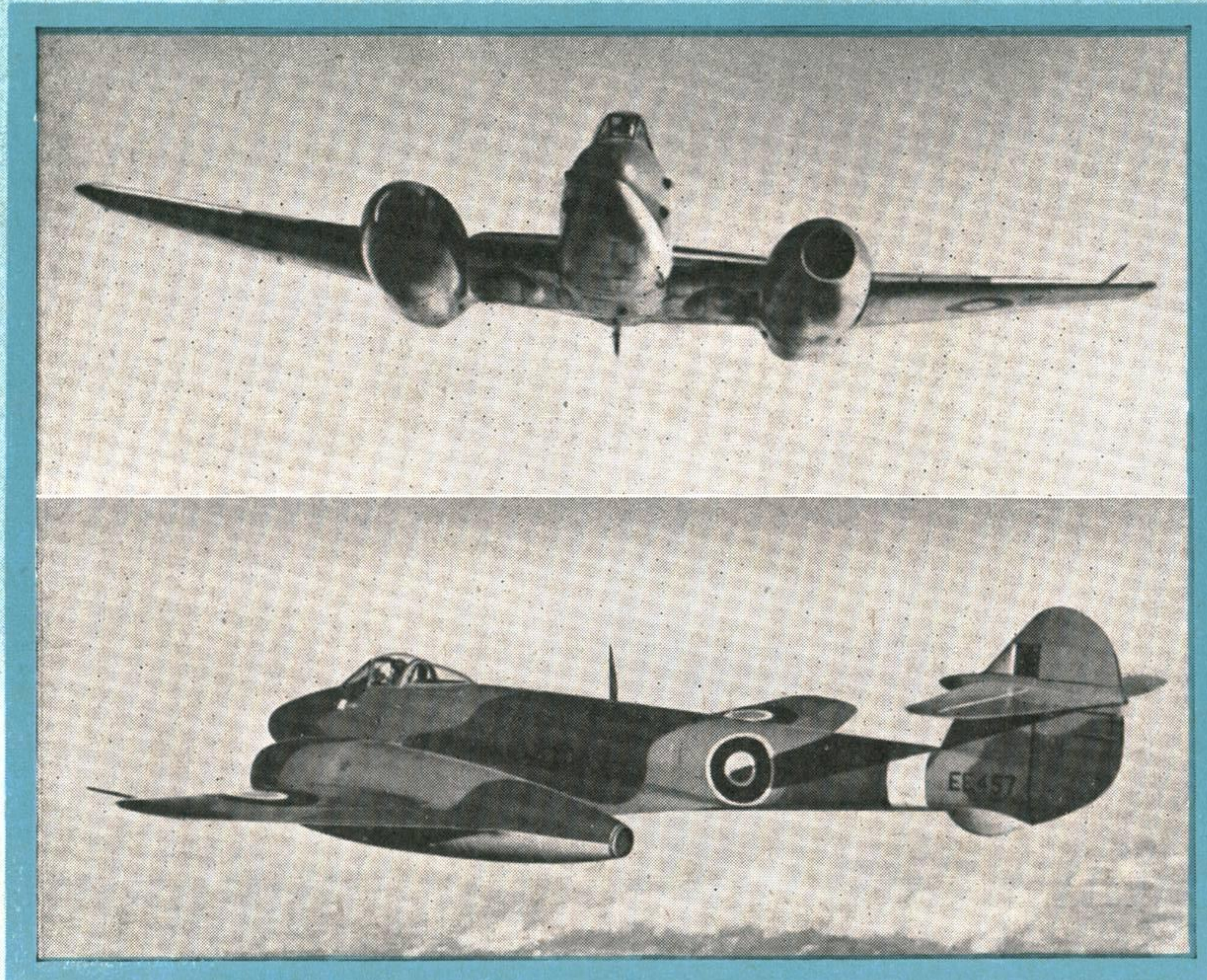
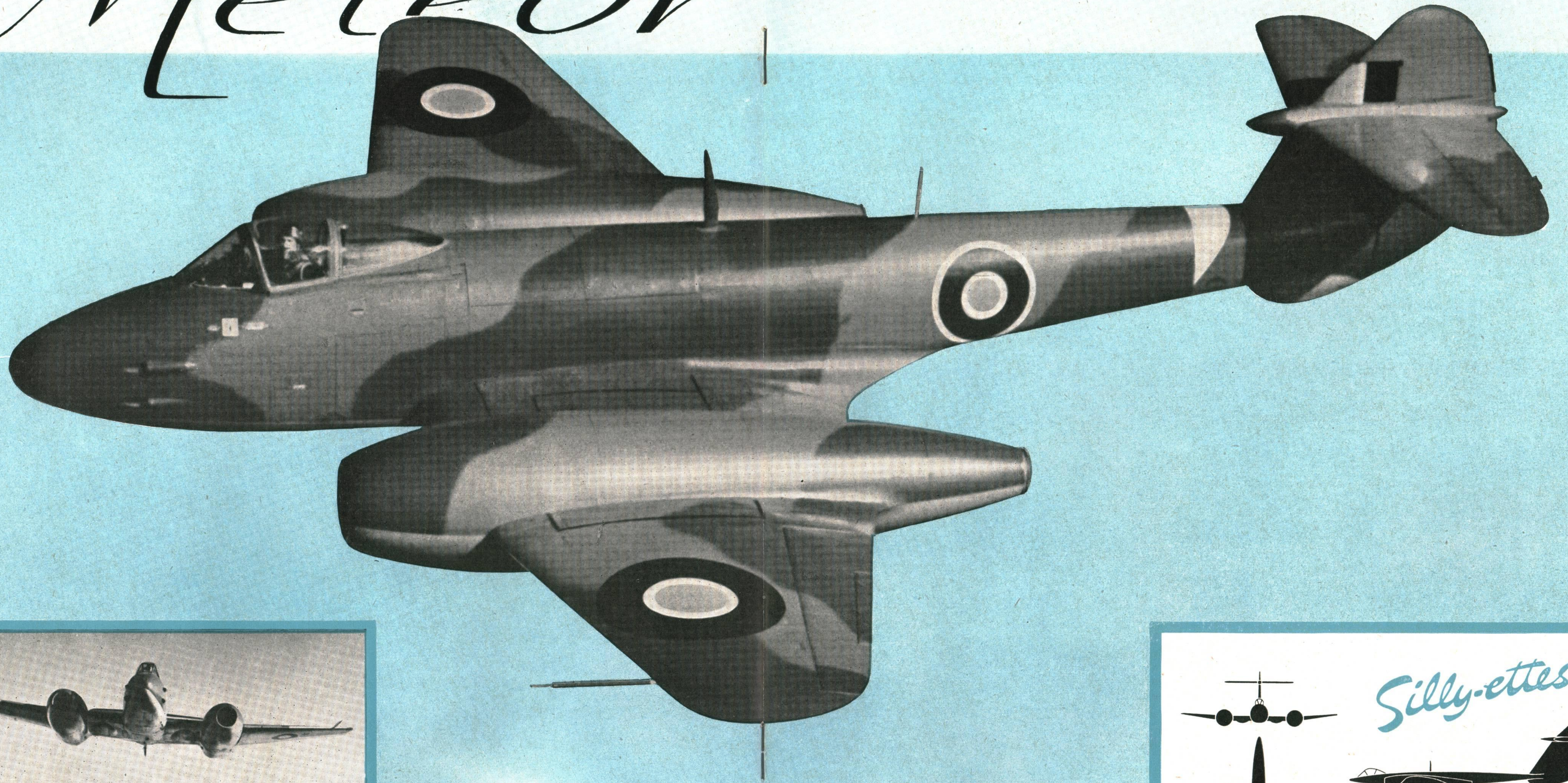
7. **REPUBLIC F-12**—Army reconnaissance forerunner of the civil "Rainbow", the F-12 is pressurized for 40,000 feet, with 4,100 miles range. Exhaust gases ejected from each nacelle tail assist in giving a claimed cruising speed of 400 m.p.h.

8. **NORTHROP XB-35**—This flying-wing experimental bomber is designed for an all-up weight of 209,000 lb. gross overload and is powered by four Pratt and Whitney Wasp Major engines buried in the wing, each driving two 4-blade co-axial propellers. The 3-blade propellers on the port outer are temporary.

**A**MERICAN designers have never been slow to introduce new designs and developments. The pictures on this page are evidence of their present tendencies towards jets, prop-jets, the flying wing and, of course, bigger, heavier, higher and faster aeroplanes.



# Meteor



*Silly-ettes*

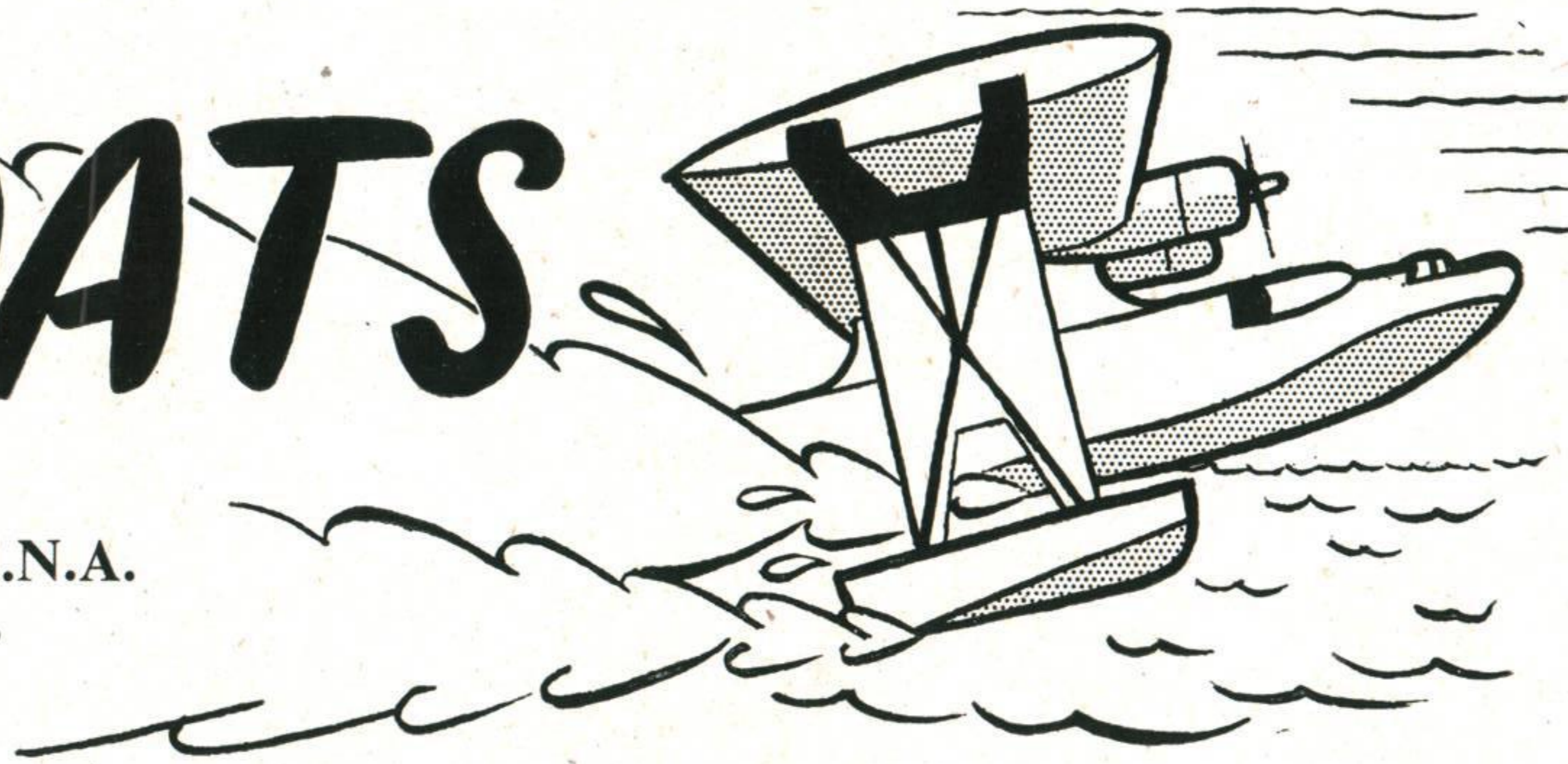
The  
**GLOSTER METEOR IV**  
Single Seat Fighter  
Span : 42' 10" Length : 41' 3"

# FLYING BOATS

by

JOHN A. SIZER, A.R.Ae.S., A.I.N.A.

