

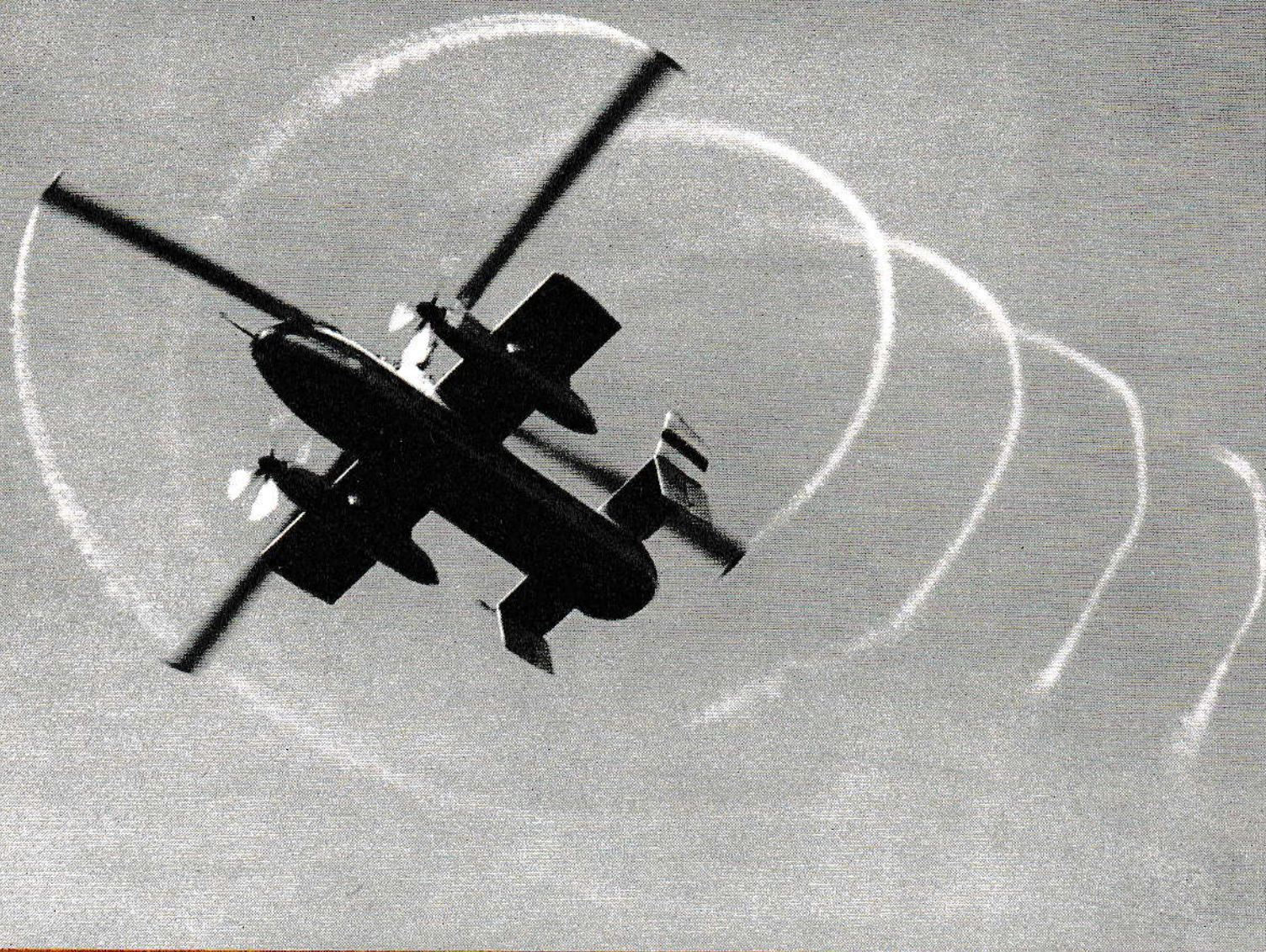
THE ROYAL



OBSERVER CORPS

RECOGNITION

Journal
and R.O.C. GAZETTE



Vol. I JUNE 1959 No. 6

Soviet Circus — 8.

The TU-114 Long-Range Airliner **ROSSIYA** (NATO: "Cleat")

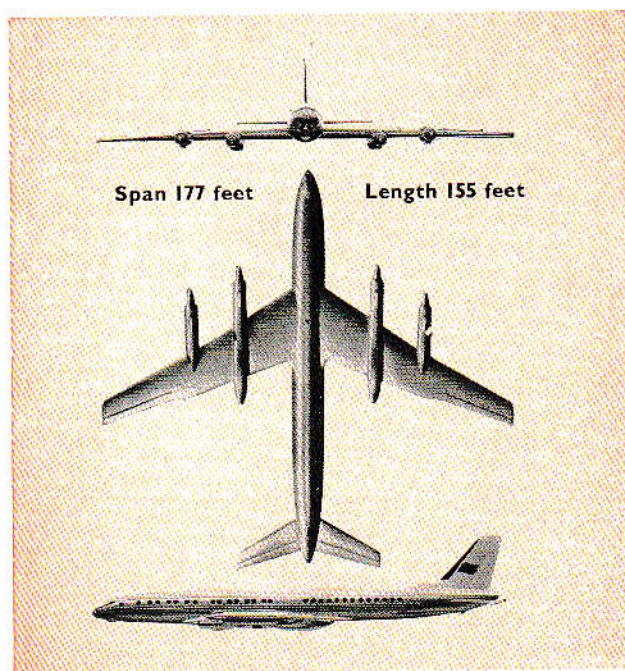
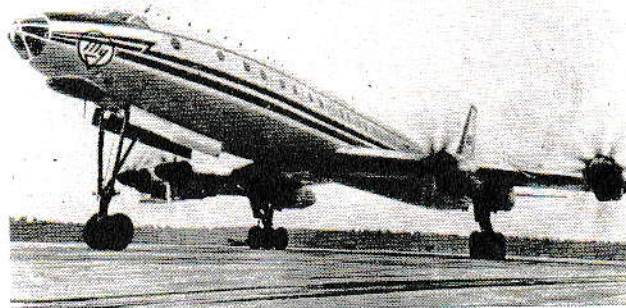


IF the dreams of Andrei Tupolev come true, the Trans-Siberian Railway will soon become an outmoded way of crossing the Russian continent. His TU-114 Russia will, he reckons, carry so many people over such great distances that he will be able to bring the price of air travel down to the level of present-day rail fares—and it could go into service with *Aeroflot* this year.

Based on the wing, engine and tail units of the Bear military bomber, the Russia (unveiled to coincide with the 40th anniversary of the 1917 October Revolution) is indisputably the largest and the heaviest commercial transport now flying. The original TU-114 has a pressurised fuselage in keeping with its titanic proportions (16,420 cubic feet) which will accommodate from 120 passengers on the longest range flights to a maximum of 220 over shorter distances. The under-floor holds give a further 2,472 cubic feet of space for freight. The Russia has a maximum take-off weight of nearly 185 tons, for which it pays the penalty of requiring a take-off speed of about 170 m.p.h. and a run of over 3,000 yards to clear 50 feet. Nevertheless it claims a "typical" cruising speed of 531 m.p.h. and a maximum one of 565 m.p.h. from its four Kuznetsov turboprop motors, each of which develops more than 12,000 shaft horsepower.

The cigar-shaped fuselage and the swept-back wings with their distinctive long engine nacelles make the Russia a fairly good bet for the spotter, quite apart from its giant size. It will be featured in lessons in this *Journal* later this year.

The TU-114D, which appeared later, may be said in a visual sense to be a throw-back to the Bear bomber, for it reveals a fuselage of much reduced diameter. At least two are known to have been built, and one made a wide-spread tour of the Soviet Union last summer.



THE ROYAL



OBSERVER CORPS

RECOGNITION JOURNAL

AND R.O.C. GAZETTE

The Royal Observer Corps Recognition Journal and Gazette is a monthly publication produced in the Department of the Assistant Chief of the Air Staff (Training), Air Ministry, and prepared in collaboration with the Ministry of Supply (Air Technical Publications). Applications for copies must be submitted through the normal official publications supply channels—not to the Editorial Office or direct to the Air Ministry.

