

THE ROYAL



OBSERVER CORPS

RECOGNITION

Journal
and R.O.C. GAZETTE

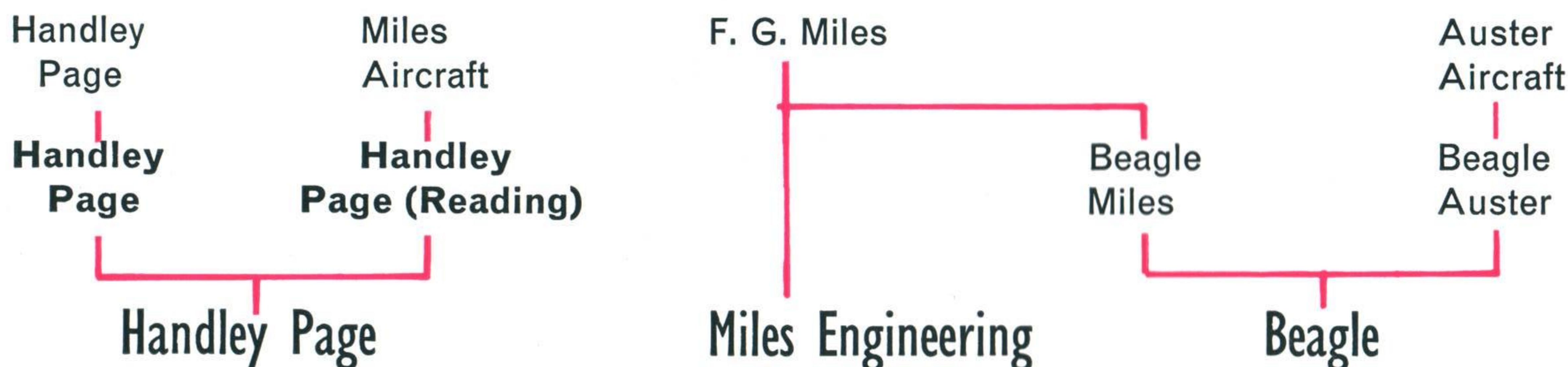
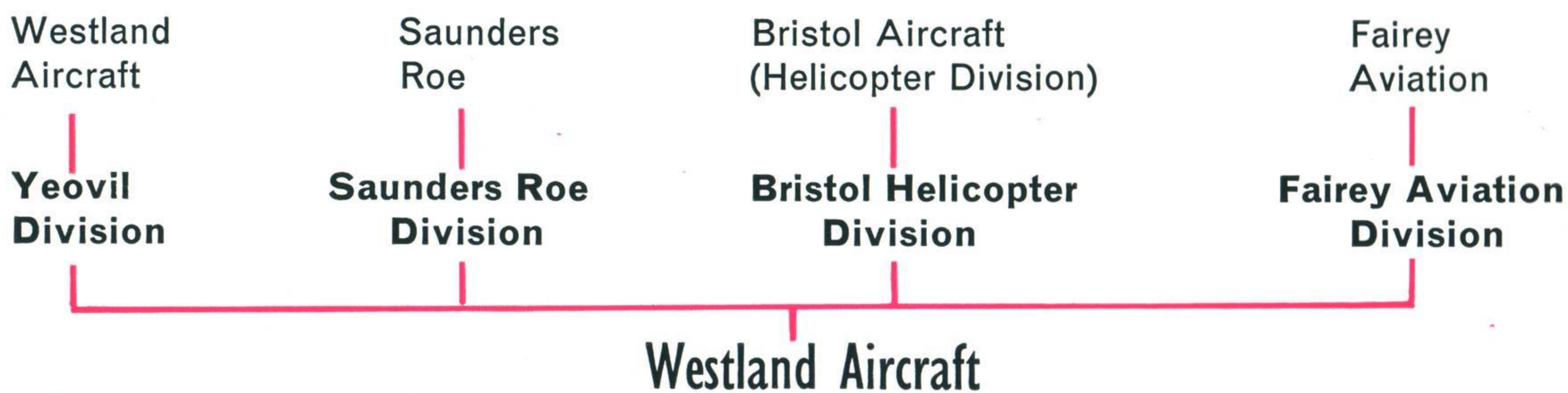
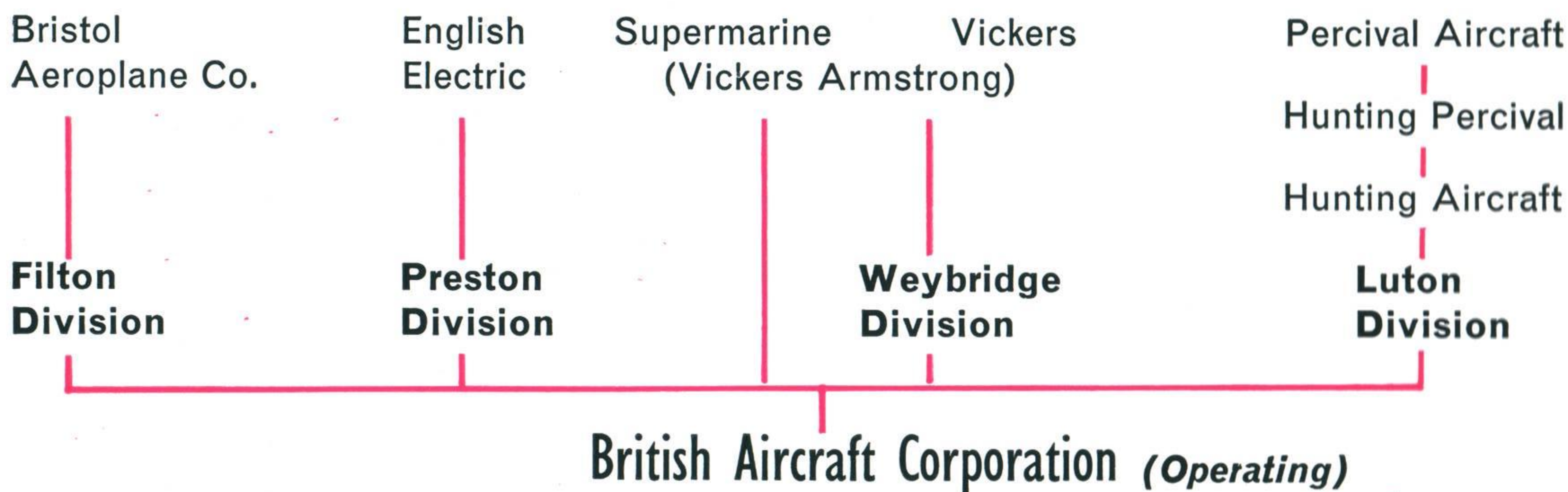
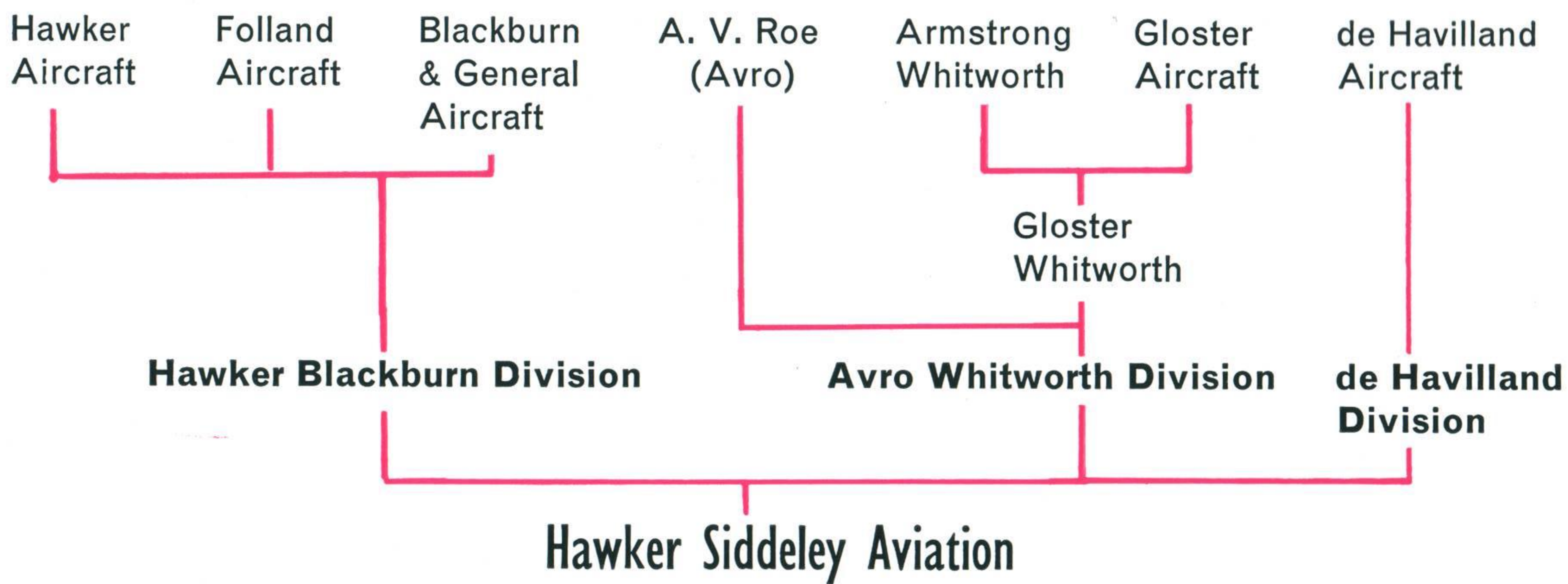


Vol. 6 OCTOBER 1964 No. 10



British Aircraft Constructors

CURRENT POSITION SHOWN IN BOLD TYPE



Scottish Aviation

Lancashire Aircraft

Phoenix Aircraft

Paragon Aircraft



THE ROYAL OBSERVER CORPS

RECOGNITION JOURNAL
AND R.O.C. GAZETTE

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AIRCRAFT INCORPORATED

During recent years many changes have taken place in the British aircraft industry, chiefly by the integration of firms into groups. The character of the industry has changed to embrace guided missiles which have largely taken the place of the conventional machine guns and bombs and, significantly, the S.B.A.C.—Society of British Aircraft Constructors has changed its name (but not its initials) to Society of British Aerospace Companies.

Once an aircraft has been given a name it usually sticks and it matters not that the Bristol Belvedere is now the Westland Belvedere, for the reporting name is just Belvedere and the full Service name and designation for the current version is Belvedere H.C.1. On the other hand, where aircraft have been known by a firm's name and design number, the reporting name is sometimes affected under the new grouping.

Hawker Siddeley Aviation, a facet of the vast Hawker Siddeley Group, embraces a group of well-known firms, including De Havilland and Avro, both with a long design lineage. By a decision taken by the group in July last year the

firms embraced lost their separate identities and this affected the aircraft designations. The De Havilland series which started at D.H.1 in 1915 and passed such milestones as the D.H.9A bomber, D.H.82 Tiger Moth and D.H.98 Mosquito, led up to the D.H.125 which became the H.S.125. A. V. Roe started his series at 500, before the first World War in which thousands of Avro 504 trainers were built; Avro's highest design number, to be put into production, was the Avro 748 which became Hawker Siddeley 748. The H.S.125 and H.S.748 have been given the Service names of Dominie and Andover respectively, but they are not the recognised names for civil versions which are in greater numbers. For reporting purposes, however, the Service names are acceptable.

The large British Aircraft Corporation (Operating) is that section of the British Aircraft Corporation concerned with the construction of complete aircraft. In this case a B.A.C. designation has not been retrospectively applied, but is used for all designs formulated since the merger in 1960 of which the B.A.C. One-Eleven was the first to be constructed.

Beagle Aircraft, a subsidiary of British Executive & General Aviation Ltd., is, in turn, a subsidiary of the Pressed Steel Co. Auster Aircraft have been absorbed and this results in the complicated situation whereby the A.O.P. aircraft in service are Austers up to A.O.P.9, but the latest A.O.P. version is called by the new company the Beagle A.O.P.11—and Beagle is the tripartite name for a Russian bomber!