Author of "Model Flying Boats"



**A**N AEROPLANE frequently reflects its function in its appearance. Fighters, for example, look slim, speedy and small and combine fire power, climb and manoeuvrability to the exclusion of almost everything else. Day bombers, night bombers and ground attack aircraft all have special, and in most cases, distinguishing layouts directly bearing upon their operational tasks. And so it is with the flying boat. Performing in every way the functions of a land plane, it must, in addition, take-off from, and alight on, water.

The manner in which the flying boat's particular structural problems are solved makes for easy recognition. Deep hulls—steps—high wings—large, high tails—sponsons—floats—struts—and a good number of other features—all make for the peace of mind of the spotter.

Steps in the hull of a boat are for the purpose of breaking the suction of the water. There may be one or two steps, depending upon the size of the hull. A V-section planing bottom helps to give the boat directional stability and minimises alighting impact. (The word "Keel" is very often used by spotters to define the V-shaped planing bottom of flying boats although, technically speaking, the flying boat has no keel). The deep hull is designed to raise the wings, engines and propellers clear of water and spray, while the hull form is generally distinctively shaped to compromise between aerodynamic and hydrodynamic laws.



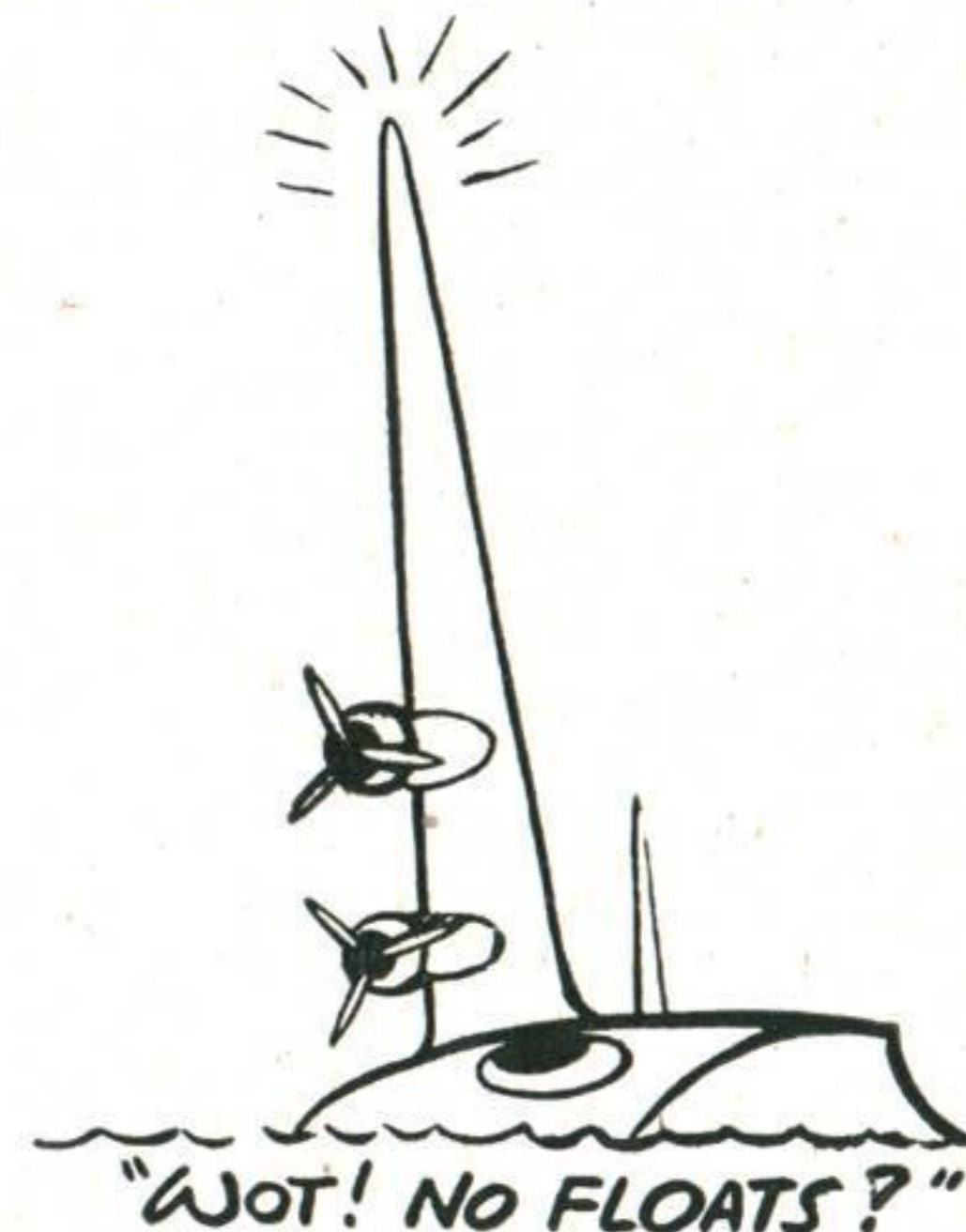
Let us take a designer's problem from his casebook and see how it helps our recognition. Consider the hull; we will decide on a shallow one, just to make it difficult. A low hull means that we have to support engines above the spray. Since the thrust line, which passes through the centre of the propellers, should coincide, as nearly as possible, with the wing chord line, we must have a high wing. Furthermore, we want the wing well out of the water, which gives us yet another reason for raising it. The answer, therefore, is a pylon structure. For the same reason, the tail must be high, so we shape the hull in such a fashion that it sweeps up at the rear, and fairs nicely into a very large fin and rudder which generally looks rather like a great sail. To bring the elevators well into the slip stream, we put the tail plane up on the fin and rudder.

However, having raised all this gear so high up, we find there is a tendency for the boat to fall over to one side or the other when it is stationary. This tendency is referred to by those in very high technical circles as negative metacentric height, but to us it is *plane* top heavy. To overcome this, sponsons are suggested. These are very useful for embarking and disembarking platforms, and we may also put some extra fuel in them. They will even help the lift when the flying boat is airborne. They also look nice and neat and help our spotting. On the other hand, however, they do tend to be sensitive over

their placing round the water line, they may even set a limit on our loading line and may also be dangerous in rough water take-offs, so we look at the prospect for floats. Wing floats, when placed at the wing tips, will give maximum effect for minimum size, and thus minimum weight, but they will want strongly strutting. They could, of course, be made to retract. But no matter where they are placed or how they are attached, they will usually be clearly recognisable.

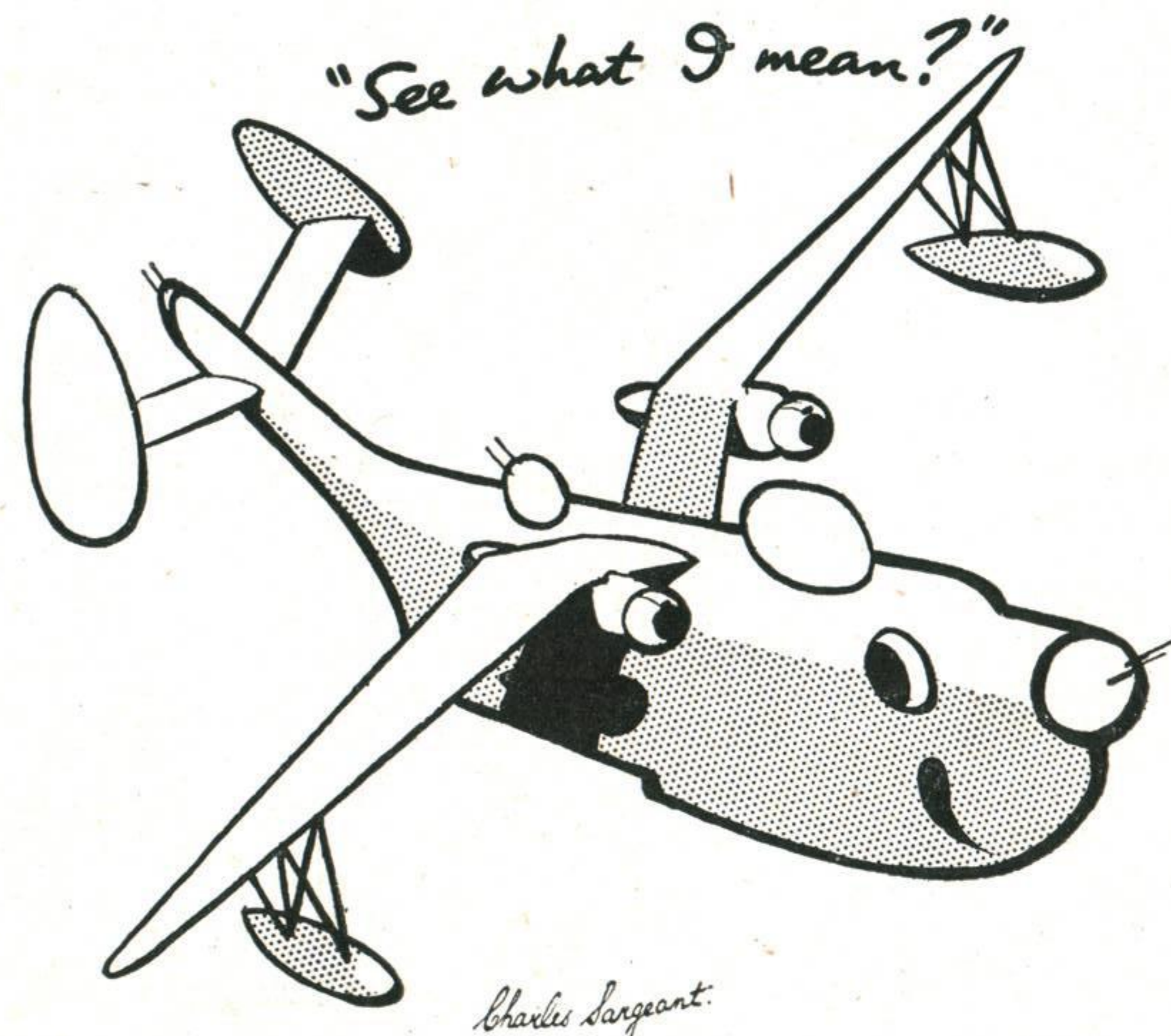
From this quick survey of the flying boat designer's problems, you will, perhaps, see some which could very well have confronted those designing the PBY-5 Catalina or the Dornier Do 18.

We might have decided, on the other hand, to dispense with the pylon structure to support the wings and build a large deep hull in place of it, within which we should be able to fix a second deck and thus improve accommodation, at the same time putting in more engines and go in for a bigger boat altogether. Nevertheless, we should still have plenty of features of a tell-tale character. We should still require our wing floats; we should still have our tail high, though the tail plane might rest upon the hull and it would not be necessary to build it on the fin. Consider the Martin Mars or Short Sunderland.