This publication is produced solely for official use and can not be sold to members of the public. Contributions and correspondence should be addressed in the first instance through the usual Corps channels to Headquarters, Royal Observer Corps, Bentley Priory, Stanmore, Middlesex.

Feature	Page
Fairey Rotodyne (cover)	81
Soviet Circus—8: The TU-114 Rossiya	82
A Message from the Commandant (Air Commodore J. M. Warfield, C.B.E.)	83
*The Yak-25 Flashlight-A	84
Briefs	87
Three-View Digest: Alizé, Mach-Trainer, Gnat, Fury, Swift, Hunter 6, Hunter 7, Thunderchief, Lightning, Arrow and Blowlamp	88
Air Defence Up To Date, by John W. R. Taylor—Part Two	90
*Beverley and Shackleton 2	92
*Ukraine (Cat)	94
Those Were the Days; Solutions to Tests and Lessons	96

* Identification lessons

A Message from

Air Commodore J. M. WARFIELD

Commandant, Royal Observer Corps

C.B.E.



IN the very short time that has elapsed since I assumed command of the Royal Observer Corps, I have been able to visit some Groups and also to meet the Area Commandants and many of the full-time officers of the Corps. From these contacts I have learned a good deal of the important responsibilities that are now placed upon you, and also of the problems that arise in phasing your new tasks with your traditional rôle.

During the time that lies ahead, I hope to meet many of the part-time officers and observers, and it is probable that the Camps will provide the first opportunity.

Certainly I know of the long association between the Royal Observer Corps and the Royal Air Force, and of the service you have given—and continue to give—to Fighter Command. I also realise very fully that the strength of the Corps lies in the selfless loyalty and enthusiasm of the voluntary members who do the job, therefore I look forward to meeting you and to sharing your problems.

14th May, 1959

It is not often we are favoured with such a close look at a Russian military aeroplane as we are afforded by this set of pictures of the Flashlight fighter; they give a real sense of proximity and intimacy. We can examine the engine arrangement; we can inspect the bicycle-type undercarriage system with its little outriggers at the wingtips; we can see how the two heavy cannon lie under the forward fuselage; we can peer into the cockpit; and we can look at many other features too. In fact, short of being able to walk round an actual aircraft—an unlikely possibility!—there is little more we could wish for in order to study this Soviet fighter close to, so make the most of this opportunity to (metaphorically speaking) clamber round the Flashlight and pick it to pieces, dissecting and studying its physical and visual make-up. The small flying views will put the various enlarged portions in their right place and perspective, at the same time illustrating the characteristic attitude of the Flashlight in flight. For a Flashlight identification lesson, turn over to the next page (86).