All the large helicopter manufacturing plants have been acquired by Westland Aircraft, who hold licence for Bell and Vertol helicopters in addition to the Sikorsky types produced.

Handley Page, apart from the acquisition of Miles Aircraft shortly after the war, have remained, like Short & Harland in Northern Ireland and Scottish Aviation at Prestwick, independent of the mergers.

The family tree of the industry shown opposite provides a simple guide to the present grouping and, as such, is not intended as a guide to the financial organisation which is a rather different, and very involved, structure.



WHIRLWIND

Sikorsky S-55 helicopters

Length of fuselage 42 feet

The Gnome turbine-engined versions of the Whirlwind, distinguished by their longer noses, are known as the Whirlwind Series 3 in commercial use (as shown on this page) and as the H.A.R.10 in R.A.F. service (as shown opposite, top, and on the cover). Hundreds of the earlier versions, shown middle right, are in service.

Known by various names and designations according to Service, the design names Sikorsky S-55 for American-built and Westland-Sikorsky WS-55 for British-built are more embracing, but impractical for reporting purposes. For this reason Whirlwind is the general reporting name for all S-55/WS-55 helicopters. Work to instructions on page 157.



Whirlwind Series 3 with pontoons



▶ The H.A.R.10, the first of the Service versions of the Series 3 Gnome-engined Whirlwinds is in service with Coastal, Transport and Flying Training Commands of the R.A.F.

▶ Early versions of the Whirlwind, including the American-built S-55s supplied under Mutual Defence Aid arrangements are still in limited R.N. use as the H.A.S. 22 (as shown).



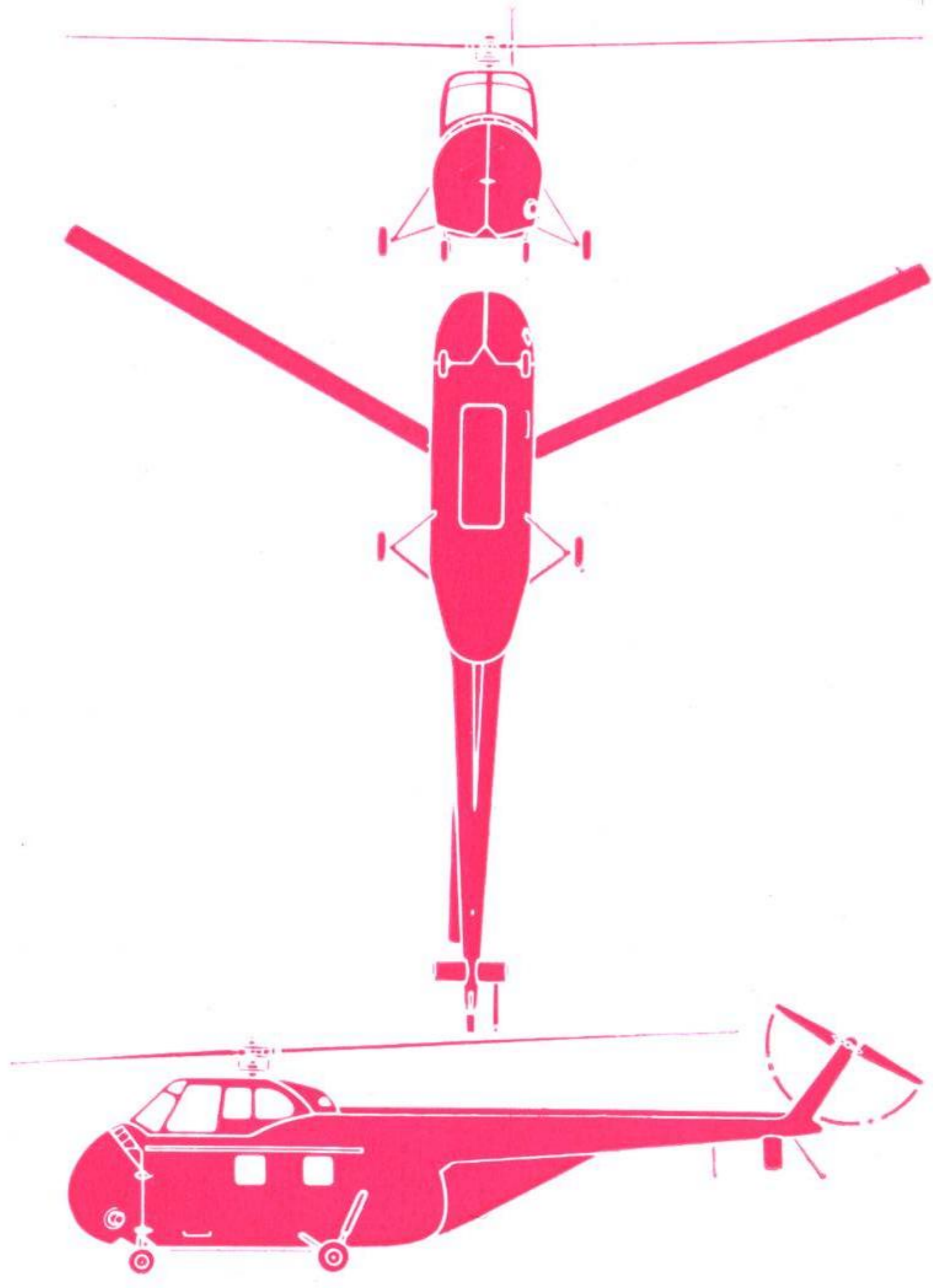
▶ The Sikorsky S-55 versions for U.S. maritime service are designated CH-19E for the U.S. Marine Corps, UH-19F for the U.S. Navy and UH-19G for the U.S. Coast Guard.

▶ The Sikorsky S-55 versions for U.S. military use are designated UH-19B and HH-19B in the U.S.A.F., and UH-19C and UH-19D in the U.S. Army where it is known as the Chickasaw.

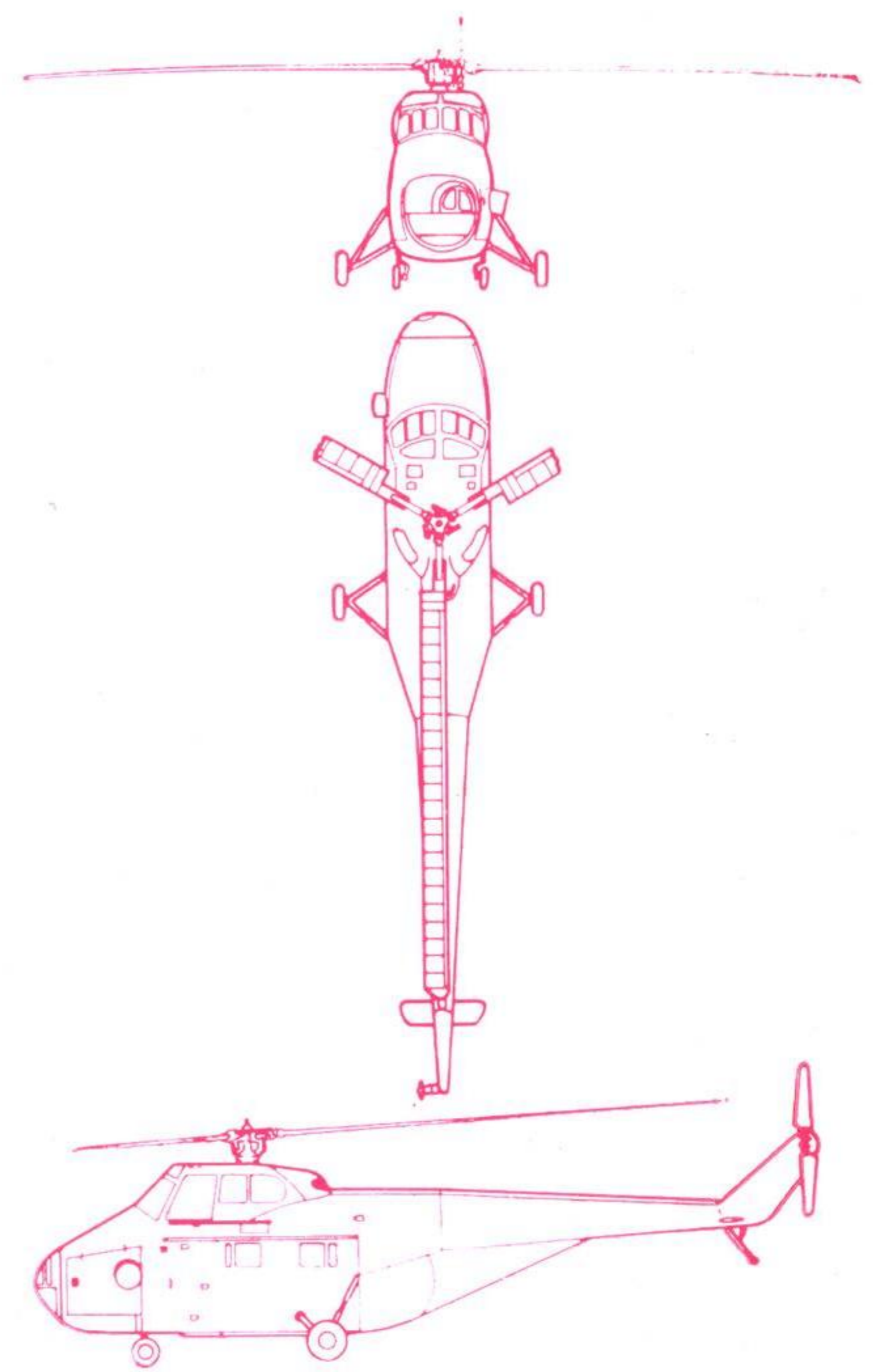


▶ The British commercial series are in three versions. Series 1 is the standard piston-engined "blunt nosed" version, Series 2 concerns only a limited number with an engine change and Series 3 is the turbine-engined version with longer nose as shown.