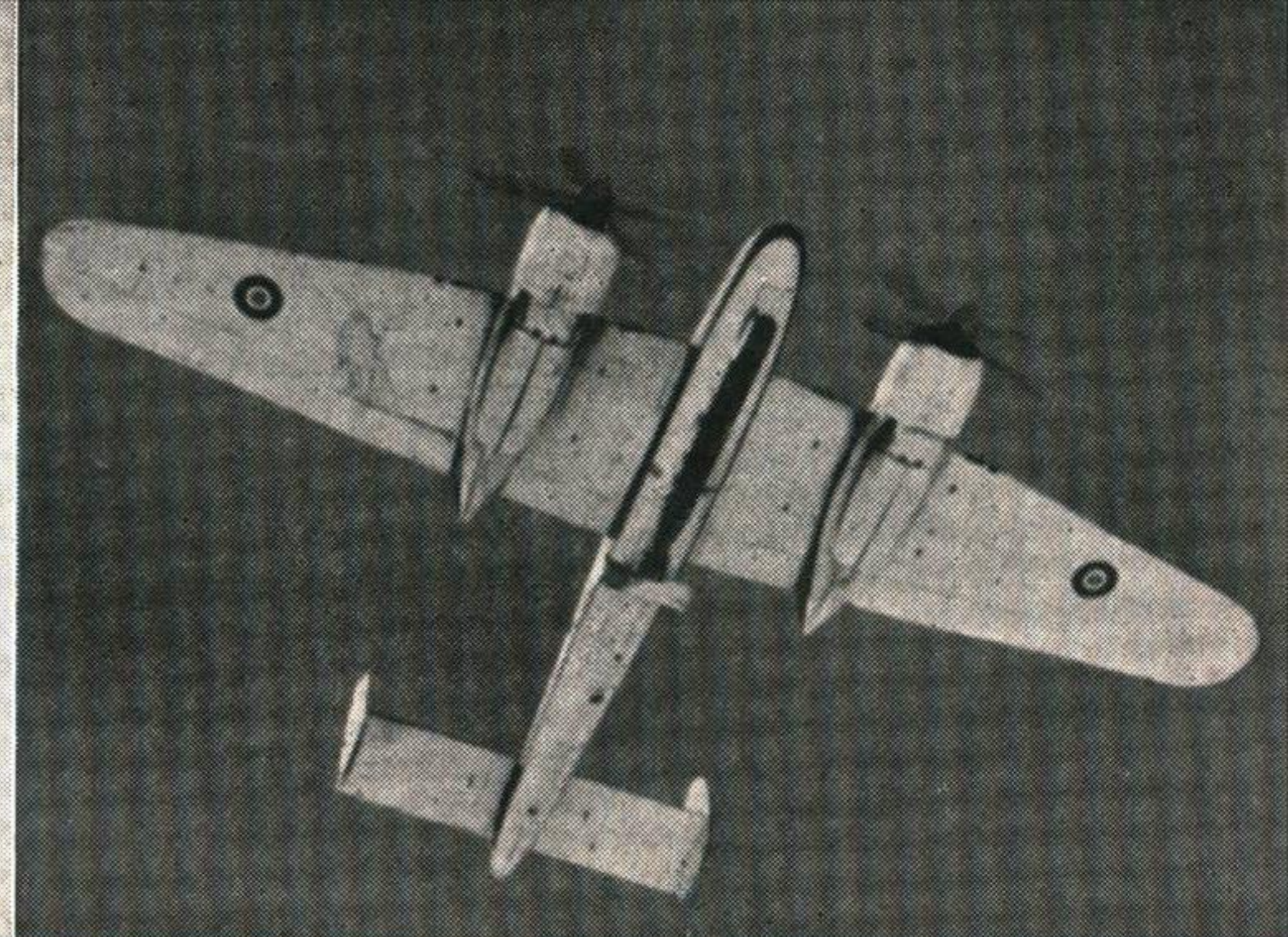
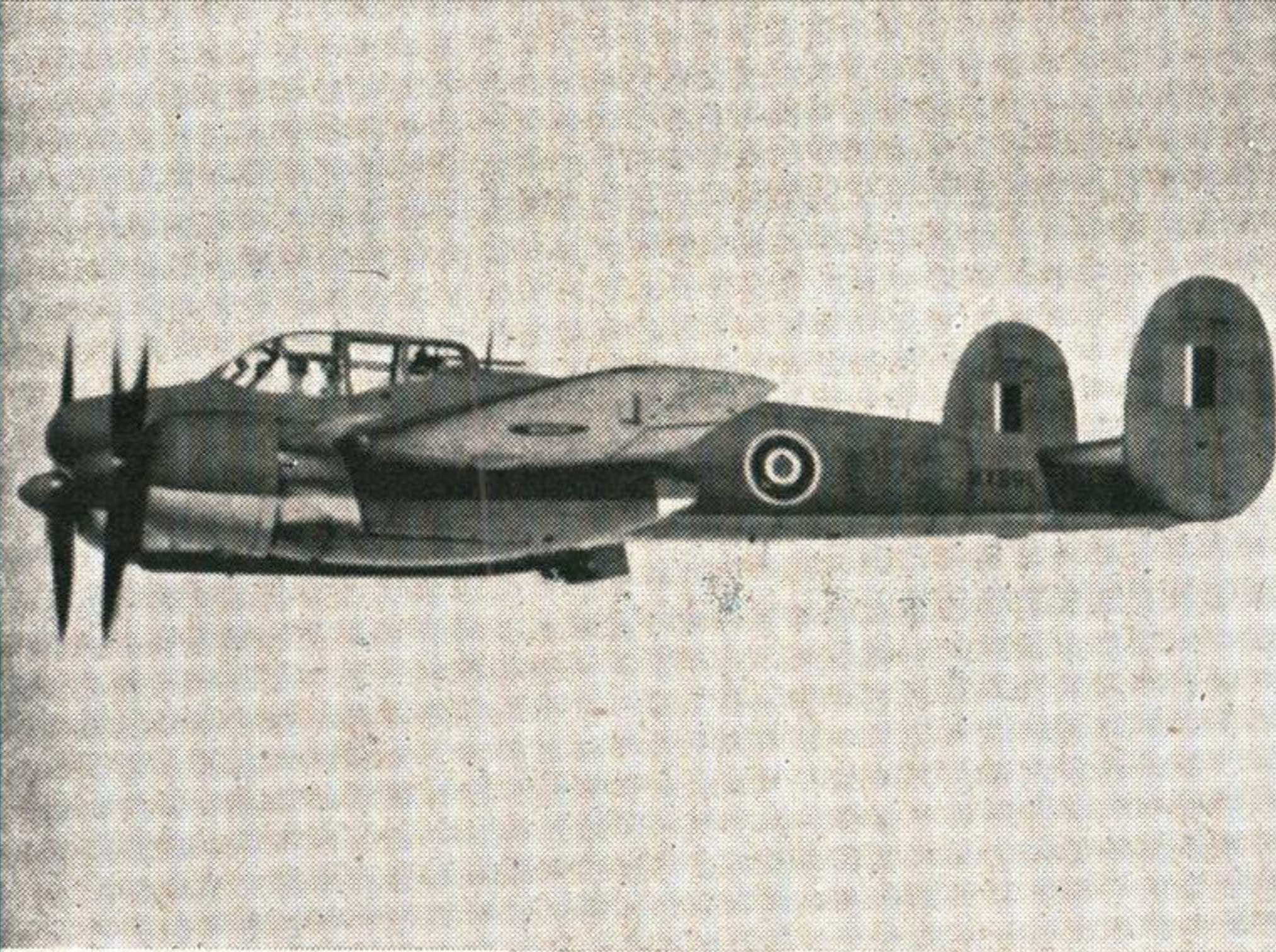
An interesting point that arises with all flying boat construction is that everything above the water line is generally fashioned in a smooth and aerodynamic form. Below the water line, however, there are very few curves and where two surfaces meet, there is a clean, sharp angle. If this were not so, we should find the water getting quite a firm grip on the hull and thus increasing the drag.

Generally speaking, we are, I think, inclined to regard flying boat spotting as a "piece o' cake", but is it? To the expert—yes; but to many others—no. Ugly incidents occurred during the war when flying boats were misunderstood, both as to appearance and intentions. So whilst we can expect that, of all aircraft, the flying boat will have more than a fair share of tell-tale features—some boats have *everything*—they are well worth a study as a class on their own, and there are quite a large number of them in the various Air Forces of the world.



# Brigand

Two Bristol Centaurus 57 of 2475 h.p. Span 72 ft. 6 in. A torpedo-fighter to replace the Beaufighter, the Brigand combines a heavy armament with a high speed at sea level. The "Bristol" appearance remains but it has large oval fins and rudders and a back-swept wing.



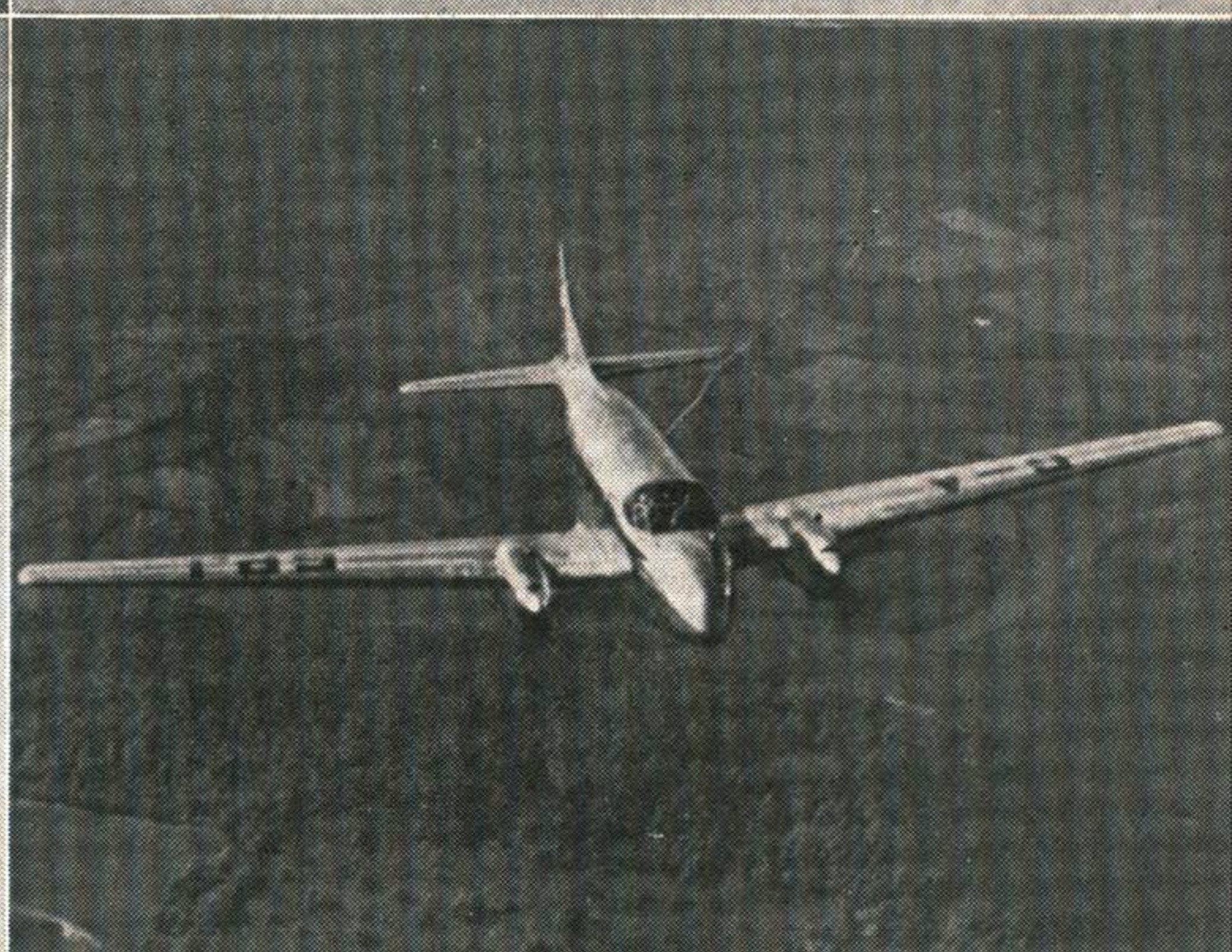
# Hastings

Four Bristol Hercules 101 of 1675 h.p. Span 113 ft. This R.A.F. Transport version of the Handley Page Hermes is expected to be in service by the autumn. The capacious fuselage will hold 50 men and, with the low, rather "flat" wing, forms a useful Recognition aid. Top speed is 553 m.p.h. at 20,000 feet.



# Dove

Two Gipsy Queen 71 of 330 h.p. Span 57 ft. One of the lighter Brabazon types (Brabazon VB), this all metal feeder-line aircraft has several Recognition features similar to the D.H. Hornet. Flying tests resulted in a larger fin fairing than originally fitted.



