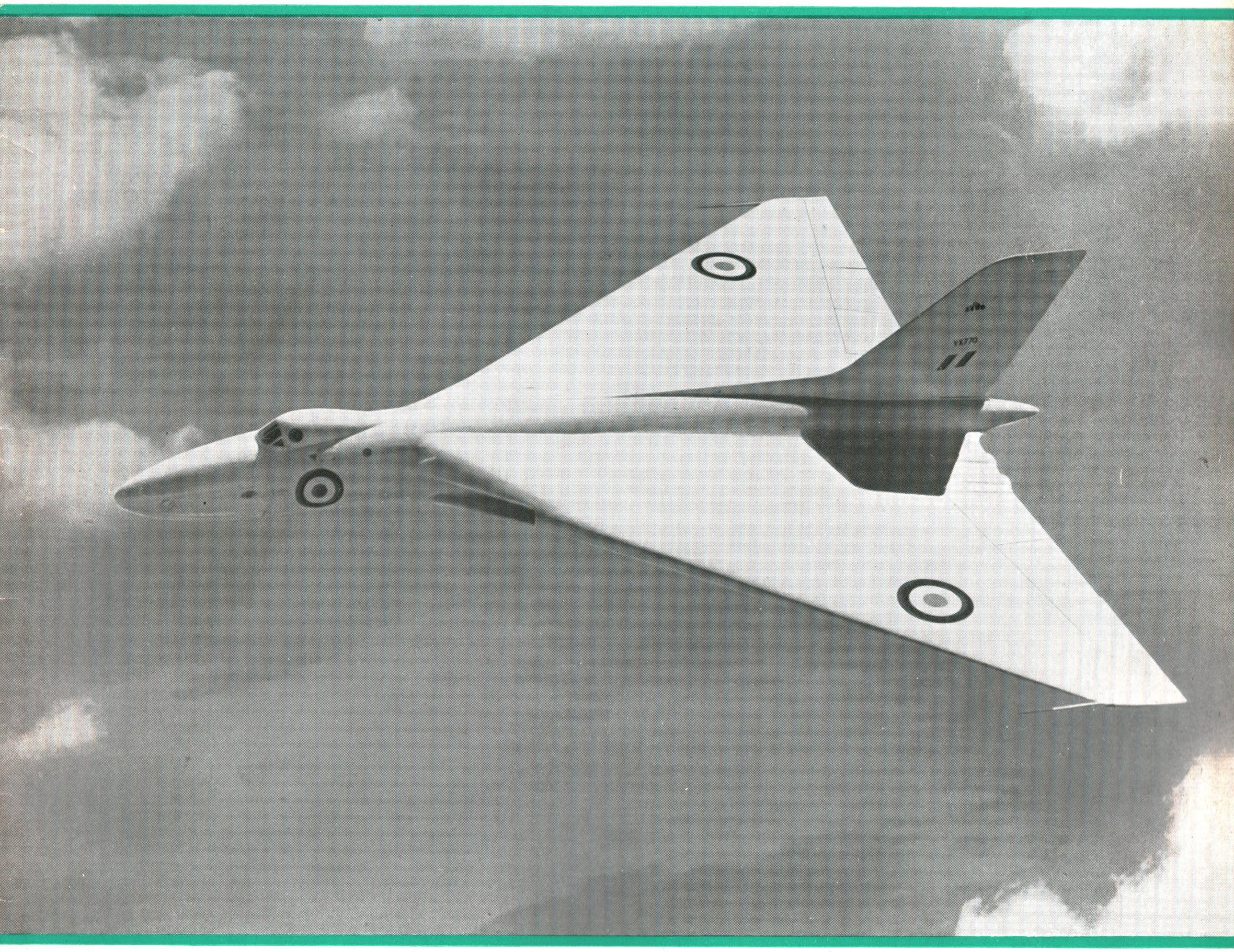
Richardson

JOINT SERVICES

RECOGNITION

Journal



Vol. 7 DECEMBER 1952 No. 10

AMBASSADOR
(ELIZABETHAN)

Airliner by Airspeed

DECEMBER 1952 **Vol. 7 No. 10**

JOINT SERVICES

RECOGNITION JOURNAL

The *Joint Services Recognition Journal* s a monthly publication prepared and produced by the Assistant Chief of Air Staff (Training), Air Ministry, in collaboration with the Ministry of Supply—Controller of Supplies (Air)—Air Technical Publications. Contributions and correspondence should be addressed to the Editor, *Joint Services Recognition Journal*, Air Ministry, Room 213, Richmond Terrace, Whitehall, London, S.W.1.

CONTENTS

Feature	Page
Avro Vulcan (Cover)	217
Ambassador (Elizabethan Class)	218
The Importance of Procedure or Every Picture Tells a Story (Editorial)	219
Russian Destroyers—Gordy Class	220
Character Study No. 31—Meteor NF Mk.11	221
Elementary Spotting	222
Briefs	223
Sea Hawk and Banshee	224-225
Books for Christmas	226
Impressions of Farnborough, 1952	227
New Shapes at Farnborough	228
U-IL-28	230
Heat Barrier	231
Hawker Hunter—Close-Up	232
Spot the Centurion!	234
Sillographs	235
Exercise ' Shackleton '	236
Advanced Spotting	237
Solutions to Tests and Exercises	238
Index to Volume 7 (New Series)	239

The Importance of Procedure OR Every Picture Tells a Story

RECOGNITION TRAINING is not usually associated with hard discipline and strict compliance with the letter of the instruction, indeed, there are some who believe that the less discipline in it the better. Nevertheless, it is a fact that a disciplined procedure increases the effectiveness of some kinds of recognition training because it means that more gets done more thoroughly in a given time.

Let us consider those specially printed devices called Translators, which are sometimes misunderstood—if not misused. Without going too deeply into theory, we want to stress that they are not just a collection of illustrations to look at casually once in a while, nor are they intended to be cut up for projection, or filed away in libraries and gen-books. Nor, incidentally, held by pupils for private study. They are, in fact, training instruments, ready to give good synthetic recognition experience *provided* they are used properly. Which brings us back again to our title.

The saying " every picture tells a story " is very true of recognition training. But that story has to be " dug out " and " taken in " by the pupil himself : no one can do it for him because much of the story (the visual experience) is absorbed unconsciously.

The Translators (and for that matter, the Tutors, Trainers and Teachers which we print in the *Journal*) are designed to make us " dig it out " and " take it in "—to make us look " with intent " at pictures of aeroplanes, ships or tanks, to make us work over the visible details and so become familiar with them. To identify the object in the picture we must look at this feature, consider that one, observe this shape carefully and discriminate between various alternatives and so on, and so become familiar with its shape ; and thus to name it, not once, but many times over until names and shapes begin to stick in the memory (which they do quite soon). The memory, incidentally, is greatly aided by the writing down of answers. Without the method and accuracy given by proper procedure, the picture fails to yield its full story and the lesson is only half-learnt.

If you are already an expert in recognizing a particular group of targets you may not need much Translator experience, though it would do no harm to work them through and may, in fact, do good : the more experience you already have the less time it will take anyhow. On the other hand, if you are not greatly experienced you can hardly have enough of them—but always under the guidance of an instructor who should set them as lessons for a definite period. This also applies, incidentally, to the exercises appearing in the *Journal*.

At this point we should perhaps address ourselves to instructors. The procedure suggested at present for the kind of exercise under discussion, is as follows : The pupils are required to write their names at the tops of their papers together with the number or name of the exercise ; the numbers of the " target " pictures should then be listed. The method of translating is next explained and before the pupils are set to work to identify each picture they should be advised to do the easiest ones first and return to the more difficult ones later : in this way too much time is not wasted over difficult views which may be more easily interpreted when some experience has been gained. The first few exercises should be checked closely to ensure that care is being taken to identify accurately. When the instructor is satisfied on this point, the pupil can be set to work " against the clock " and spot checks only need be applied to future work.

If the pupil is given the exercise to do in his spare time, or given the solutions to check with his own results as he goes along, or if he is not impressed with the need for accuracy and does not write down each answer, or skims through the exercise, good results cannot be expected. The discipline of a set procedure is essential in obtaining the most out of such trainers as the Translator.

Russian Destroyers—Gordy Class

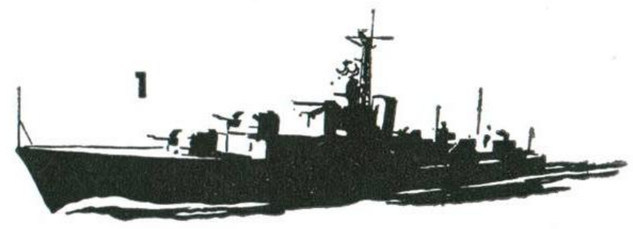
Our larger illustration and silhouette No. 5 are of the Gordy class destroyer. With their aid, can you identify which of the remaining illustrations are also of that ship? Solutions on page 238.

The Gordy class destroyer is of pre-war design. Her lines, like those of the Kirov cruisers, seem to suggest some Italian influence. Here are some visual points to watch for: (1) Low, squat, capped funnel, trunked forward and backing on to a mass of superstructure which tends to make it look "faired"; (2) two polemasts; (3) a "round down" at the stern for minelaying.

A number of Gordy destroyers—including the class ship—were lost during the war.

We shall feature the improved Gordy—a two funnelled ship—later. Some approximate figures:—

Displacement: 1,650 tons. Length: 375 ft.



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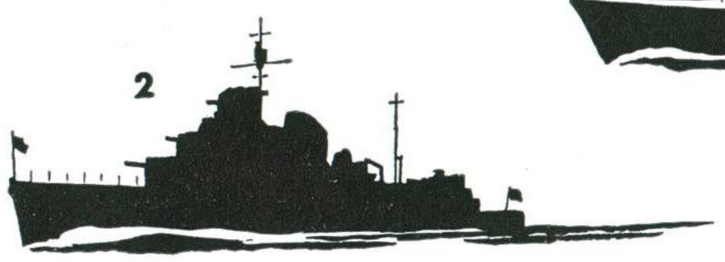

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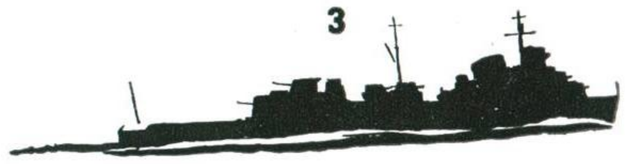

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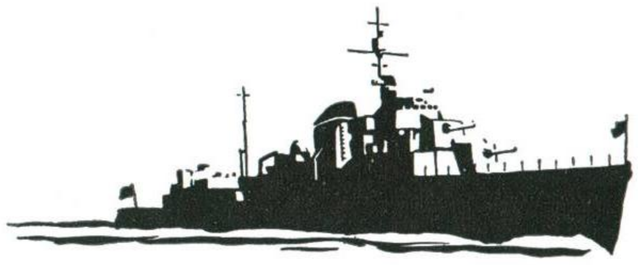

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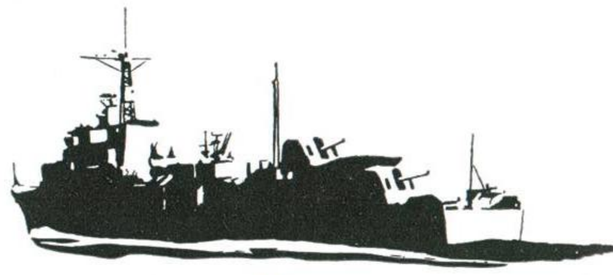

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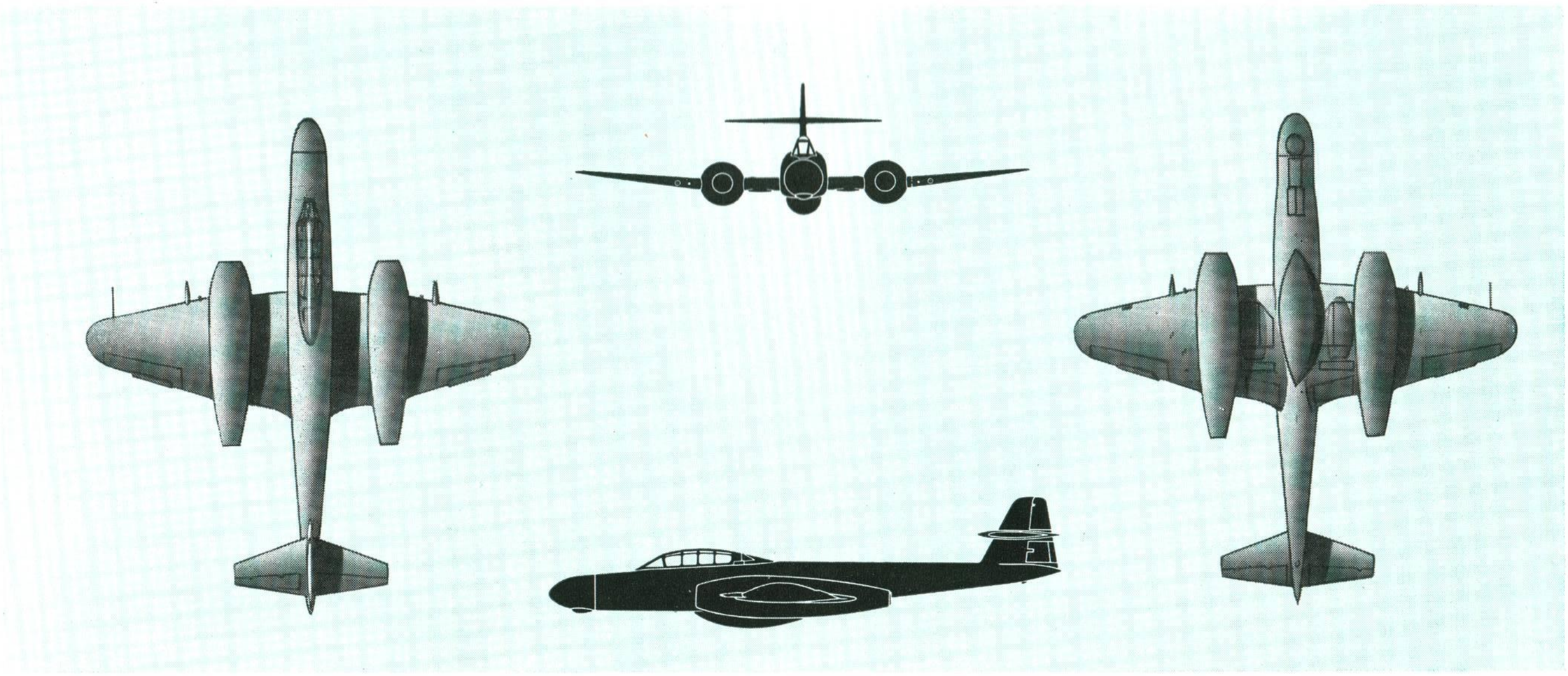
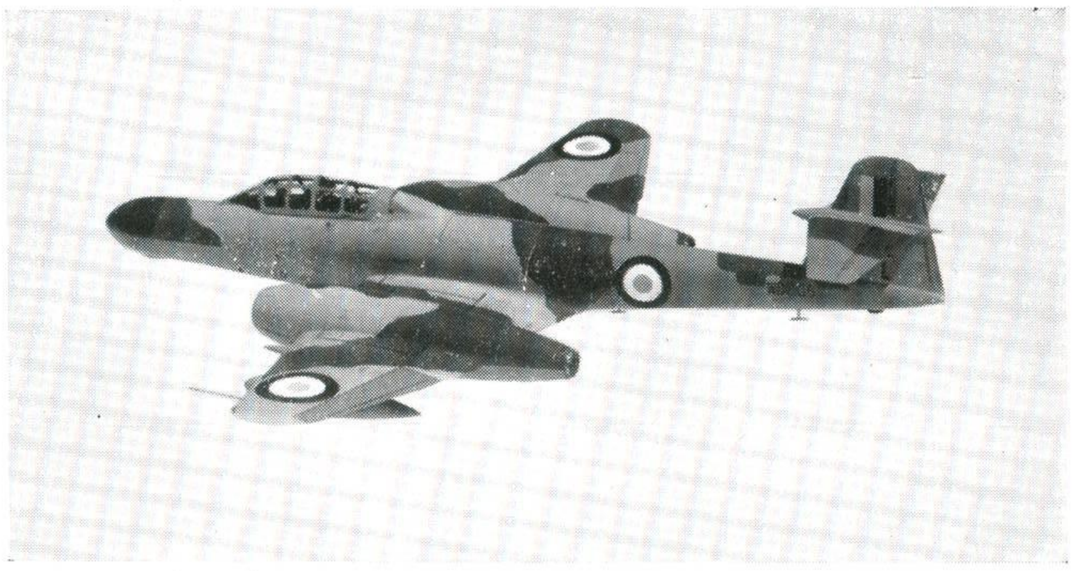


Character Study No. 31 — THE METEOR NF 11

THE GLOSTER-ARMSTRONG WHITWORTH METEOR NF 11—to give complete and proper credit—is easier to tell in the sky than any other of the famous stable. Her character of course lies entirely in the long, forward-reaching, almost yearning, nose. This dominant feature stamps the NF 11 at almost all angles except directly astern.

The aircraft is exceptionally well balanced and harmonious from an optical point of view ; the wings spreading out at about half-way along the fuselage ; the two huge Derwent motor spindles ; the belly tank ; and, sometimes, the pair of auxiliary tanks beneath the wings. Unlike other members of the family, the wings appear well able to support the fuselage and other parts ; and there is a general air of spindle, or tubular like, forms to lend the machine an optical aspect of smooth speed.

The fuselage is a singular shape. Starting with the protruberant nose (which looks like the cap of a fashionable fountain pen), there is a visible swelling immediately aft of the nose cap where the cockpit is situated and the long curving cockpit cover—thrust well out in front of the wings—is a very distinctive feature, which is, as it were, complemented by the deep bulge of the belly tank set somewhat behind it. Aft of the wings the fuselage tapers to a sharp point, but in side views the top line is almost horizontal.



The tail unit, as on all Meteors, looks a little uncomfortable, as if it has got left behind and has just managed to catch up and cling to the end of the fuselage. The fin and rudder is a bold overall shape, with a flattish rounded top (much more rounded than some published silhouettes show it) with a steeply rising fin and an even steeper falling rudder line. The angular tailplane is set, without dihedral, half way up the fin.

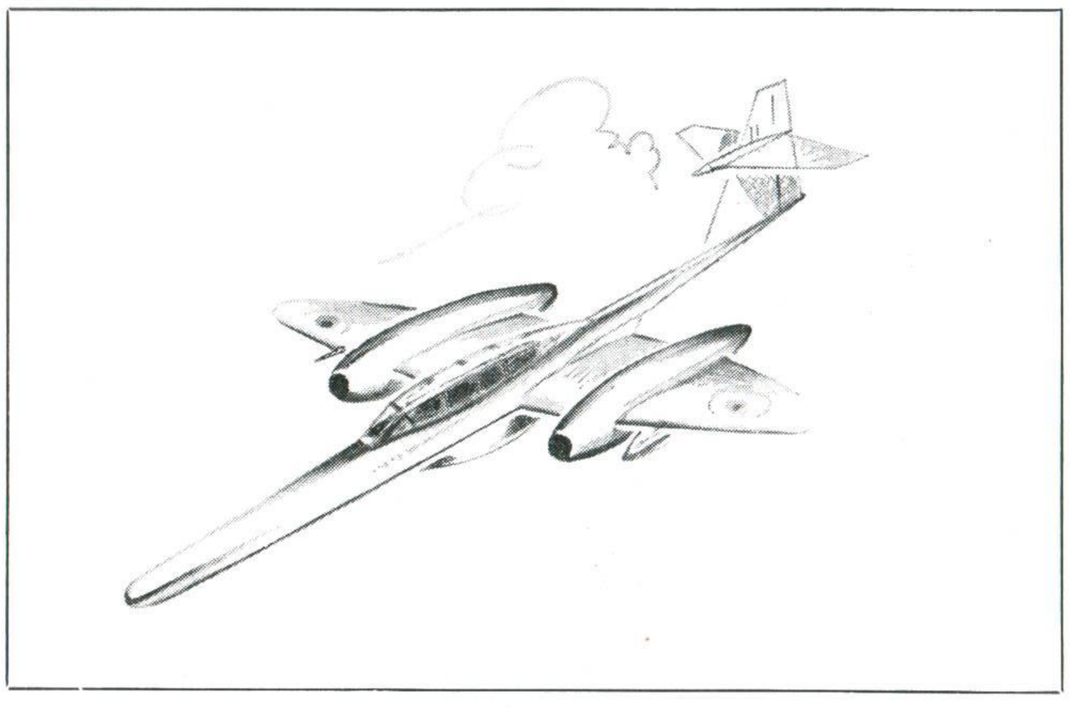
The wings, with dihedral on the outer panels, are curve-tipped and divided up by the great engine spindles —shapes which bulge top and bottom and reach from well in front of the leading edge to far behind the trailing. All in all it is, as we have said, a nose-dominated aircraft of slim and graceful proportions.

The Meteor NF 11 first flew in 1950 and is the standard night fighter in the R.A.F. Basic figures for it are :

Span : 43 feet.
Length : 48 feet 4 inches.
Engines : 2 R.R. DERWENT TURBOJETS.
Armament : FOUR 20mm. CANNON.
Maker : ARMSTRONG WHITWORTH.
Function : NIGHT FIGHTER.

C. H. GIBBS-SMITH

. . . a nose-dominated creature . . .