Whirlwind Series 1 models

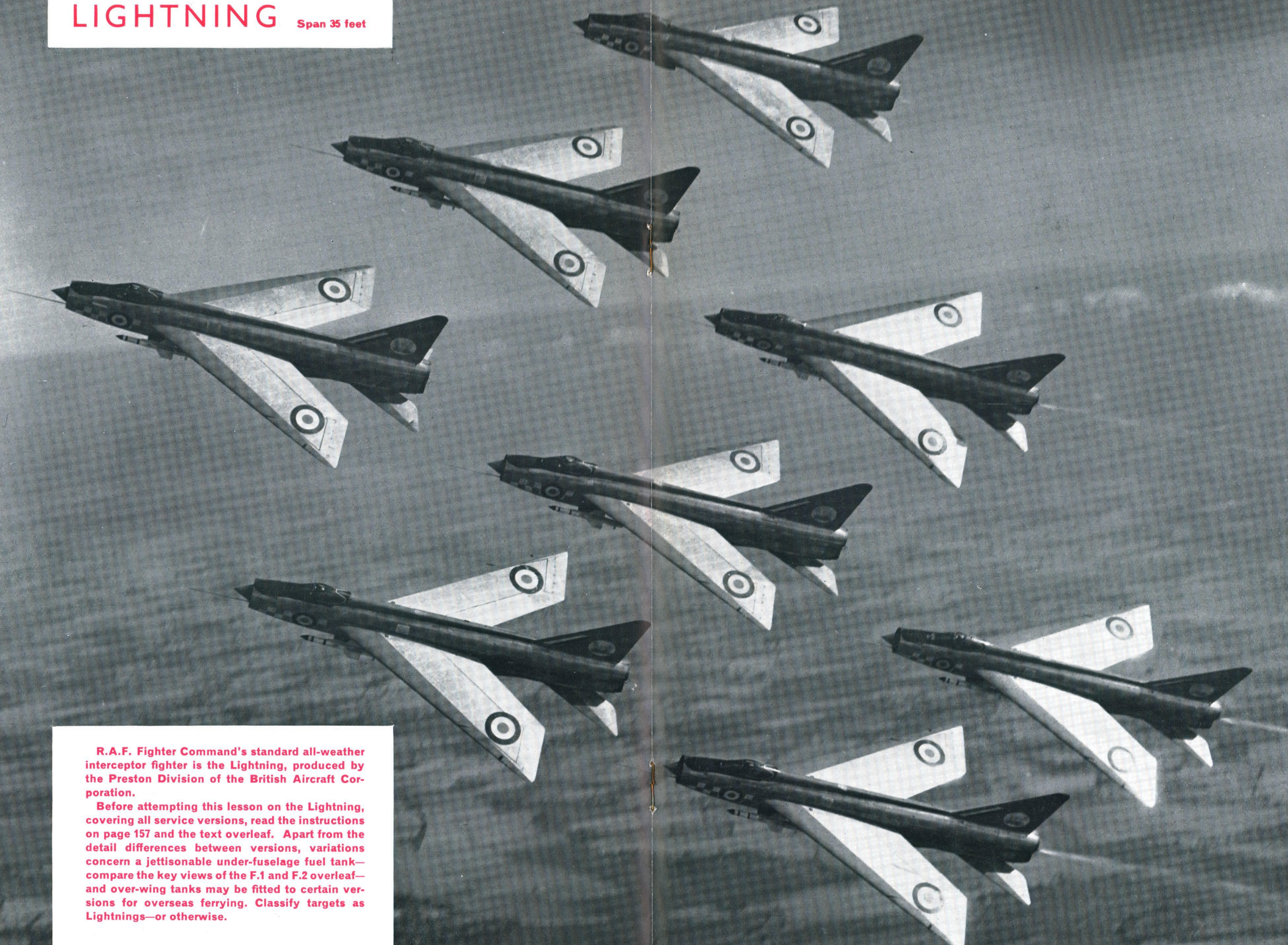


Whirlwind Series 3 models





LIGHTNING Span 35 feet

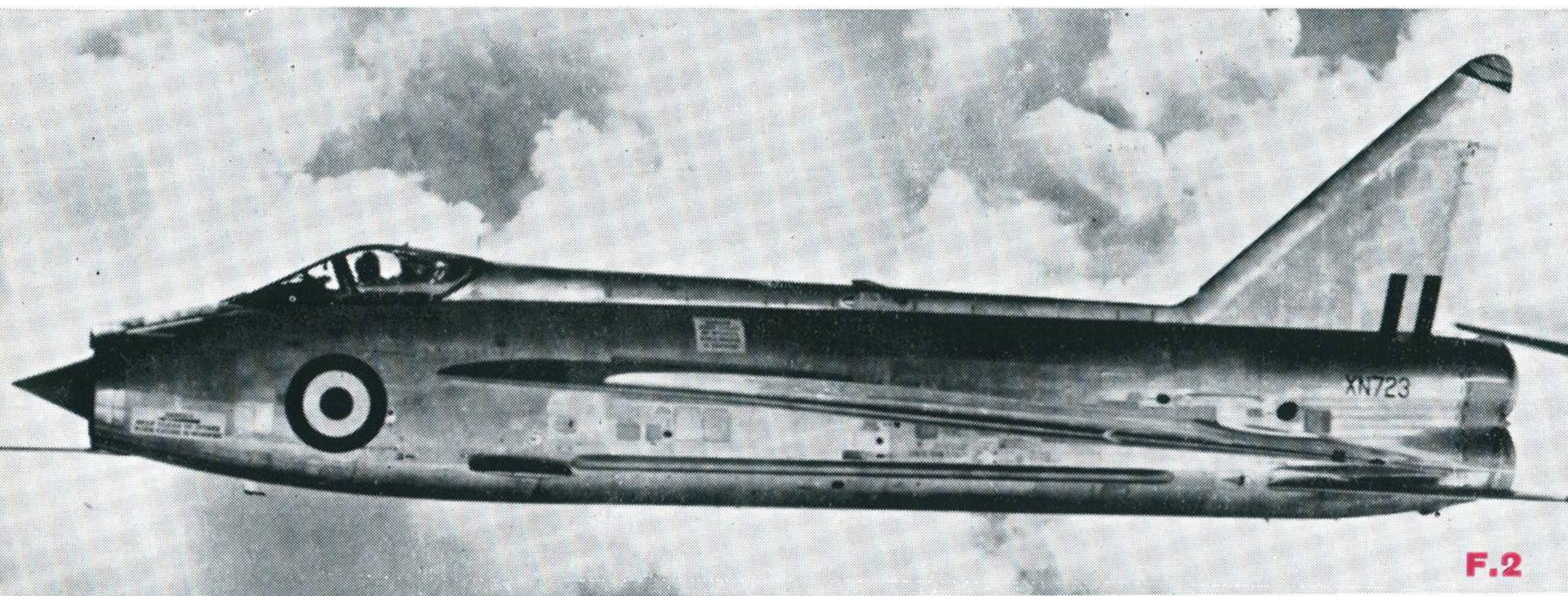


R.A.F. Fighter Command's standard all-weather interceptor fighter is the Lightning, produced by the Preston Division of the British Aircraft Corporation.

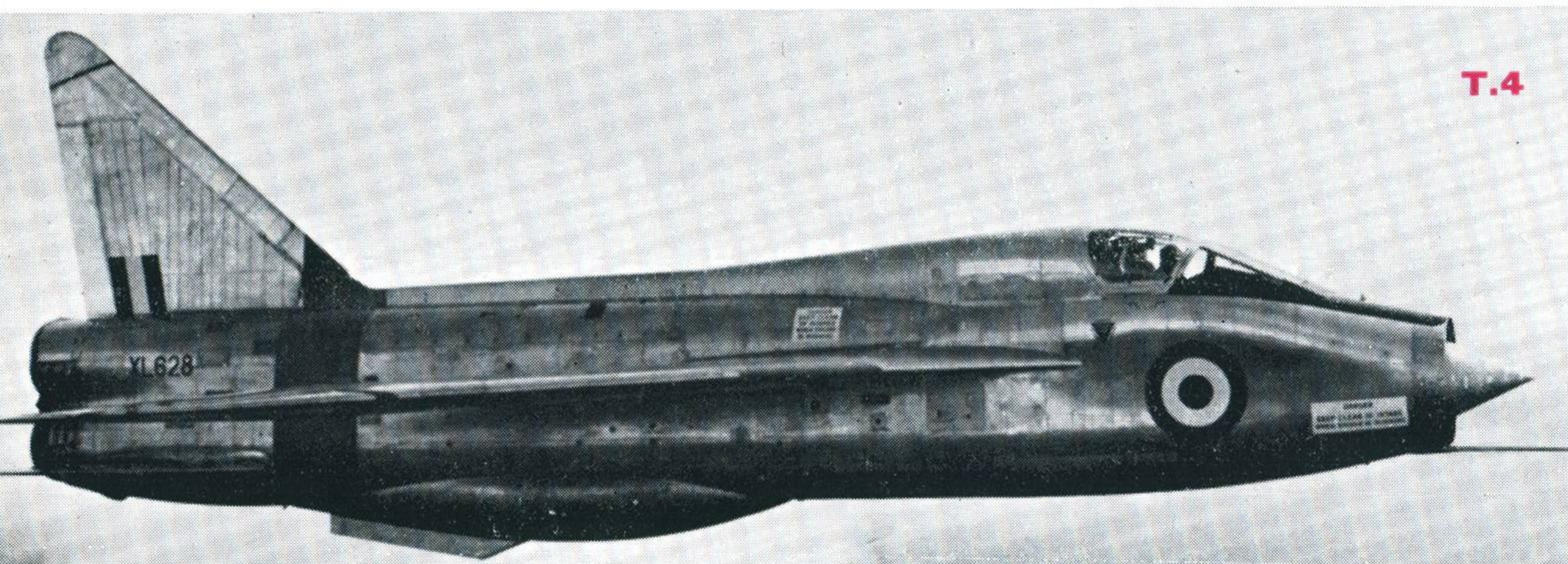
Before attempting this lesson on the Lightning, covering all service versions, read the instructions on page 157 and the text overleaf. Apart from the detail differences between versions, variations concern a jettisonable under-fuselage fuel tank—compare the key views of the F.1 and F.2 overleaf—and over-wing tanks may be fitted to certain versions for overseas ferrying. Classify targets as Lightnings—or otherwise.