FLASHLIGHT-A

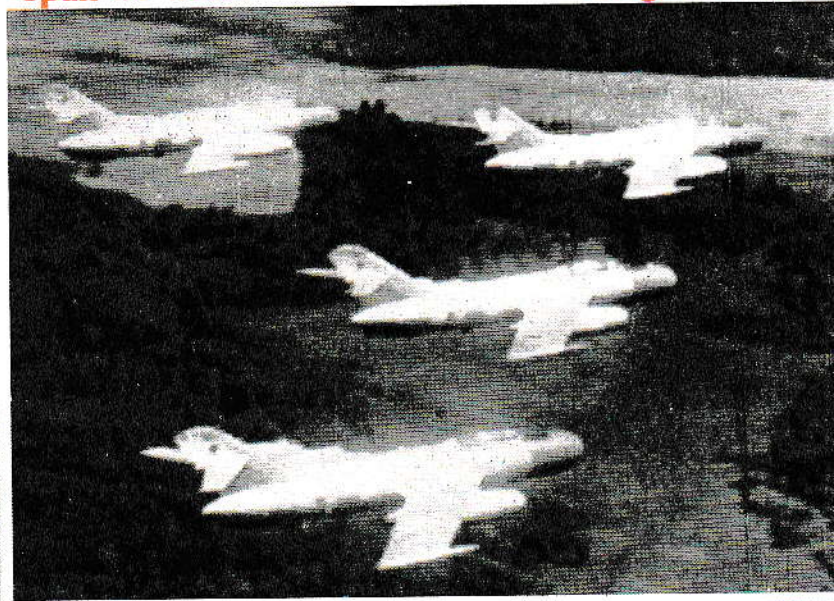
Yakovlev YAK-25

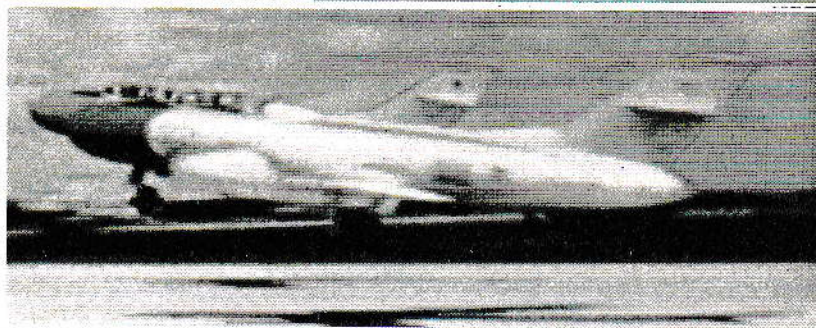
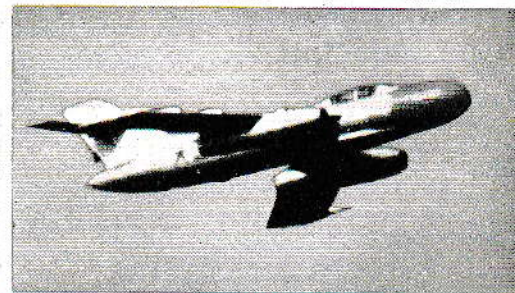
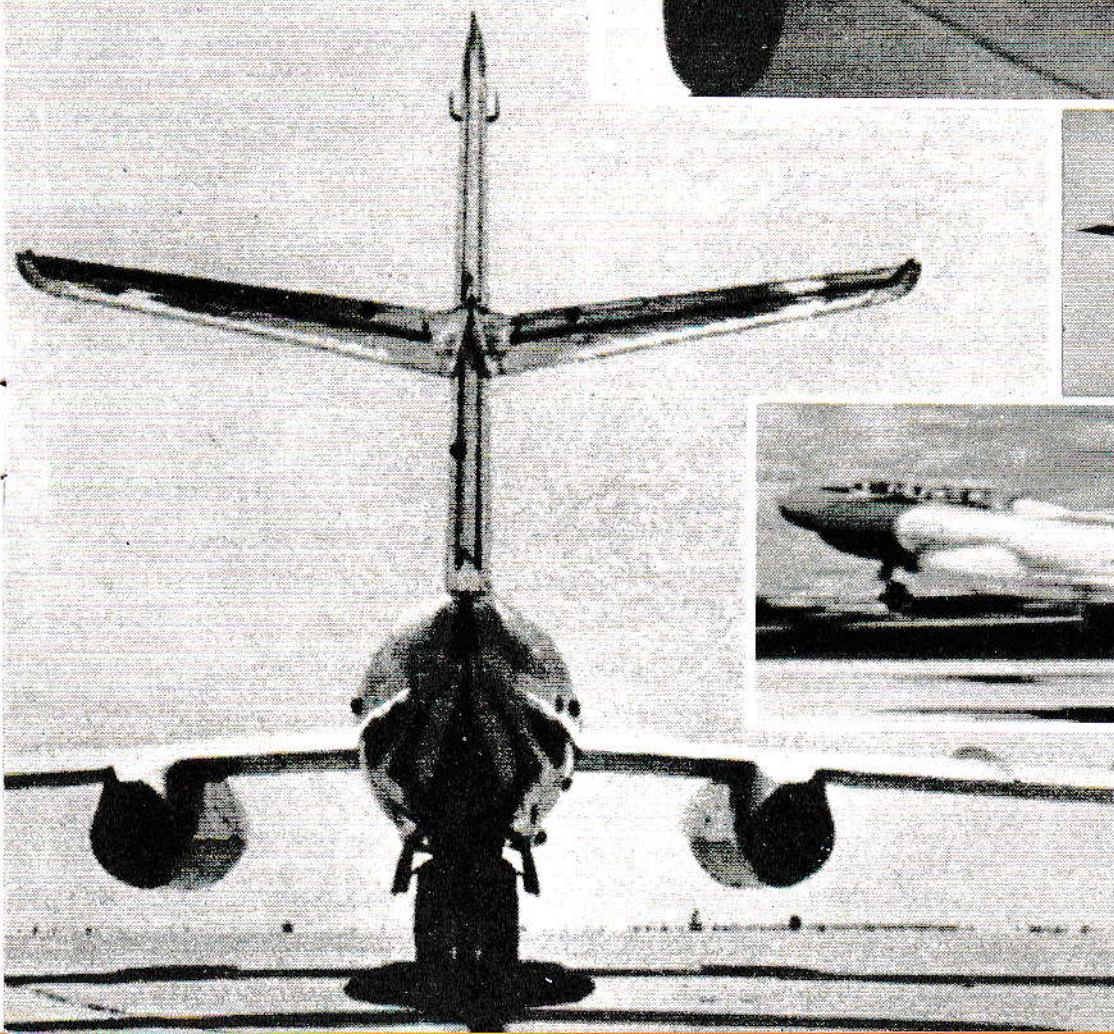
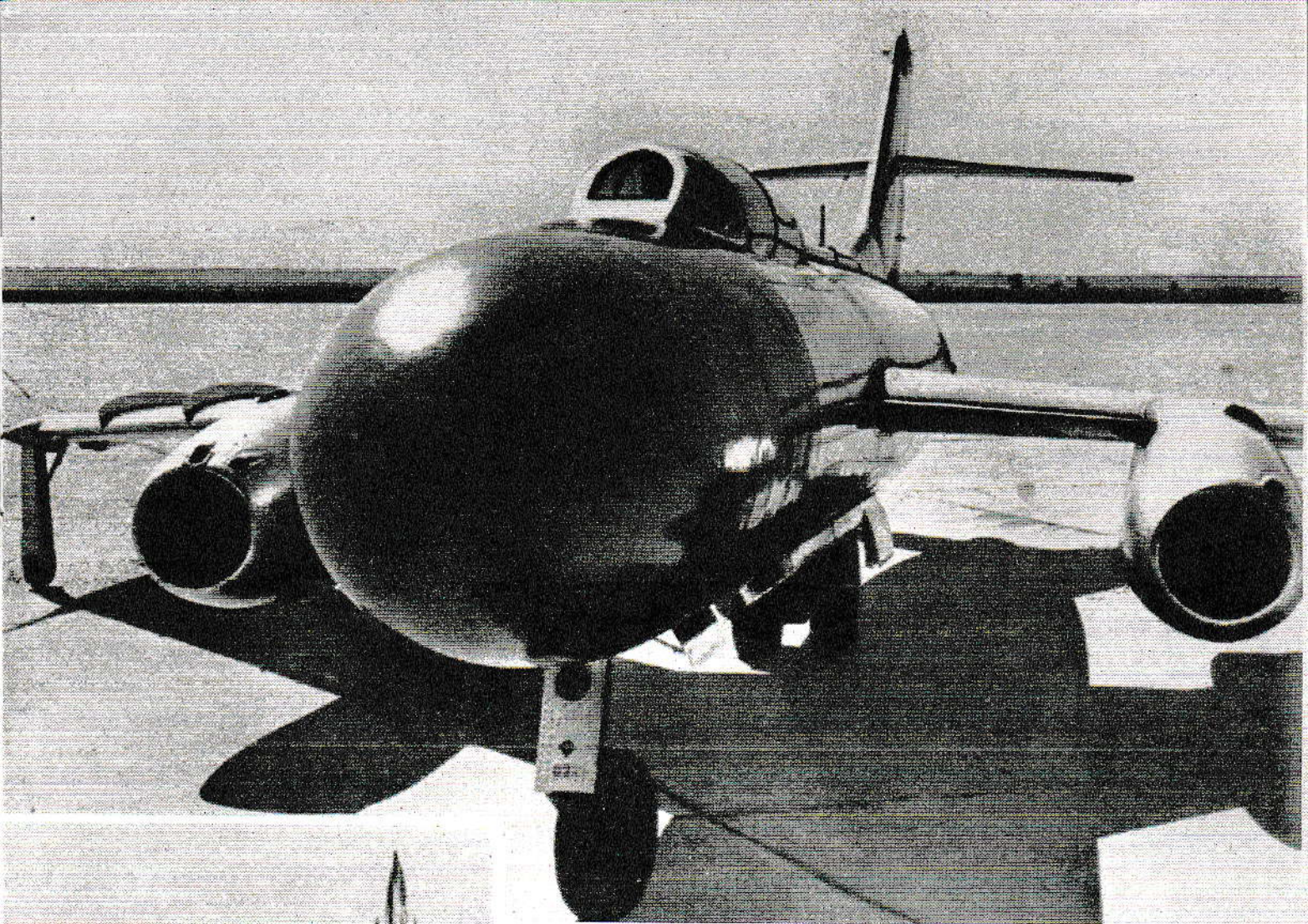
All-weather Fighter

The twin-jet Flashlight-A has been a standard night and all-weather fighter of the Soviet Air Force for approximately four years.

Span 41 feet

Length 55 feet

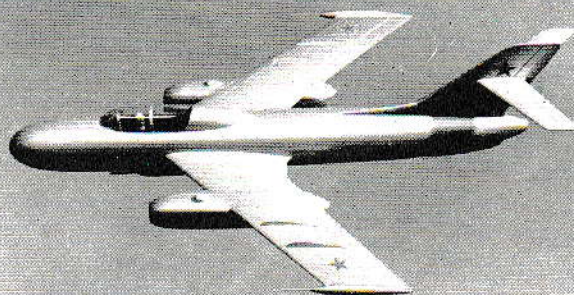




The YAK-25 FLASHLIGHT - A

Soviet All-weather Fighter

Although less elegant than some of its Western counterparts—with some of whom it could nevertheless be confused—the Russian Flashlight is no doubt efficient at its job. For our part we must be equally efficient at identifying it, in case we should ever meet one. If the lesson here is done correctly and thoroughly, it will provide that necessary experience.



Wing Span 41 feet



1



2



3



4



5



6



7



8



9



10



11



12



13



14



15



16



17



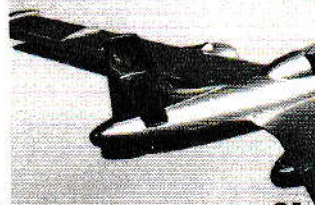
18



19



20



21



22



23



24



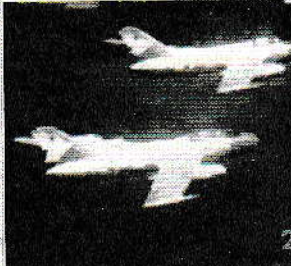
25



26



27



28

Briefs

A collection of items of news and interest which may help your recognition.