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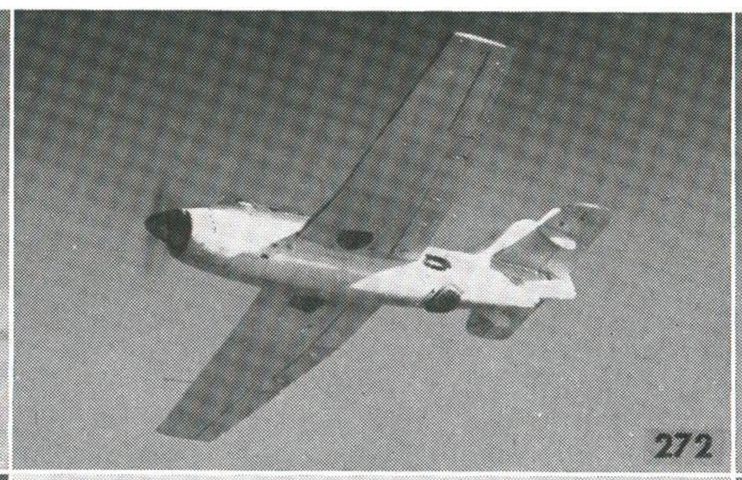
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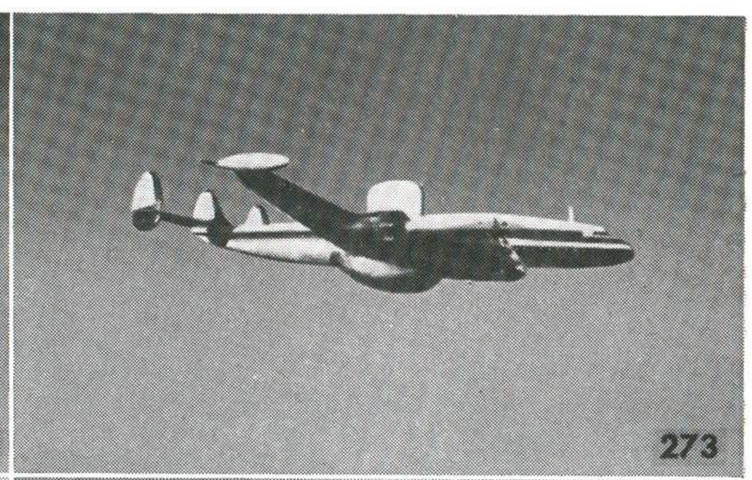
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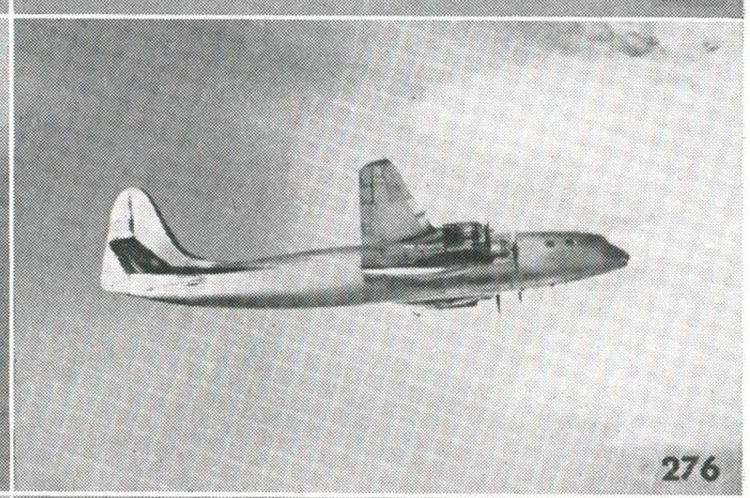
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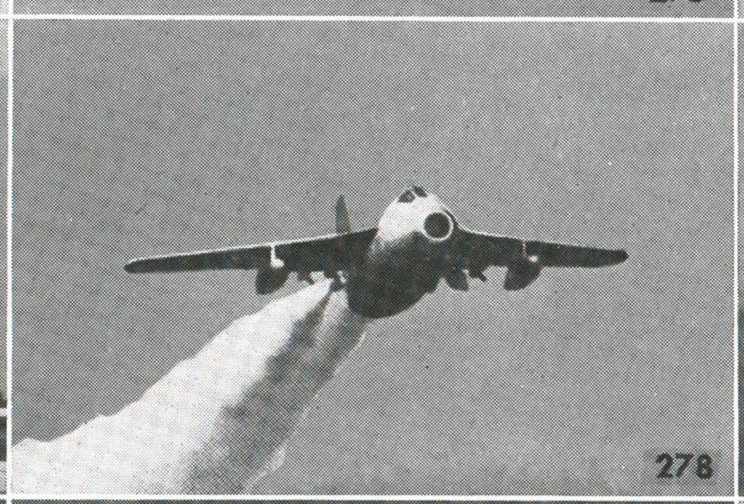
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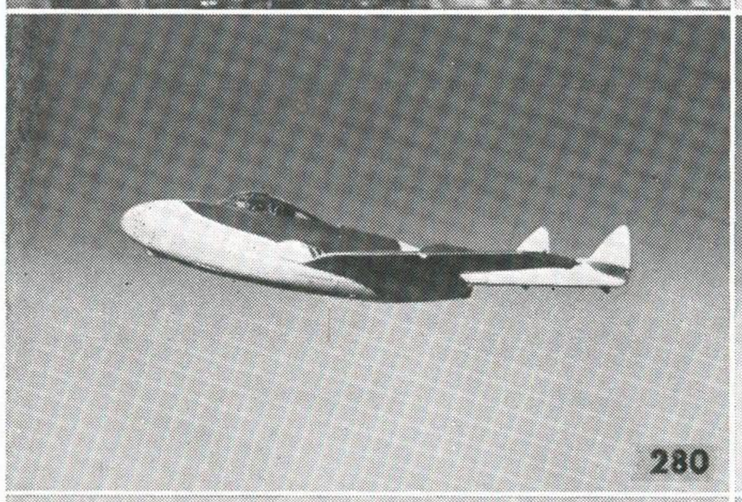
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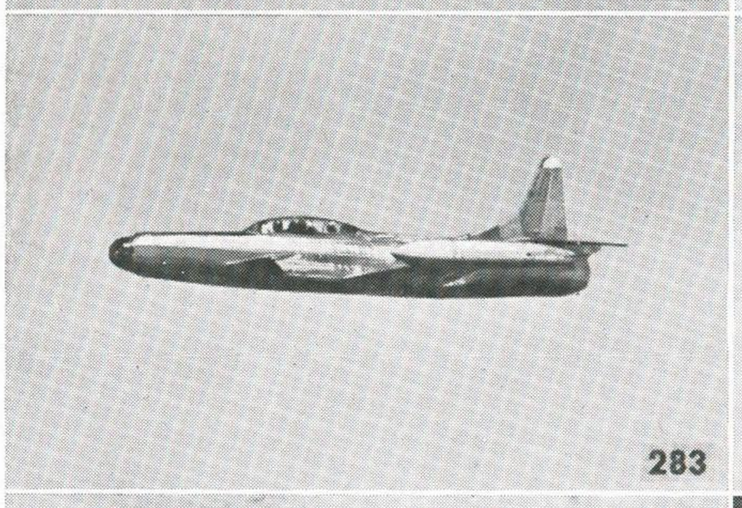
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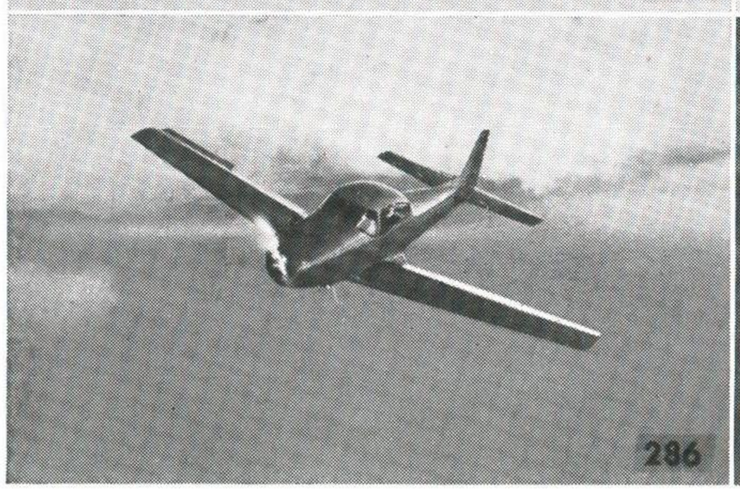
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287

BRIEFS

Rising to the Occasion

Looked at sideways, the Bristol 173 helicopter is a very long object with short legs and a stumpy tail. Length of the body is in fact 78 feet, and 10 to 13 passengers, plus a crew of two, can be carried. The loops just above the undercarriage legs are not for external strap-hangers, but are oleo balance pipes. These are connected through the fuselage to the opposite wheels and serve to equalize the ground pressure on each leg, and combat ground resonance. They will probably be removed later. Either of the two Alvis Leonides engines, which are geared to a sychronized shaft, can be used independently to drive the twin rotors. Incidentally, below the Bristol 173 in the background of this picture, readers may be able to distinguish left to right : Canberra, Gannet, Canberra, Canberra, Javelin, Meteor, Sea Hawk, and Valiant.

* * *

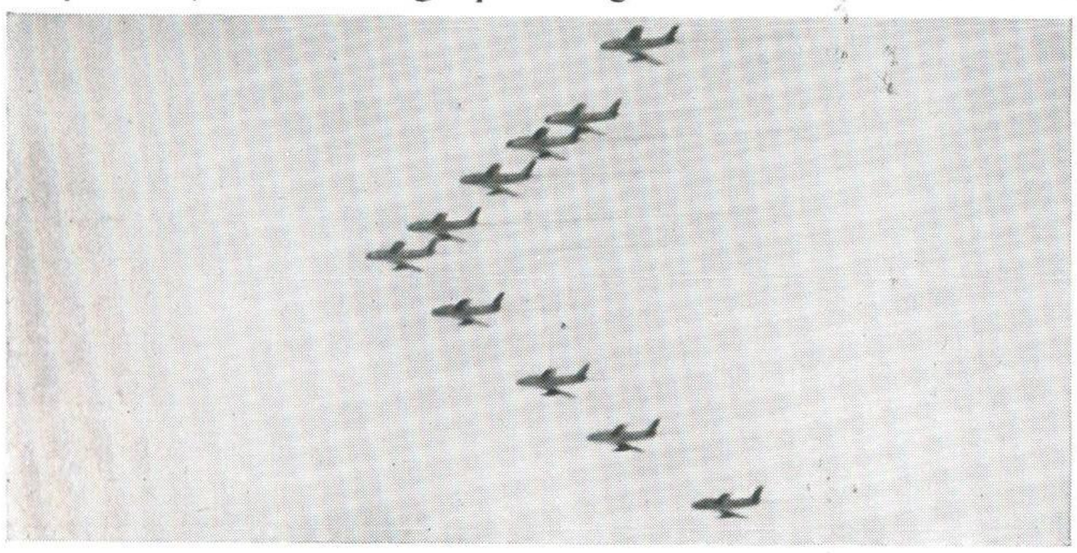
New Moons

The Society of British Aircraft Constructors report the fact that British designers are now contemplating crescent-shaped wings with swept back inner sections cranked forward again towards the tip. The swept sections would have delta characteristics and house engines, fuel, and undercarriage, whilst the outer sections would be straight and razor thin towards the tip ; the object being to incorporate the advantages of both types of wing into one design. The nearest British example already in existence leaning towards these characteristics is the Valiant.

* * *

Tropical Fish

Looking more like fish than fighters there is, on close inspection, no mistaking a prowling formation of F-86 Sabres.



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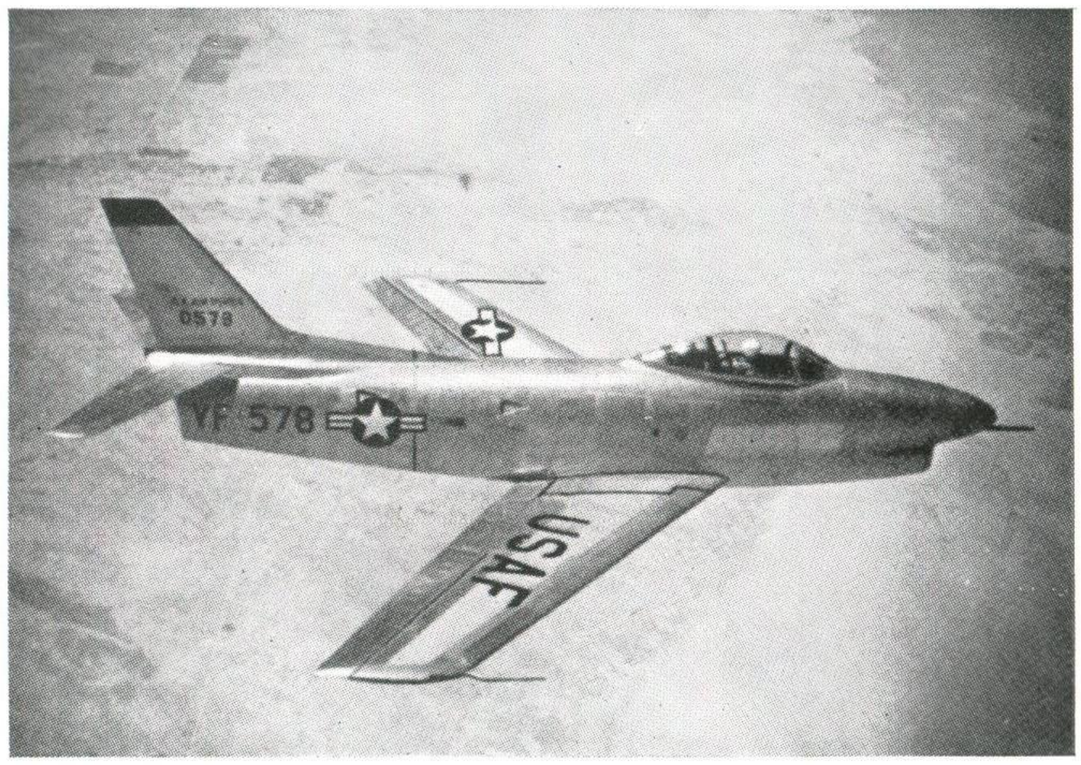
Comet 3

With Series 1 Comets in service since early this year, and production of 44 passenger Series 2 under way, de Havilland report that Series 3 is now in an advanced stage of design and is expected to fly in 1954. The new Comet will be an enlarged version of earlier models with an 18 ft. longer fuselage and will cruise 58 to 78 passengers at 500 m.p.h. Rolls-Royce Avons will supply the power at 9,000 lb. static thrust. Production Comet 3's should begin to appear in late 1956, and three, with an option for a further seven, are on order for Pan American Airways.

Sharper Sabres

The North American F-86D Sabre is now in service with U.S.A.F. Main visual difference from the F-86A Sabre is in the re-positioned air intake under a pointed spinner-like nose. The nose carries radar for airborne interception.



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Convair F-102

New supersonic delta wing fighter to be produced for U.S.A.F. is the Convair F-102. No details are yet available, but the aircraft is designed for " very high speeds in the stratosphere and incorporates significant improvements in electronics and armament ". Convair's previous XF-92A research delta has been flying extensively since 1948.

* * *

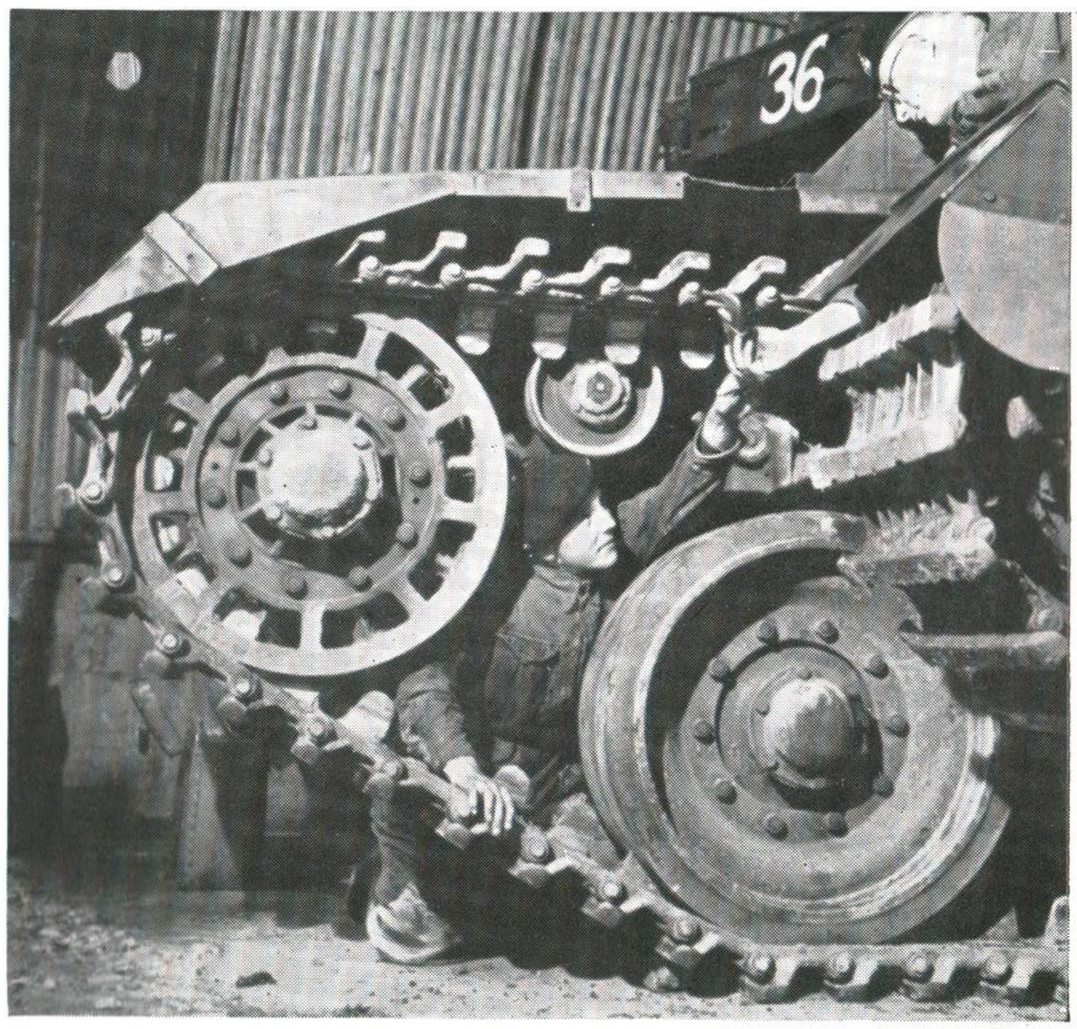
Correction

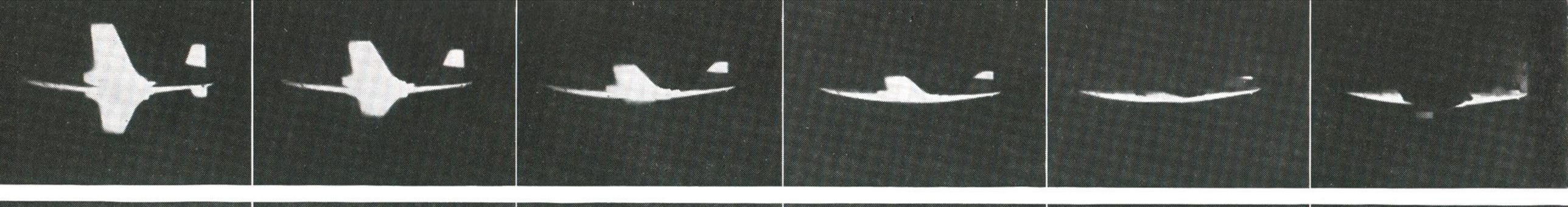
We regret that in the article " Night Interception and Visual Recognition " in the September, 1952, *Journal*, the identity to the aircraft in the left-hand strip of night views on page 154 was incorrectly given. This strip shows a TU-4 (B-29 or Washington) and not a B-50 as stated, the latter having one exhaust only on the port underside of each engine. We shall illustrate them both side by side later on.

* * *

Spanner in the Works

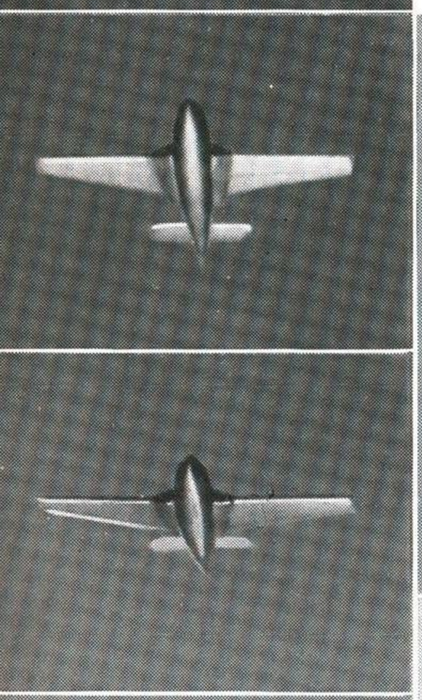
Sandwiched between the idler, first road wheel and front track return roller of a Centurion (skirting plates removed), a tank trainee is handed the wherewithal for tightening things up.