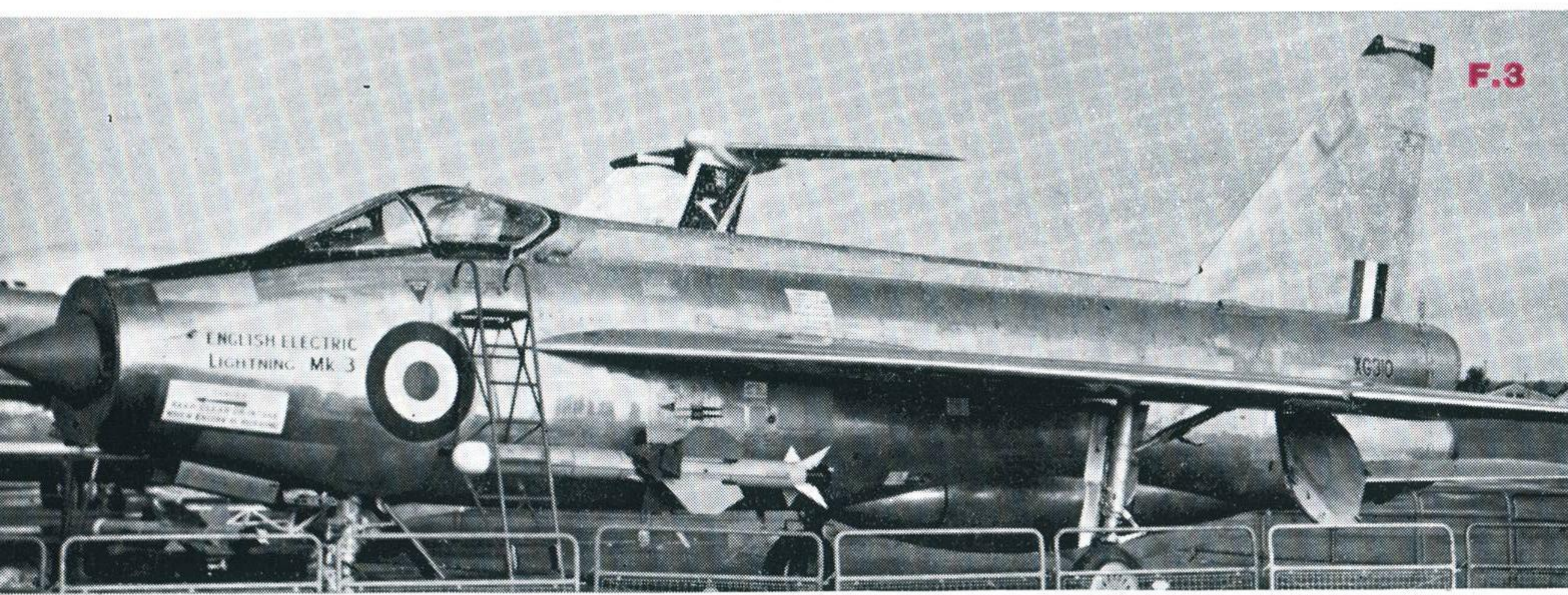
F.1



F.2



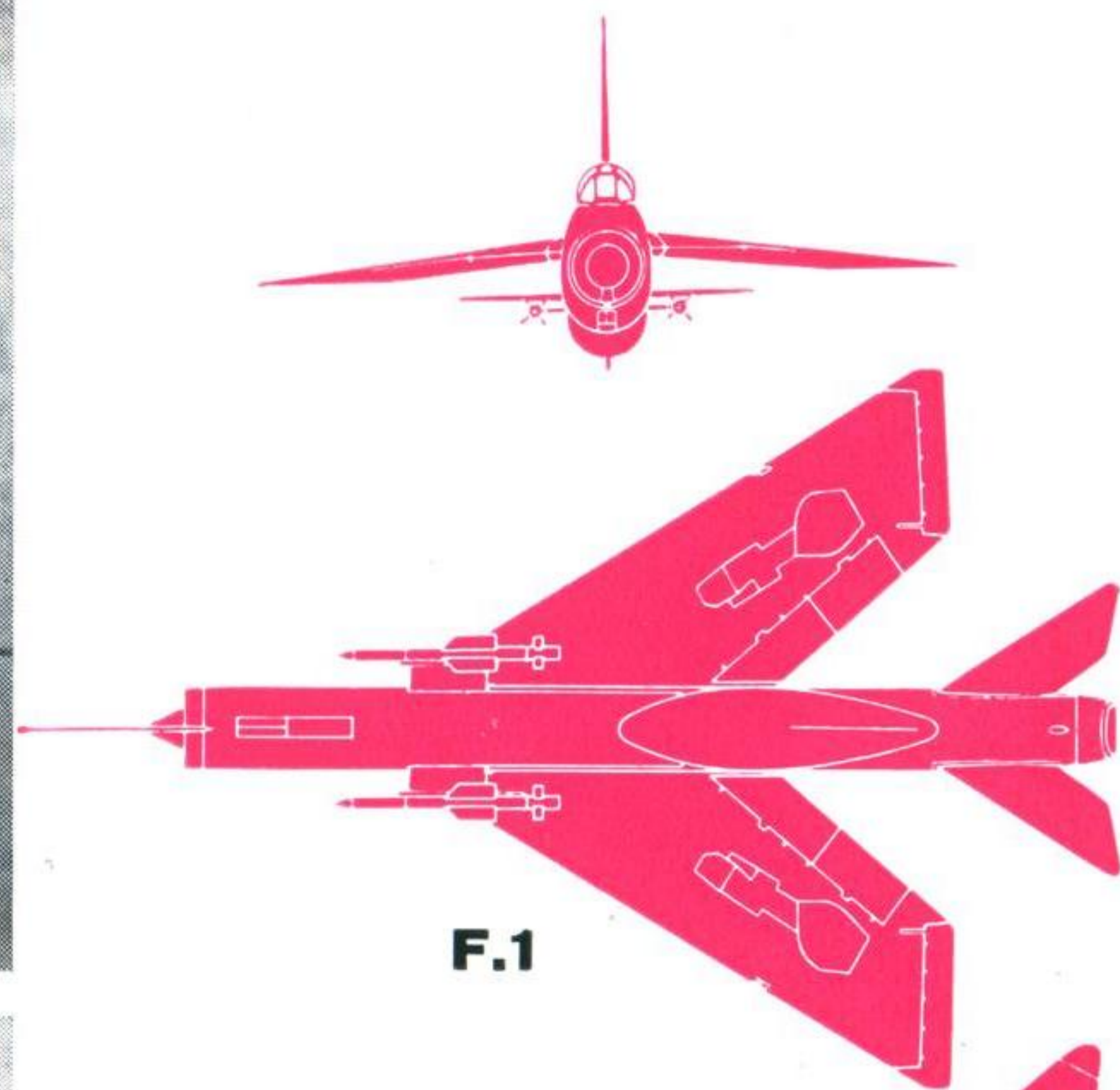
T.4



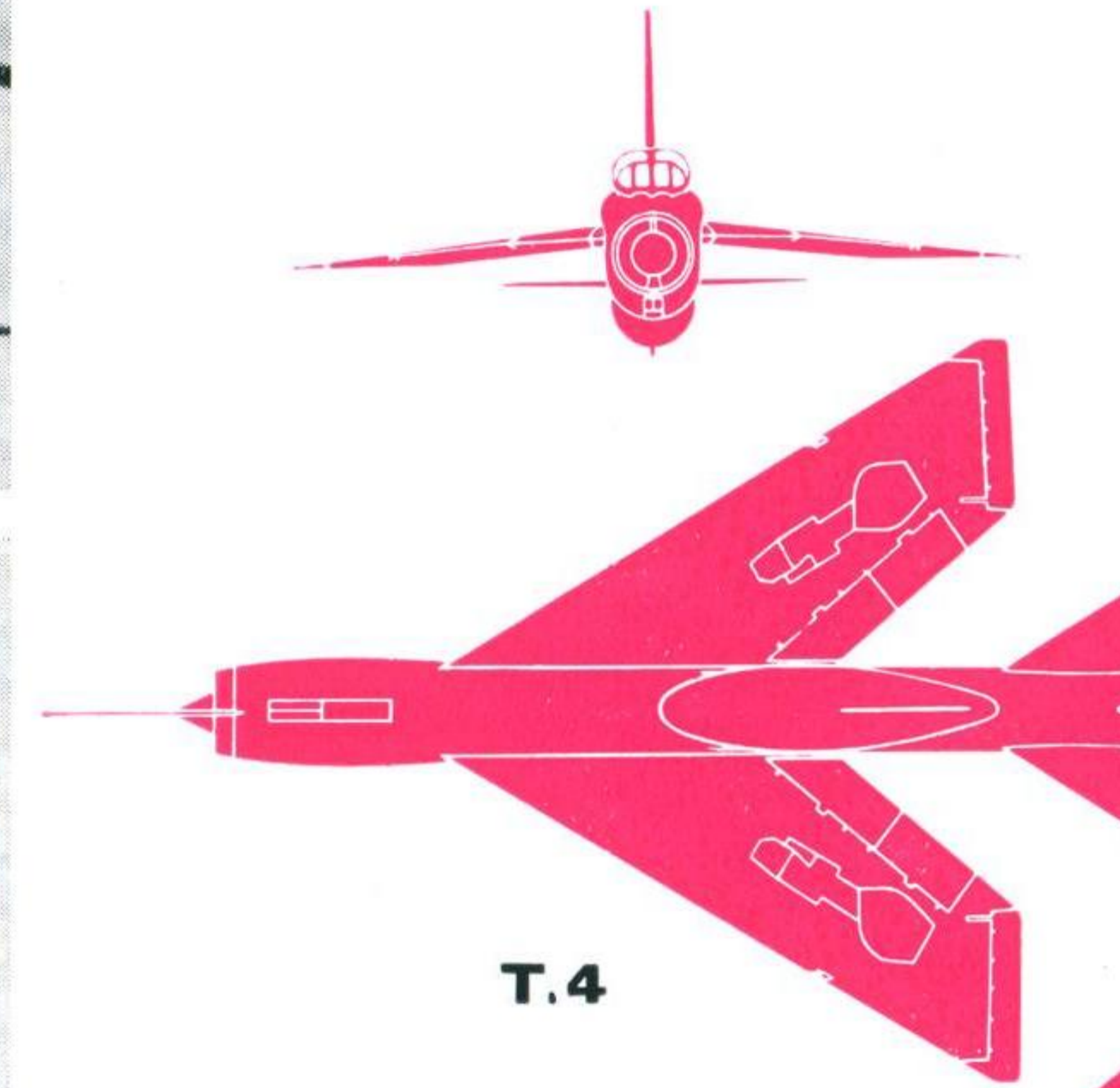
F.3



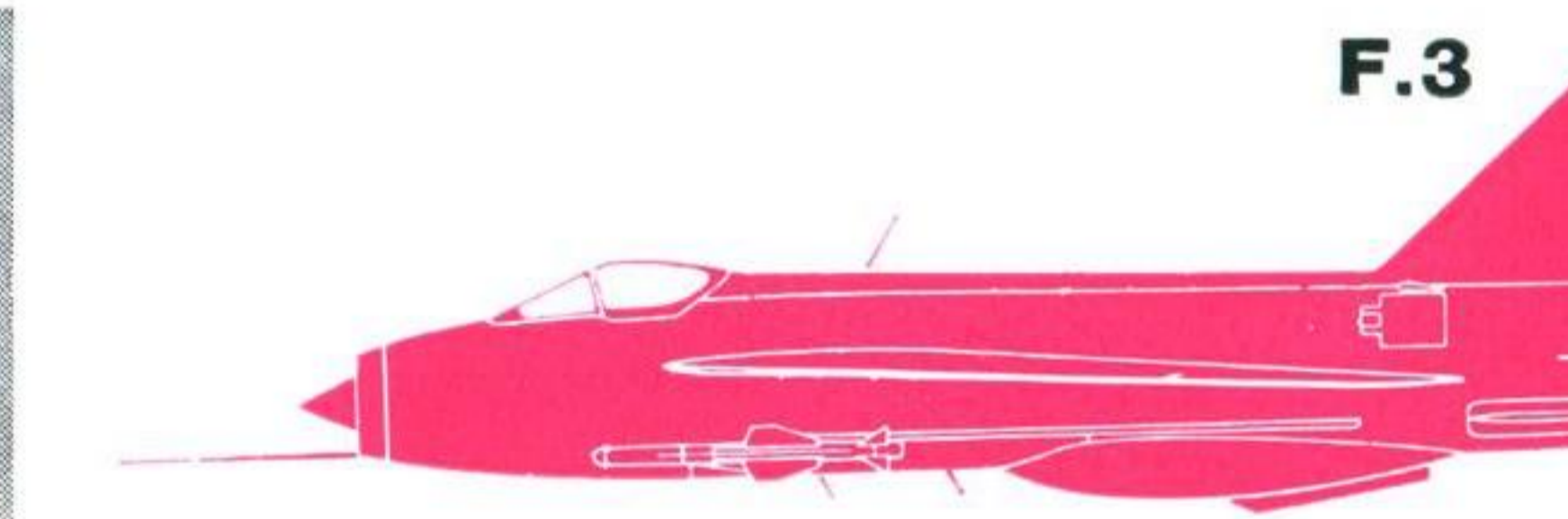