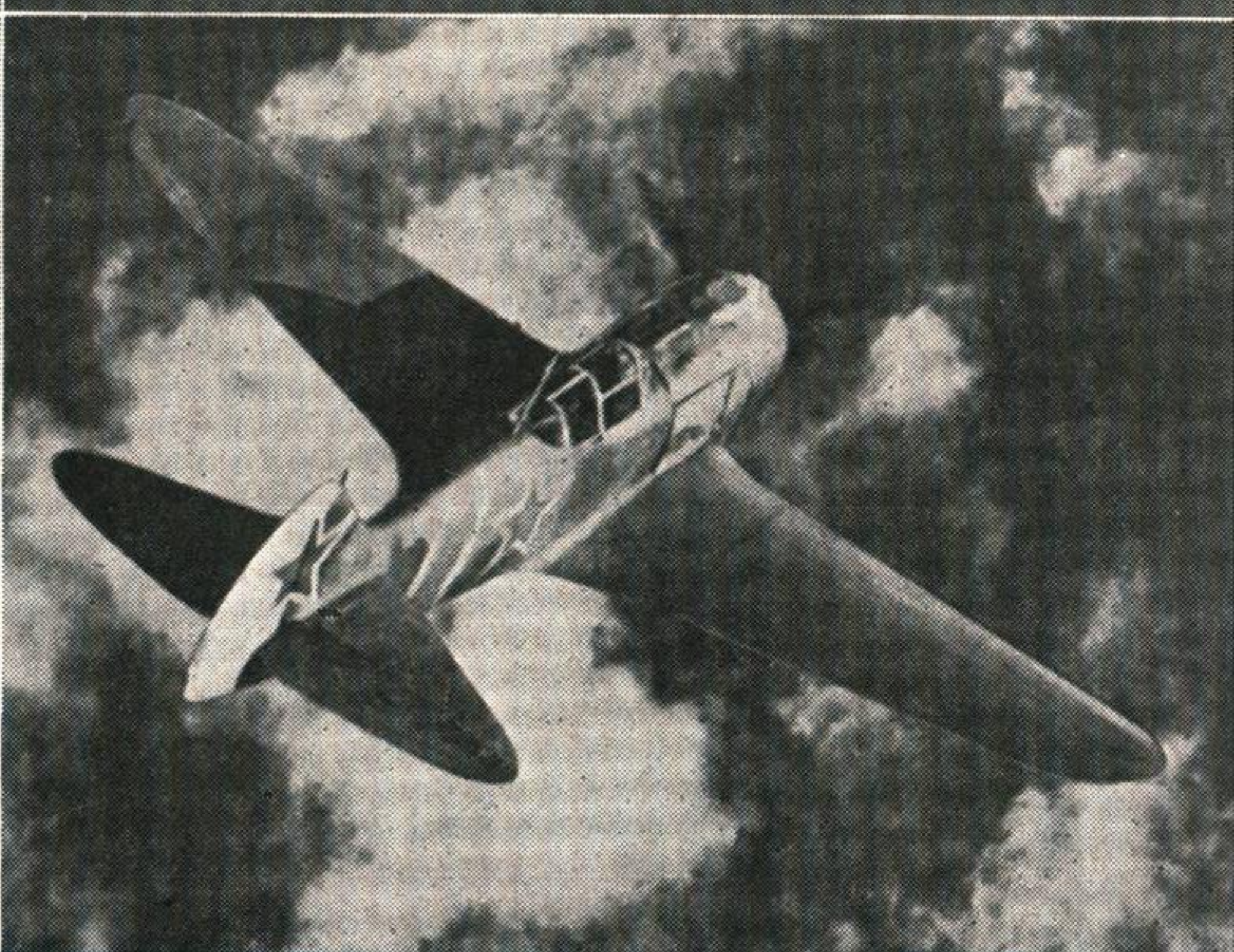
# Constellation

Four Wright Cyclone 18 of 2200 h.p. Span 123 ft. An elegant name for an elegant aeroplane now in regular transatlantic service. Shapely triple fins and rudders on a high tailplane match the fine lines of its fuselage form.



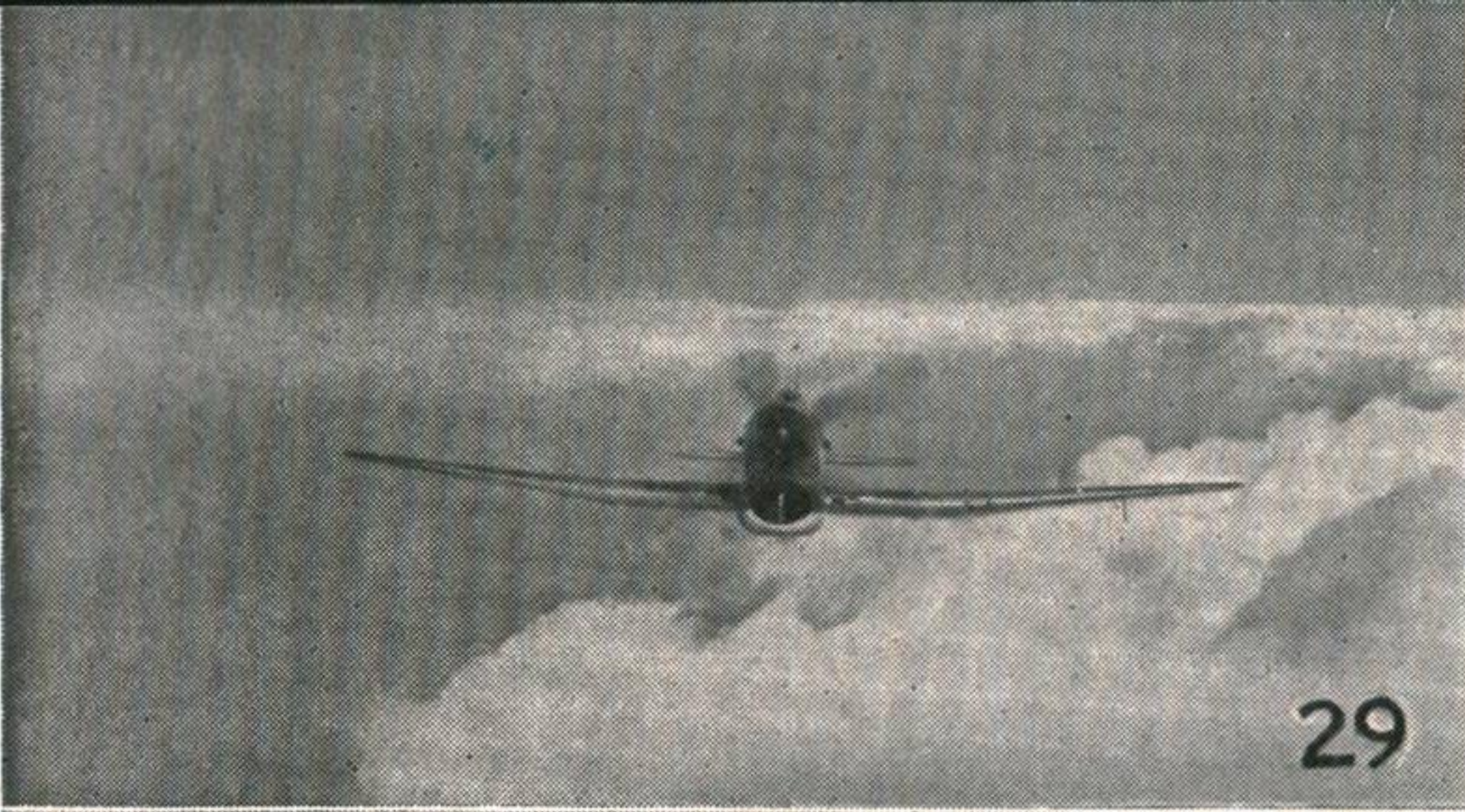
# LA-5

One M-82F of 1540 h.p. or M-82FNW of 1650 h.p. Span 32 ft. 2 in. Characteristically Russian in shape and layout with a sharply tapered wing and back-swept tail plane. A compact little fighter with a top speed of 380 m.p.h.