Taking SHAPE

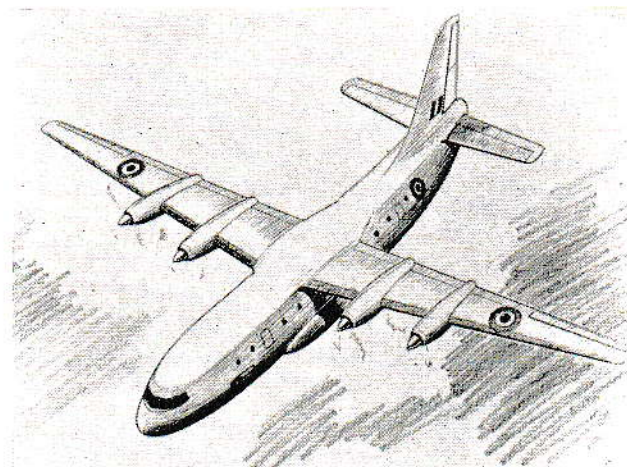
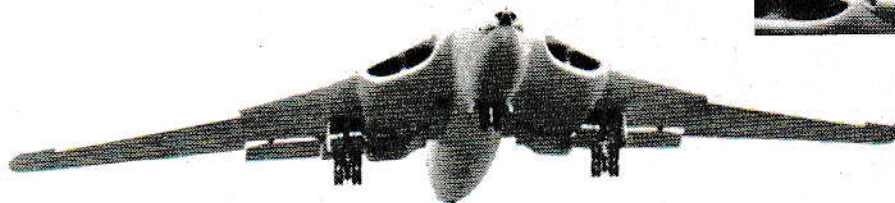
A group of Fiat G.91s has for several months been carrying out an intensive flight programme with the Italian Air Force, prior to being taken over in the summer by an international NATO squadron for further testing under a SHAPE programme in Germany. Meanwhile, in Italy, series production of the G.91 lightweight fighter and the G.91R reconnaissance version (shown in the photo) proceeds according to schedule, and the G.91T trainer model is at an advanced stage of development.



* * *

The Conway Victor

Four Rolls-Royce Conway by-pass jet engines, each of 17,250 lbs. thrust, took the first Handley Page Victor B Mk. 2 off on its maiden flight at the end of February (*bottom photo*). In general appearance there is little to distinguish the latest Victor from the Mk. 1 bomber now in R.A.F. service, though there are one or two minor changes of interest and the performance is said to be greater. The wing span is slightly increased and the engine air intakes are larger, there are two small retractable air-scoops (*see inset*) on top of the rear fuselage, and buried in the starboard wing root is a small Blackburn Artouste turbojet to start the starboard engines (whose air in turn is taken to start the port-side ones). The giant under-wing fuel tanks, seen on a Victor B Mk. 1 at the S.B.A.C. Display last year, can be fitted to extend the range and the new Victor will be able to carry the powered "stand-off" bomb.



Strategic Britannic

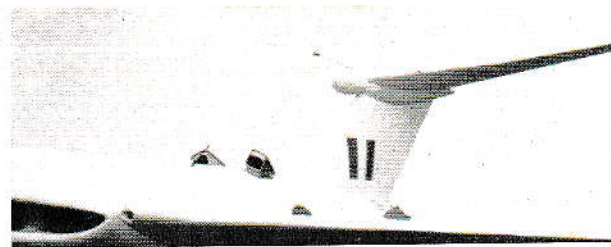
The Royal Air Force is to have its own strategic freighter: this was confirmed in the House of Commons by Mr. Duncan Sandys following publication of the 1959 Defence White Paper. It was decided to select an aircraft which, while meeting all military requirements, would at the same time be a potential seller in the civilian market, and the design chosen is the Short S.C.5 Britannic. The Britannic has been developed, in liaison with Bristol, from the Britannia airliner and utilises the wing and systems of the latter combined with an entirely new fuselage. Fitted with four Rolls-Royce Tyne turboprop motors, the Britannic is expected to fly in 1961, and production aircraft may be available later the same year. The artist's sketch gives the general configuration of the Britannic, whose principal dimensions are: span, 148 feet 3½ inches; length, 134 feet 0 inches; height to top of fin, 47 feet 0 inches; all-up weight, 195,000 lbs.

* * *

Airliner Statistics

Of the 511 jet and turboprop-powered airliners in service in the world, excluding the Soviet bloc, 436 are British, the S.B.A.C. disclosed at the beginning of March. These include Viscounts, Britannias and Comets; foreign aircraft in service are the Boeing 707, Electra and Friendship. Of the total in service, all but 50 have British powerplants. Although turbine-powered airliner operating experience is no longer a British monopoly, as it was for more than six years, the airline hours of the three British machines continue to mount steadily, and by the date mentioned above had reached a total of 1,668,600 hours. The world's outstanding turbine engine, the Rolls-Royce Dart, had amassed more than 6½ million airline hours and was adding to this at the rate of a quarter of a million hours a month.

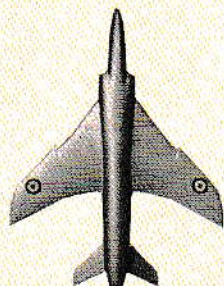
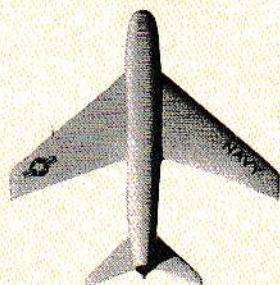
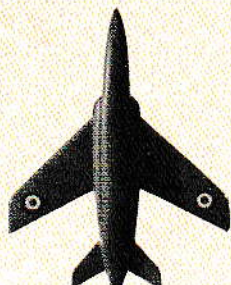
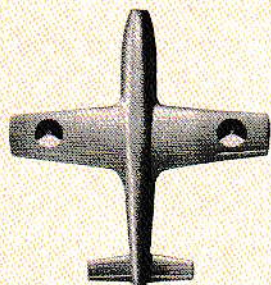
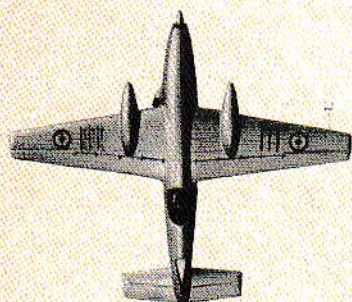
* * *



THREE-VIEW DIGEST

they are inevitably affected by the *Journal's* rather extended production schedule, and whilst it is possible to make corrections in the text up to a fairly late stage, alterations to the pictorial arrangement cannot always be so easily accomplished. In the present case, for instance, the inclusion of the Arrow was already decided upon before its development was cancelled in February.

The photographs and tone drawings below and opposite supplement those in the November 1958 edition. Though these compilations are aimed at providing up-to-date references to modern aircraft,



ALIZÉ (FRANCE)

Anti-Submarine Aircraft

Combined "hunter/killer" for carrier use by the French Navy, over 100 have been ordered. Three-seater, one Dart turboprop engine. Armament chiefly bombs and rockets.

Span: 50 feet

MACH-TRAINER (NETHERLANDS)

Conversion Trainer

Two-seater, in service with R.Neth.A.F.; 50 have also been built in Brazil. May carry underwing ordnance loads. One Nene or Derwent jet engine.

Span: 39 feet

GNAT

MK. I (G.B.)

Fighter-Bomber

Small lightweight design, has been purchased by India, Finland and Yugoslavia. Single-seater with a wide variety of underwing ordnance loads possible. Gnat Trainer (lengthened 2-seat cockpit) on order for the R.A.F.

Span: 22 feet

FURY

(U.S.A.)

Carrier-Borne Fighter-Bomber

In U.S. Navy service as FJ-4, differs from FJ-2 and -3 by deeper fuselage, broader chord wing. Various underwing loads may be carried, including guided missiles. FJ-4B is equipped with LABS.

Span: 39 feet

SWIFT

FR MK. 5 (G.B.)

Fighter and Reconnaissance Aircraft

FR Mk. 5 (silhouette) serving with R.A.F. in Germany; may have belly fuel tank and underwing rockets. F Mk. 7 (photo) used for guided weapons trials, has 3-foot greater wing span and lengthened nose. Span: 32 feet





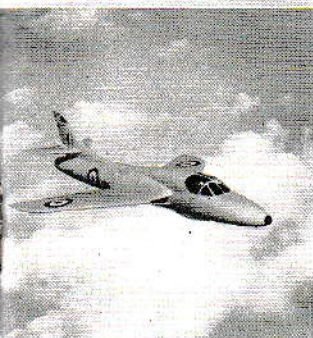
HUNTER

F MK. 6 (G.B.)

Fighter

Built in substantial numbers and sold to or built in many overseas countries; U.K. production of F Mks. 1, 2, 4 and 5 now complete. F Mk. 6 has "saw-tooth" wing leading edge and greater variety of underwing loads.

Span: 34 feet



HUNTER

T MK. 7 (G.B.)

Conversion Trainer

Developed from fighter variants, has widened cockpit and forward section to accommodate two crew side by side. Production aircraft have "saw-tooth" wing leading edge. Naval T Mk. 8 similar.