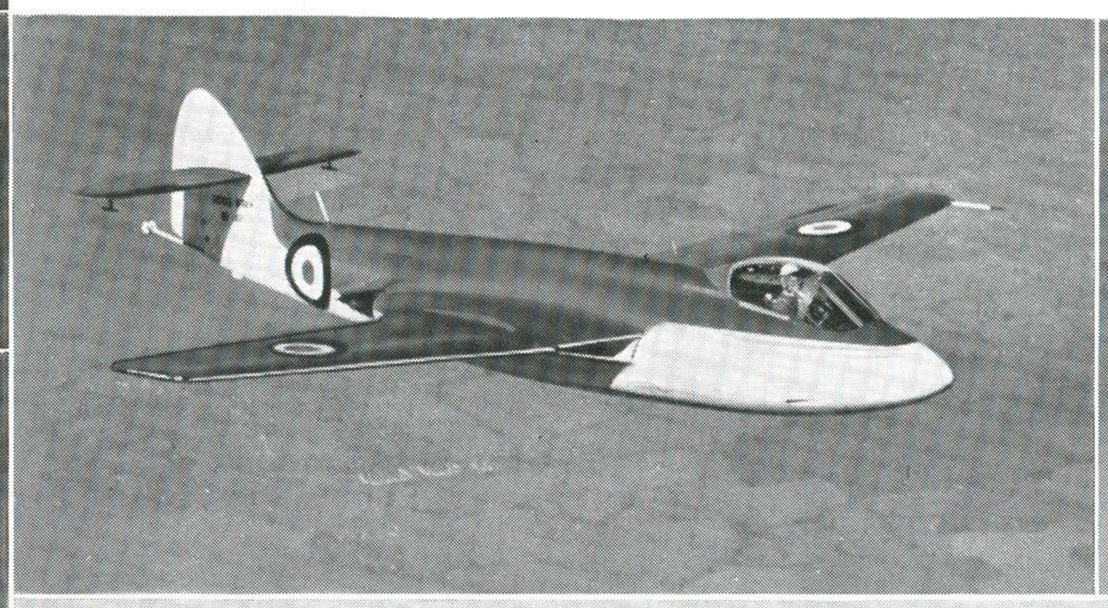


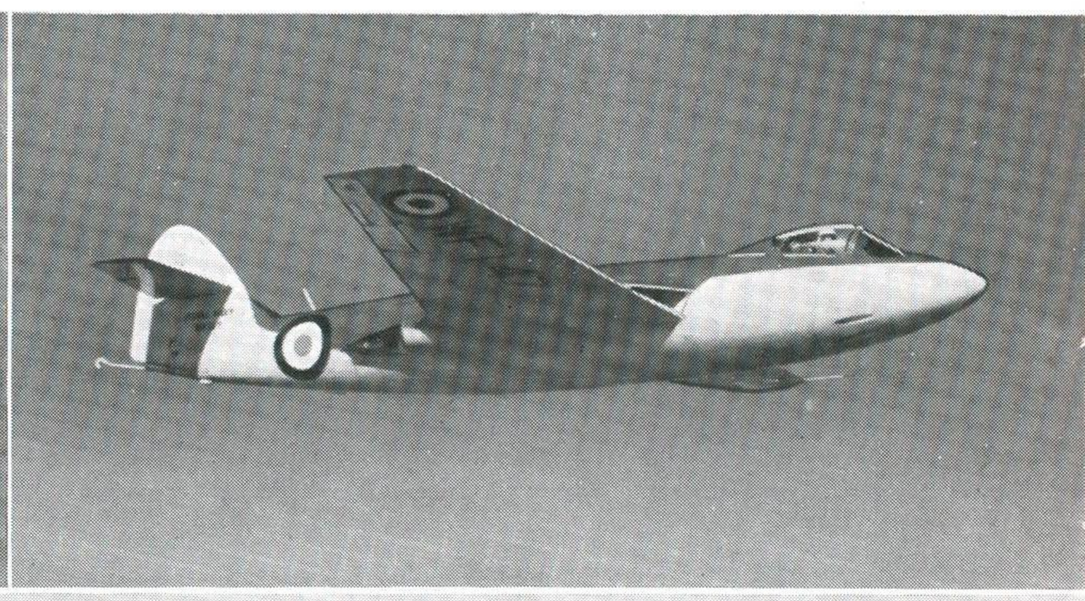


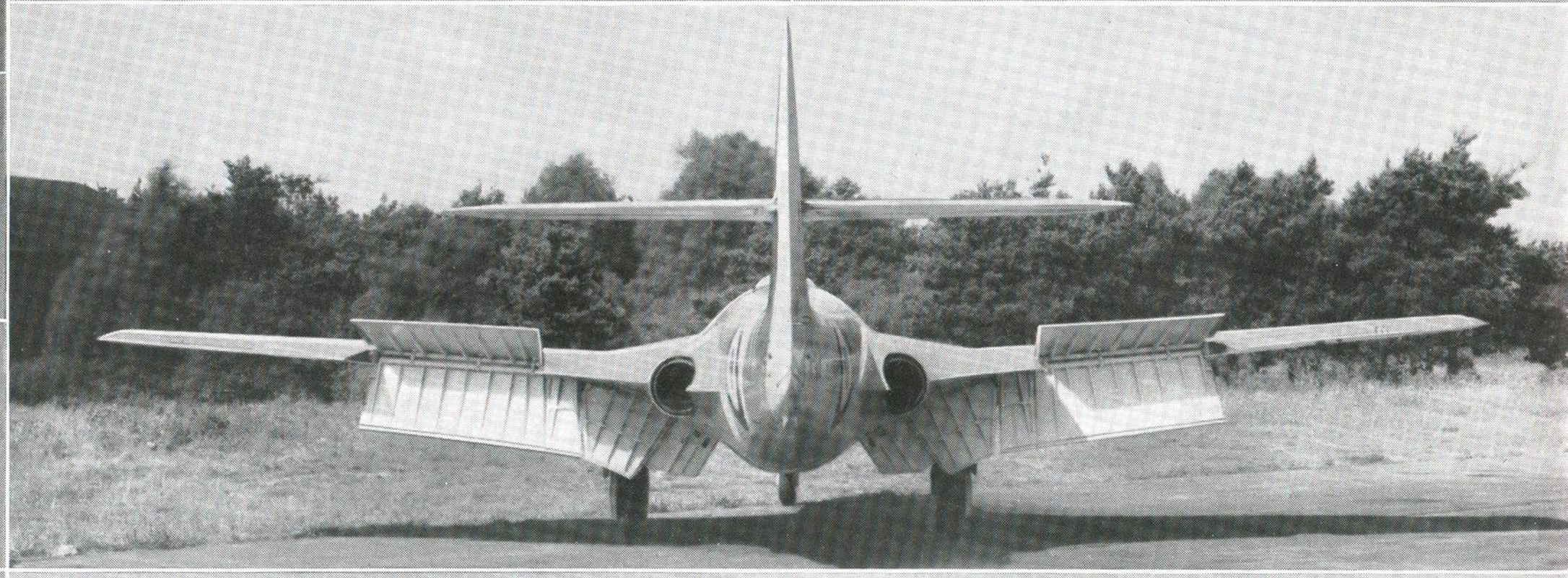
SEAHAWK (R.N.)

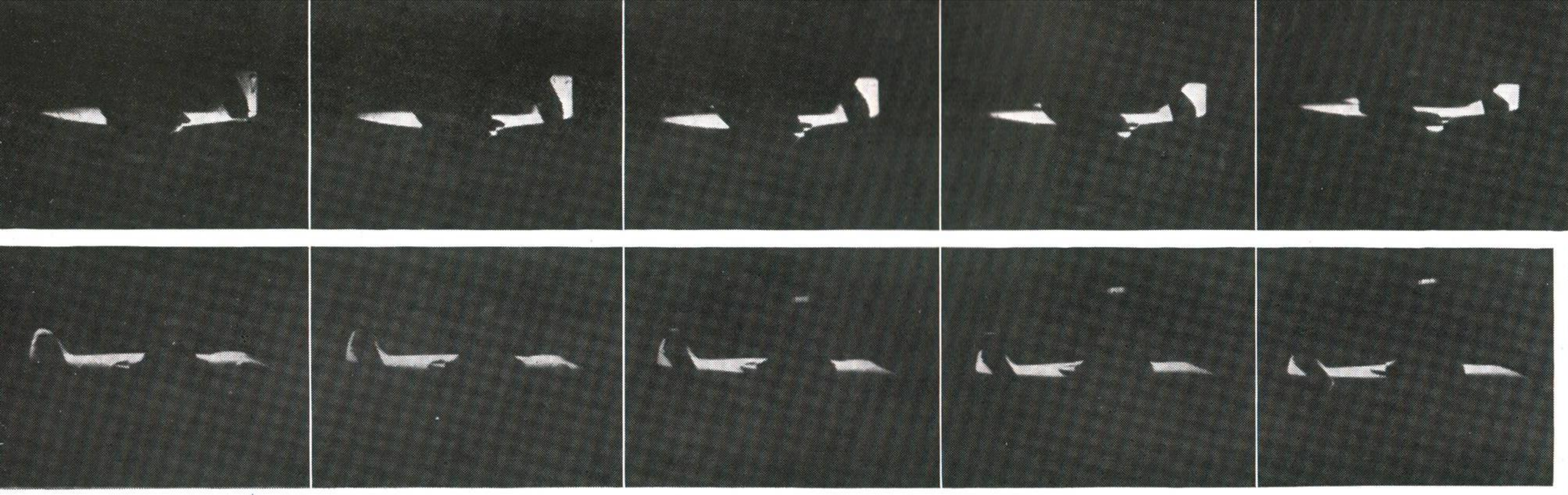
Two carrier-borne fighters of the same performance and shape group. down the vertical strips and to and fro along the horizontals. When





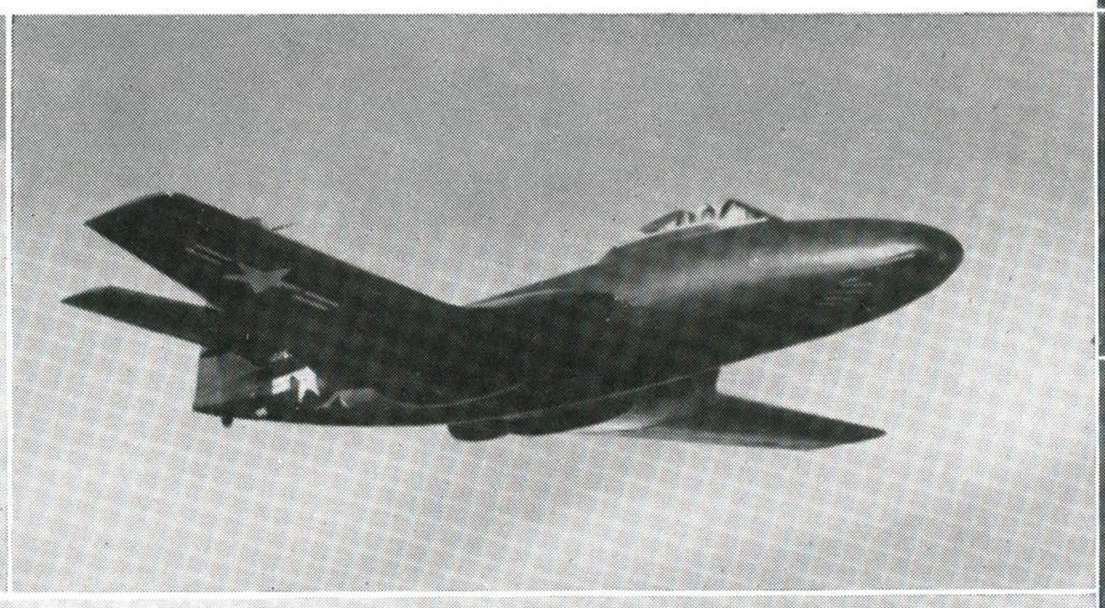


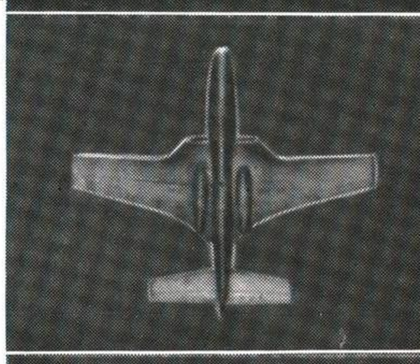


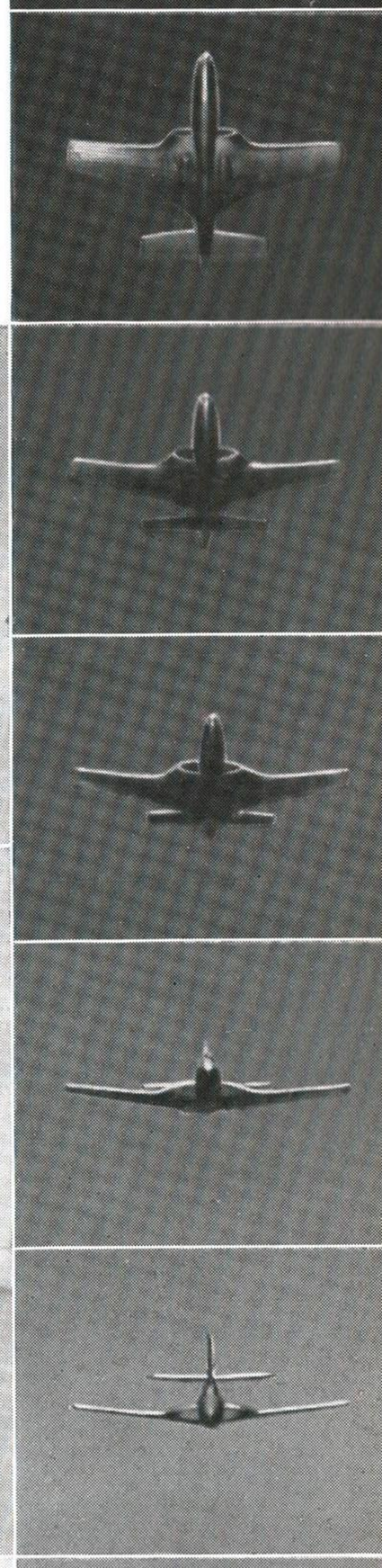


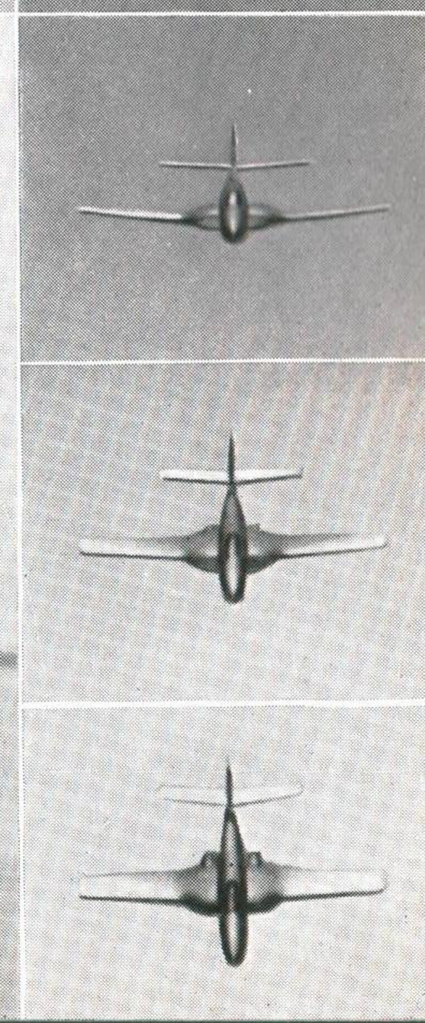
BANSHEE (U.S.N.)

Compare details of close-up views and allow your eye to rove up and satisfied you know the differences, try the test on the following page.

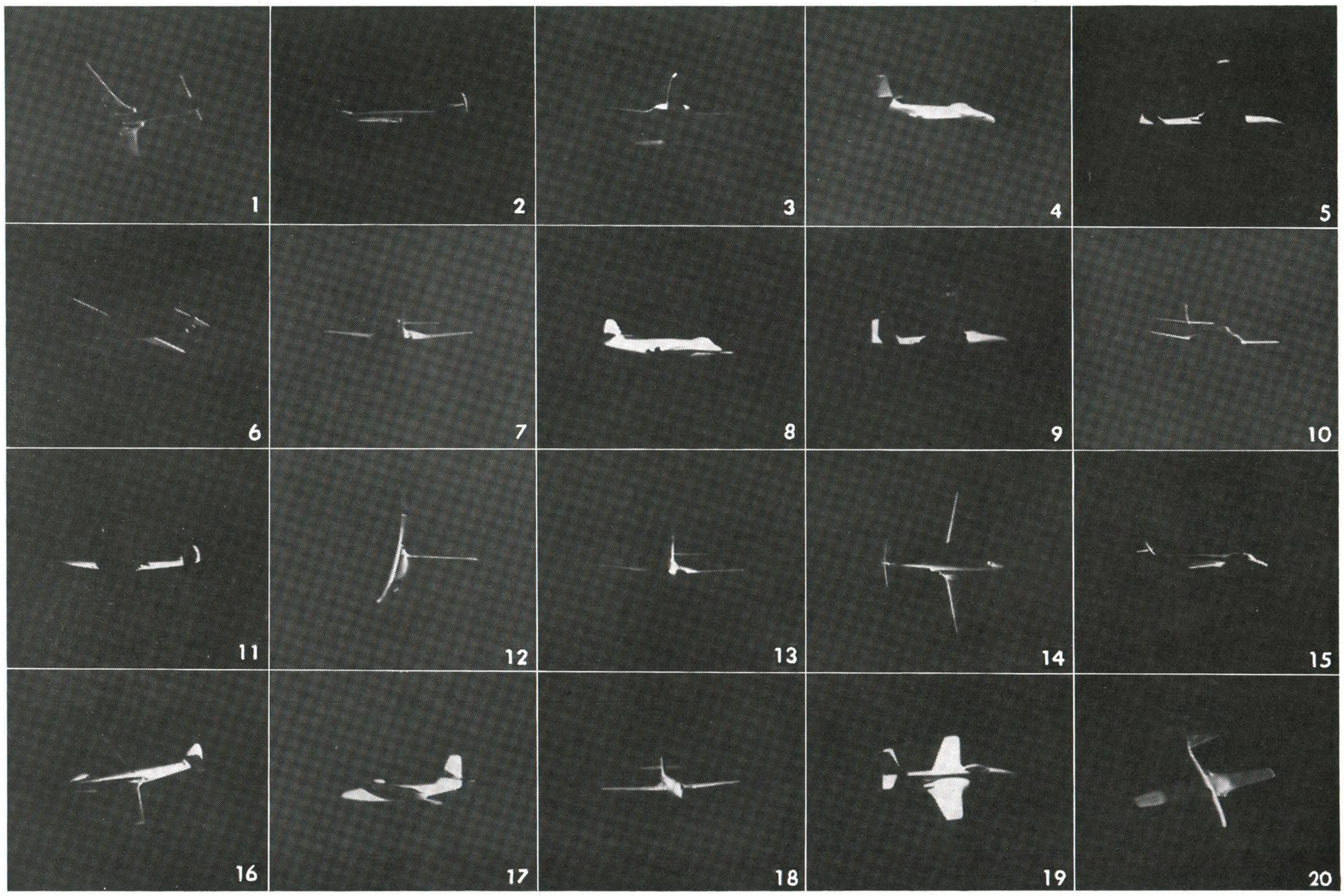








Seahawk and Banshee Test



BOOKS FOR CHRISTMAS

BY

JOHN W. R. TAYLOR

There's very little "peace on earth, goodwill to all men" about the latest aviation books this Christmas. You can take your choice from the autobiographies of two men of war, a combat history of the tough U.S. Marine flyers or a picture book about push-button weapons of tomorrow. Nevertheless, if you have not yet made up your mind how to spend that Christmas Book Token, the following notes may help.

"Clear the Decks!" by REAR-ADMIRAL DANIEL V. GALLERY, U.S.N. George G. Harrap, 182 High Holborn, London, W.C.1. 215 pp. Illus. 12s. 6d.

History books of the future may not explain how a small U.S. camp in Iceland came to be called "Kwitcherbelliakin" in 1942 or how an "old salt", in command of a new aircraft carrier in 1943, agreed with his cautious air group commander that there was not enough wind for take-off, and then climbed into a fighter and made the first take-off and landing himself. Which explains why history books are often dull, and Dan Gallery's autobiography is one of the finest books we have read for many a month.

Gallery is no ancient mariner, surveying the past through a rose-tinted telescope and bemoaning that things aren't what they were! He is proud of his own achievements and those of his ship, the Guadalcanal; even prouder of his young sailors, 80 per cent of whom had never seen salt water before they joined his ship, but who played a magnificent part in the Battle of the Atlantic, during which they even boarded and captured a U-boat. The result is a story full of adventure, common sense, humour and the sort of faith that guided Dan Gallery in all that he did. It is a man's book in every way.

"History of Marine Corps Aviation in World War II" by ROBERT SHERROD. Combat Forces Press, 1115 17th Street, Washington, D.C., U.S.A. 496 pp. Illustrated. $6.50.

If you have read the superb histories of U.S. Army Air Force and Naval Aviation in World War II, you must have this book to complete the series. If you have not read the others, try and get this one anyway: it is brilliantly written, beautifully bound, accurate and gives a picture of the bitterness of the Pacific island-hopping campaign that will shock most British readers, who were concerned at the time with a war nearer home. Only 1 per cent of the U.S. Armed Forces served in the Marines; only a small percentage of those men flew; yet they destroyed 2,345 enemy aircraft with the help of that efficient semi-official Observer Corps—The Coastwatchers. Their story makes splendid reading, and the book would be worth buying for its statistics and photographs alone.