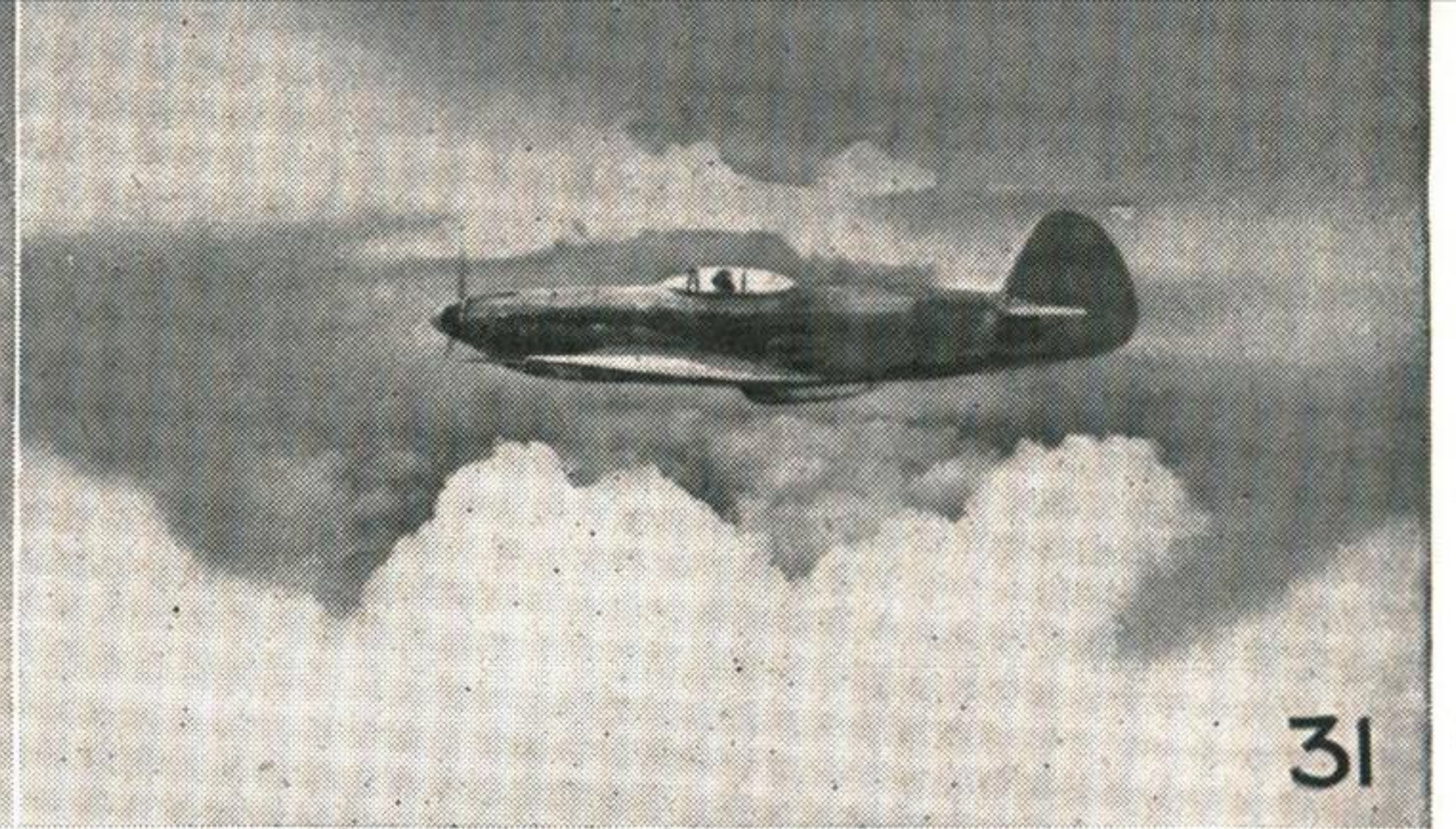
**SILLOGRAPHS**



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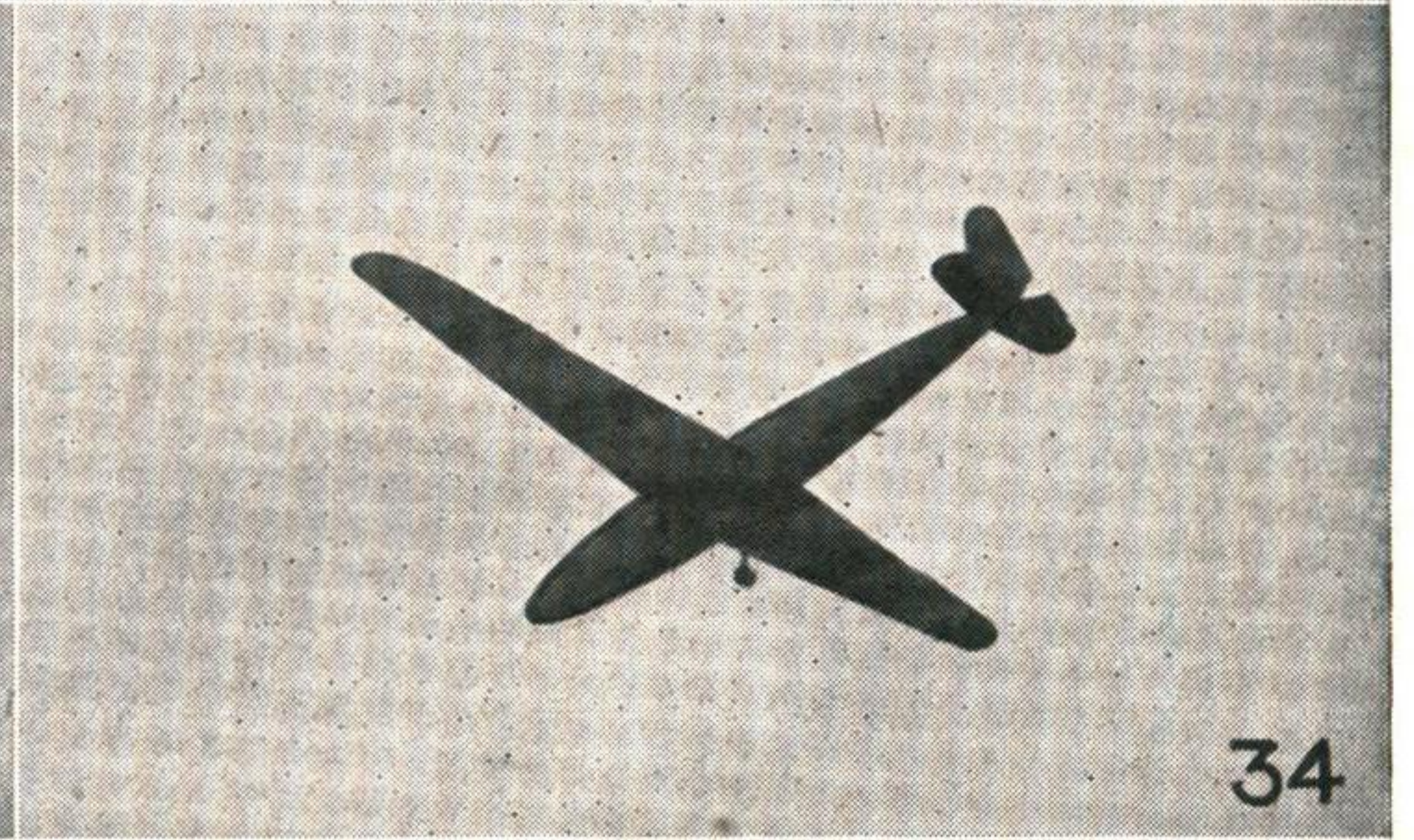
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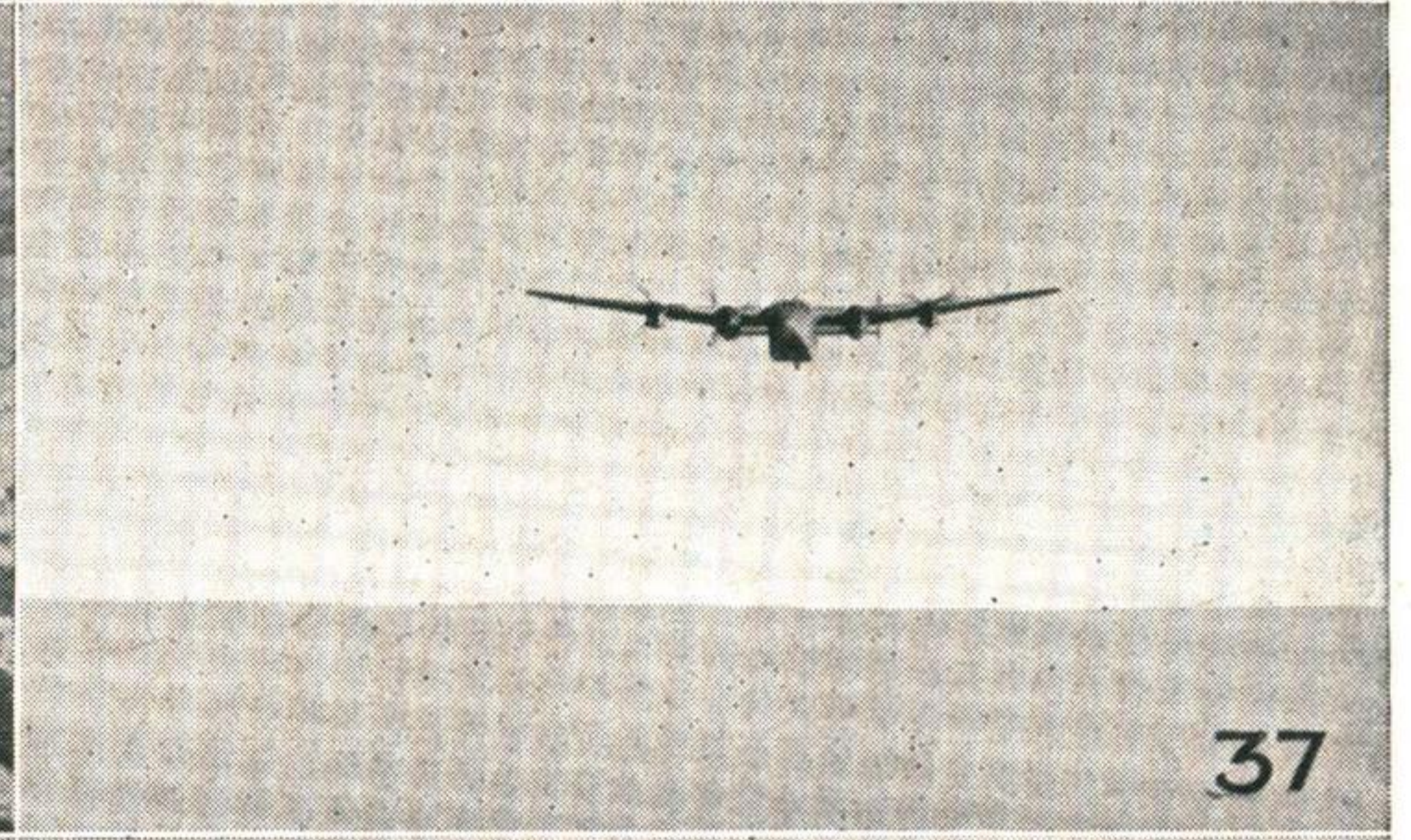
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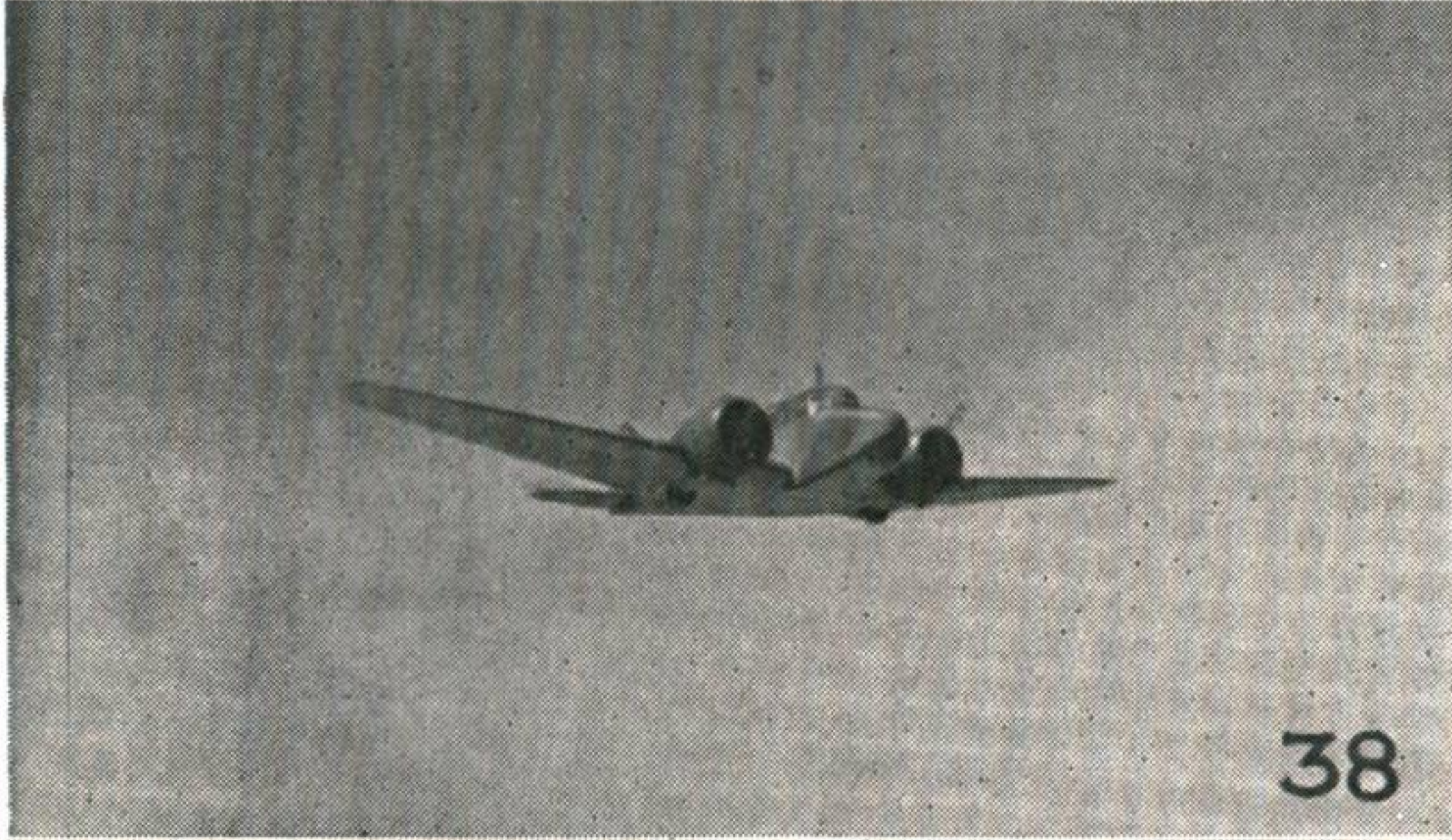