T.5



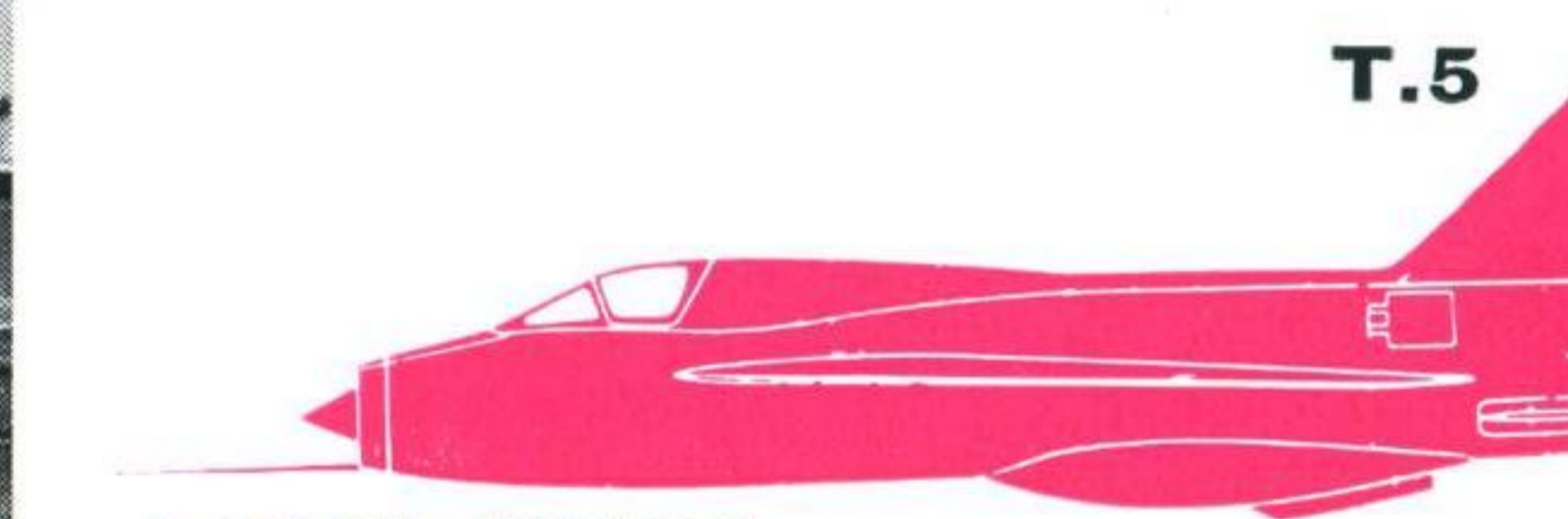
F.1



T.4



F.3



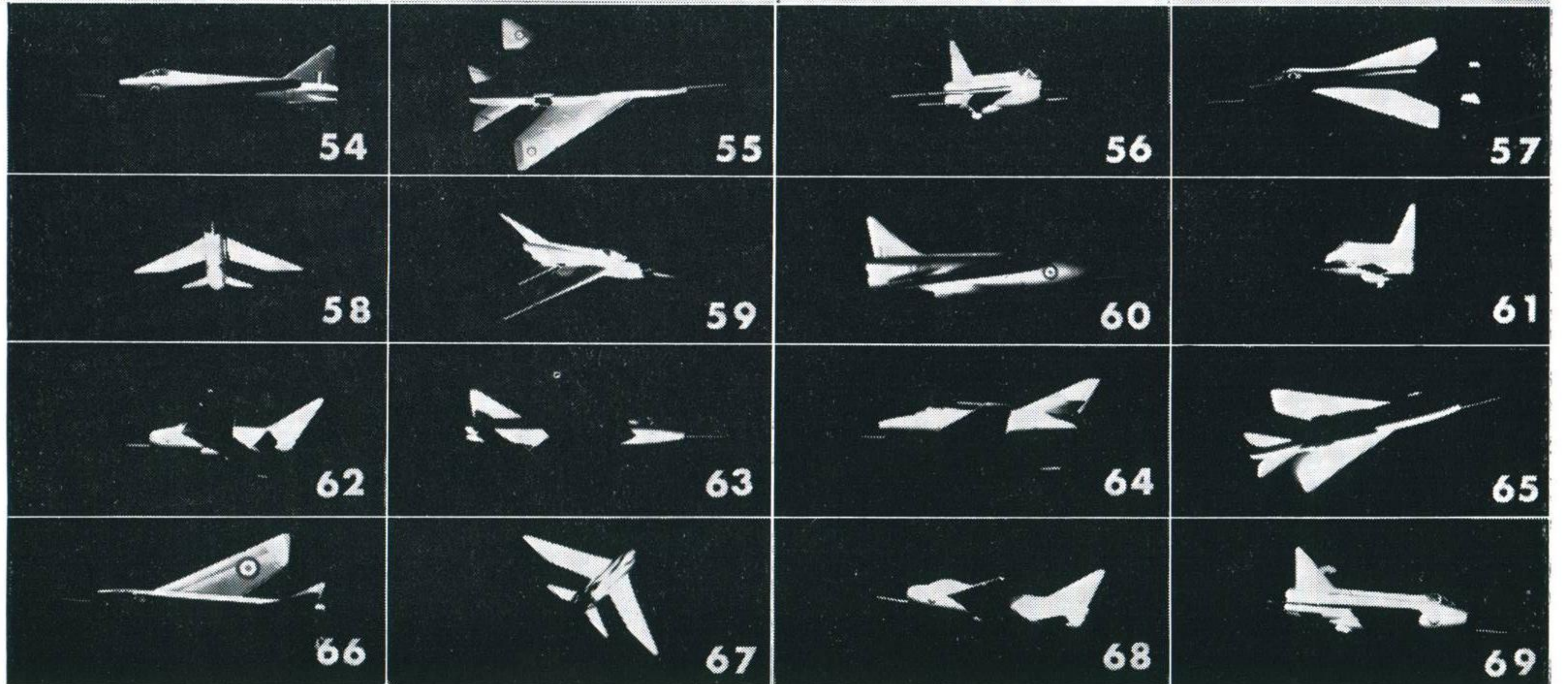
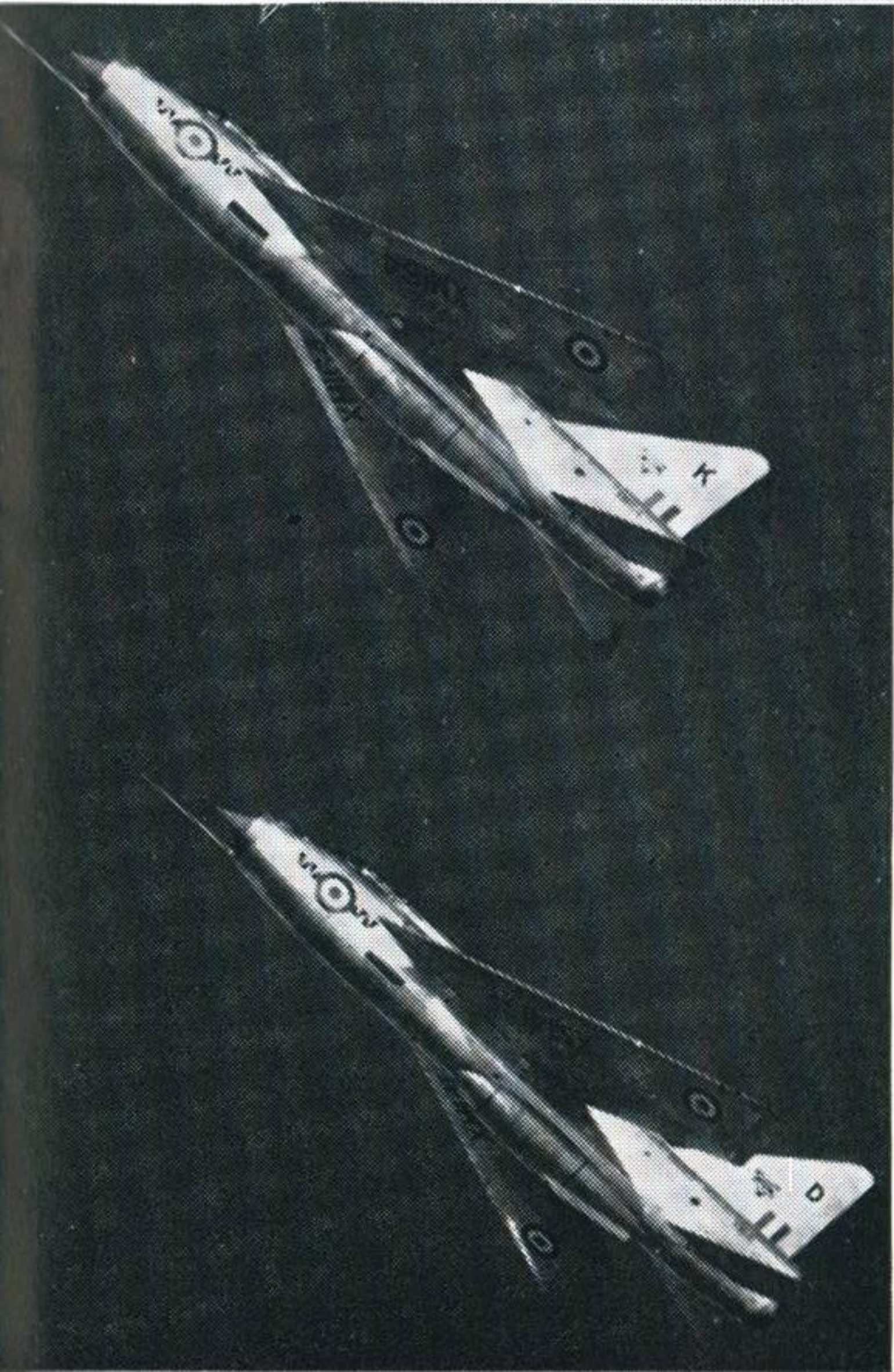
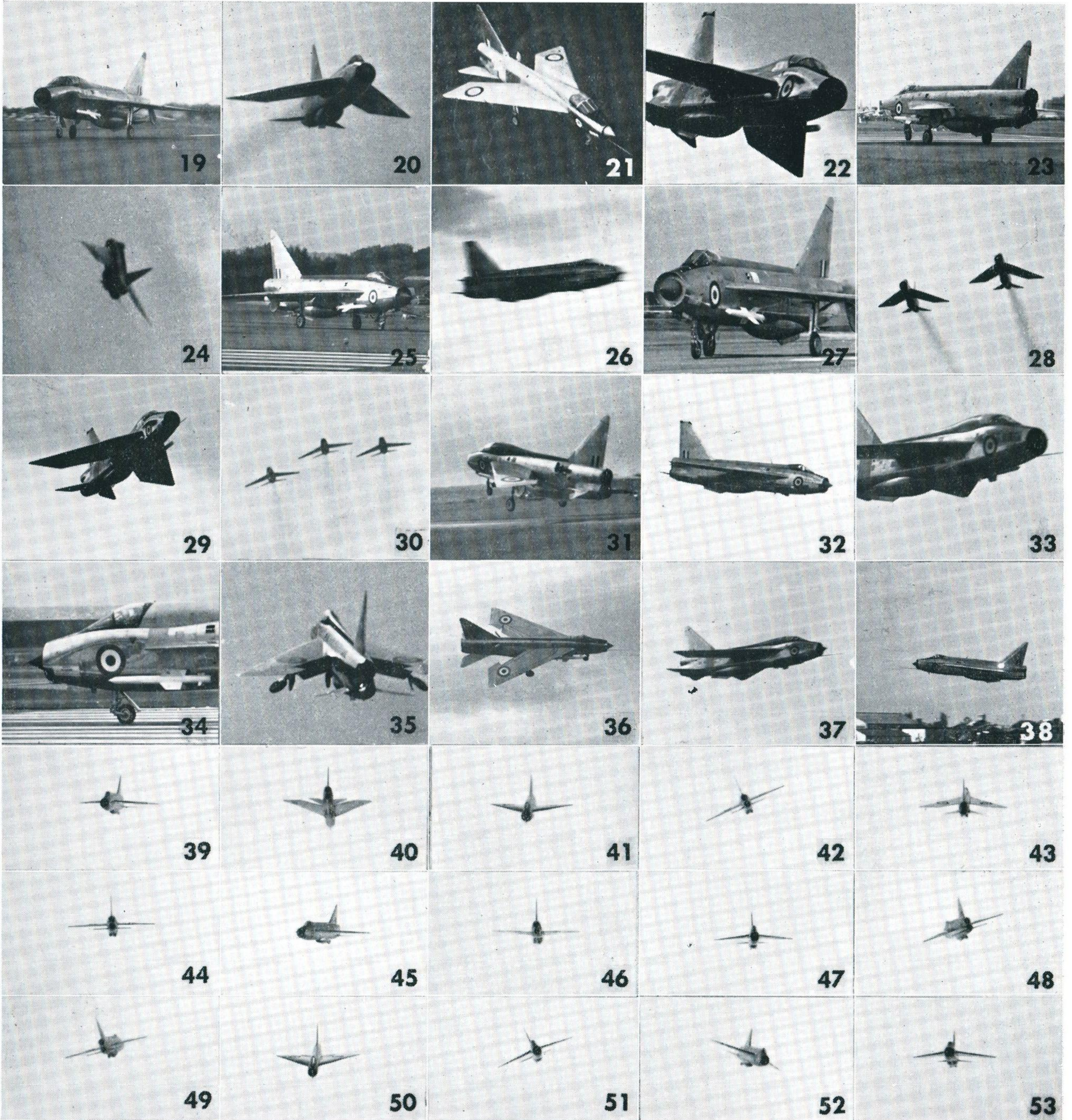
T.5