"Rockets, Jets, Guided Missiles and Space Ships" by JACK COGGINS and FLETCHER PRATT. Random House, U.S.A. Obtainable from Sidgwick and Jackson, 44 Museum Street, London, W.C.1. 64 pp. 10s. 6d.

Here is the book you have been looking for if you, or your son, are interested in rockets and space travel. The text, which covers the history of rockets over a period of 700 years, is accurate and easy to understand. The pictures, half of them in full colour, are superb, and range from a drawing of Hyder Ali using rockets against British soldiers in 1780 to Japanese rocket artillery of 1944 and space-travellers observing Mars from Phobos in A.D. ???? It is difficult to imagine a more fascinating subject or a more attractive way of dealing with it; but it makes one realize how little future there will be in learning aircraft recognition in the "push-button" era.

IMPRESSIONS OF FARNBOROUGH

1952

by Observer Officer JOHN H. BLAKE

THE first impression carried away from the Show this year—carried away, it must be said, on the Friday evening, before John Derry's tragic death—is, undoubtedly, that it has been a far finer performance than the same Show last year. Both in the new types on display, and the standard of demonstration, there can be little doubt that this year we had a winner. Only in the Static Park could it be said that the standard had fallen. One felt that the few aircraft on display were, perhaps, a little ordinary. Certainly, the Fairey guided-missile was an interesting innovation at the Show, though the crowds seemed more interested in the giant Universal Freighter, through the hold of which a constant stream of spectators filed slowly, gazing with civilian incomprehension or military interest at the field-gun and prime-mover that it contained. But it was difficult to be very excited over the wing-fenced and tip-tanked Venom, the ageing record Canberra, the Christmas-tree variations upon an Attacker FB 2 theme. (Should not the makers of Naval aircraft issue a leaflet with the combinations possible on a standard kit, like the building-toy makers ?) Still, to combine the opposing needs of security and novelty must be difficult, to say the least of it.

No such criticism could be levelled at the Flying Display. The sonic barrier-jumping, the high-speed runs, the aerobatics, were of a standard to make the selection of highlights a matter of some nicety. Among the constant themes of speed and power, perhaps one of the outstanding performances was Peter Hillwood's demonstration of the Canberra Trainer. To produce so convincing a set of low-speed caracoles in a high-speed aircraft is a feat well out of the ordinary in display flying. Then the power, grace and smoothness of that most impressive airliner, the Britannia, underlining in a most agreeable manner the trend—and leadership—of British civil flying in the years ahead ; that was a memory to carry away with one from Farnborough.

One recalls, too, when seeking outstanding moments, the fascinating glimpses of the private life of a jet in the tail pipes of the re-heat aircraft, the test bed Canberras, with the world's most powerful engines, the amazing agility of the Shackleton, and among the rest, the Viscount purring smoothly past on one engine. Old and familiar pictures come to mind, as well, the perennial delights of Farnborough ; the Porteous-Auster exhibition, with a new trick, this year, and a new name for it, apparently, each day ; the fine, crashing runs of the Vickers fighters, right in the laps of the front row stalls ; the little Pioneer, its slow flying exhibition reminiscent of Displays in more spacious days. (How many readers remember the lazy, crazy-flying displays of the 'thirties in Avro Tutors, and 504s ?)

Familiar too, by this time, are the gaping bomb-bays of the Gannet and Shackleton, the phenomenal rates of climb (though the Germans once built an aircraft that climbed 37,000-odd feet a minute) and the high-speed rolls, that give the impression of being nothing more than a simple rotation on the machine's axis.

Recognitionally, the Show this year was a delight. New shapes jammed the programme, from the double-arrowhead of the Javelin to the unfamiliar outline of the Bristol 173. The grim lines of the D.H. 110, looking strangely like a Hunter cross-bred with a Vampire, were even grimmer in the coat of black paint, while at the other end of the colour scale, the Avro 698 (since named Vulcan) ushered in an era of deltas, escorted in glorious, if slightly clashing technicolor by her smaller sisters. But perhaps the most pleasing sight of all was the huge, beautifully-proportioned fin and rudder of the Britannia.

It would be impossible, except at weary length, to go through all the memorable events in this extremely satisfying year's Show, but to conclude, consider for a moment a side-show to the main Display ; the folding wing. How bravely and independently the designers tackle the problem. Aircraft trundle past down the runway clapping their hands above their heads, clenching their fists and flexing their biceps, flipping a wing-tip for a passing taxi, or in one case gravely imitating an Egyptian dancer, and looking for all the world like a lunatic biplane in the process. Wait till the delta folds its wings ; we shall have aircraft looking like flat-headed foxes. Try it and see.

Wyvern TF Mk.4

Britannia

Marathon T Mk.11

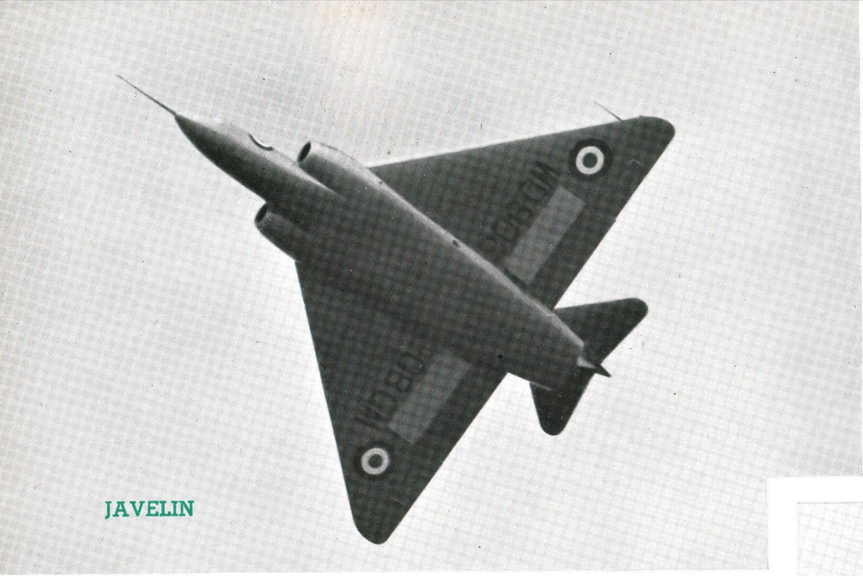
Hunter F Mk.1

Gannet AS Mk.1

Prince

Heron

Re-heat Canberra



JAVELIN

PRINCESS

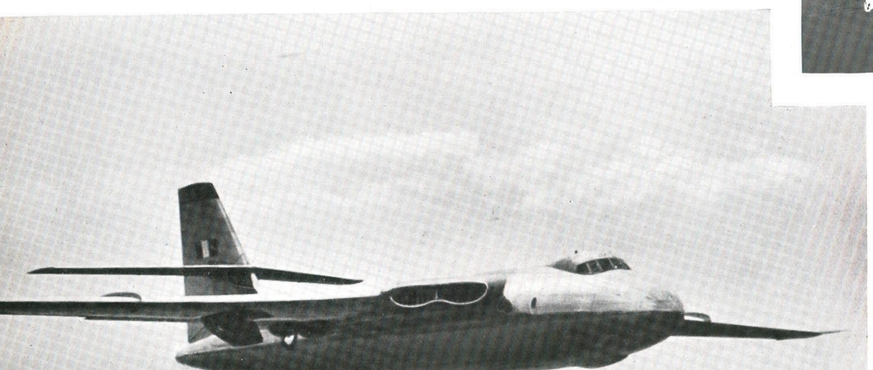
SWIFT

BRISTOL 173

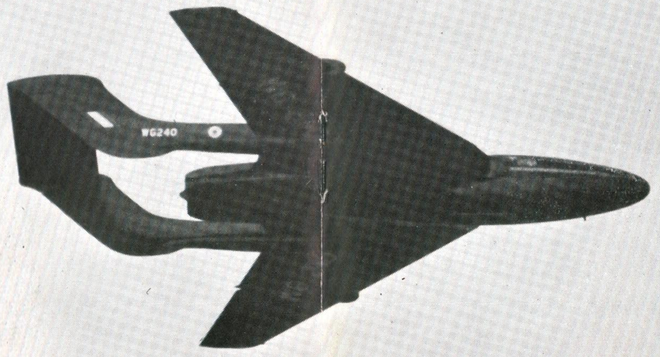
VULCAN

NEW SHAPES AT FARNBOROUGH

SKEETER (Mk. 3B)



VALIANT

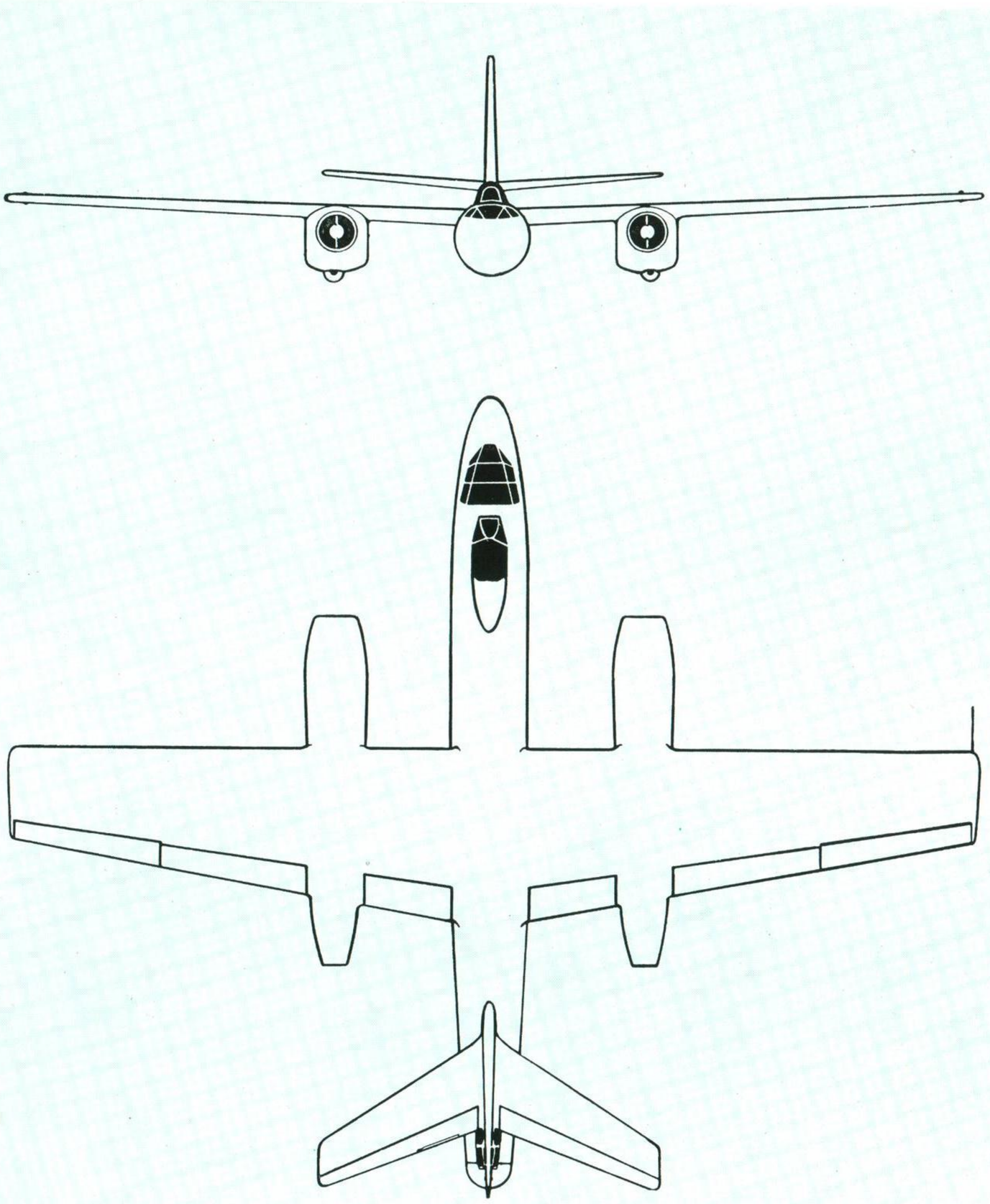


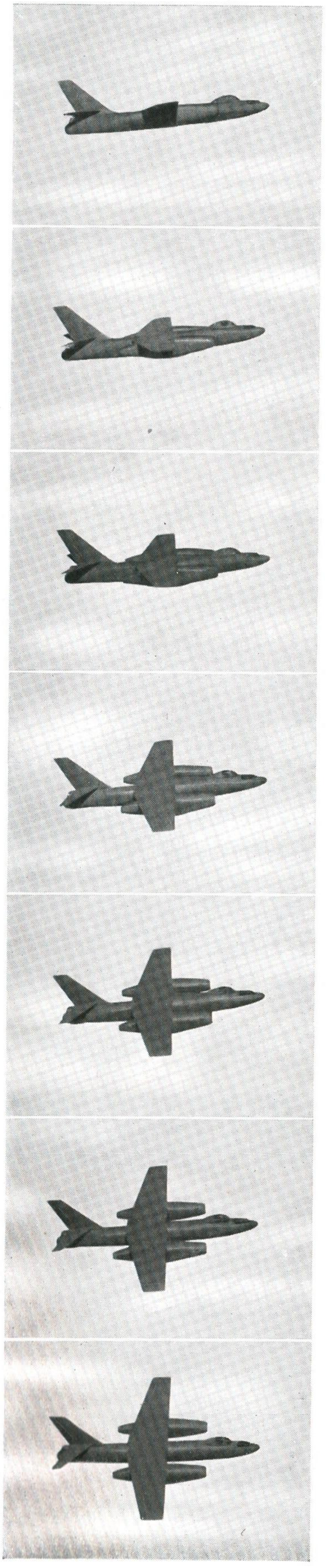
DH. 110

BRITANNIA

The U-IL-28

TWIN-JET
S.A.F. TRAINER





This is a two-seat trainer version of the IL-28 twin jet bomber and is now in operational service with the Soviet Air Force. The only visible differences are: the large blister which appeared on the underside of the forward end of the fuselage of the IL-28 has disappeared, and the nose has been modified to incorporate the second pilot's cockpit; the transparent nose panels now appear " solid ". No performance data is available at present but obviously it will differ little from that of the IL-28. Our strip of pictures shows that there is very little difference discernible at even quite short distances.

"HEAT BARRIER"

This is a condensed version of an article from the pen of Mr. R. H. Rice, Vice-President and Chief Engineer of North American Aviation, which was published in North American's house journal " Skyline ".

WITH the " sonic barrier " now hurdled, aircraft engineers and designers are probing at the next theoretical wall in the way of true supersonic speed in airplanes and missiles, the so-called thermal, or heat, barrier.

This new problem of heat is one to be dealt with when planes and missiles reach a speed of approximately Mach 3.5, or about 2,500 miles an hour, aircraft engineers believe. And there is just as much worrying done about this " heat barrier " as there once was about the " sonic " wall. Even the icy regions of 40,000 feet where the temperature on a normal day is −65°F. doesn't help with this new problem. Airplanes may soon be flying at twice the speed of sound in these regions and the " work " of picking up this still air and accelerating it to the speed of the plane will raise its temperature to 250°F. And that, is too much for the present plane equipment to withstand.

While today's plane or missile might travel at this speed safely for a short time, if the speed is maintained the matter of rising heat becomes serious. At those sustained speeds tough aluminium will relax and lose much of its strength. The materials from which today's cockpit canopies are made will soften like putty. Radar equipment may start giving the wrong messages to the pilot and electronic equipment may distort vital messages or put through none at all. And what about the pilot? Unless you give him some refrigeration he would " simmer like a beef stew ".

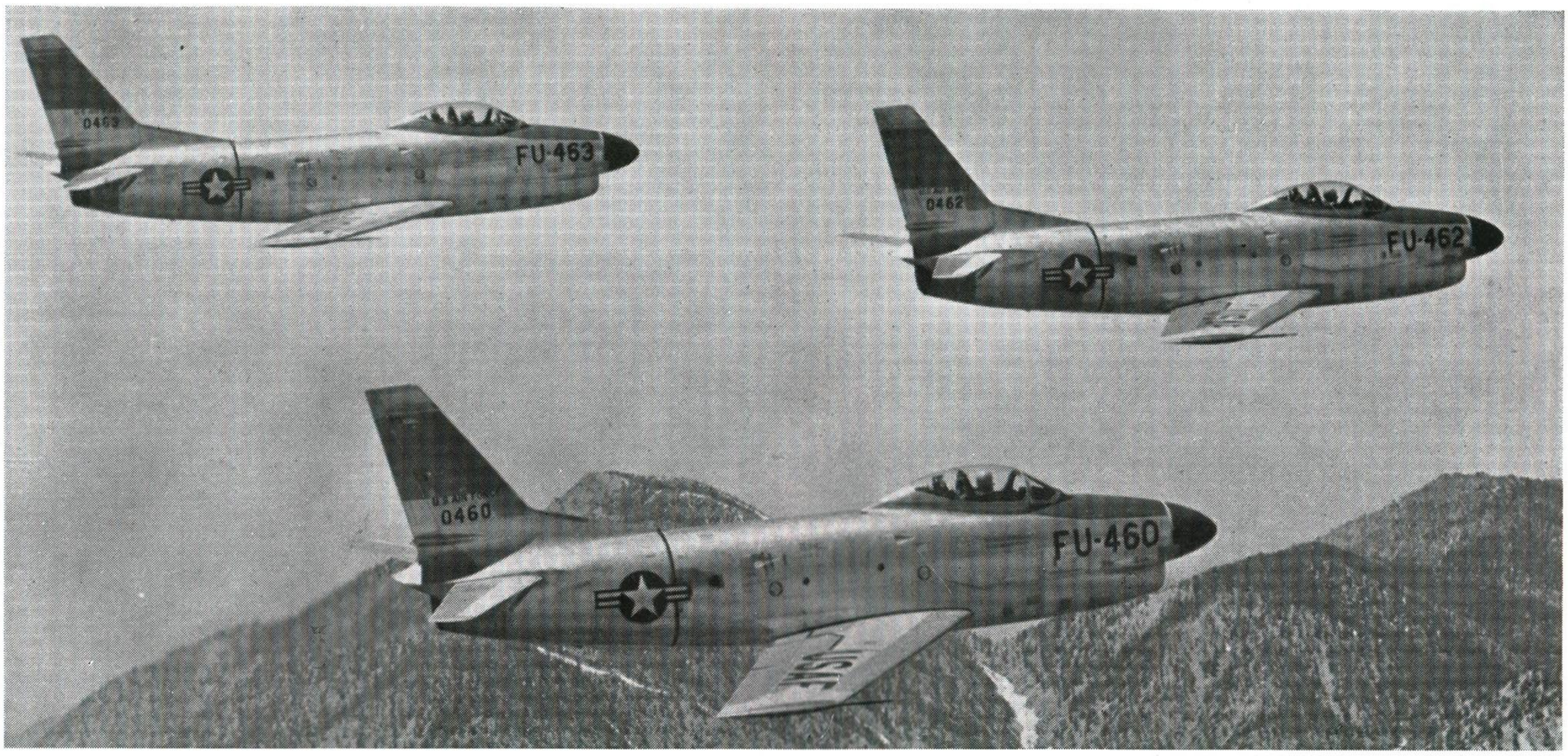
Today's North American F-86 Sabre jet, the top U.S. and United Nations fighter, is already flying at speeds which make it necessary to apply artificial refrigeration. To cool an F-86D Sabre at an average high speed takes 18 tons of air per hour. But this won't do all the job and other methods of cooling are necessary. Now in use is a refrigeration system which cools the pilot in the cockpit. With it you could freeze 175,000 one-inch ice cubes in a day from 70°F. tap water.

In supersonic planes of the future it will be necessary to use such refrigeration systems to cool electronic and hydraulic systems as well. New hydraulic oils are already being sought, and new metals capable of withstanding far greater heats than aluminium will have to be developed. It may be that the answer to the latter is one of the titanium alloys. Already North American is designing many of its fighter components of titanium, but this new wonder metal is in short supply. For the time being, heavier aluminium or stainless steel must be used to allow for loss in strength at high speeds and consequent high temperatures. At 200°F. aluminium loses only 10 per cent of its strength, but at 250°F. it loses 40 per cent. This means that 40 per cent more aluminium must be used for a plane flying for any appreciable length of time at speeds where the fully stabilized temperature of 250°F. is reached. This means more weight in the plane, and weight is something the engineer is always trying to eliminate.

To illustrate " aerodynamic heating " further consider a hypothetical missile flying at 2,000 miles an hour at 60,000 feet. Keeping a portion of its section, roughly equivalent to the volume of a home refrigerator, at 100°F., would require a one-inch thick lining of insulation and the work performed by approximately 20 home refrigerators carrying a 13,000 b.t.u./hour cooling load. If the section referred to contained fuel and no insulation was provided the fuel would actually boil off at a greater rate than the engine could burn it.

The skin of the missile would be heated to 700°F. at 2,000 miles an hour, but at 3,000 miles an hour it would be heated to 1613°F.

Many of the problems of aerodynamic heating lend themselves to solution, while others may require years of research before satisfactory solutions are found, especially as flight speeds continue to increase.



Spinners without props. F-86D Sabres, development of the famous North American F-86A Sabre, vary only in the re-forming of the nose to house a radar scanner.