Span: 34 feet



THUNDERCHIEF

(U.S.A.)

Fighter-Bomber

In production for U.S. Air Force as the F-105B (first delivery May 1958); F-105D (single-seat) and F-105E (2-seat) will have all-weather capability. Various underwing loads may be carried; nuclear weapons carried internally.

Span: 35 feet



LIGHTNING

F MK. 1 (G.B.)

All-Weather Fighter

In production for the R.A.F., due in service 1960. Production aircraft have heightened fin and rudder. Armament is two cannon and fuselage-mounted Fire-streak guided missiles; has flown at sustained Mach 2 in level flight.

Span: 35 feet



ARROW

MK. 1 (CANADA)

All-Weather Fighter

Designed for the R.C.A.F., has flown at over 1,200 m.p.h. on test flights. Work on project stopped early 1959 through withdrawal of Canadian Government support.

Span: 50 feet



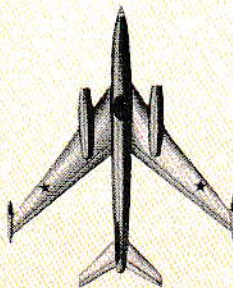
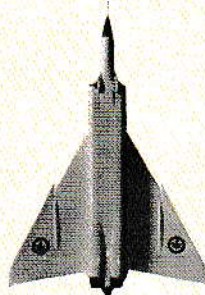
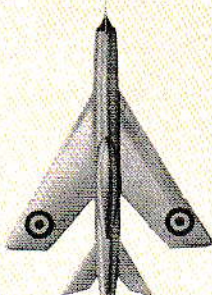
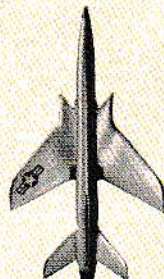
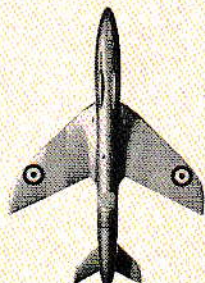
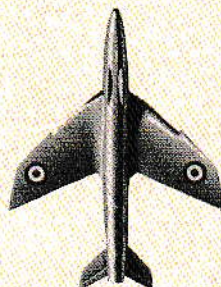
BLOWLAMP

(U.S.S.R.)

Light Bomber

First seen publicly in 1956, is probably a replacement for the IL-28 Beagle. Carries a crew of three.

Span: 57 feet



AIR DEFENCE

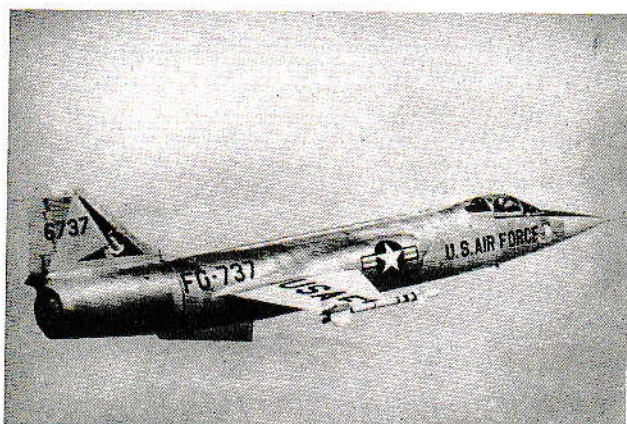
UP TO DATE

by John W. R. TAYLOR

PART TWO

CANADA'S contribution consists of many squadrons of rocket-armed CF-100 all-weather fighters. These were to have been followed by the massive 1,500 m.p.h. delta-wing CF-105, but the immense cost of this aircraft and the belief that its job can be done by missiles have persuaded the Canadian Government to abandon its production. Paradoxically, therefore, Canada is following the British policy on fighter/missile defence rather than that of her U.S. partner in NORAD.

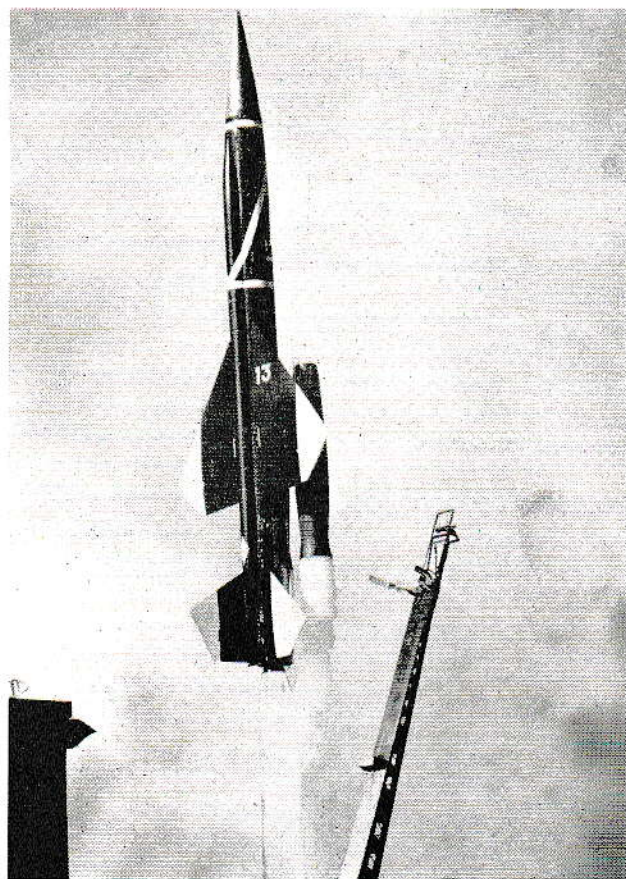
This abandoning of further piloted fighters seems unwise to many experts, but it is not entirely unrealistic. It is difficult to stretch available funds to cover the development of both fighters and missiles, and the latter have already reached a high degree of efficiency. The U.S. Army Air Defense Command, an integral part of NORAD, has at its disposal three types of anti-aircraft gun, including the extremely formidable fully-automatic 75 mm. Skysweeper, and the Nike family of missiles. Batteries of Nike-Ajax have defended U.S. cities and military installations for several years and are gradually being re-equipped with the improved Nike-Hercules. This is



Current holder of the World's Air Speed Record, the F-104 Starfighter has already used its Sidewinder missiles (seen here at the wingtip) under operational conditions.

a first-class solid-propellant two-stage rocket, utilising a radar command guidance system and with a proven lethality over a slant range of some 75 miles. Because of this comparatively short range it does not replace fighters, but is a "last-ditch" defence weapon, intended to deal with enemy raiders that elude them.

Integration of fighters and missiles is done through a fantastic electronic computing system known as SAGE (Semi-Automatic Ground Environment) which takes the radar plots, decides whether the raider should be dealt with by piloted or pilotless means and alerts the chosen fighter base or missile site. It ensures that no interception is duplicated and no raid overlooked; and ground-controlled interception service is provided from the 30 SAGE centres located throughout North America, each of which is capable of despatching and guiding the defending forces remotely from a thousand miles away.



The Boeing Bomarc surface-to-air missile—or, if you prefer, pilotless interceptor—is the first weapon of its kind in the NORAD organisation.

Even the piloted aircraft are almost automatic in operation, in that their Hughes control system can fly them towards the target by means of an auto-pilot link, fire the weapons automatically at a time and on a course that makes a "kill" almost certain and then make the break-away so that the interceptor will not fly into the wreckage.

This semi-automation, with the pilot simply taking off and landing the aeroplane and keeping an eye on its electronics, is the most powerful argument against future interceptors, because it requires little imagination to foresee these tasks being performed by "black boxes" now that fully-automatic landings are being made regularly by ordinary aeroplanes in both Britain and America. Boeing's superb ramjet-powered Bomarc missile, which is entering service with the U.S.A.F. Air Defense Command and has been chosen for the R.C.A.F. in place of the CF-105, can, in fact, be thought of best as a pilotless interceptor. It has an aeroplane configuration, is controlled by SAGE just like a piloted fighter and has hunted down and destroyed targets at ranges over 100 miles. In its developed form, it will have a 400-mile range, flying at Mach 3, with a nuclear warhead.