LIGHTNING

continued from page 152

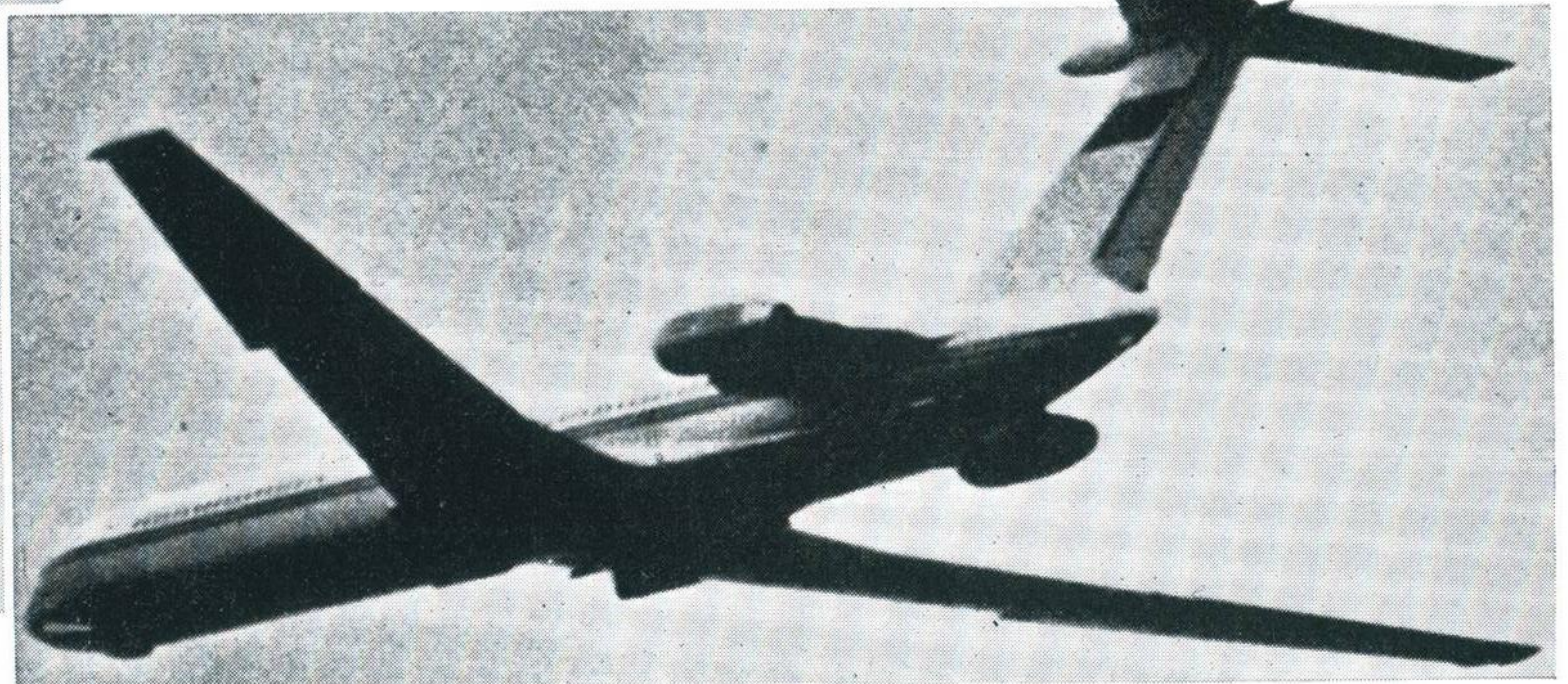
The single-seat fighter versions vary from the initial production F.1 to the F.3 with improved electronics and armed with Red Top missiles (as shown in key view, left) in place of the Firestreak missiles of the F.1 (see centre-spread on preceding page) with the F.2 as an interim development model. The F.1 and F.2 have the same outline but the F.3 has a square-cut fin—see key views. F.3s are being produced to a new standard with cambered wing leading edges and enlarged ventral fuel tanks, which will be illustrated in a later edition.

The operational two-seat trainer versions, T.4 and T.5, are complementary to the F.1 and F.3 respectively, including the variation in fin shape.



Solutions on the cover

REAR - JET BRIEFS



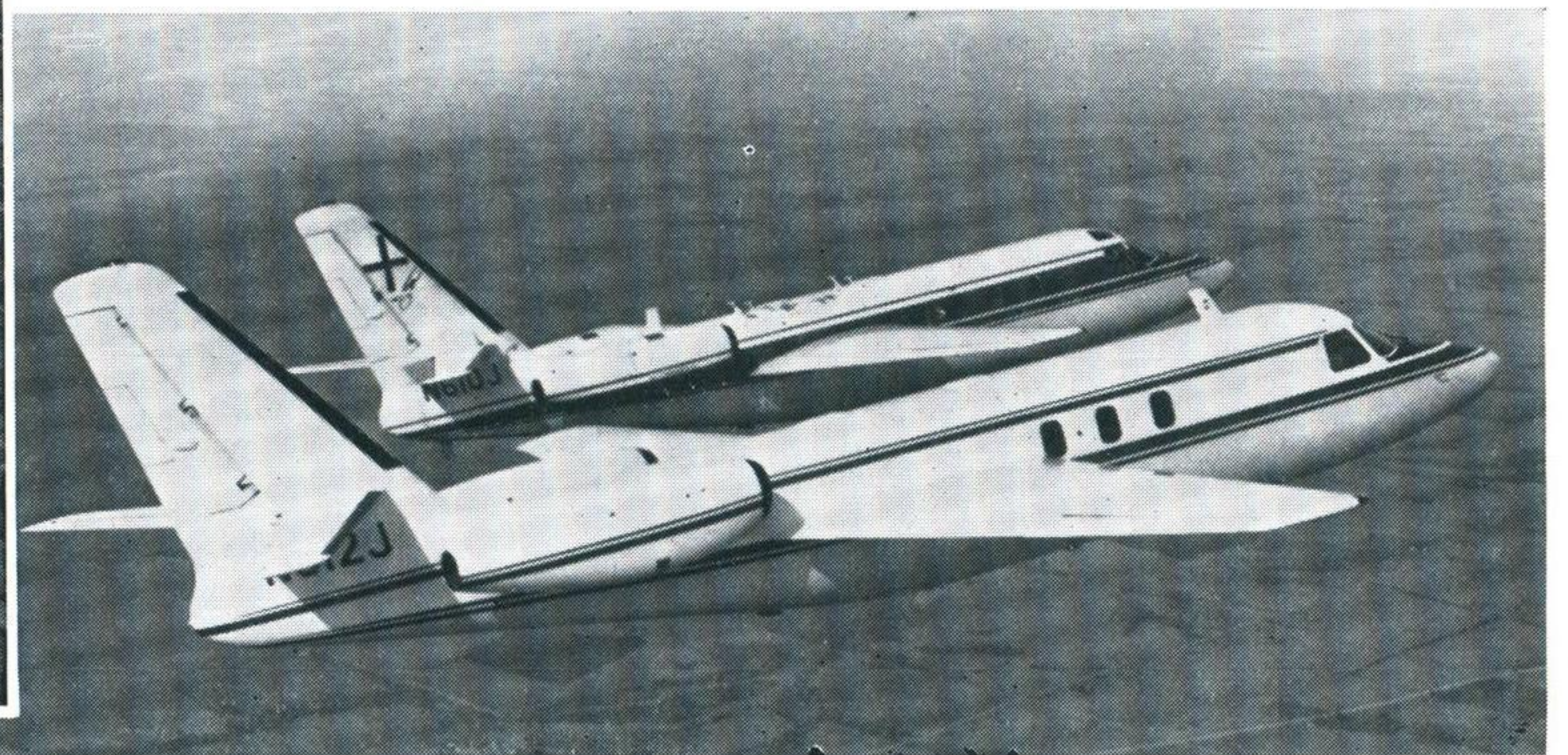
Two four-engined rear-jet airliners with similar configurations, the British Vickers VC10 and Russian Il-62 Classic.



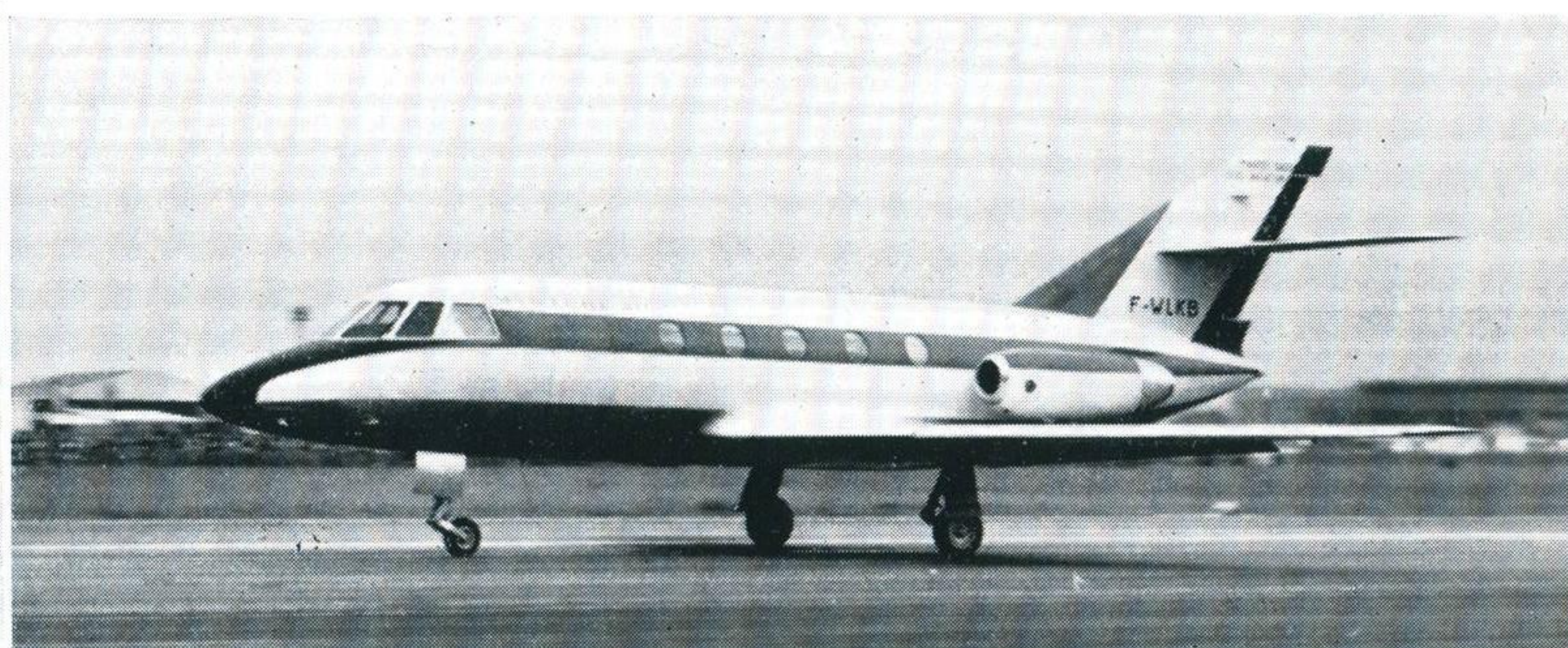
Two three-engined rear-jet airliners with similar configuration, the British Trident and the American Boeing 727.



Two American executive-type rear-jet aircraft for which military liaison aircraft orders might well be forthcoming, the Lear Jet (left) and Jet Commander (right).



From Germany and France two prototype rear-jet executive types are flying, the HFB320 Hansa and Mystère 20.



IN PASSING

FLASHLIGHT AND FIREBAR—NAMING

The name Mangrove has been allotted to the trainer variant of Flashlight. Firebar A has been re-named Brewer and thereby Firebar B becomes just Firebar.

To avoid confusion between these two types of similar configuration it is pointed out that Flashlight and Firebar are mid and shoulder-wing monoplanes respectively.

SOLUTIONS TO TRAINING LIST RECOGNITION PROBLEMS ON THE COVER

- | | |
|--------------------|-------------------|
| 1 B1 Argosy | 2 Atkins—Vanguard |
| B2 Starfighter | Brown—Skyhawk |
| B3 Stratotanker | Codd—Sea Vixen |
| B4 Badger or Camel | Downs—Phantom |
| 3 Echo—Wessex | 4 Jones—Hercules |
| Foxtrot—Tracker | Lacey—Belvedere |
| Golf—Jet Provost | Bushell—Farmer |
| India—Bear | ∴ Rogers—Avro 748 |

WEATHER BOUND

After presenting Chief Observer H. McGratton's interesting article on a "Bismuth" flight with No. 202 Squadron we learn that the squadron has disbanded due to newer methods of obtaining weather information: Chief Observer McGratton's flight is therefore of more than usual interest since it is first-hand history.

BOOK REVIEWS

Vertical Flight Aircraft of the World, by F. G. Swanborough. Temple Press Books. Price 25/-

This is the third of the series, the previous ones being "Combat Aircraft of the World" and "Turbine-engined Airliners of the World". In this new volume, printed in the Republic of Ireland, the photographic reproduction has been greatly improved, and there are some 300 photographs packed into the 120 ($9\frac{3}{4} \times 7\frac{1}{2}$ inches) pages.