The Hawker Hunter

Close-up

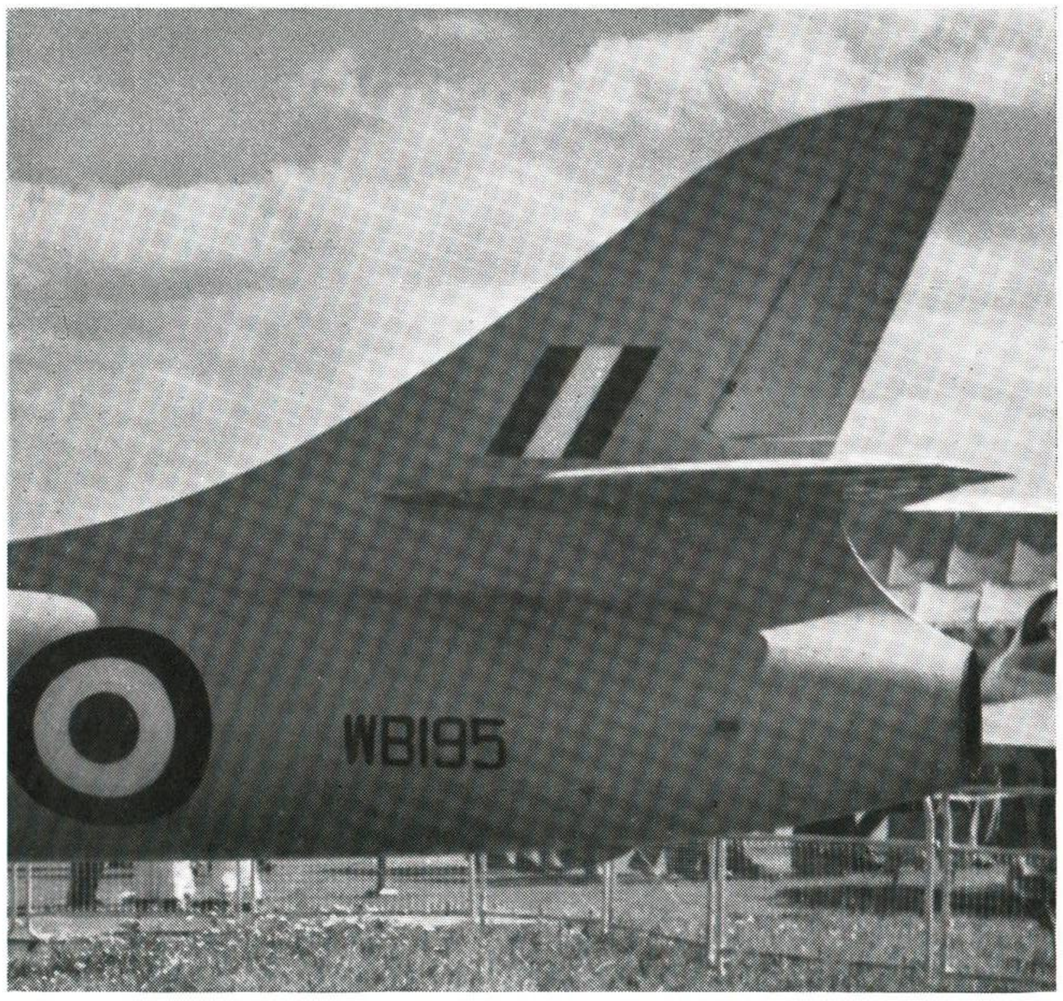
Some intimate and interesting glimpses of the R.A.F.'s supersonic single-seat fighter, an aeroplane at present more often heard than seen. There are two prototypes flying; the visible differences being only in tail details, which we illustrate here for you to interpret with the drawings. The drawing is of the second prototype; production Hunters will remain characteristically the same.

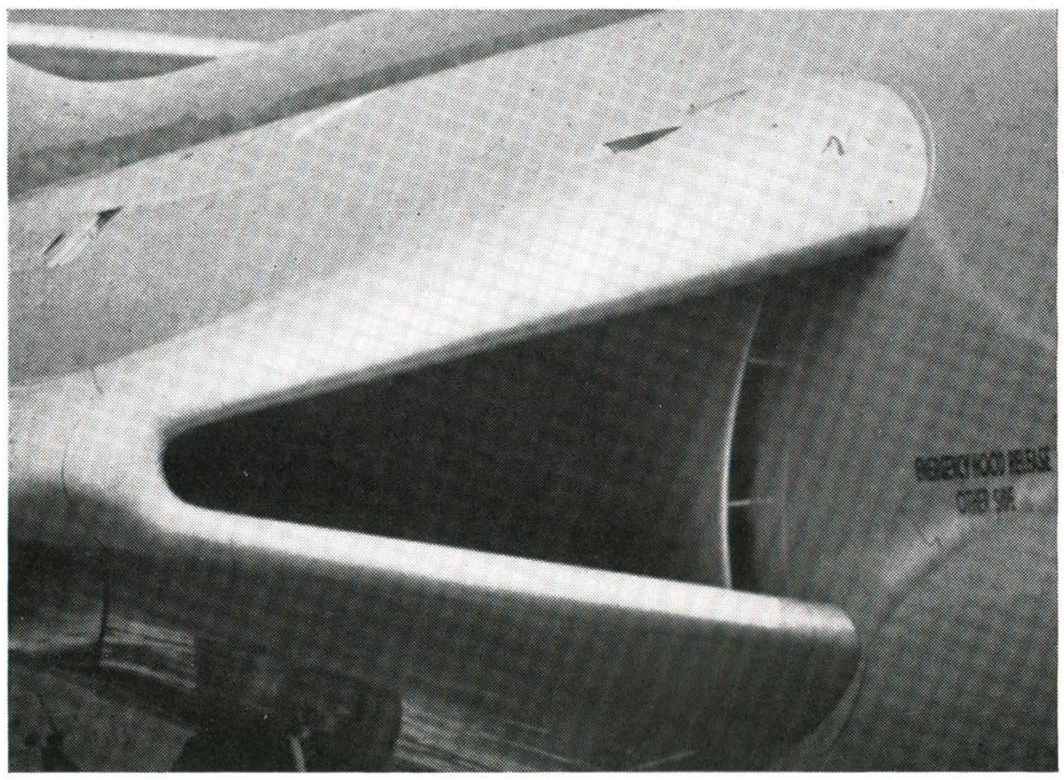
Nothing can be said of the performance of the Hunter beyond the fact that it is capable of flying beyond the speed of sound and that it has been matched against the Sabre (in some aspects of performance) and found not wanting: the Sabre in turn has been matched against the Mig-15.

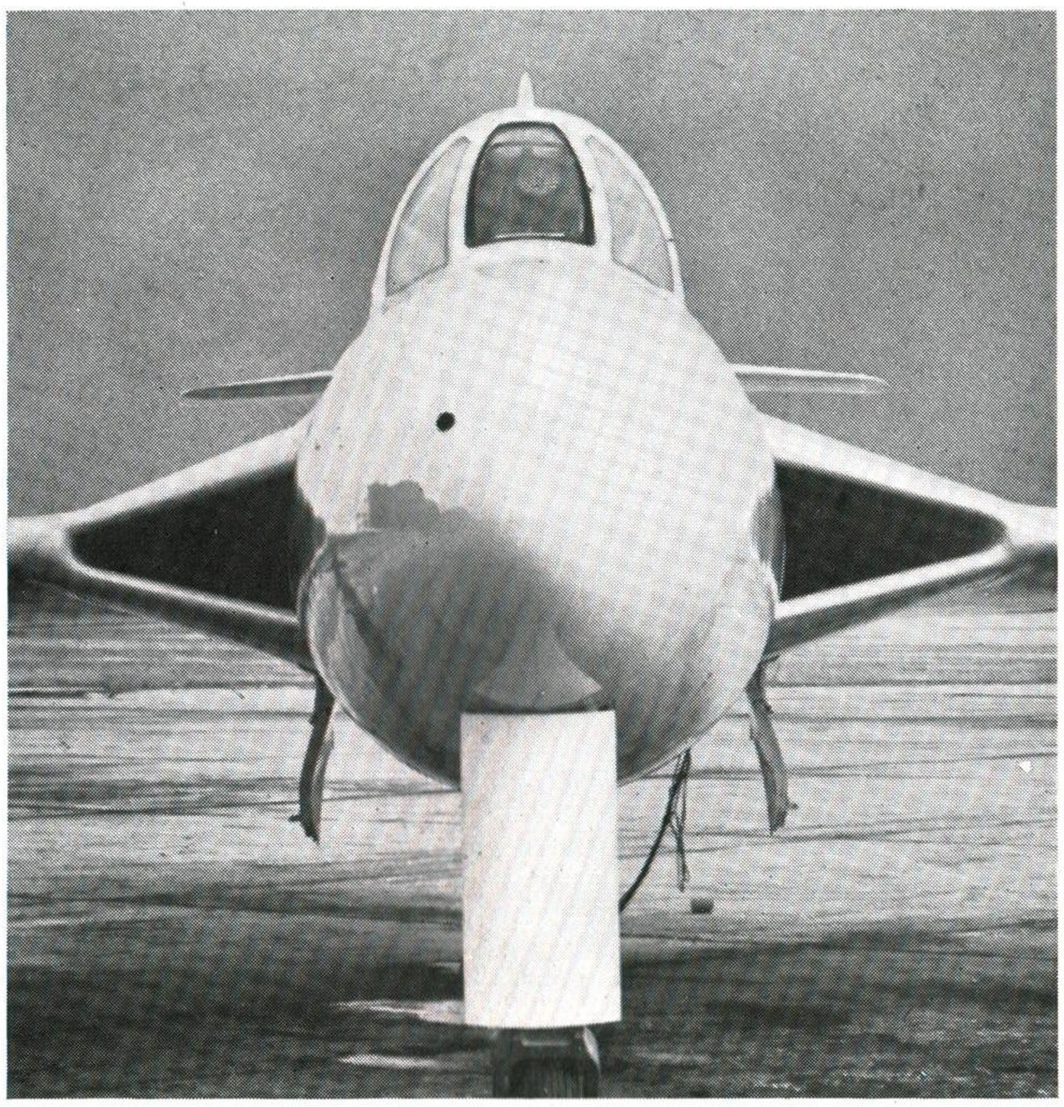
The wing span of the Hunter is 33 ft. 8 ins. and it is powered by an Avon turbo-jet.

There is an exercise on the Hunter on page 146 of the September 1952 *Journal*.

Model Makers see page 238

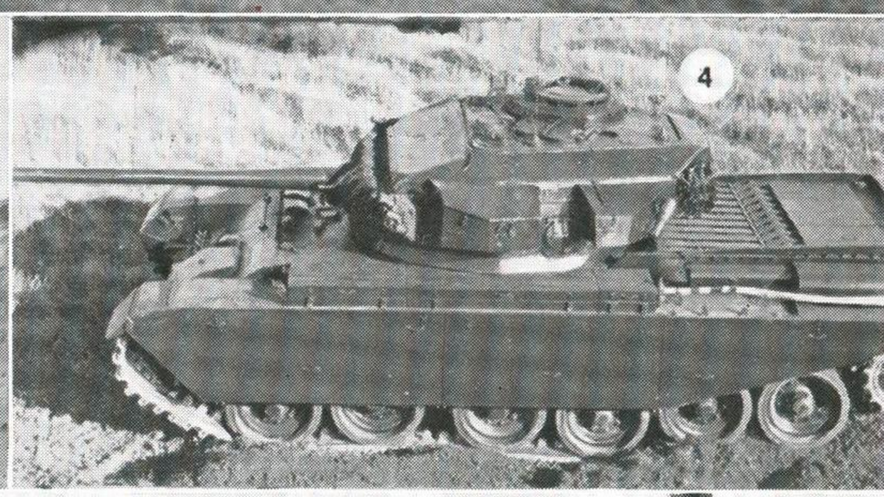


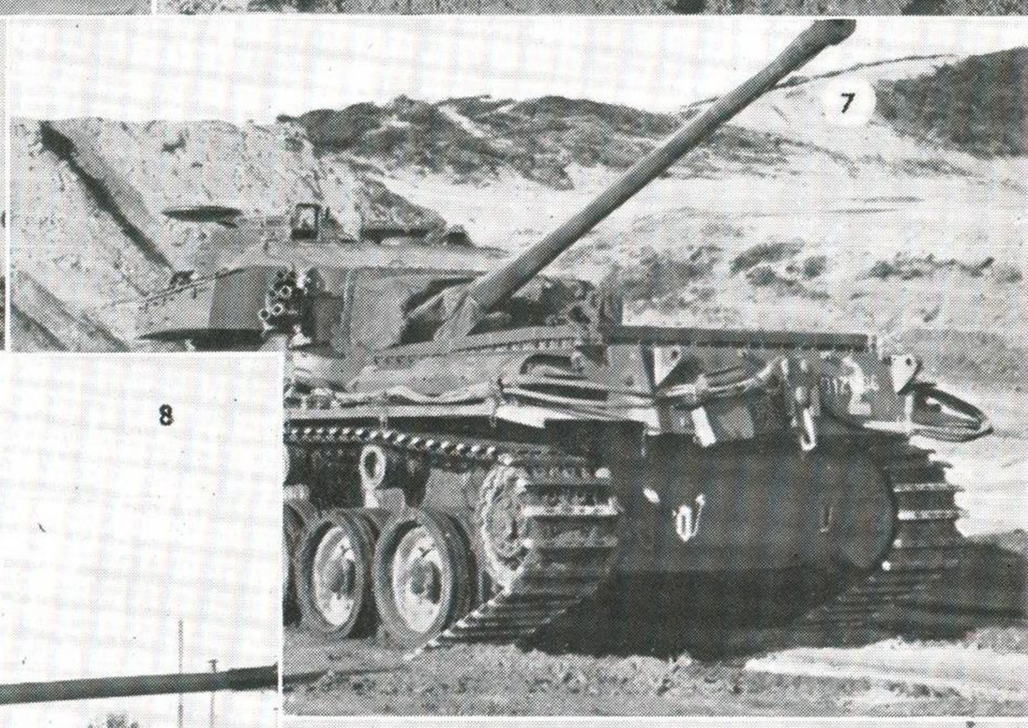


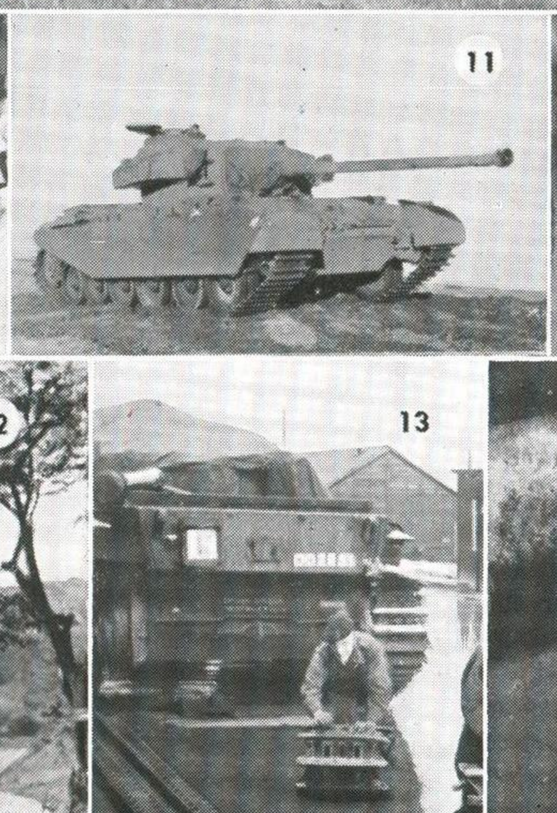


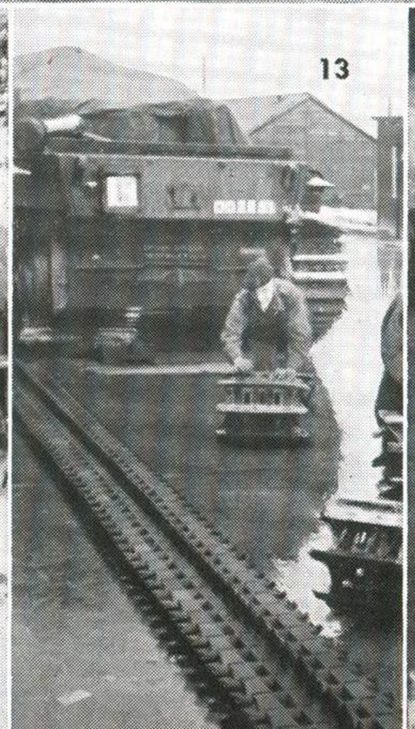
SPOT THE CENTURION!

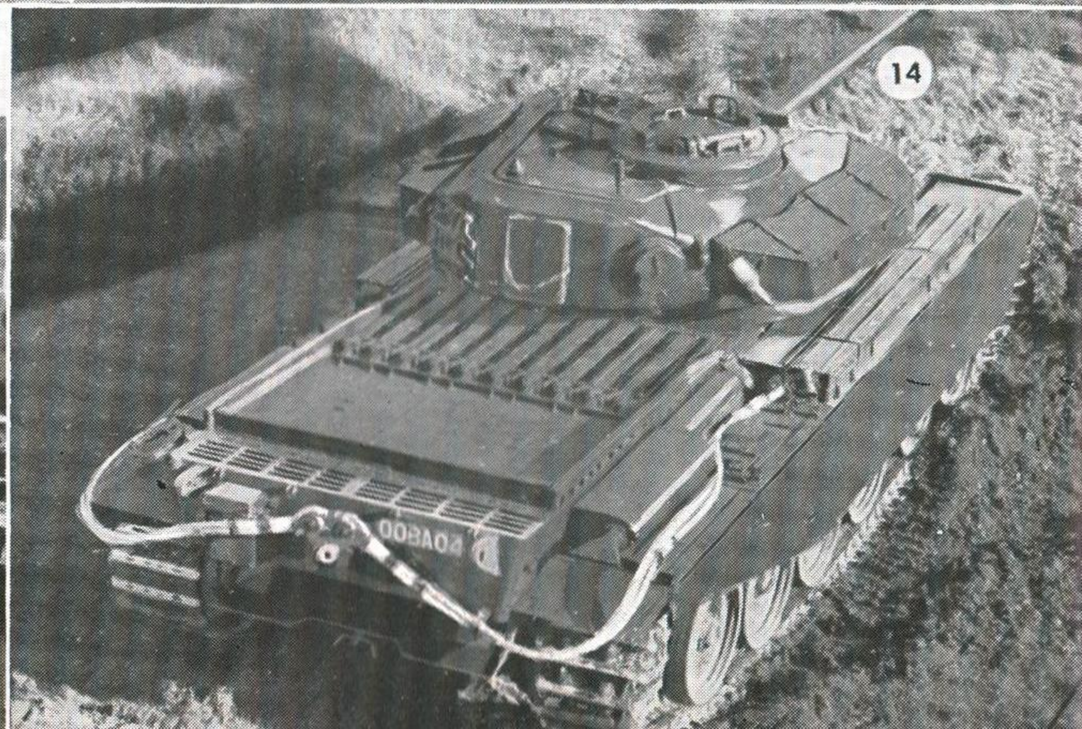
Picture 14 is of the Centurion. With its aid, identify which of the other views are of the same tank. Procedure : (1) Write a list of numbers ; (2) Identify the easiest views ; (3) With your accumulating experience identify the more difficult ones ; (4) Cross-check your "Centurions" by as many points as possible before consulting the solutions on page 238.