Bomarc offers immense attractions in terms of performance, overall cost and absence of risk to human aircrews. On the other hand, it cannot change its mind and turn away if the aircraft it is about to attack is friendly. If anything goes wrong during flight it cannot reason out why, and try to put it right; and it is by no means so impervious to electronic counter-measures as is a human pilot. These are the classic arguments against too great a reliance on missile defence and they are very important. Nor should it be forgotten that a piloted aircraft can inspect and "warn-off" intruders in peacetime, whereas a missile can only attack.

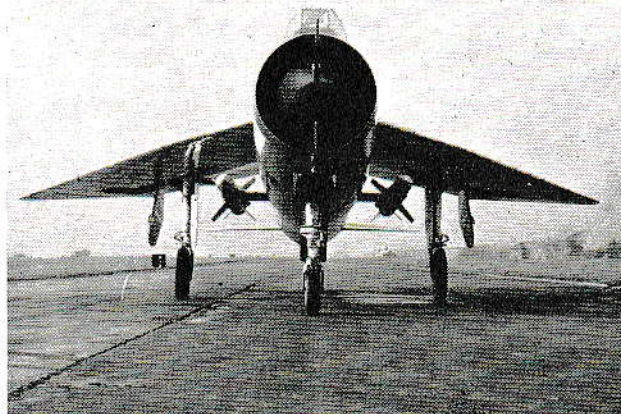
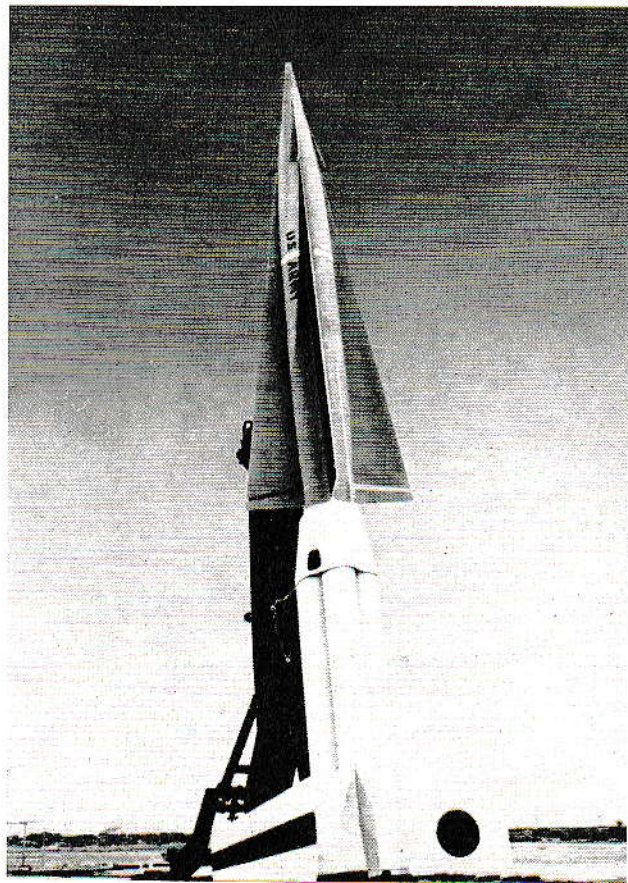


The F-89 Scorpion has served the U.S.A.F. for many years, but the latest F-89H version still carries a powerful "Sunday punch" with these Falcon air-to-air missiles in its wingtip pods.

America plans to have at least one more generation of piloted fighters. With this exception, the pattern of defence adopted by NORAD is not so very different from that of the U.K. We don't have so complex a radar warning system, but what we have is of the highest quality and is given added range by the "defence in depth" offered by our NATO partners on the continent. We don't have such a sophisticated electronic control network as SAGE; but this is just as well in view of our greater vulnerability to attack and our traditional policy of leaving a high degree of initiative in the hands of the individual pilots of Fighter Command. The Lightnings they will soon be flying are at least as good as any interceptors in the world, and the Bristol Bloodhound missiles already entering service offer a distinct advantage over even the Nike-Hercules in that they have a highly advanced semi-active homing guidance system.

The Minister of Defence has stated that Bloodhound is capable of development eventually into an anti-missile missile

The Nike-Hercules anti-aircraft missile is superseding the Nike-Ajax which has defended the United States for several years.