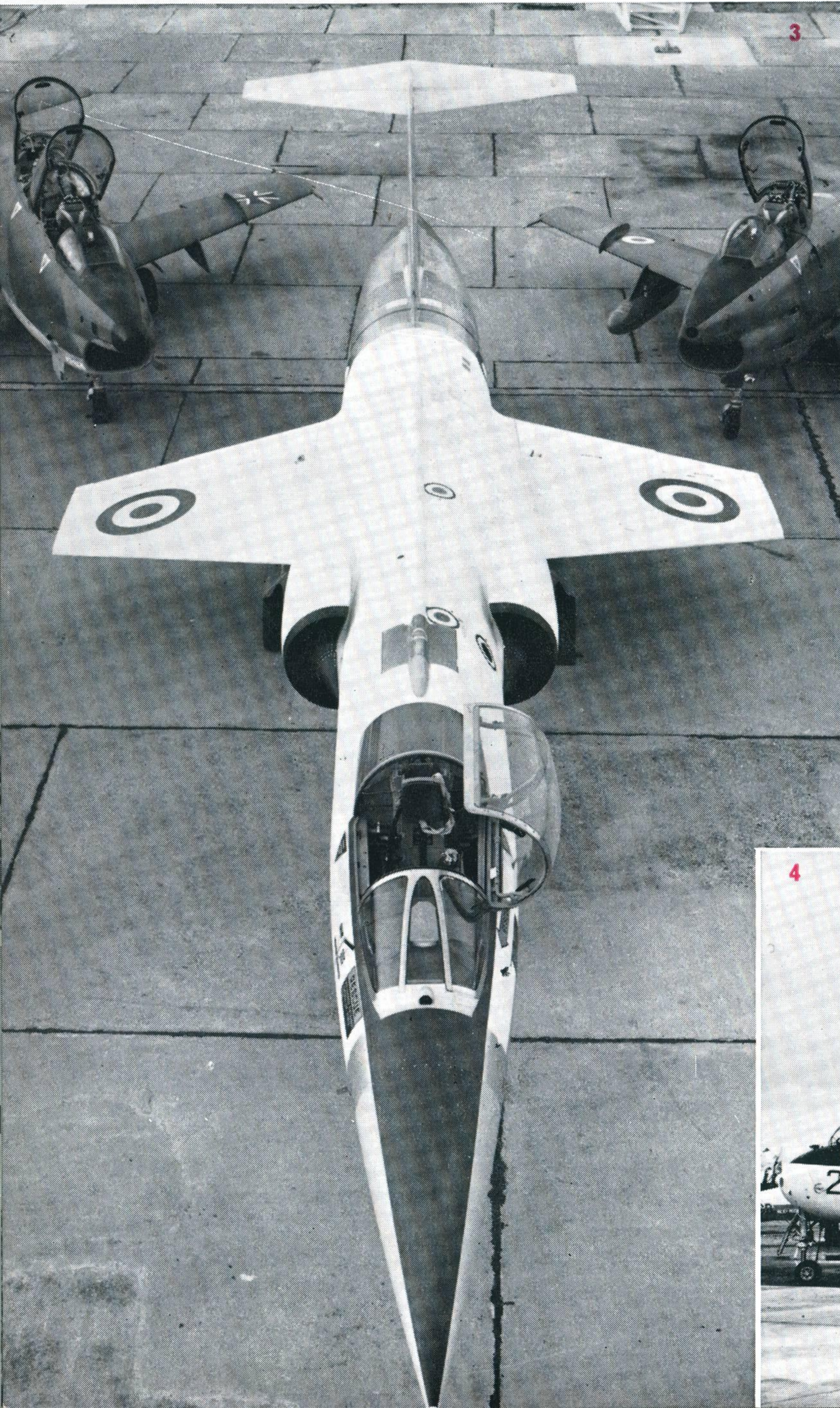
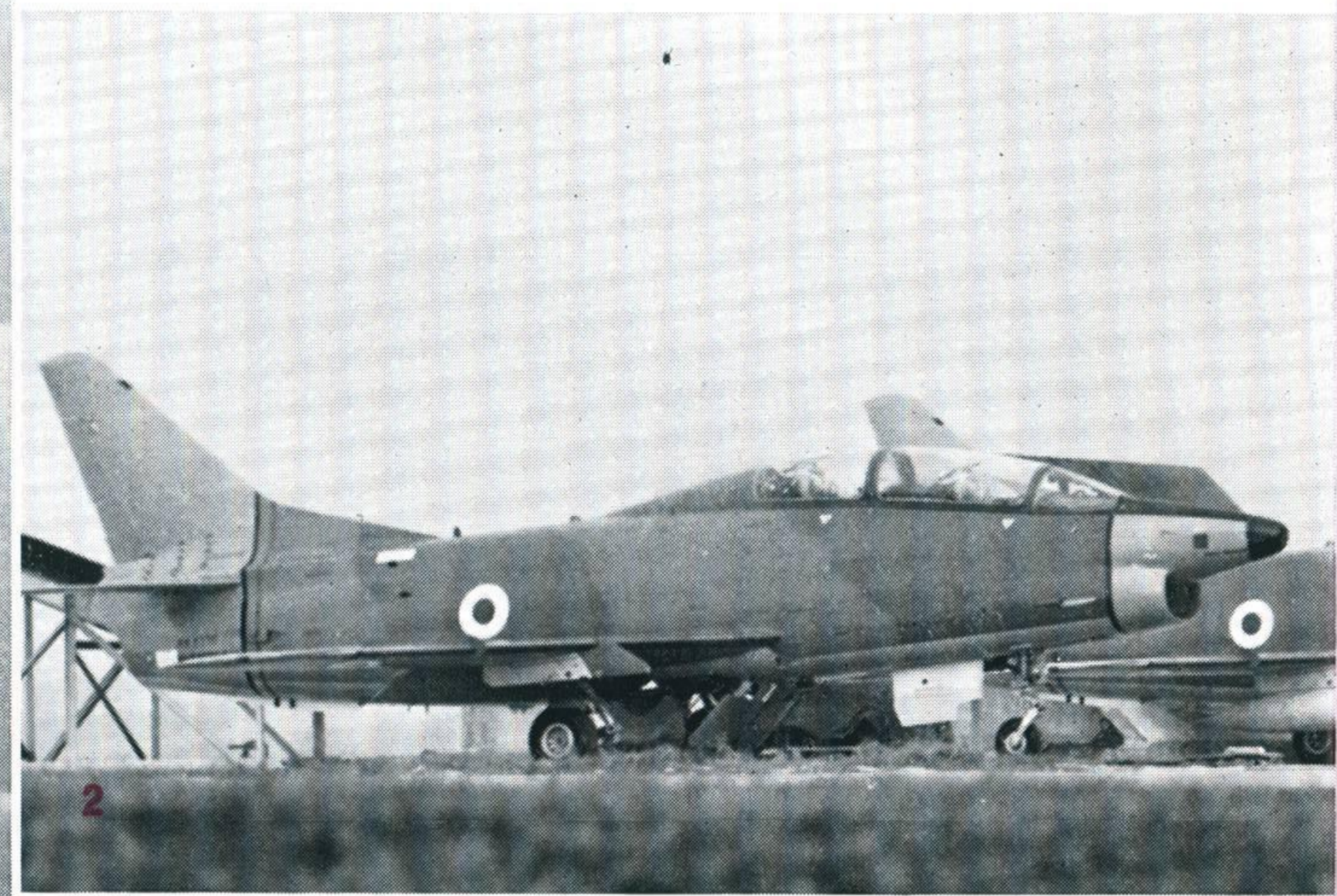
The title, although quite correct, may not appear to do full justice to the scope, which is VTOL aeroplanes and rotary wing (i.e. helicopters and autogyros) aircraft. The coverage given to Russian helicopters is particularly good and two photographs of these are reproduced from the book. B. R.



Lesson Instructions

To obtain the maximum benefit from the training devices published in this *Journal*, the following procedure should be adopted.

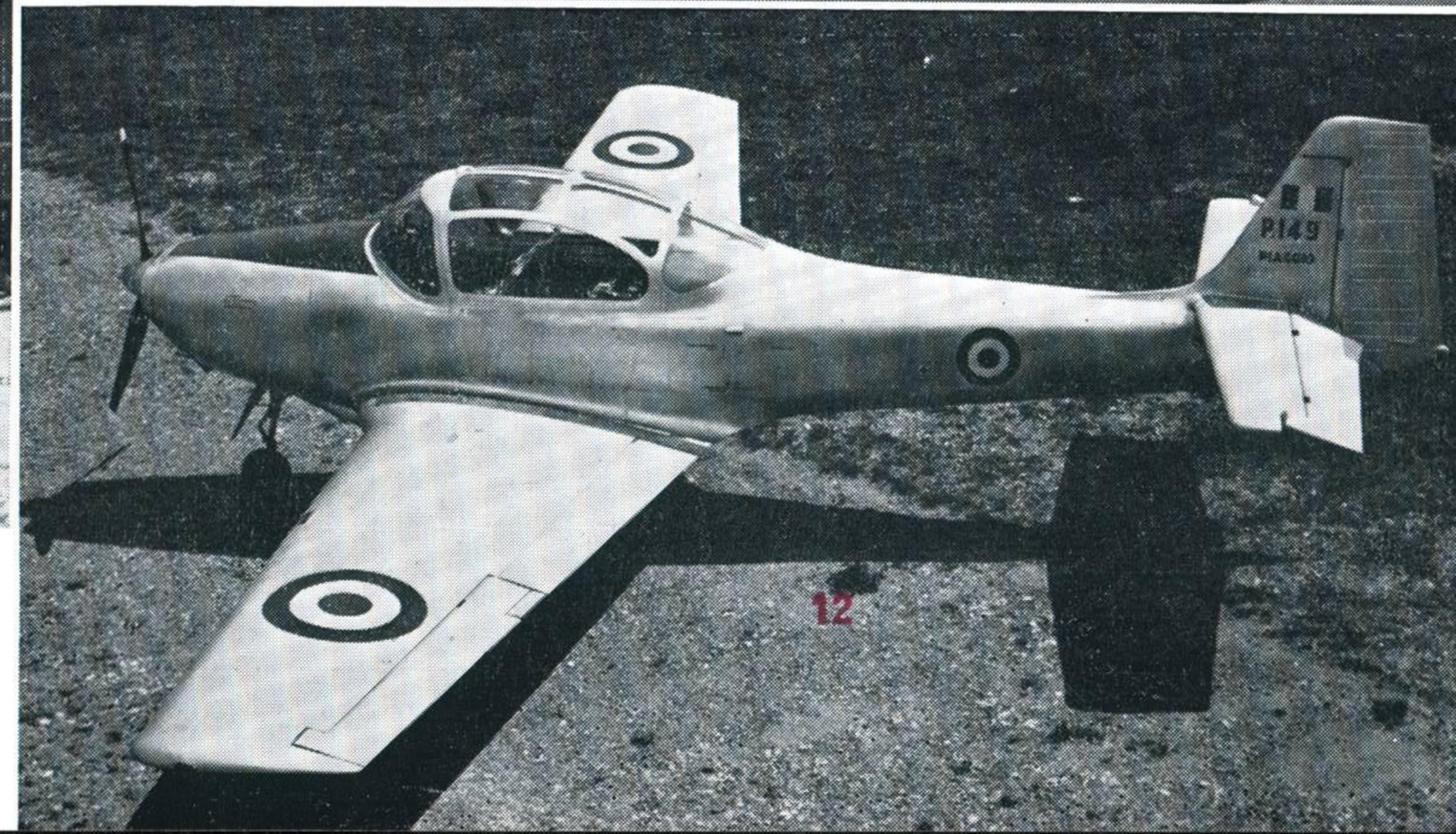
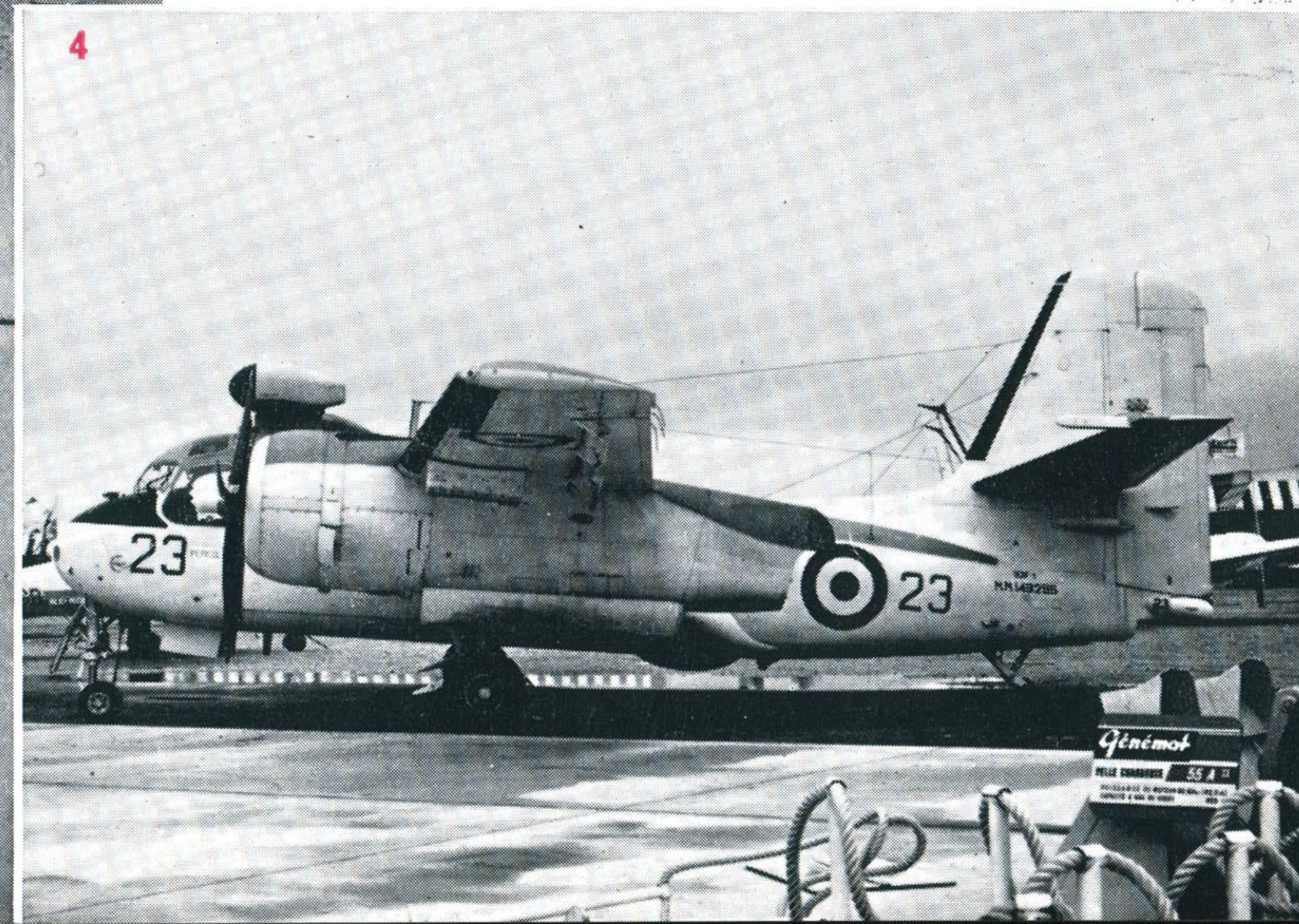
1. Read the text associated with the lesson.
2. Prepare a list of target numbers so as to be able to tackle the targets in any order.
3. Identify the target pictures by comparing them with the key views: start with the easy ones so as to gain experience: also use targets already identified to solve the more difficult ones.
4. When certain of the identity of a target write down its name **IMMEDIATELY** against the appropriate number on your list. **THIS IS IMPORTANT.**
5. Lessons should not be hurried or given a time limit. So far as beginners are concerned, it is more important to identify accurately than quickly.
6. Do not attempt conscious memorising of details, shapes, or names.