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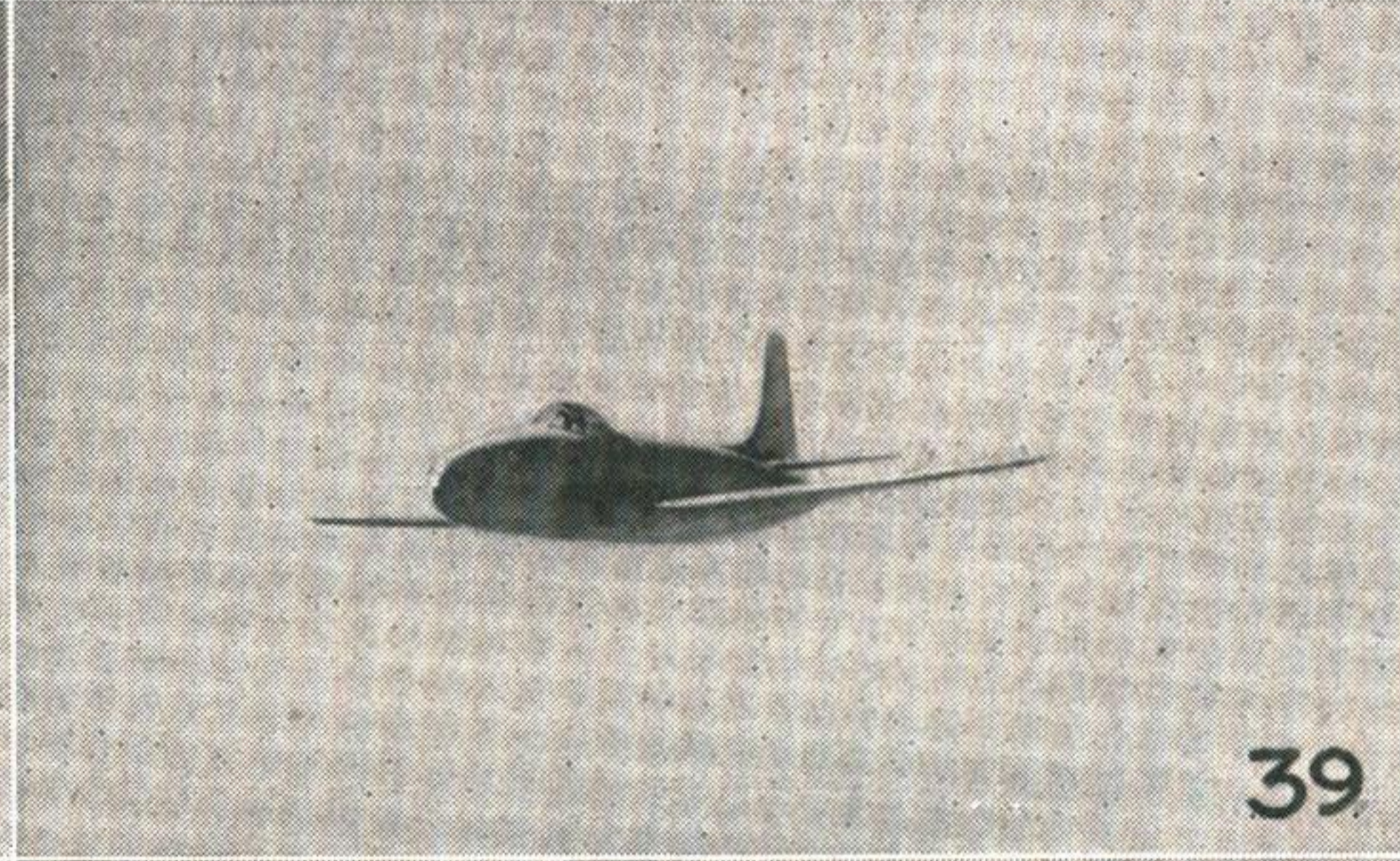
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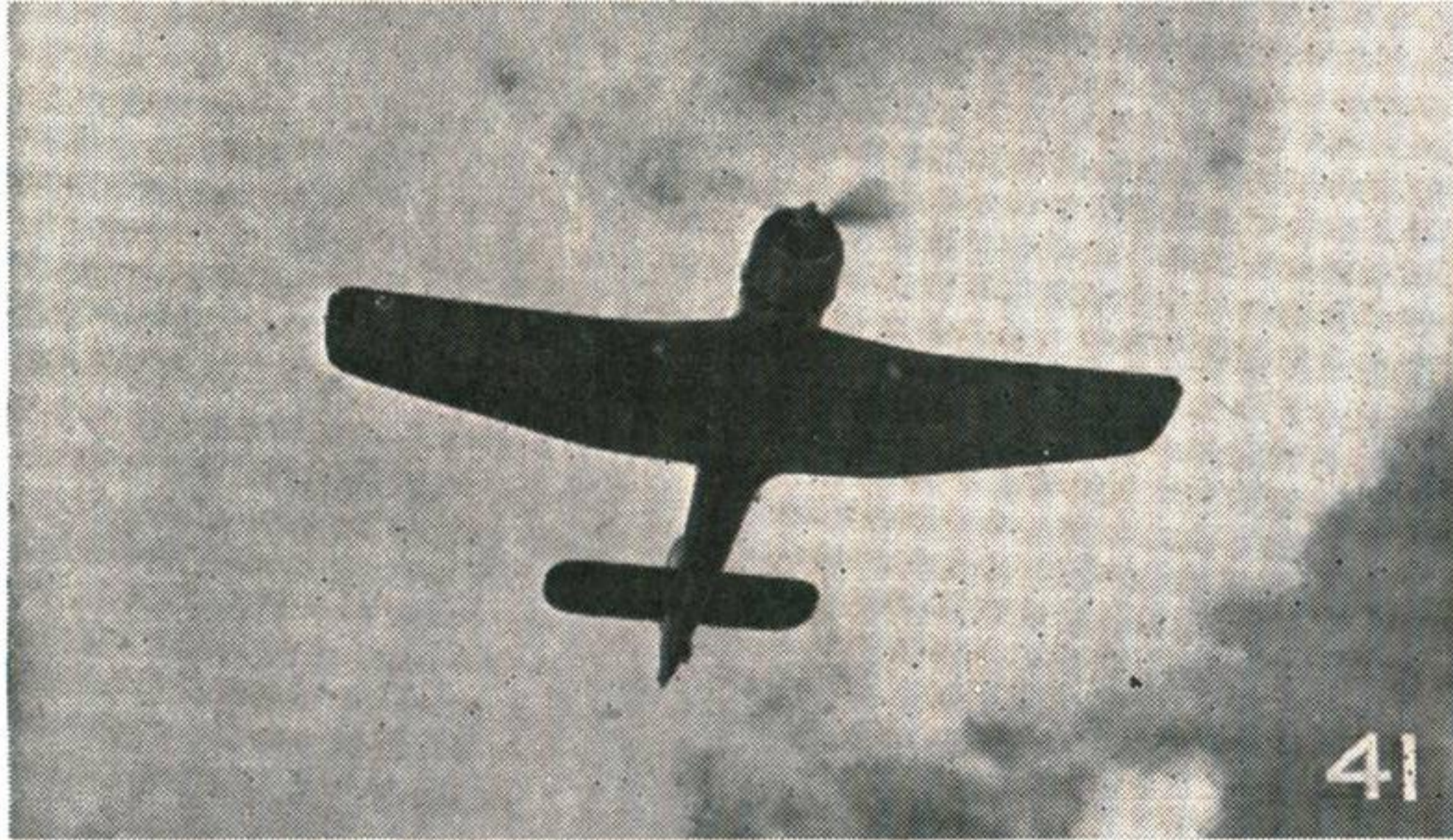
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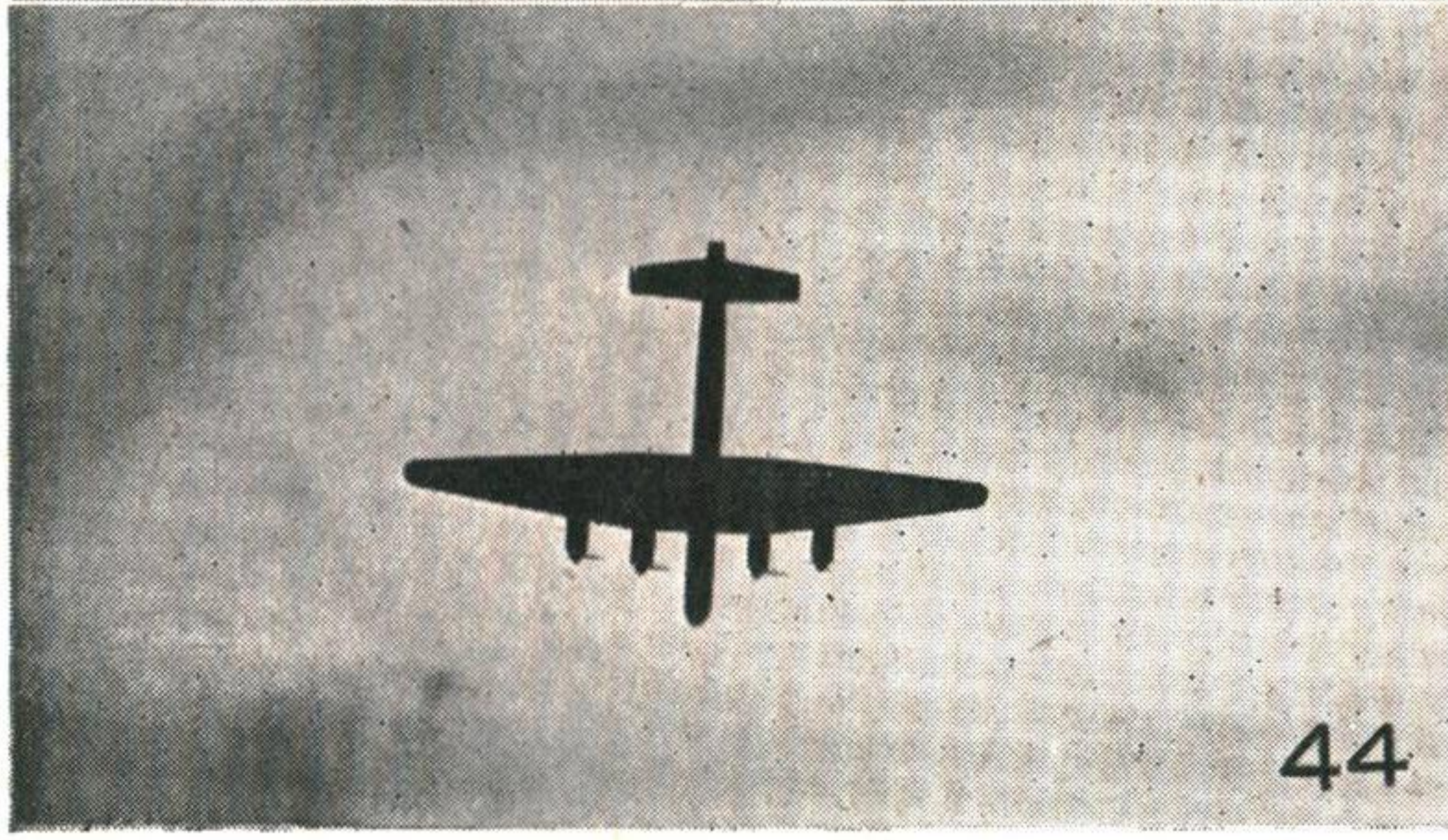