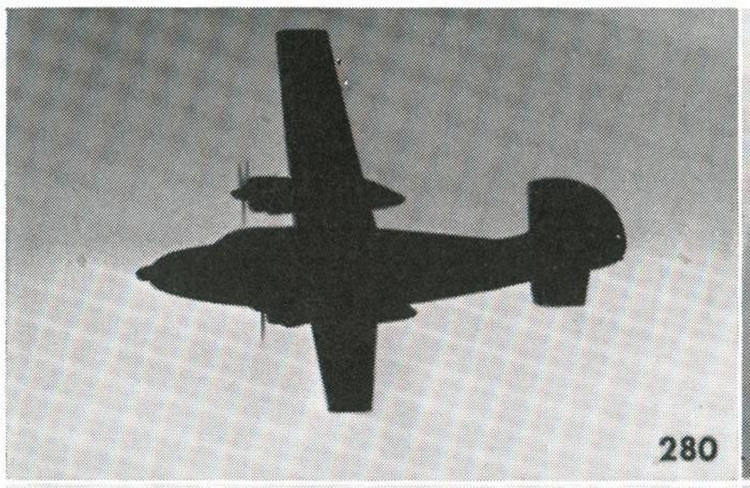








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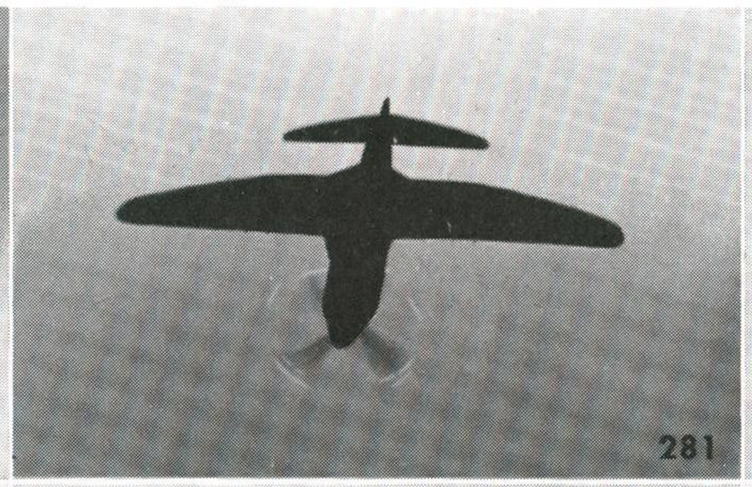
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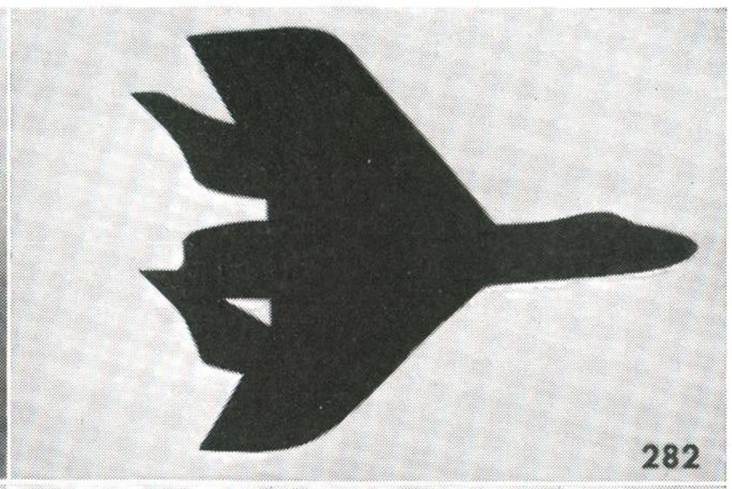
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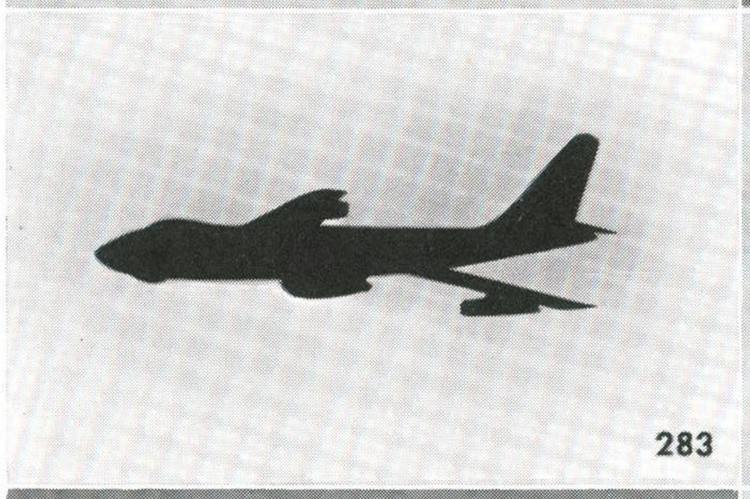
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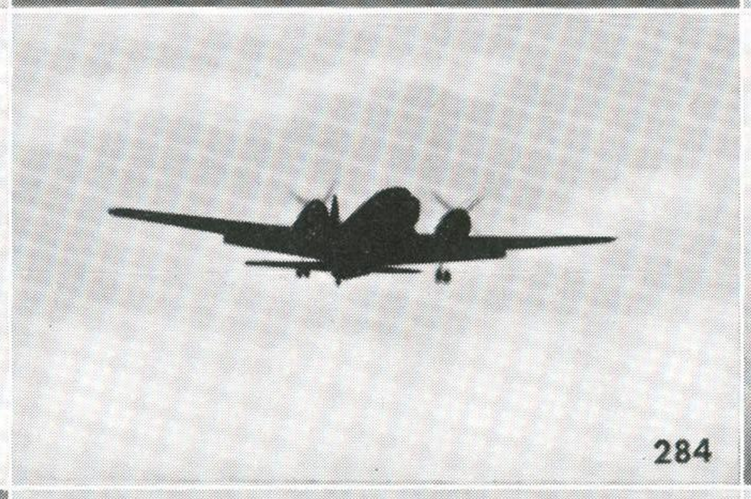
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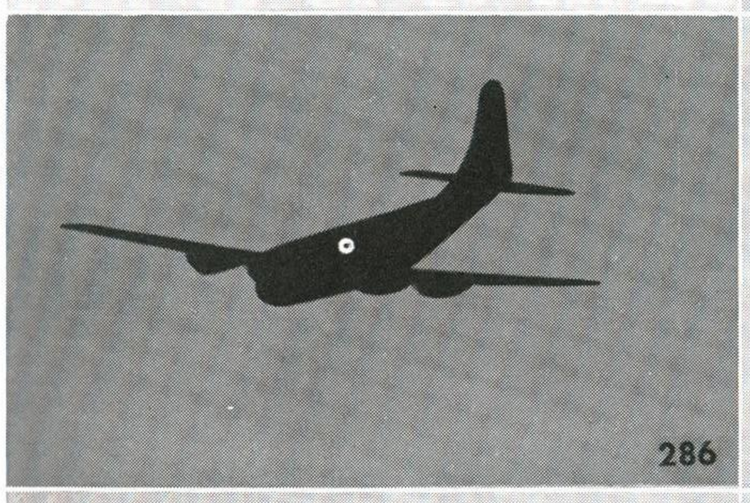
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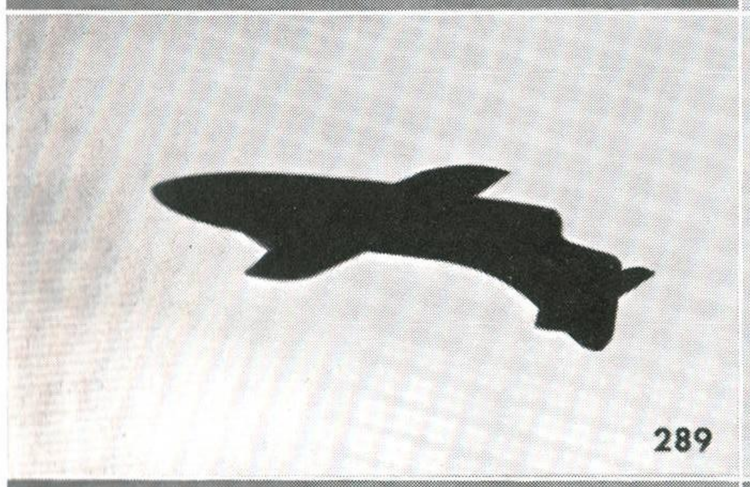
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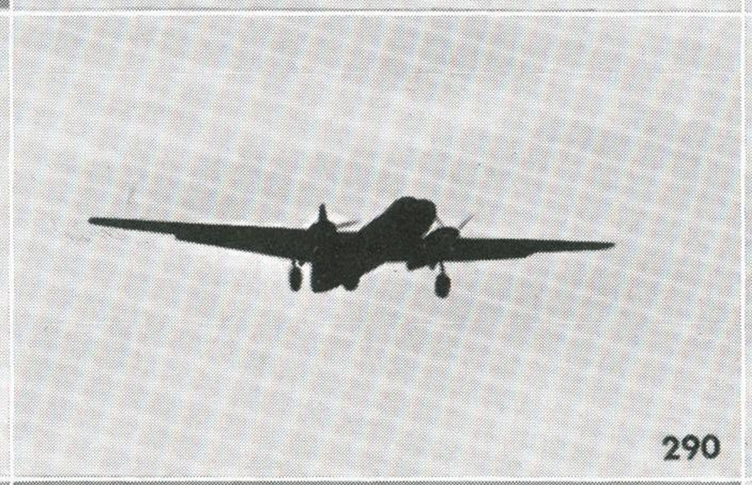
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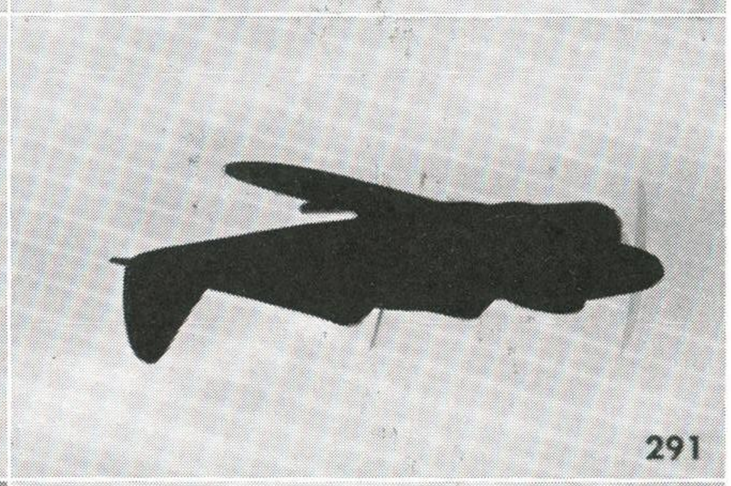
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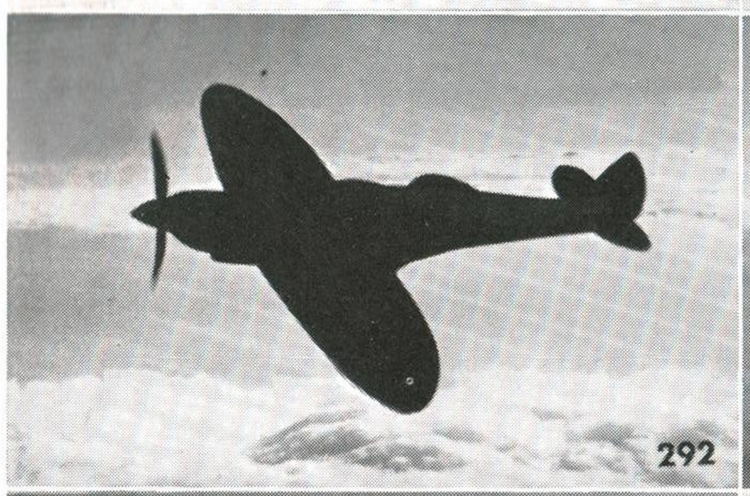
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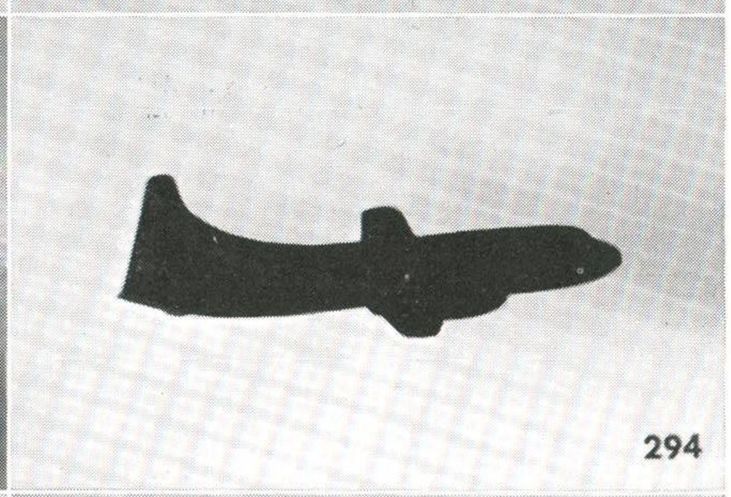
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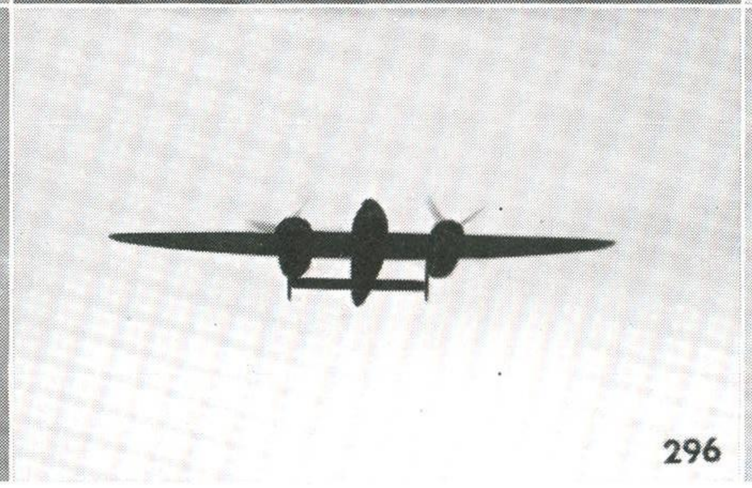
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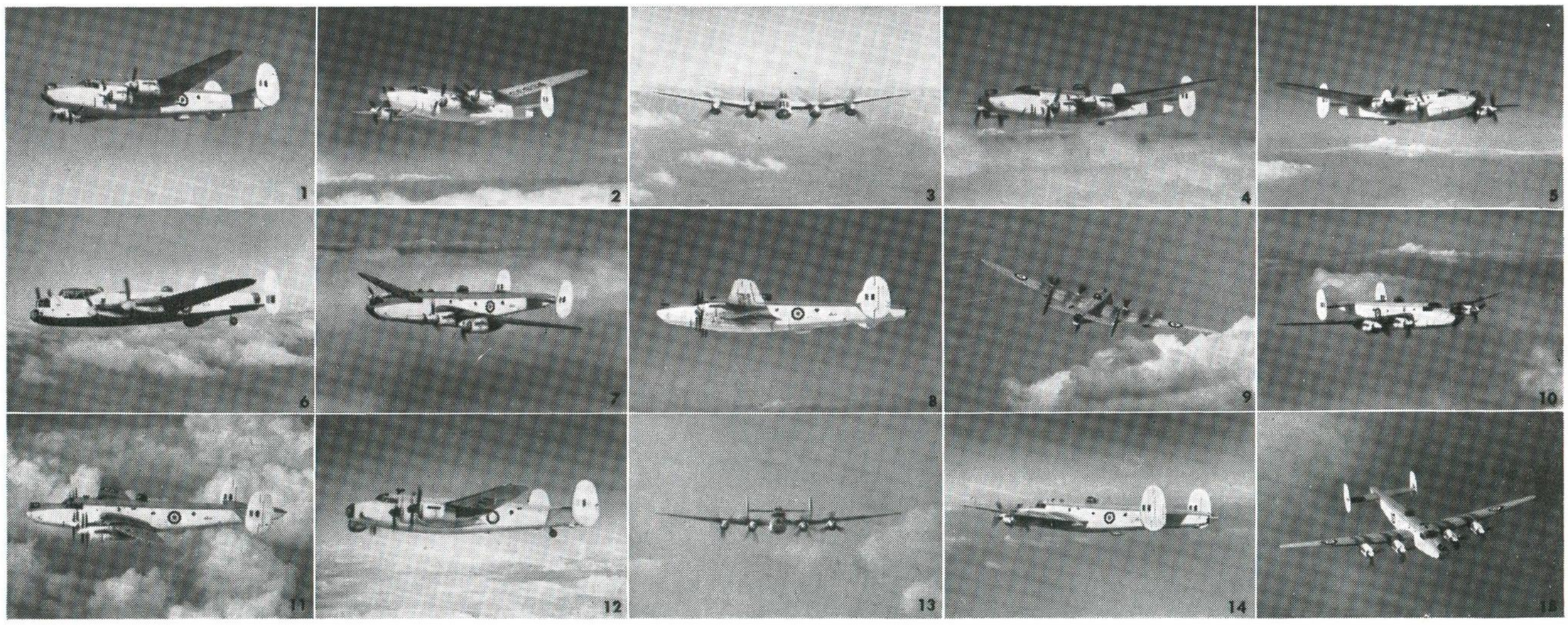
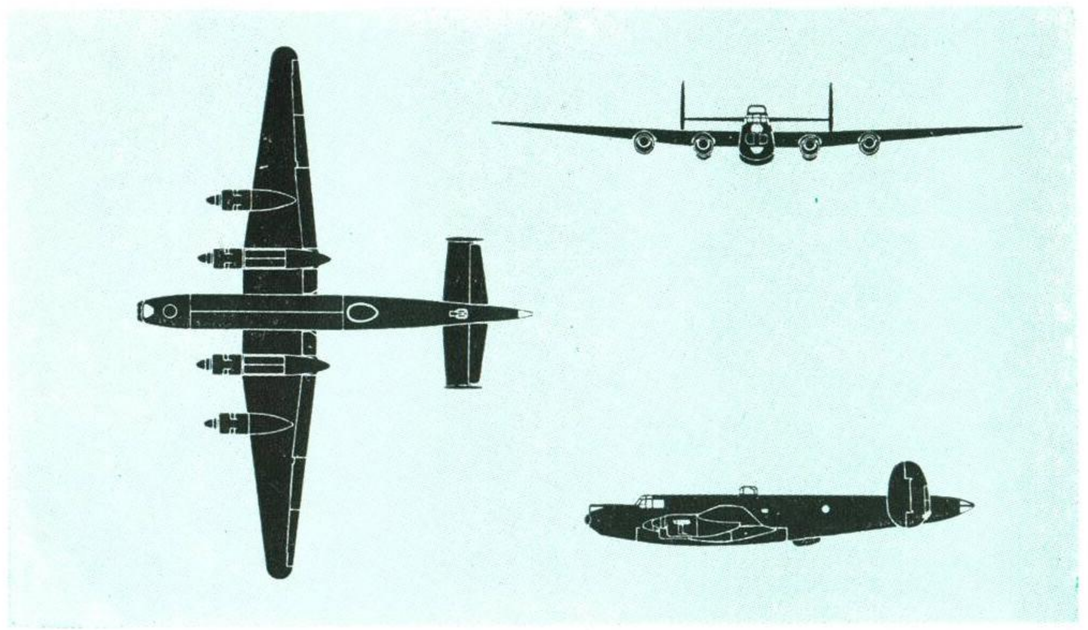
297

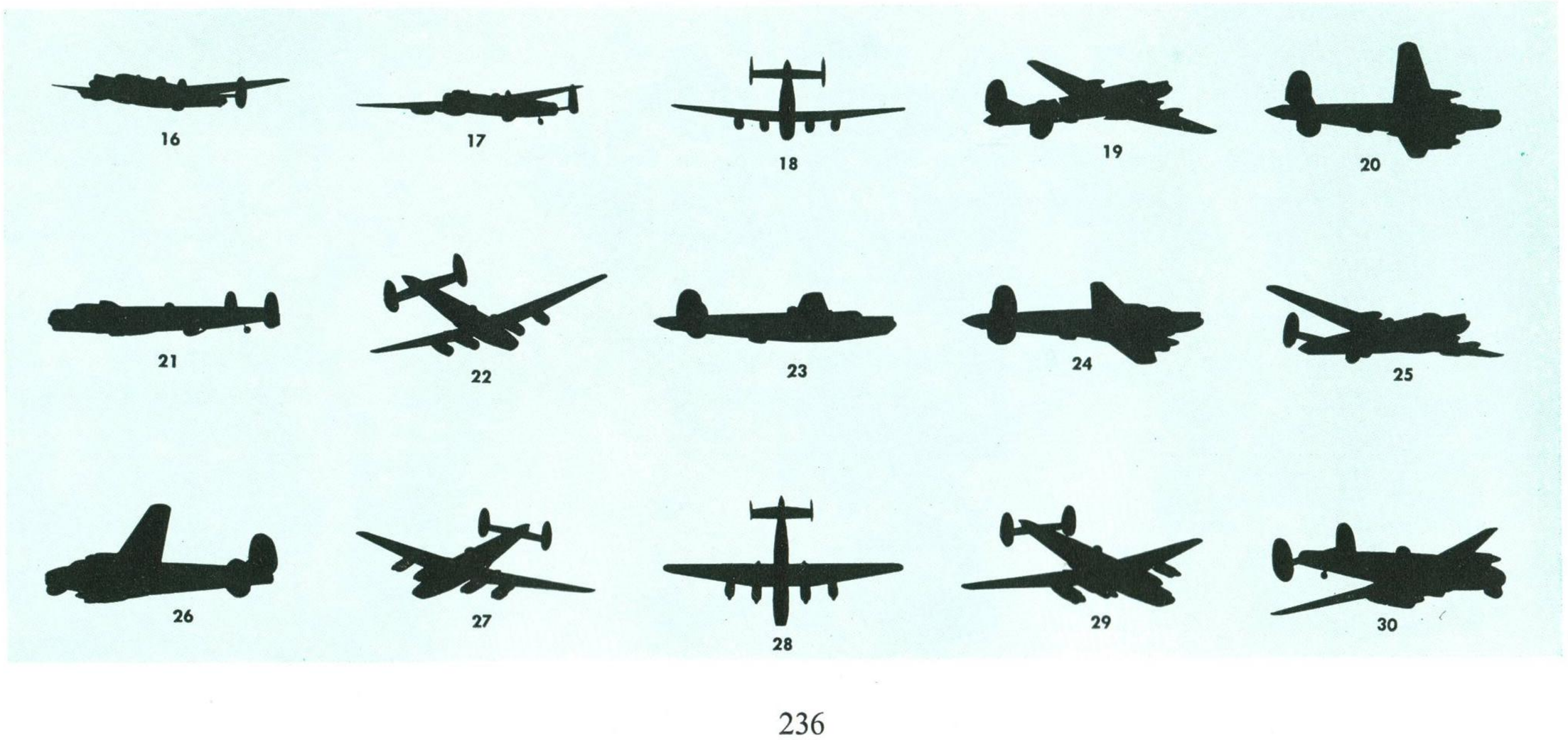
SILLOGRAPHS

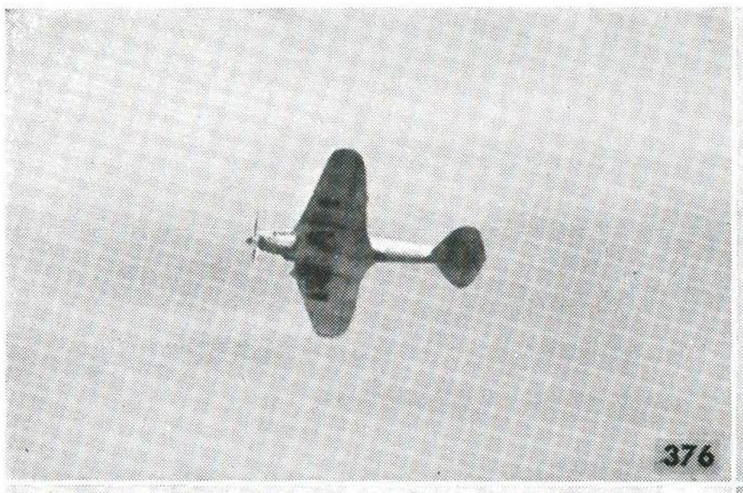
EXERCISE 'SHACKLETON'

Maritime reconnaissance is the official rôle of the Shackleton, of which two versions are now flying. This exercise is designed to familiarize you with the Shackleton MR Mk.2 (which is soon to join the Mk.1 in service with Coastal Command) and to help you to distinguish it from the earlier version and from other four-engine twin-fin types in the same recognition class. To obtain maximum benefit from the exercise it is important to proceed as follows : (1) List the numbers (1-30). (2) Identify all the Shackleton 2 illustrations with the aid of the silhouette and key picture. Do the easy ones first and use your accumulating experience to solve the more difficult ones. (3) Check your Shackletons before consulting the solutions on page 238.