Representative Aircraft of Italian Military Aviation

Italy provides the bulk of the air strength for the 5th Allied Tactical Air Force of N.A.T.O. From a thriving aircraft industry Italy can equip her own air force and export military and civil aircraft to other countries; at the same time several American types are operated, including Bell helicopter types and F-104G Starfighters built under licence.

The captions to these pictures are on the cover in order that it may be used as a test. Reference is given to earlier lessons on these types so that you can make good any lapse in your ability to identify these aircraft types.





Cover Photo: A Whirlwind H.A.R.10 of the R.A.F.; some earlier Mk. 2 and 4 have been converted to this standard by replacing their piston engines with turbine power.

SOLUTIONS TO TESTS AND EXERCISES IN THIS EDITION

Page 158 REPRESENTATIVE AIRCRAFT OF ITALIAN MILITARY AVIATION

Where lessons have appeared on the types listed, the appropriate reference to the edition concerned is given in brackets.

- | | |
|--------------------------------------|---|
| 1 Fiat G91Rs (May 1962) | 7 Agusta Bell 47J Ranger (July 1961) |
| 2 Fiat G91Ts (May 1962) | 8 Piaggio P.136L |
| 3 F-104G Starfighter (December 1962) | 9 Agusta Bell 47G Trooper (July 1961) |
| Fiat G91T (top left) and | 10 Piaggio P.166 |
| Fiat G91R (top right) | 11 Agusta Bell 204Bs Iroquois (June 1963) |
| 4 Tracker (June 1963) | 12 Piaggio P.149 |
| 5 Fiat G91 (May 1962) | |
| 6 Macchi MB326 | |

Page 148 WHIRLWIND (SIKORSKY S-55 HELICOPTERS)

All targets are of **Whirlwind** helicopters except for No. 18 which is a **Hound** and No. 43 which is a **Wessex**.

The full list of designations, as far as can be ascertained, is as follows:

- | | |
|--------------------------------|---|
| 1 Whirlwind H.A.R.10 prototype | 28 Whirlwind |
| 2 Whirlwind Series 3 | 29 Whirlwind H.A.R.10 |
| 3 Whirlwind Series 3 | 30 Whirlwind H.A.R.10 |
| 4 Whirlwind H.A.R.10 | 31 Whirlwind Series 3 |
| 5 Whirlwind H.A.R.10 prototype | 32 CH-19E (U.S. Marine Corps) |
| 6 Whirlwind Series 3 | 33 Whirlwind H.A.R.10 |
| 7 Whirlwind Series 1 | 34 Whirlwind Series 3 |
| 8 CH-19E (U.S. Marine Corps) | 35 Whirlwind H.A.S.22 |
| 9 YH-19 (U.S.A.F. prototype) | 36 Whirlwind Series 3 |
| 10 Whirlwind Series 3 | 37 Whirlwind Series 3 |
| 11 Whirlwind | 38 H-19 |
| 12 H-19B (U.S.A.F.) | 39 Whirlwind H.A.R.10 |
| 13 Whirlwind Series 3 | 40 CH-19E (U.S. Marine Corps) |
| 14 Whirlwind H.A.R.4 | 41 Whirlwind H.A.R.10 |
| 15 YH-19 (U.S.A.F. prototype) | 42 Whirlwind H.A.R.10 prototype |
| 16 CH-19Es (U.S. Marine Corps) | 43 Wessex H.A.S.1 |
| 17 Whirlwind Series 2 | 44 Whirlwind |
| 18 Hound | 45 H-19A (U.S.A.F. transferred to Philippine Air Force) |
| 19 YH-19 (U.S.A.F. prototype) | 46 Whirlwind Series 2 |
| 20 Whirlwind Series 3 | 47 Whirlwind H.A.R.10 |
| 21 H-19 | 48 Whirlwind H.C.C.8s |
| 22 Whirlwind H.A.R.10 | 49 Whirlwind H.A.R.10 |
| 23 Whirlwind Series 3 | 50 H-19 |
| 24 Whirlwind H.A.S.22 | 51 Whirlwind |
| 25 CH-19Es (U.S. Marine Corps) | 52 Whirlwind H.A.R.10 prototype |
| 26 Whirlwind H.A.R.2 | 53 CH-19E (U.S. Marine Corps) |
| 27 UH-19F (U.S. Navy) | 54 Whirlwind |

Page 152

LIGHTNING

All targets are of **Lightnings** except No. 30 which is a **Super Sabre** and No. 64 which is a **Mystère**. Full designations are as follows:

- | | | |
|---------|----------|--------|
| 1 F.1 | 24 F.1 | 47 F.1 |
| 2 F.1s | 25 F.1 | 48 F.1 |
| 3 T.4 | 26 F.3 | 49 F.1 |
| 4 F.2 | 27 F.2 | 50 F.1 |
| 5 T.4 | 28 F.1s | 51 F.1 |
| 6 T.4 | 29 T.5 | 52 F.1 |
| 7 F.1 | 30 F-100 | 53 F.1 |
| 8 F.1 | 31 T.4 | 54 F.1 |
| 9 F.2 | 32 F.3 | 55 F.1 |
| 10 T.4 | 33 T.4 | 56 F.1 |
| 11 F.1 | 34 T.4 | 57 F.1 |
| 12 F.1 | 35 F.1 | 58 F.1 |
| 13 F.1 | 36 F.1 | 59 F.1 |
| 14 F.1 | 37 T.4 | 60 F.1 |
| 15 F.1 | 38 F.1 | 61 F.1 |
| 16 F.1 | 39 F.1 | 62 F.1 |
| 17 F.1 | 40 F.1 | 63 F.1 |
| 18 F.1s | 41 F.1 | 64 IVA |
| 19 T.4 | 42 F.1 | 65 F.1 |
| 20 F.1 | 43 F.1 | 66 F.1 |
| 21 T.4 | 44 F.1 | 67 F.1 |
| 22 T.5 | 45 F.1 | 68 F.1 |
| 23 F.1 | 46 F.1 | 69 F.1 |

Training List Recognition Problems

Presented by Chief Observer J. E. WARD, 15/B4

1 Posts B1, B2, B3 and B4 each observed a different aircraft flying over each of their posts.

B1 observed a four-engined aircraft emitting a turbo-prop whine and possessing a twin-boom layout.

B2 noticed a single-engined jet with a wing span of less than half the fuselage length. The wings were not swept back, but they had a marked angle of anhedral.

B3 observed a swept wing jet with four podded engines, carrying flight refuelling equipment.

B4 noticed a twin jet aircraft with the jets tucked close to the fuselage. The wings were swept and carried a large projection on each trailing edge.

Name the aircraft observed by each post.

2 At a certain air show, Observers Atkins, Brown, Codd and Downs each made a study of a different aircraft.

Atkins noted that his aircraft had four turbo-props, a "double bubble" fuselage and an angular dihedral tailplane.

Brown's particular choice was a single-engined jet with delta wings and a tailplane set on the fin.

Codd noticed an aircraft with swept back wings and a twin boom structure.

Downs noted an anhedral tailplane and outer wing panel dihedral on a twin jet aircraft.

Which aircraft did each observer study?

3 Four pilots were talking about their respective aircraft.

Lieutenant Commander Echo was extremely pleased with the performance of the 1,450 s.h.p. Napier Gazelle installed in his helicopter.

Lieutenant Foxtrot admitted that although his twin-engined, anti-submarine aircraft only had an endurance of nine hours, the high-wing layout aided visibility.

Flight Lieutenant Golf was certain that the side-by-side seating in his single-engined jet trainer was admirable. His 48 gallon tip-tanks assisted his range.

Mr. India, a civilian test pilot, commented on his impression of a turbo-prop strategic bomber which had inner engine nacelles projecting behind its wings.

4 Each of the following aircraft: Farmer, Hercules, Avro 748 and Belvedere was flown by one of the following pilots—Jones, Lacey, Bushell and Rogers.

After take-off Jones feathered his port propellers. Bushell on a high speed run switched on both his after-burners. Lacey noticed that his twin rotors were beginning to vibrate slightly.

Which man flew which aircraft?

Solutions on page 157.