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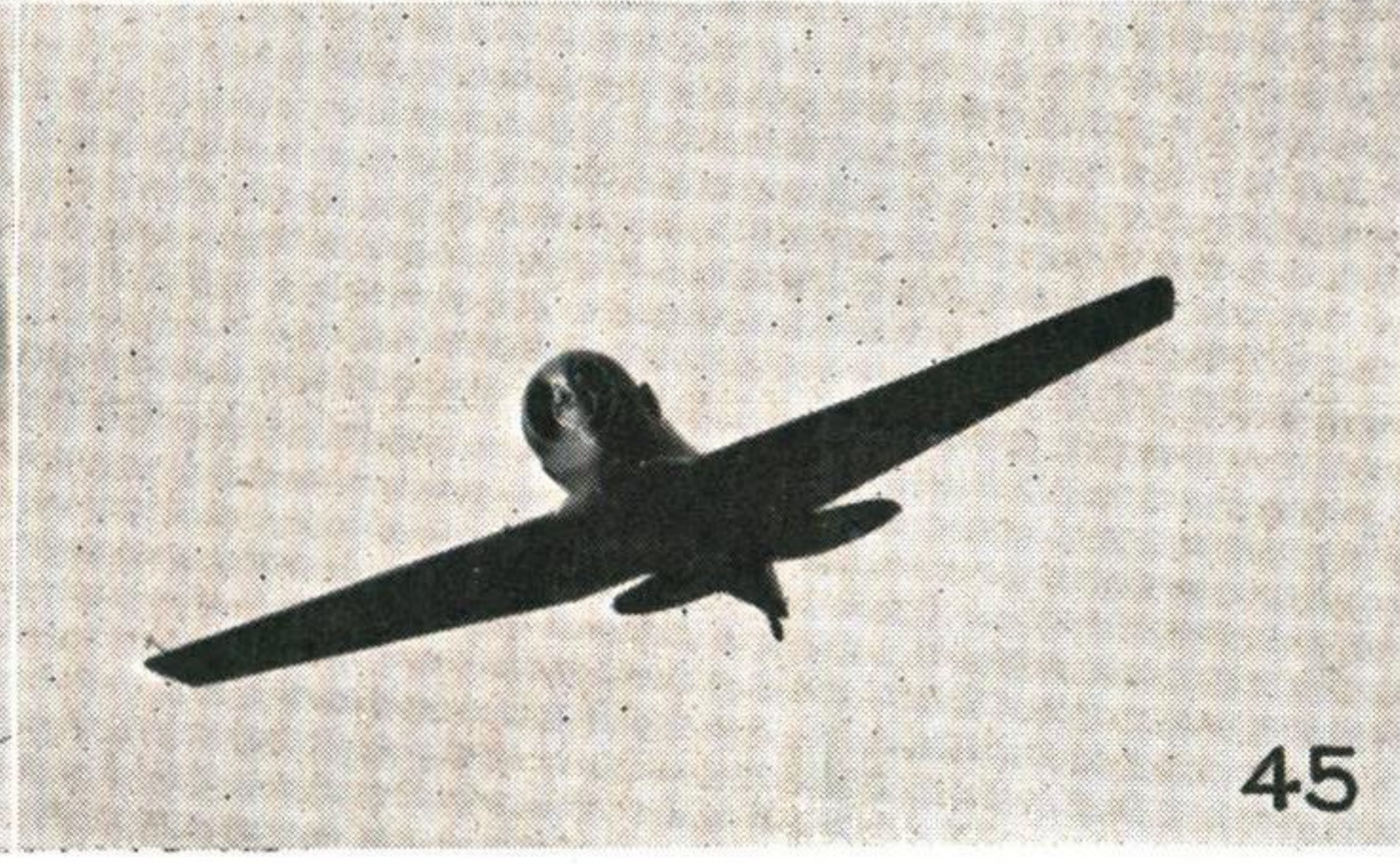
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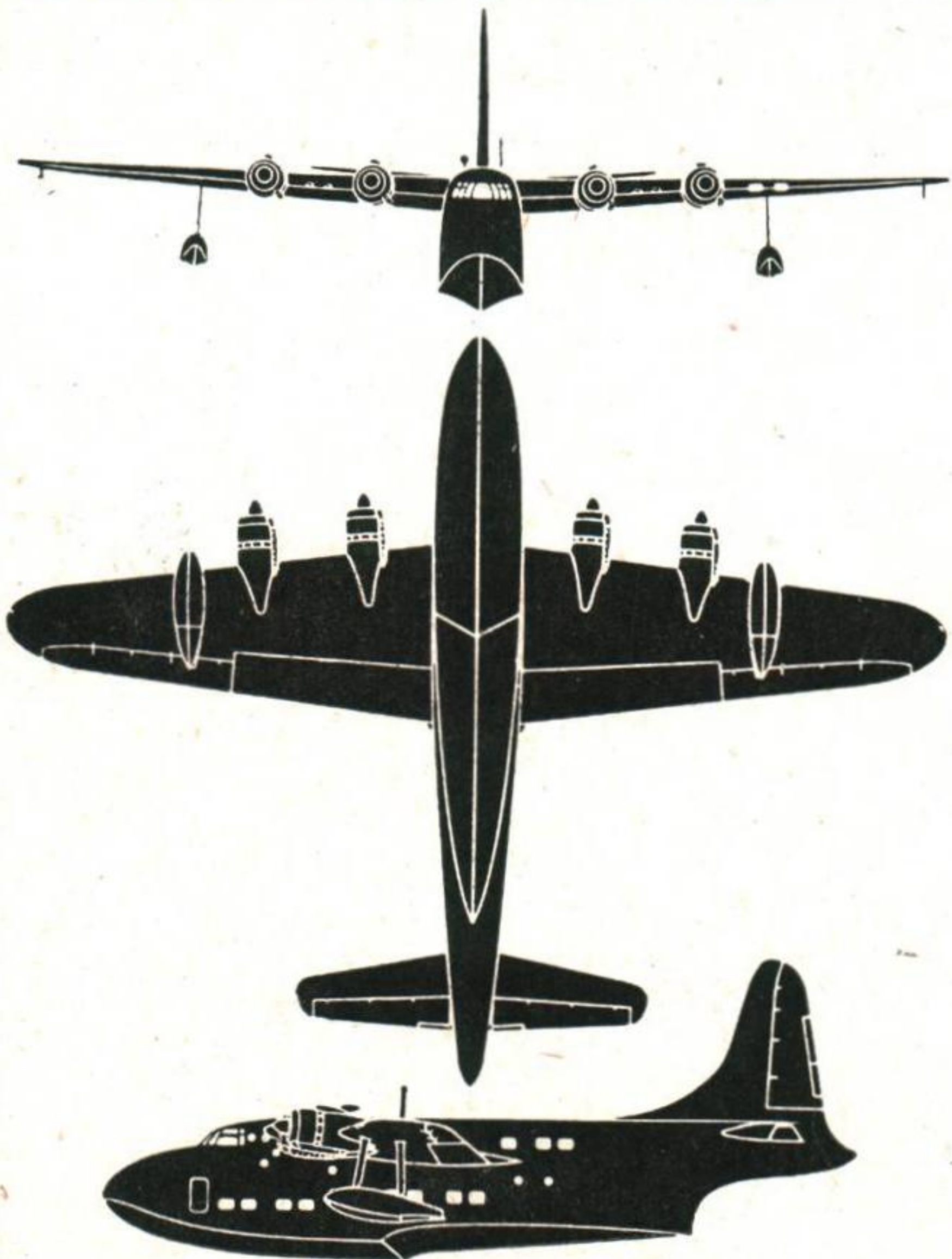
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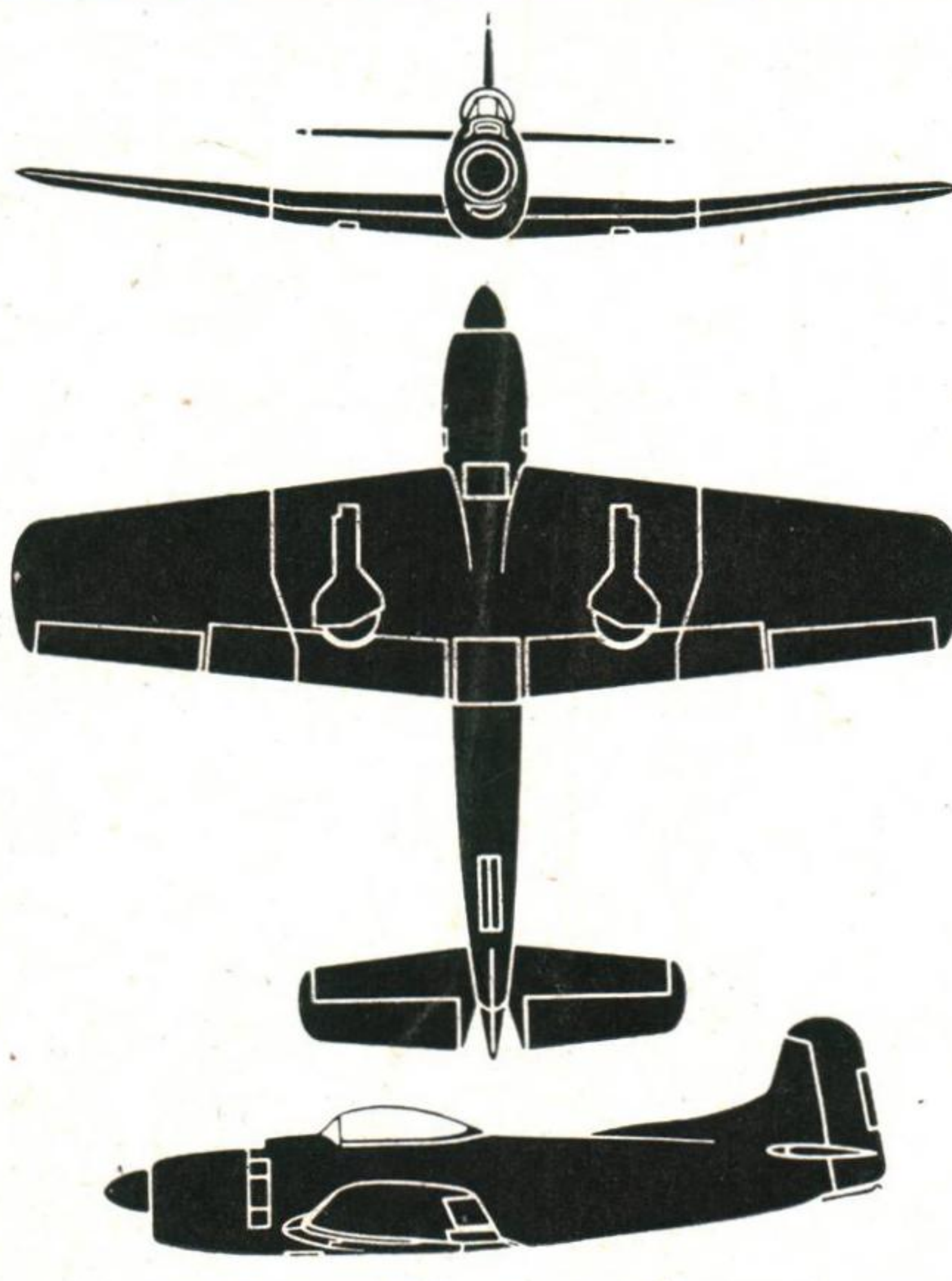
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# ADVANCED SPOTTING