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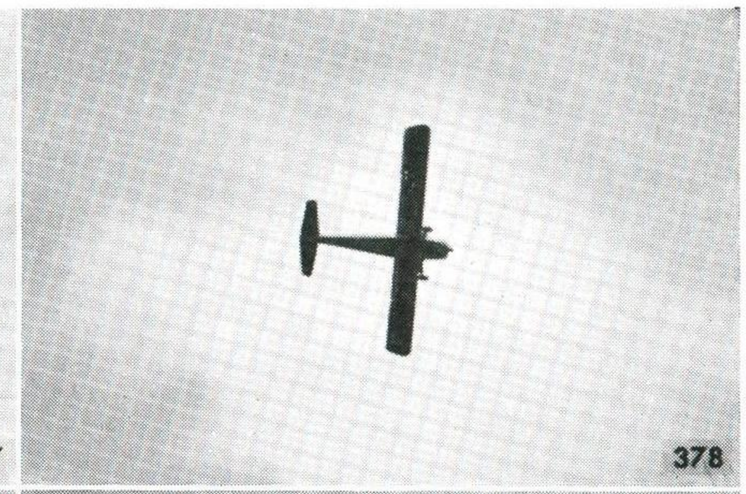
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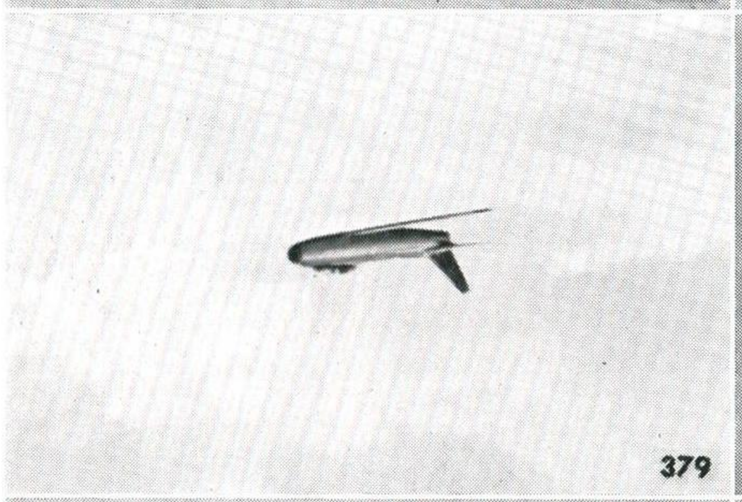
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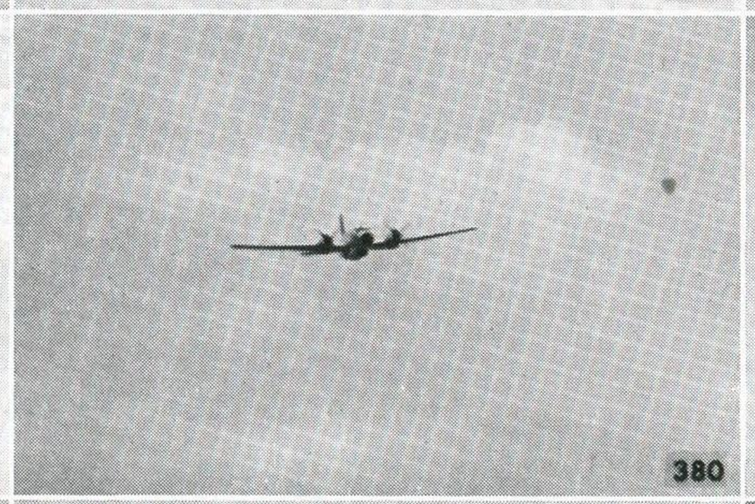
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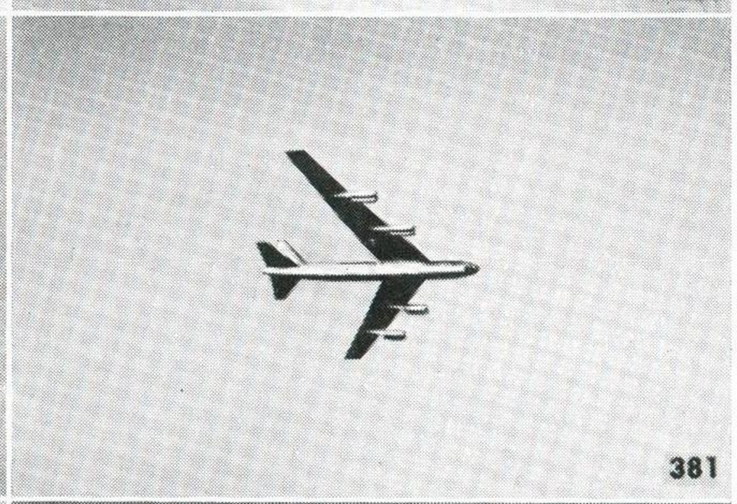
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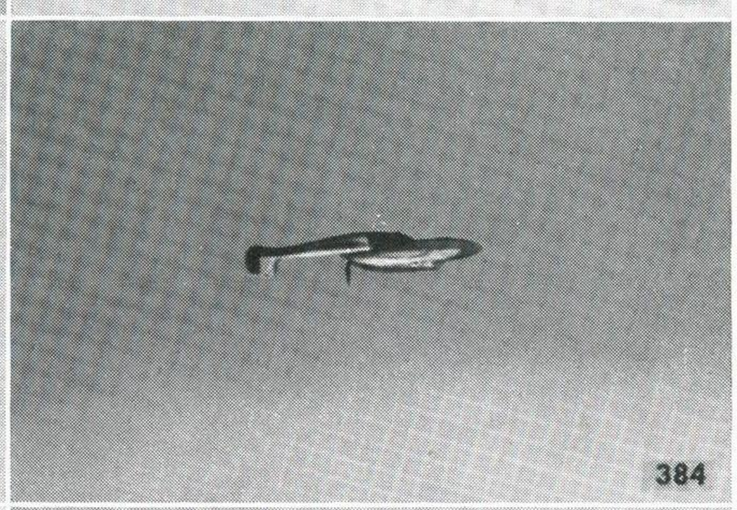
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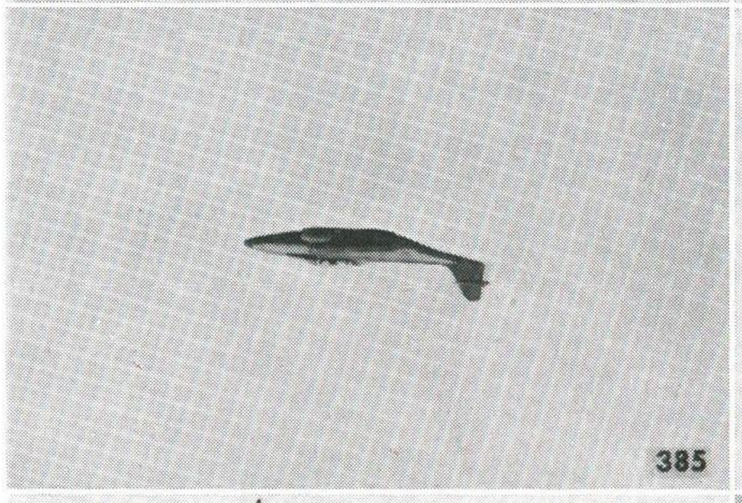
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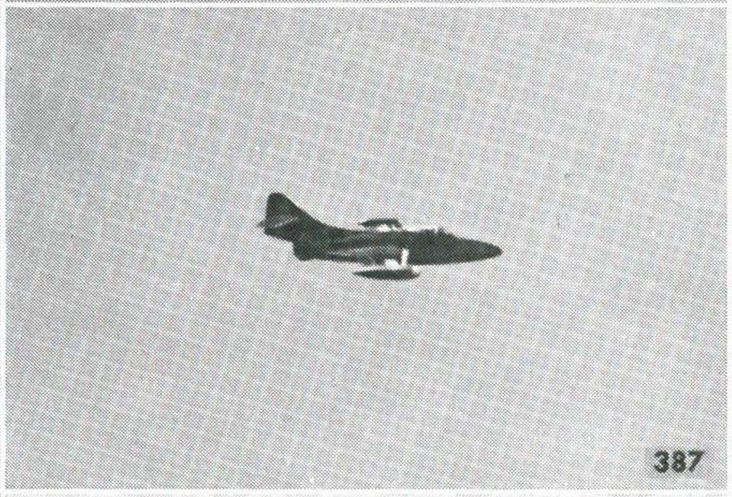
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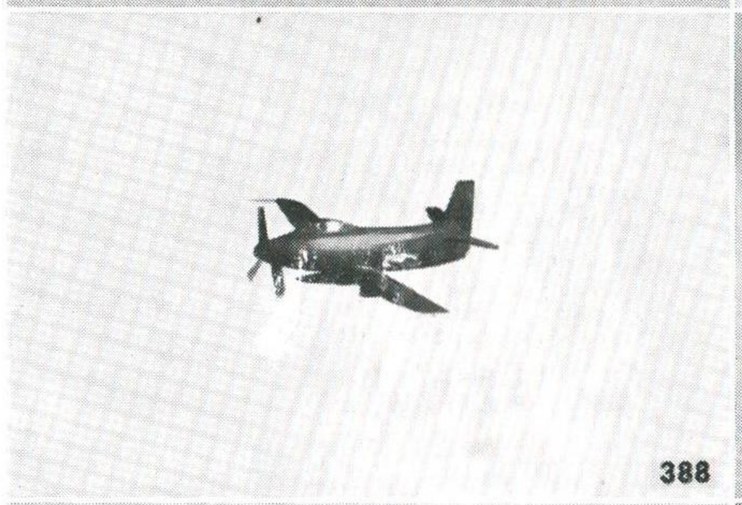
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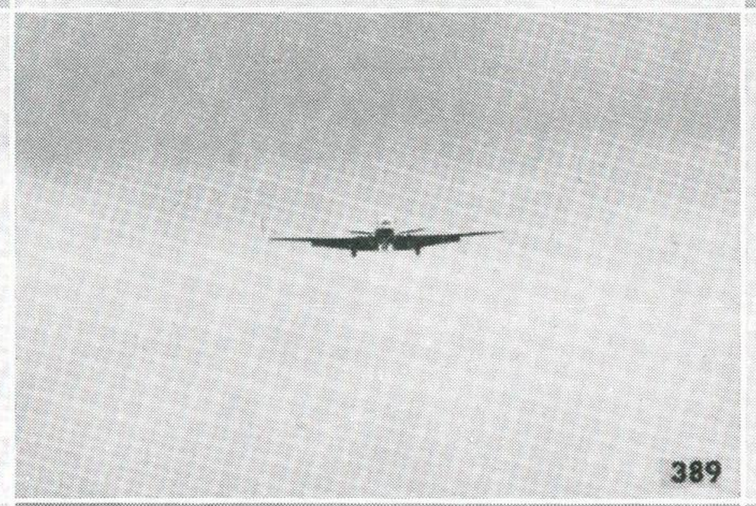
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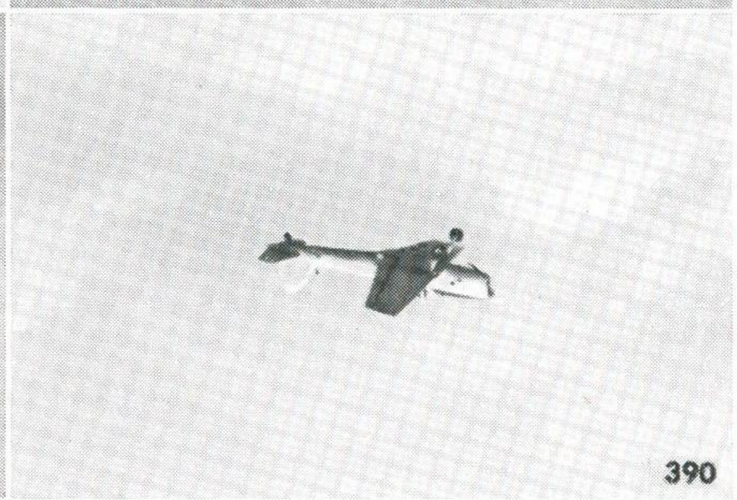
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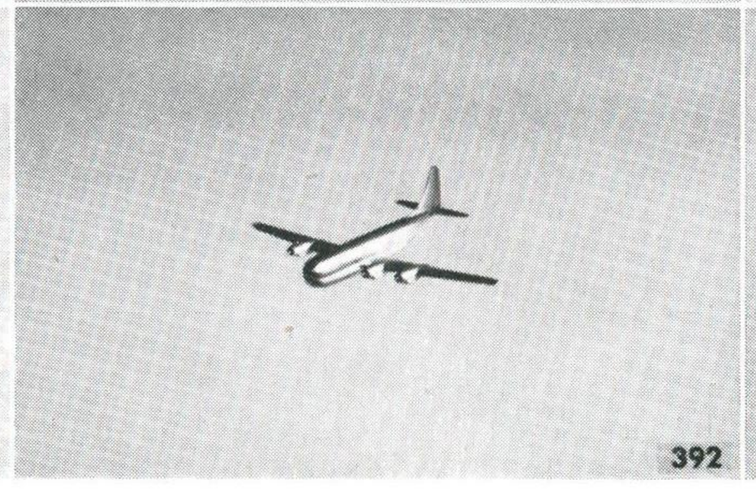
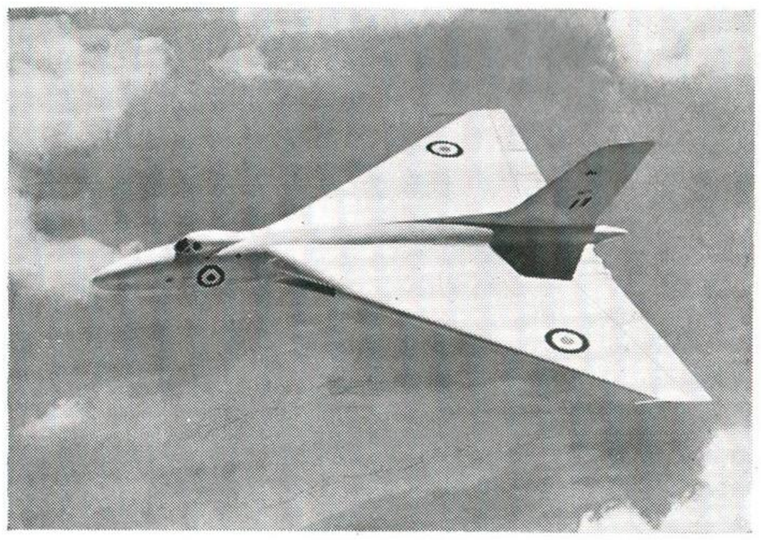
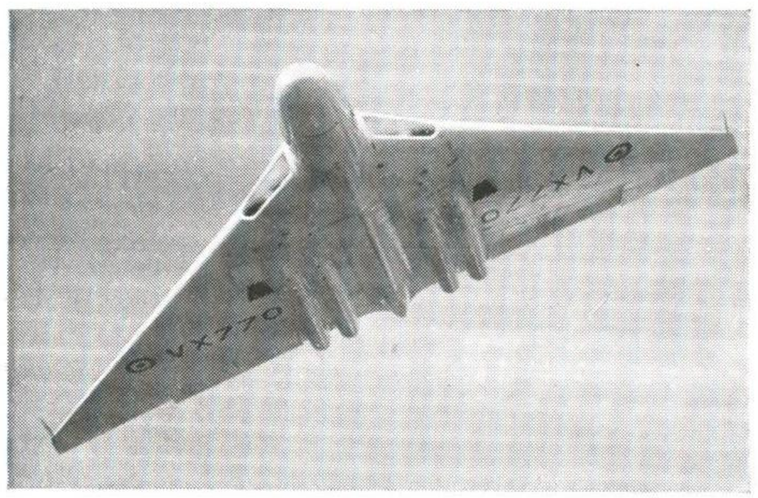
391


392

393



Cover Photo : Avro Vulcan four-jet delta bomber on quantity order for the R.A.F. Other views below.



SPOT THE CENTURION

All Centurions excepting
No. 2 which is a Comet.

SOLUTIONS TO TESTS AND EXERCISES IN THIS EDITION :

If you are unable to recognize any ship, tank or aircraft in the test illustrations, try to identify it with the aid of silhouettes or other illustrations before checking with lists below.

ELEMENTARY

271. **Beaver**
272. **Gannet** (AS Mk.1)
273. **Constellation** (WV-2)
274. **Valetta** (T Mk.3)
275. **Bristol 173**
276. **Armagnac** (SE.2010)
277. **Shackleton** (MR Mk.2)
278. **Saab J-29**
279. **Stratofreighter** (C-97A)
280. **Sea Venom** (NF Mk.20)
281. **Bell 47D**
282. **Prentice** (T Mk.1)
283. **Starfire** (F-94C)
284. **Sentinel** (L-5)
285. **North American T-28**
286. **Navion** (L-17A)
287. **Heron**
288. **Freighter** (Mk.31)

ADVANCED

376. **IL-2**
377. **Canberras** (B Mk.2)
378. **Beaver**
379. **Sabre** (F-86E)
380. **Varsity** (T Mk.1)
381. **Stratofortress** (B-52)
382. **Hermes** (Mk.4)
383. **Sea Vampire** (F Mk.20)
384. **Saab J-21A**
385. **Scorpion** (F-89A)
386. **Supermarine 508**
387. **Panther** (F9F-3)
388. **Skyshark** (A2D-1)
389. **Comet** (Mk.1)
390. **Chipmunk** (T Mk.10)
391. **CF-100 Canuck**
392. **Stratocruiser**
393. **Saab Safir**

SILLOGRAPHS

280. **Sea Prince** (T Mk. 1)
281. **Wyvern** (TF Mk. 4)
282. **Cutlass** (F7U-1)
283. **Stratojet** (B-47A)
284. **Varsity** (T Mk. 1)
285. **Tigercat** (F7F-3N)
286. **Stratocruiser**
287. **Hermes** (Mk. 4)
288. **Venom** (FB Mk. 1)
289. **Panther** (F9F-3)
290. **Mercator** (P4M-1)
291. **Firefly** (Trainer Mk. 2)
292. **Spitfire** (Trainer Mk. 8)
293. **Corsair** (F4U-5)
294. **Convairliner** (Model 240)
295. **Convairliner** (Model 240)
296. **Brigand** (B Mk. 1)
297. **Savage** (AJ-1)

EXERCISE 'SHACKLETON'

1. **Shackleton 2**
2. **Shackleton 2**
3. **Lancaster 7**
4. **Shackleton 2**
5. **Shackleton 2**
6. **Lancaster 7**
7. **Shackleton 2**
8. **Shackleton 2**
9. **Shackleton 1**
10. **Shackleton 2**
11. **Shackleton 2**
12. **Shackleton 1**
13. **Shackleton 2**
14. **Shackleton 2**
15. **Shackleton 2**
16. **Shackleton 2**
17. **Lincoln 2**
18. **Shackleton 2**
19. **Shackleton 2**
20. **Shackleton 2**
21. **Lincoln 2**
22. **Shackleton 2**
23. **Shackleton 2**
24. **Shackleton 2**
25. **Shackleton 2**
26. **Shackleton 1**
27. **Shackleton 2**
28. **Shackleton 2**
29. **Shackleton 2**
30. **Shackleton 1**

SEAHAWK AND BANSHEE

1. **Banshee**
2. **Seahawk**
3. **Banshee**
4. **Banshee**
5. **Seahawk**
6. **Seahawk**
7. **Banshee**
8. **Seahawk**
9. **Banshee**
10. **Banshee**
11. **Seahawk**
12. **Banshee**
13. **Banshee**
14. **Seahawk**
15. **Seahawk**
16. **Seahawk**
17. **Banshee**
18. **Seahawk**
19. **Banshee**
20. **Banshee**

MODEL MAKERS NOTE (HUNTER)

Overall colour of Prototype Hunter is pale green. Usual R.A.F. roundels and serials in black. Details of the service version will be given later.