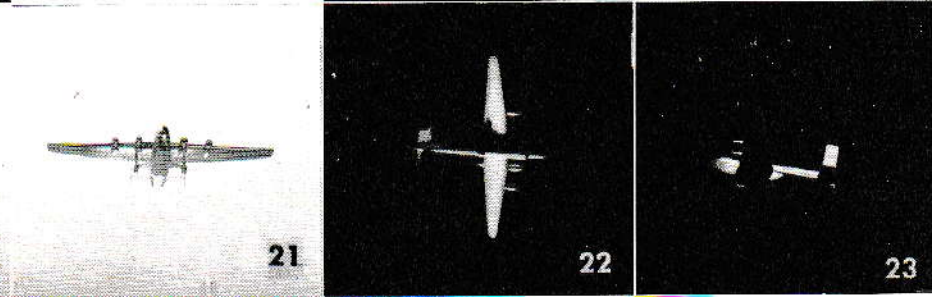
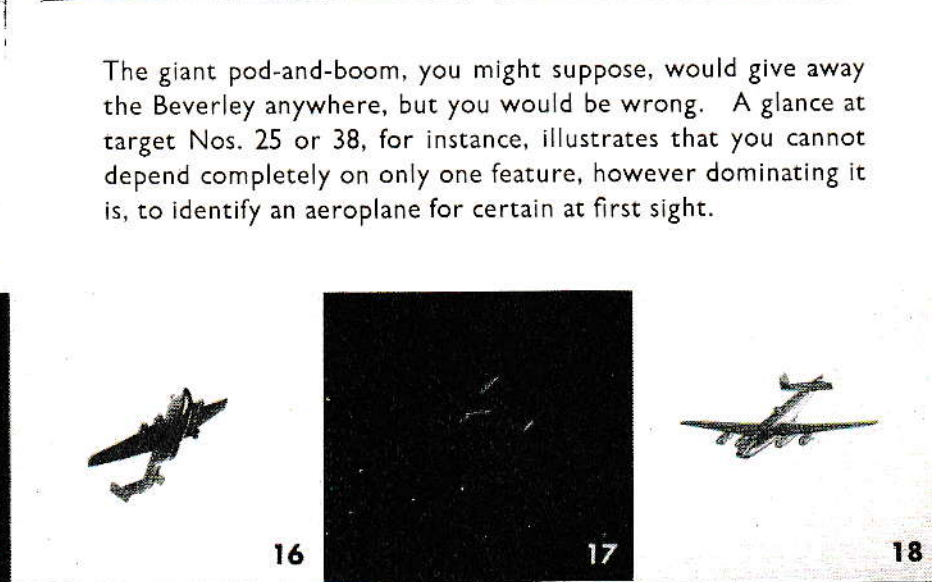
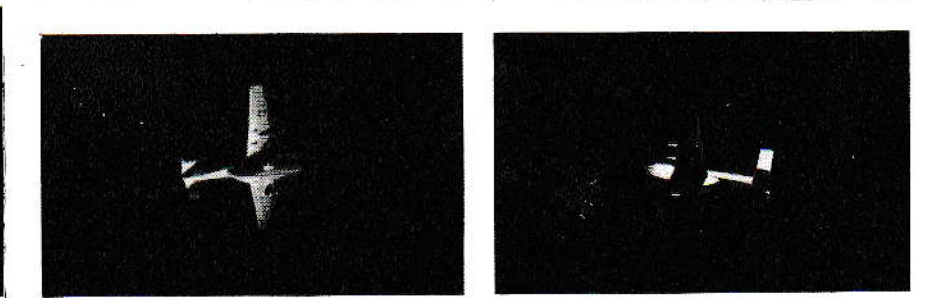
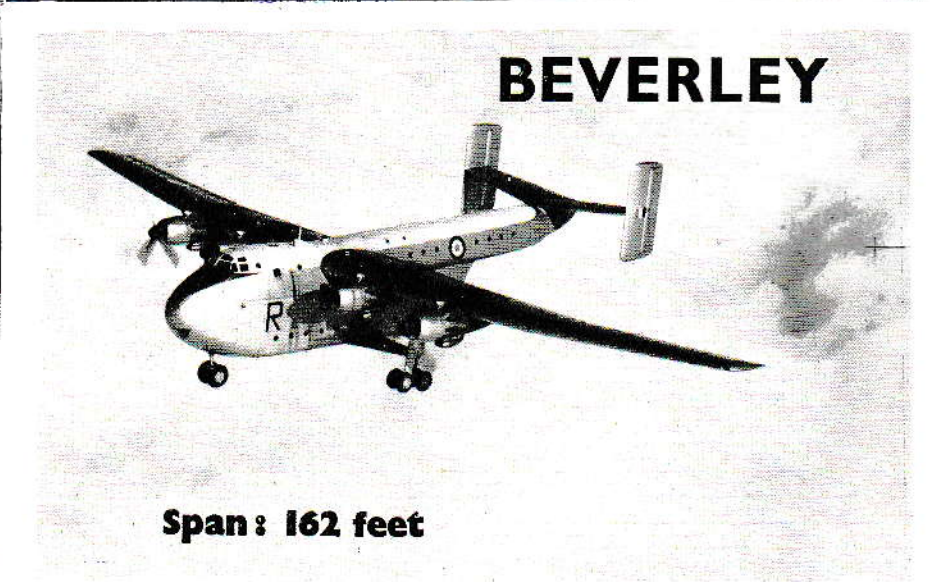
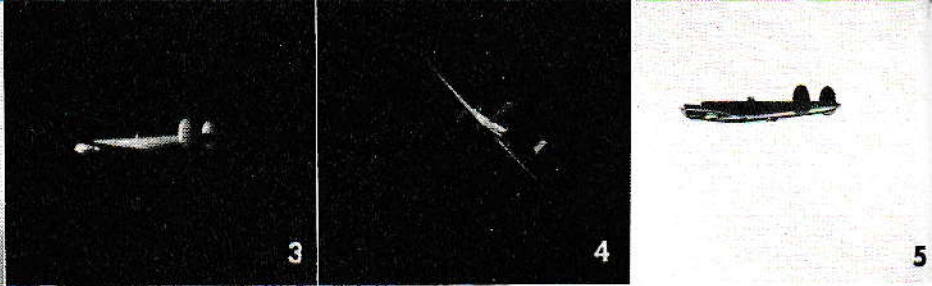
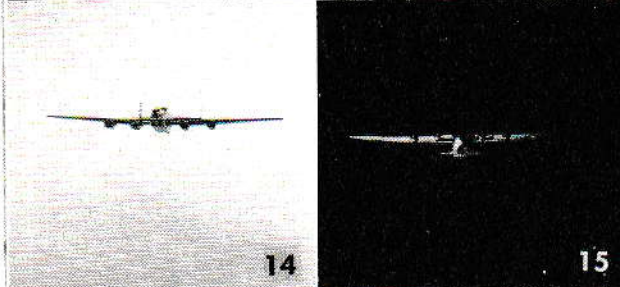
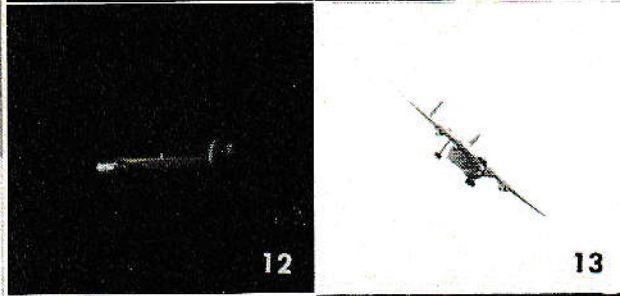
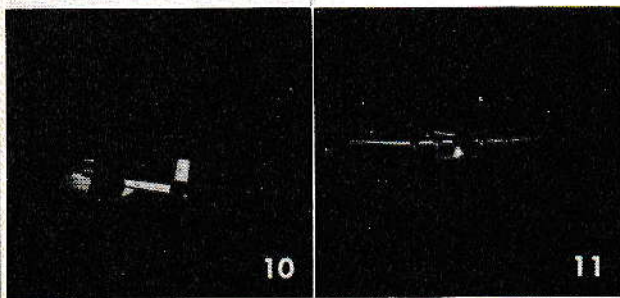
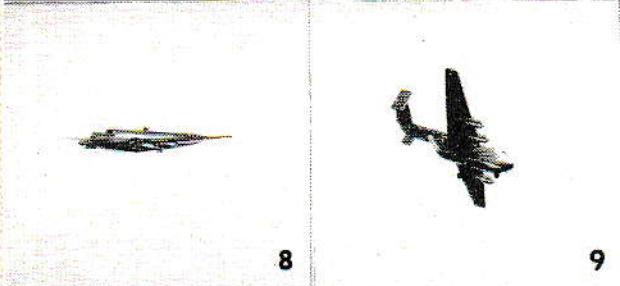
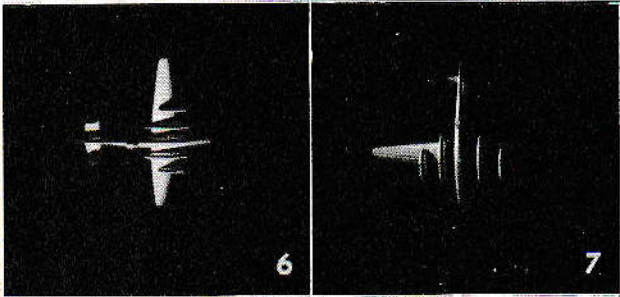
The English Electric Lightning, an all-weather fighter with a Mach 2 performance, is expected to enter R.A.F. service shortly. It has an armament of fixed cannon and Firestreak air-to-air missiles.

—and this is a remark of the most vital importance. It reflects great credit on the missile designers and supports their plea for all possible financial and political support; but it also emphasises the other side of the picture.

Until recently, we thought of the intercontinental ballistic missile (ICBM), with its H-bomb warhead, as the ultimate weapon. Now we can foresee a defence against it, based on detection of its firing by radar, computation of its trajectory, and interception by a missile that will home on the electromagnetic disturbances caused by the re-entry of the ICBM warhead into the atmosphere over the target. If we see an answer to even the mighty ICBM, is there not an answer to every automatic weapon? And might not the nation that retained a handful of piloted fighters and bombers find itself with air supremacy in a world full of misguided missiles?

Air defence at sea: a close-quarters look at the "business end" of the U.S. Navy's guided missile cruiser U.S.S. Canberra. Note the enormous searchlight-style radar antennae and the batteries of Terrier missiles.





The giant pod-and-boom, you might suppose, would give away the Beverley anywhere, but you would be wrong. A glance at target Nos. 25 or 38, for instance, illustrates that you cannot depend completely on only one feature, however dominating it is, to identify an aeroplane for certain at first sight.



24



25



26



27



28

SHACKLETON 2



Span: 120 feet



29



30



31



32



33



34

The absence of a fixed (and substantial) undercarriage on the Shackleton is no certain guide to identifying it in this lesson, as views 30 or 45 will tell you. Which of them is a Shackleton? Perhaps both of them are—or neither. Clearly you must know each as a whole before you can accurately tell them apart.