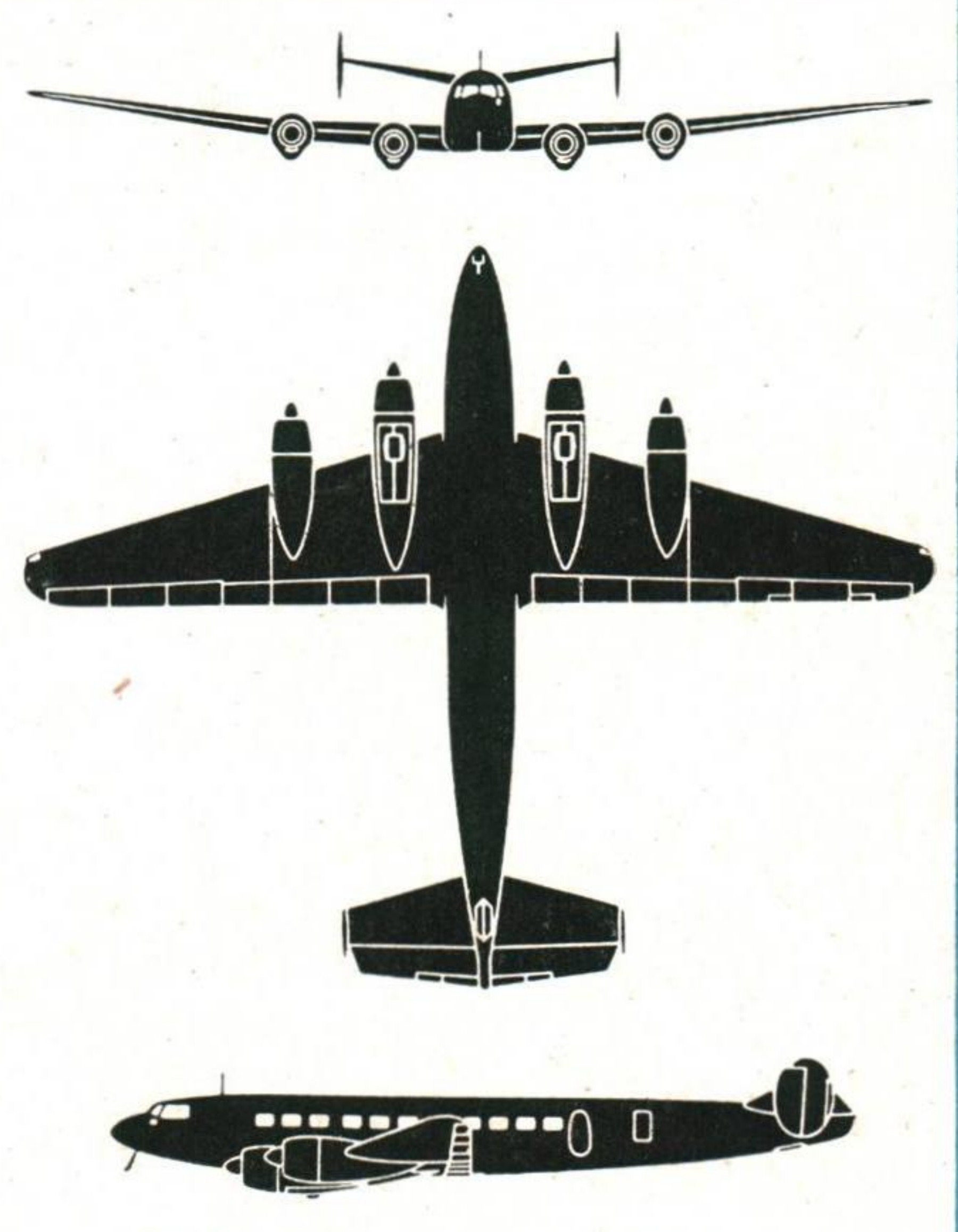
Recognition Test No. 6



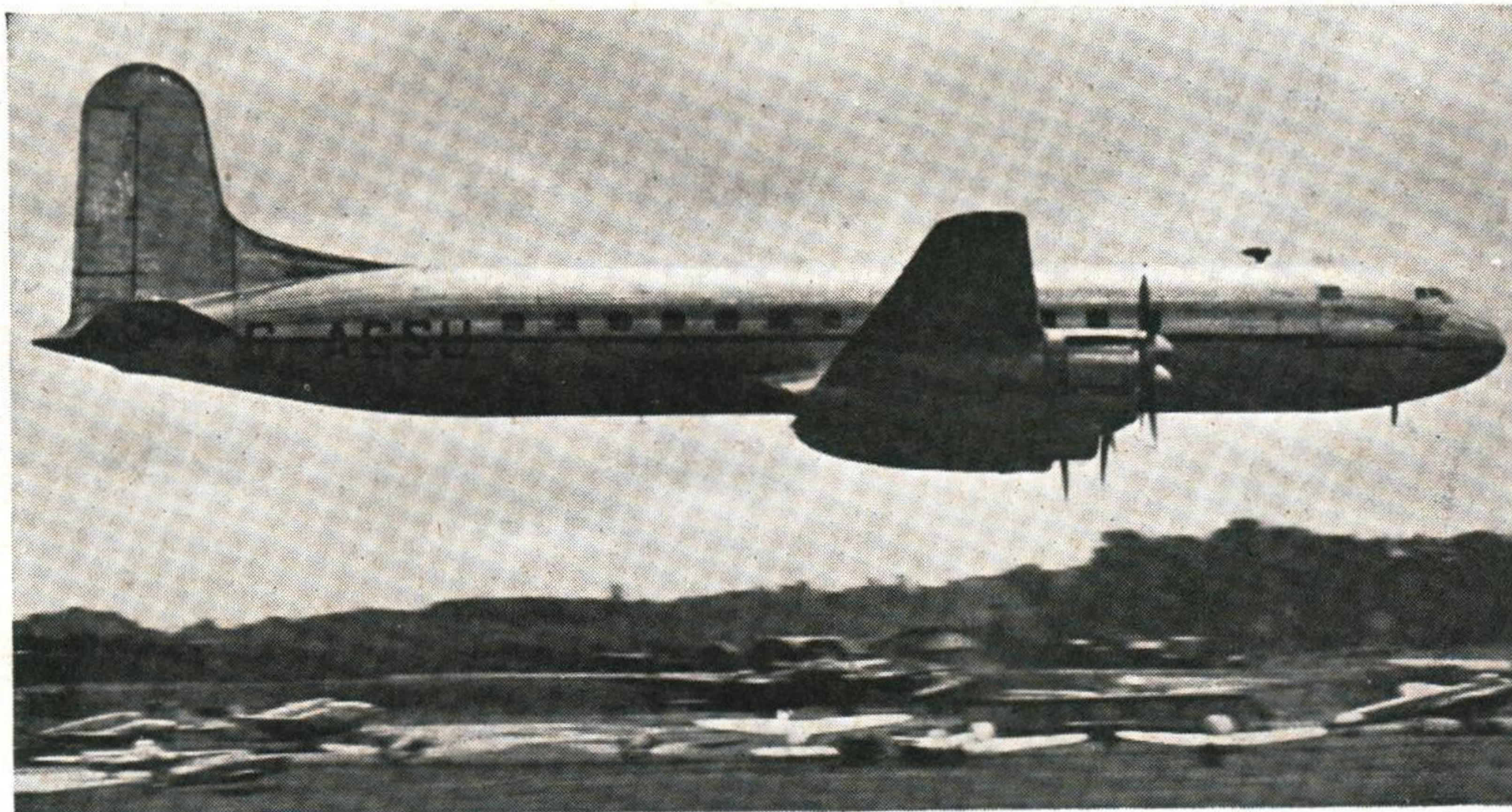
**SHORT SOLENT**  
British Civil Transport  
(4 Hercules) Span 112 ft. 9 in.



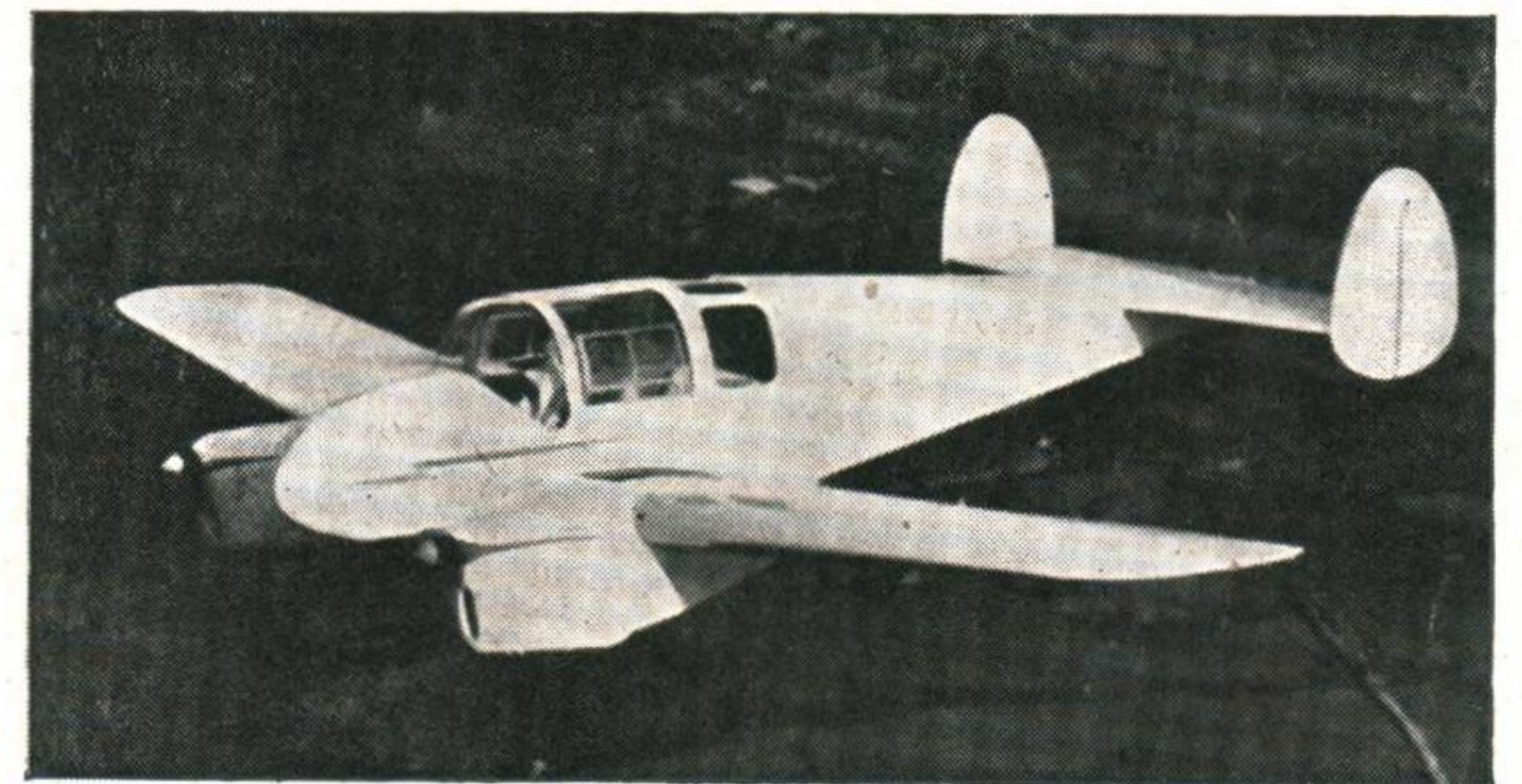
**MARTIN BTM-1 MAULER**  
American Bomber  
(Double Wasp) Span 50 ft. 0 in.



**BLOCH 161 LANGUEDOC**  
French Civil Transport  
(4 Gnome-Rhone) Span 96 ft. 6 ins.



**ELONGATED ELEGANCE**—The Avro XXI Tudor II displays its impressive length and modified fin and rudder at the Farnborough Display. The wings and engines are similar to those of the Lincoln, while all the flying surfaces now have straight edges and round tips. In such a view as this, where the tremendous length of nose can be seen, there should be little chance of confusion with the shorter-nosed Tudor I.



**GENTEEL GEMINI**—A small 4-seater cabin monoplane developed from the single engine Messenger, the Miles M.65 Gemini retains the good flying characteristics of that aeroplane, together with some of its Recognition features. The chubby body, large stepped-down flaps and oval twin fins and rudders make it fairly easy to spot.

**A CORRECTION:** In Issue No. 1, Advanced Spotting picture No. 5 was of Tempest II, not V.

**ACKNOWLEDGMENT**—In this issue, the following photographs are by Charles E. Brown:—Cover: Firefly IV; Centre pages: Meteor (large photo); pp.21 and 23: Hastings.

## SOLUTIONS TO RECOGNITION TESTS IN THIS ISSUE:

### FRONT COVER: Firefly IV

#### No. 4 (ELEMENTARY SPOTTING):

- |                       |                     |
|-----------------------|---------------------|
| 19. Constellation     | 28. SB2C Helldiver  |
| 20. Spiteful XIV      | 29. Sea Otter I     |
| 21. DC-3 Dakota       | 30. Beaufighter X   |
| 22. PBN Catalina      | 31. Liberator C.VII |
| 23. Vampire I         | 32. P-51H Mustang   |
| 24. P-47N Thunderbolt | 33. Sunderland III  |
| 25. Tempest II        | 34. IL-4            |
| 26. F8F Bearcat       | 35. Lincoln I       |
| 27. TBF Avenger       | 36. Junkers Ju 52   |

#### No. 5 (SILLOGRAPHS):

- |                       |                          |
|-----------------------|--------------------------|
| 26. Meteor III        | 39. Tudor I              |
| 27. S.O.93 (French)   | 40. Auster III           |
| 28. Viking I          | 41. Anson XIX            |
| 29. P-38 Lightning    | 42. A-7 (Russian Glider) |
| 30. P-47N Thunderbolt | 43. York                 |
| 31. L-5 Sentinel      | 44. C-46 Commando        |
| 32. Vampire I         | 45. Mitchell III         |
| 33. Beaufighter X     | 46. P-63 Kingcobra       |
| 34. Wayfarer          | 47. Tempest II           |
| 35. DC-3 Dakota       | 48. YAK-9                |
| 36. Hornet I          | 49. PE-2                 |
| 37. P-51 Mustang      | 50. IL-2                 |
| 38. Firebrand IV      |                          |

#### No. 6 (ADVANCED SPOTTING):

- |                    |                  |
|--------------------|------------------|
| 29. Tempest VI     | 38. Oxford       |
| 30. DC-4 Skymaster | 39. P-80         |
| 31. YAK-3          | 40. Spitfire 22  |
| 32. Hudson III     | 41. Master III   |
| 33. Horsa I        | 42. Auster V     |
| 34. Hotspur II     | 43. Wellington X |
| 35. Mosquito XVI   | 44. Lincoln I    |
| 36. PE-3           | 45. Harvard II   |
| 37. York           | 46. Hastings I   |

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