35



36



37



38



39



40



41



42



43



44



45



46

UKRAINA

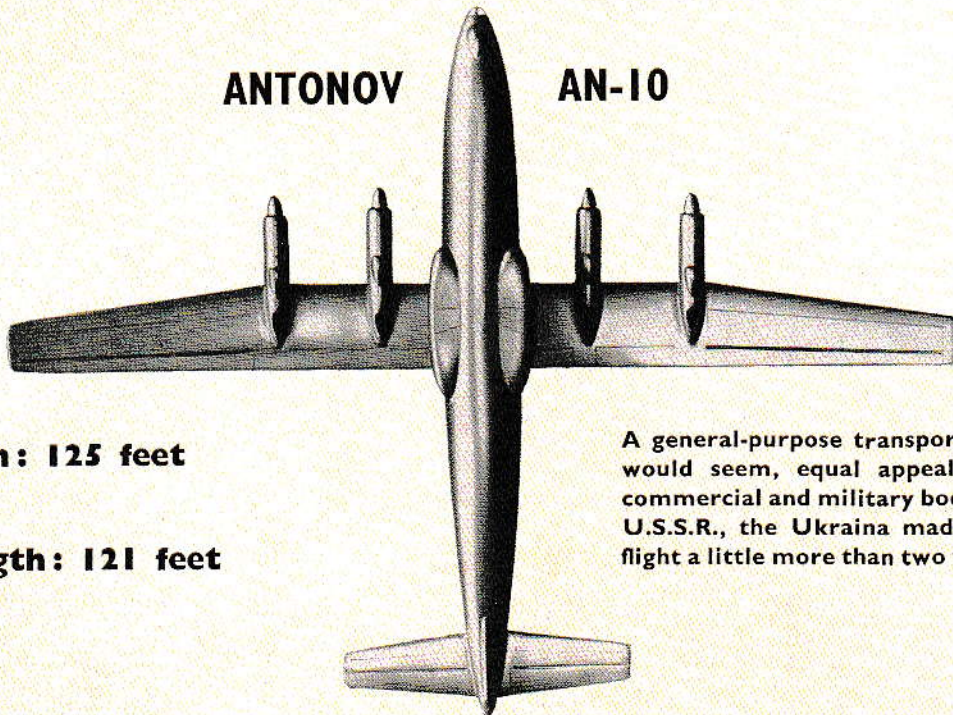
NATO Code Name: CAT



Soviet passenger/freight transport

ANTONOV

AN-10



Span: 125 feet

Length: 121 feet

A general-purpose transport with, it would seem, equal appeal to both commercial and military bodies in the U.S.S.R., the **Ukraine** made its first flight a little more than two years ago.



The photographic 3-view will provide the main recognition features, and as you systematically work out each of the target views many others will reveal themselves. Begin with an easy target, use the key to work it out, and having satisfied yourself of its identity write down "Ukraine (Cat)" opposite its number on a prepared list. Look out for jokers, and when you have solved all the targets, check with the solutions on the rear cover.



1



2



3



4



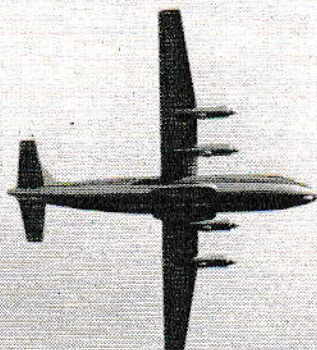
5



6



7



9



10



11



8



12



13



14



15



16



17



18



19



20



21



22



23



24



25



26



27



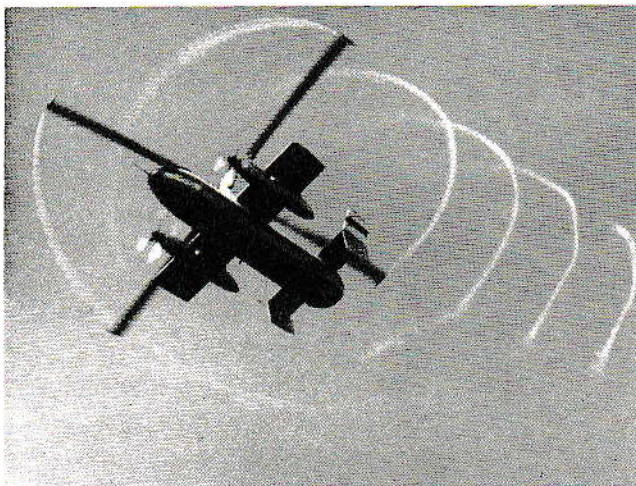
28



29



30



Cover Picture: The Fairey Rotodyne, tracing a spiral in the sky as it lights the tip-jets of its four-blade rotor in preparation for the transition from forward to hovering flight.

SOLUTIONS TO TESTS AND LESSONS IN THIS EDITION

UKRAINA

All the target views are of the Ukraina (Cat) except:

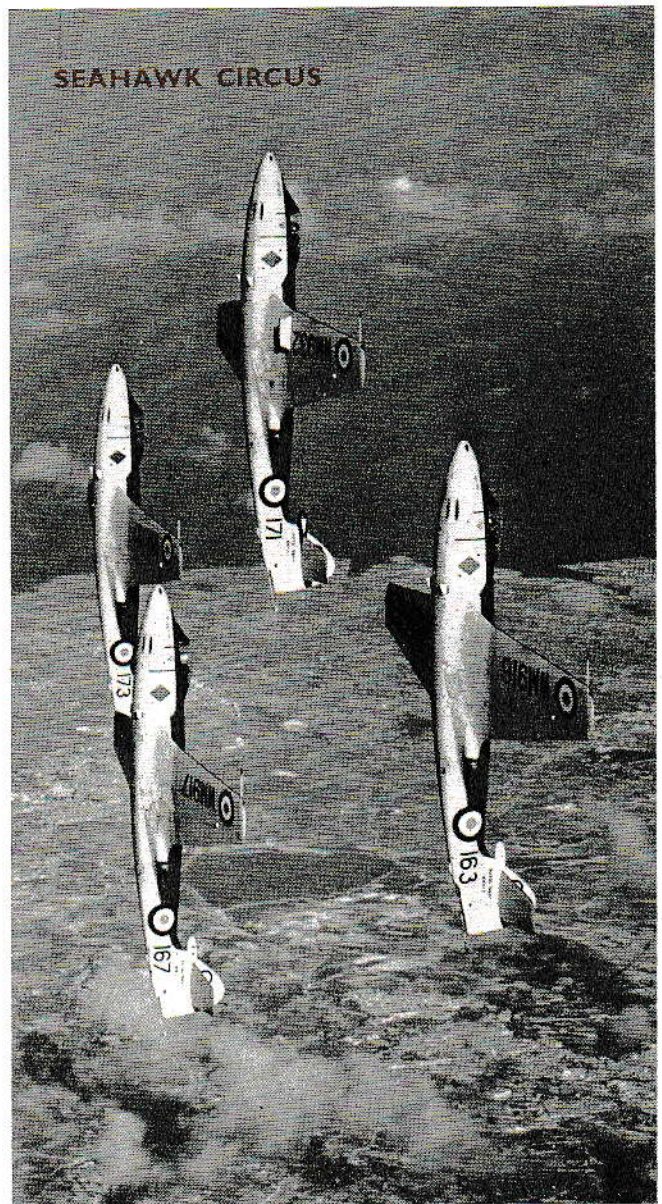
- No. 8. Cargomaster
- No. 11. Cargomaster
- No. 24. Moscow (Coot)
- No. 29. Hercules

FLASHLIGHT-A

All the target views are of Flashlight-A except No. 12, which is a Sud-Aviation Vautour.

BEVERLEY AND SHACKLETON

- | | | |
|----------------|----------------|----------------|
| 1. Beverley | 17. Beverley | 33. Shackleton |
| 2. Shackleton | 18. Shackleton | 34. Beverley |
| 3. Shackleton | 19. Beverley | 35. Beverley |
| 4. Beverley | 20. Shackleton | 36. Beverley |
| 5. Shackleton | 21. Beverley | 37. Beverley |
| 6. Shackleton | 22. Shackleton | 38. Beverley |
| 7. Shackleton | 23. Beverley | 39. Beverley |
| 8. Shackleton | 24. Shackleton | 40. Shackleton |
| 9. Beverley | 25. Shackleton | 41. Shackleton |
| 10. Beverley | 26. Beverley | 42. Shackleton |
| 11. Beverley | 27. Beverley | 43. Shackleton |
| 12. Shackleton | 28. Beverley | 44. Shackleton |
| 13. Beverley | 29. Shackleton | 45. Shackleton |
| 14. Shackleton | 30. Beverley | 46. Beverley |
| 15. Beverley | 31. Shackleton | |
| 16. Beverley | 32. Shackleton | |



THOSE WERE THE DAYS!!