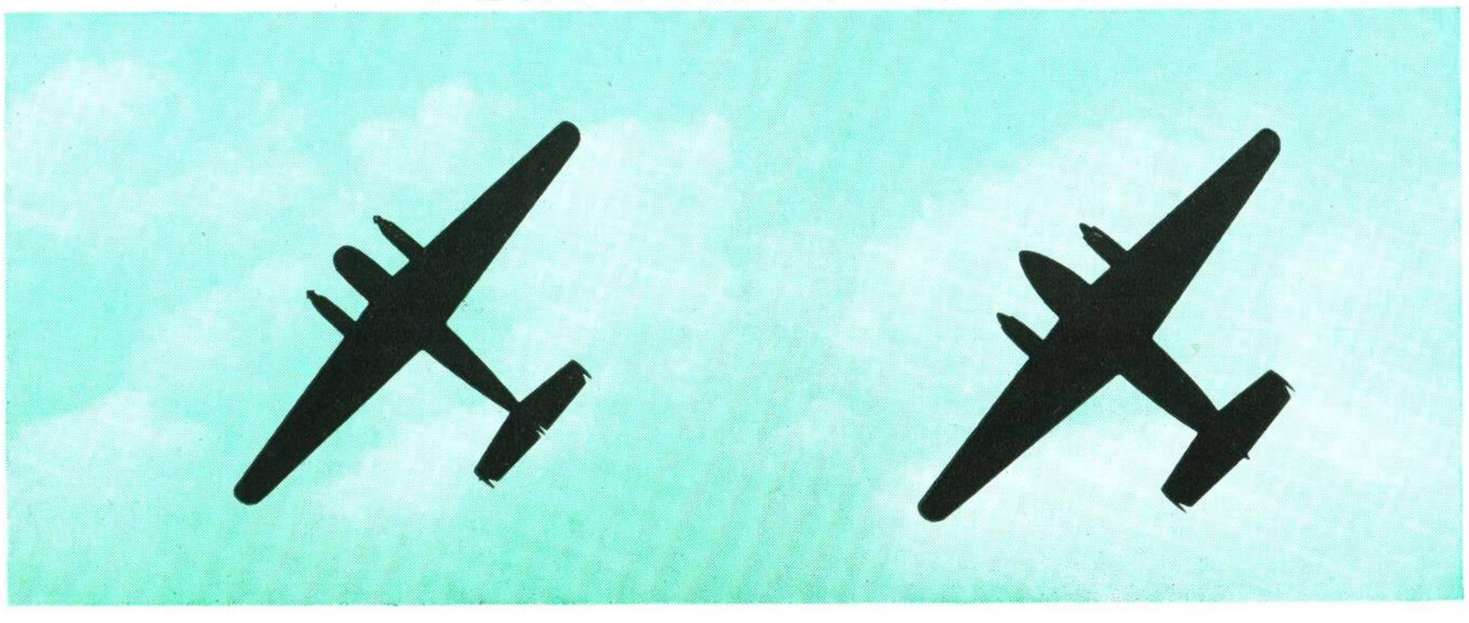
1 S	E	2 A	3 P	4 L	5 O	6 T	T	E	R	S	■
A	■	U	7 S	E	A	O	8 T	T	E	R	■
9 N	O	S	E	W	R	10 G	U	11 A	12 R	D	■
13 D	14 D	T	15 T	I	G	E	R	M	O	T	16 H
17 R	O	E	E	S	■	M	R	B	S	■	O
I	V	R	L	■	■	■	18 E	A	S	Y	V
19 N	E	T	20 L	I	T	21 A	T	S	■	■	E
G	■	22 R	E	23 A	24 R	R	E	S	25 T	E	R
H	26 N	O	R	27 G	O	E	L	A	N	28 D	29 N
A	E	C	S	A	30 C	A	R	D	T	U	E
M	W	31 L	A	I	D	■	■	O	■	A	N
■	32 S	O	U	N	D	C	I	R	C	L	E

Solutions to crossword in November 1952
Royal Observer Corps Gazette.

PERPLEXING PAIR

Left: NC 701 (Siebel Si 204D)
Right: MD 315 Flamant

PERPLEXING PAIR



RUSSIAN DESTROYERS —GORDY CLASS

1. **Battle Class**
2. **Gordy Class**
3. **Gordy Class**
4. **Battle Class**
5. **Gordy Class**
6. **Gordy Class**
7. **Gordy Class**
8. **Gordy Class**
9. **Gordy Class**
10. **Gordy Class**
11. **Battle Class**
12. **Gordy Class**
13. **"C" Group**

INDEX TO VOLUME 7 (New Series)

AIRCRAFT

A2D Skyshark, *Illus.* 63, 106, 153, 175, 237, Silh. 175.
AD-2 Skyraider, *Illus.* 4, 8, 56, 129, Silh. 129.
AD-4W Skyraider, *Illus.* 104, 106, 120, 129, 153, 176, Silh. 104. 176.
AD-5 Skyraider, *Illus.* 45, 68, 129.
Aerovan 6, *Illus.* 90.
AF-2 Guardian, *Illus.* 8, 10, 24, 58, 68, 120, 153, 176, Silh. 176.
Airdale, *see* L-16.
AJ-1 Savage, *Illus.* 28, 42, 80, 141, 185, 203, 235, Silh. 185.
Albatross, *see* UF-1 and SA-16A.
AM-1 Mauler, *Illus.* 176, Silh. 176.
Ambassador, *Illus.* 39, 149, 167, 186, 218, Silh. 149, 186.
Ambrosini S-7, *Illus.* 62.
Anson C Mk.19, *Illus.* 182, Silh. 182.
Argonaut, *Illus.* 54, 116, 188, 210, Silh. 54, 188.
Armagnac, *see* SE 2010.
Attacker F Mk.1, *Illus.* 6, 7, 15, 21, 22, 58, 139, 165, 166, 179, 204, 206, 207 Silh. 15, 179, 208.
Auster, B4, *Illus.* 90.
Auster Mk.6, *Illus.* 90, 148, 172, Silh. 148, 172.
Auster Model S, *Illus.* 90.
Autocrat, *Illus.* 58, 90, 148.
Avenger, *see* TBM.
Avitruc, *see* C-123.
Avro 504K, *Illus.* 90.
Avro 707A, *Illus.* 195.
Avro 707B, *Illus.* 28, 195.

B-26 Invader, *Illus.* 56, 185, Silh. 185.
B-29, *Illus.* 56, 156, 189, 209, 210, Silh. 189, 209.
B-36D, *Illus.* 21, 31, 78, 80, 84, 85, 156, 162, 165, 166, 192, 202, Silh. 86, 192.
B-45 Tornado, *Illus.* 56, 110, 111, 141, 166, 181, 202, Silh. 112, 181.
B-47 Stratojet, *Illus.* 21, 31, 58, 60, 80, 84, 85, 140, 162, 165, 192, 202, 235, Silh. 86, 192.
B-50 Superfortress, *Illus.* 31, 154, 156, 189, 209, 210, Silh. 189 209.
Balliol T Mk.2, *Illus.* 158, 159, 174, Silh. 160, 174.
Banshee, *see* F2H.
Bearcat, *see* F8F.
Beaufighter, *Illus.* 143.
Beaver, *Illus.* 90, 148, 165, 172, 222, 237, Silh. 172.
Bell H-12, *Illus.* 152.
Bell 47, *Illus.* 119, 152, 170, 222, Silh. 170.
Bird-dog, *see* L-19.
Bobcat or Crane, *see* C-78.
Bonanza, *Illus.* 90.
Brabazon, *Illus.* 22.
Breguet 763 Deux Ponts, *Illus.* 21, 116, 191, Silh. 191.
Bretagne, *see* SO-30P.
Brigand B Mk.1, *Illus.* 10, 21, 56, 116, 118, 186, 235, Silh. 186.
Bristol 170, *Illus.* 10, 116, 118, 165, 185, 222, Silh. 185.
Bristol 173, *Illus.* 67, 152, 222, 223, 228.
Bristol Fighter, *Illus.* 90.
Britannia, *Illus.* 82, 203, 227, 229.
BT-13A Valiant, *Illus.* 200.
Bücker Bestmann, *Illus.* 62.

C-45 Expeditor, *Illus.* 23.
C-46 Commando, *Illus.* 23, Silh. 183.
C-47 Dakota, *Illus.* 56, 78, 183, Silh. 183.
C-54 Skymaster, *Illus.* 39, 188, 210, Silh. 188.
C-64 Norseman, *Illus.* 23, 117, 172, Silh. 172.
C-78 Bobcat or Crane, *Illus.* 200.
C-82 Packet, *Illus.* 128, 186, Silh. 186.
C-87 Liberator, *Illus.* 44.
C-97 Stratofreighter, *Illus.* 20, 106, 189, 222, Silh. 189.
C-119 Packet, *Illus.* 56, 107, 117, 128, 186, 203, Silh. 186.
C-123 Avitruc, *Illus.* 68.
C-124 Globemaster 2, *Illus.* 88, 106, 116, 117, 141, 156, 161, 189, 210, Silh. 161, 189.
C-125 Raider, *Illus.* 117, 187, Silh. 187.
Canberra B Mk.1, *Illus.* 22.
Canberra B Mk.2, *Illus.* 4, 21, 28, 31, 39, 110, 111, 141, 162, 165, 180, 196, 202, 237, Silh. 112, 180.
Canberra PR Mk.3, *Illus.* 4, 180, Silh. 180.
Canberra (re-heat), *Illus.* 227.
Canuck, *see* CF-100.
Catalina, *see* PBN.
Cessna L-19, *see* L-19.
CF-100 Canuck *Illus.* 10, 32, 33, 135, 180, 237, Silh. 34, 180.
Chipmunk T Mk.10, *Illus.* 64, 65, 135, 173, 237, Silh. 66, 173.
Comet, *Illus.* 10, 55, 58, 78, 84, 85, 96, 141, 162, 165, 192, 202, 237, Silh. 55, 86, 192.
Commando, *see* C-46.
Constellation, *Illus.* 5, 10, 21, 72, 191, 222, Silh. 5, 191.
Consul, *Illus.* 4.
Convair L-13, *see* L-13.
Convair-Liner, *Illus.* 10, 21, 80, 116, 118, 144, 183, 196, 235, Silh. 183.
Convair YB-60, *see* YB-60.
Cornell, *see* PT-26.
Corsair, *see* F4U.
Corse, *see* SO-95.
Crane or Bobcat, *see* C-78.
Cutlass, *see* F7U.

Dakota, *see* C-47.
DC-6, *Illus.* 88, 188, Silh. 188.
DH-110, *Illus.* 1, 24, 46, 228.
Dominie, *Illus.* 22.
Dove, *Illus.* 30, 182, Silh. 30, 182.
Dragon, *Illus.* 90.
Dragonfly, *Illus.* 21, 118, 152, 170, Silh. 170.

Expeditor, *see* C-45.

F2H Banshee, *Illus.* 15, 42, 56, 68, 139, 179, 203, 204, 206, 207, 224, 226, Silh. 179, 208.
F3D Skyknight, *Illus.* 32, 33, 135, Silh. 34.
F4U Corsair, *Illus.* 31, 56, 139, 176, 235, Silh. 176.
F7F Tigercat, *Illus.* 31, 235.
F7U Cutlass, *Illus.* 180, 235, Silh. 180.
F8F Bearcat, *Illus.* 42, 176, Silh. 176.
F9F Panther, *Illus.* 10, 28, 31, 32, 33, 42, 43, 56, 78, 80, 135, 139, 167, 179, 203, 204, 206, 207, 235, 237, Silh. 34, 179, 208.
F-47 Thunderbolt, *Illus.* 44.
F-51 Mustang, *Illus.* 44, 68, 174, Silh. 174.
F-80 Shooting Star, *Illus.* 15, 32, 33, 106 135, 139, 179, 216, Silh. 34, 179.
F-82 Twin Mustang, *Illus.* 56, 128, 165, 186, Silh. 186.
F-84 Thunderjet, *Illus.* 15, 42, 139, 157, 179, 193, 196, 204, 206, 207, 216, Silh. 179, 208.
F-84F, *Illus.* 140.
F-86 Sabre, *Illus.* 16, 17, 22, 28, 31, 42, 56, 58, 78, 88, 106, 132, 134, 139, 156, 165, 178, 196, 223, 231, 237, Silh. 18, 178.
F-88 Voodoo, *Illus.* 68.
F-89 Scorpion, *Illus.* 4, 28, 31, 32, 33, 49, 68, 72, 74, 78, 80, 106, 117, 135, 139, 165, 167, 180, 237, Silh. 34, 180.
F-94 Starfire, *Illus.* 32, 33, 42, 56, 68, 80, 117, 135, 179, 222, Silh. 34, 179.
Fairey Junior, *Illus.* 90.
Fiat G-12LA, *Illus.* 187, Silh. 187.
Fiat G-46, *Illus* 62.
Fiat G-212CP, *Illus.* 187, Silh. 187.
Firebrand TF Mk.5, *Illus.* 175, Silh. 175.
Firefly FR Mk.1, *Illus.* 39, 141.
Firefly FR Mk.5, *Illus.* 56, 158, 159, 174, Silh. 160, 174.
Firefly AS Mk.7, *Illus.* 4, 28, 174, 196, Silh. 174.
Firefly (Trainer Mk.2), *Illus.* 235.
FJ-1 Fury, *Illus.* 78, 82.
FJ-2 Fury, *Illus.* 82, 196.
Flamant, *see* MD-315.

Gannet, *Illus.* 4, 24, 28, 147, 153, 175, 222, 227, Silh. 153, 175.
Gemini, *Illus.* 90, 128, 185, Silh. 185.
Globemaster 2, *see* C-124.
Goeland, *Illus.* 118.
Goose, *see* JRF.
Guardian, *see* AF-2.

Halifax A Mk.9, *Illus.* 44, 128, 190, Silh. 190.
Harpoon, *see* PV-2.
Hart, *Illus.* 90.
Harvard 2, *Illus.* 90.
Hastings C Mk.1, *Illus.* 78, 88, 161, 188, Silh. 88, 161, 188.
Hawker Cygnet, *Illus.* 90.
Heinkel He 111P, *Illus.* 200.
Helldiver, *see* SB2C-5.
Hermes, *Illus.* 29, 39, 54, 88, 235, 237 Silh. 29, 54.
Heron, *Illus.* 222, 227.
Hiller 360, *Illus.* 119, 152.
HJS-1, *Illus.* 152.
Hornet F Mk.3, *Illus.* 31, 56, 116, 118, 182, Silh. 182.
HRP-1 Rescuer, *Illus.* 83, 152.
HRP-2 Rescuer, *Illus.* 83, 118, 152.
HTK-1, *Illus.* 152.
Hunter, *Illus.* 4, 58, 73, 96, 107, 146, 178, 195, 196, 197, 227, 232, Silh. 146, 178, 197, 233.
HUP-1 Retriever, *Illus.* 97, 119, 120, 152.

IL-2 *Illus.* 42, 237.
IL-10, *Illus.* 78, 158, 159, 175, Silh. 160, 175.
IL-12, *Illus.* 80, 106, 118, 183, Silh. 183.
IL-18, *Illus.* 141.
IL-28, *Illus.* 21, 31, 42, 78, 110, 111, 117, 118, 154, 162, 166, 180, 202, Silh. 112, 180.
Instructor, *see* S-11.
Invader, *see* B-26.

Javelin F(AW) Mk.1, *Illus.* 45, 163, 180, 195, 198, 228, Prov. Silh. 180, 198.
JRF Goose, *Illus.* 136, 137, 143, 162, 165, 202, Silh. 138.
Jungmeister, *Illus.* 90.
Junkers JU 52, *Illus.* 19, 23, 116.

Kaman HTK-1 *see* HTK-1.
Kaman K-225, *Illus.* 82.
Kaydet, *see* PT-13.
KZ III, *Illus.* 172, Silh. 172.
KZ VII, *Illus.* 90.

L-5 Sentinel, *Illus.* 90, 172, 222 Silh. 172.
L-13 Scout, *Illus.* 148, 172, 196, Silh. 172.
L-16 Airdale, *Illus.* 172, Silh. 172.
L-17 Navion, *Illus.* 10, 48, 80, 90, 141, 165, 173, 196, 222, Silh. 173.
L-19 Bird-dog *Illus.* 148, 172, Silh. 172.
LA-9, *Illus.* 31.
LA-11, *Illus.* 175, Silh. 175.
Lancaster, *Illus.* 128, 190, 236, Silh. 190.
Languedoc, *Illus.* 56, 58, 116, 128, 190, Silh. 190.
Leopard Moth, *Illus.* 90.
Liberator, *see* C-87.
Lightning, *Illus.* 143.
Lincoln B Mk.2, *Illus.* 117, 128, 190, 236, Silh. 190.
Lodestar, *Illus.* 143.

Macchi MB. 308, *Illus.* 90.
Mallard, *Illus.* 141.
Marathon Mk.1, *Illus.* 78, 107, 191, Silh. 191.
Marathon T Mk.11, *Illus.* 227.
Mariner, *see* PBM.
Marlin, *see* P5M.
Martin 202, *Illus.* 183, Silh. 183.
Martin 404, *Illus.* 4, 68, 106, 141, 183, Silh. 183.
Mauler, *see* AM-1.
MD-315 Flamant, *Illus.* 118, 128, 185.
MD-450 Ouragan, *Illus.* 16, 17, 21, 58, 59, 139, 178, Silh. 18, 178.
MD-452 Mystere, *Illus.* 178, Silh. 178
Me 109, *Illus.* 44.
Mercator, *see* P4M.
Messenger, *Illus.* 64, 65, 90, 135, 173, Silh. 66, 173.
Meteor F Mk.4, *Illus.* 9, 181, Silh. 181.
Meteor T Mk.7, *Illus.* 9, 181, Silh. 181.
Meteor F Mk.8, *Illus.* 9, 22, 39, 139, 156, 181, Silh. 181.
Meteor Mk.8 (P.V.), *Illus.* 68.
Meteor FR Mk.9 *Illus.* 9, Silh. 181.
Meteor PR Mk.10, *Illus.* 9, 116, 118, 165, 181, Silh. 181.
Meteor NF Mk.11, *Illus.* 9, 39, 53, 110, 111, 118, 139, 162, 165, 181, 202, 221, Silh. 52, 112, 181, 221.
MIG-9, *Illus.* 42, 78.
MIG-15, *Illus.* 16, 17, 56, 89, 106, 114, 115, 146, 156, 178, 195, Silh. 18, 146, 178.
MIL Helicopter, *Illus.* 122, 152, 170, Silh. 122, 170.
Monarch, *Illus.* 90.
Morane M.S. 472 Vanneau, *Illus.* 62.
Morane M.S. 733, *Illus.* 62.
Mosquito PR Mk.34, *Illus.* 116, 182, Silh. 182.
Mosquito TT Mk.35, *Illus.* 80, 182, Silh. 182.
Mustang, *see* F-51.
Mystere, *see* MD 452.

Navion, *see* L-17.
Neptune, *see* P2V.
NC-701 (Siebel Si 204D), *Illus.* 185, Silh. 185.
NC 853 Club, *Illus.* 90.
Noralpha, *Illus.* 90.
Nord 2501 Noratlas, *Illus.* 28, 106, 128, 186, Silh. 186.
Norecrin, *Illus.* 90.
Norseman, *see* C-64.
North American T-28, *see* T-28.

Ouragan, *see* MD-450.

P2V Neptune, *Illus.* 27, 39, 43, 58, 68, 78, 117, 118, 141, 165, 184, 196, Silh. 184.
P4M Mercator, *Illus.* 184, 235, Silh. 184.
P5M Marlin, *Illus.* 42, 58, 78, 106, 118, 136, 137, 162, 166, 187, 202, Silh. 138, 187.
P.111, *Illus.* 28, 58, 195.
Packet, *see* C-119 and C-82.
Panther, *see* F9F.
PBM Mariner, *Illus.* 136, 137, 162, 166 202, Silh. 138.
PBN Catalina, *Illus.* 23, 87, 136, 137, 162, 167, 187, Silh. 138, 187.
PE-2, *Illus.* 118, 128, 155, 185, Silh. 185.
Piaggio P.148, *Illus.* 62, 173, Silh. 173.
Piper Cub, *Illus.* 90.
Piper Cub Coupe, *Illus.* 90.
Piper Super Cruiser, *Illus.* 90.
Prentice T Mk.1, *Illus.* 22, 64, 65, 80, 90, 135, 173, 222, Silh. 66, 173.
Prince, *Illus.* 68, 227.
Princess, *Illus.* 228.
Proctor T Mk.4. *Illus.* 64, 65, 90, 135, 173, Silh. 66, 173.
Provost T Mk.1, *Illus.* 28, 39, 48, 58, 64, 65, 78, 80, 90, 135, 173, Silh. 66, 173.
PT-13 Kaydet, *Illus.* 200.
PT-26 Cornell, *Illus.* 200.
PV-2 Harpoon, *Illus.* 200.

Q-6 Petrel, *Illus.* 90.

Raider, *see* C-125.
RB-50B Superfortress, *Illus.* 21.
Reliant, *Illus.* 90.
Rescuer, *see* HRP-1 and 2.
Retriever, *see* HUP-1.
RF-84F, *Illus.* 140.

S-11 Instructor, *Illus.* 4, 10, 42 58, 62, 90, 173, Silh. 173.
S-55, *Illus.* 68, 152, 170, Silh. 170.
SA-16A Albatross, *Illus.* 68, 136 137, 187, 202, Silh. 138, 187.
Saab B-18, *Illus.* 118, 128.
Saab J-21A, *Illus.* 237.
Saab J-21R, *Illus.* 46, 177, Silh. 177.
Saab J-29, *Illus.* 16, 17, 42, 78, 80, 101, 139, 178, 222, Silh. 18, 101, 178.
Saab 210, *Illus.* 67.
Saab Safir, *Illus.* 237.
Sabre, *see* F-86.
Savage, *see* AJ-1.
SB2C-5 Helldiver, *Illus.* 4.
Scorpion, *see* F-89.
Scout *see* L-13.
SE 2010 Armagnac, *Illus.* 116, 196, 222.
Seafire F Mk.17, *Illus.* 56, 174, Silh. 174.
Seafire FR Mk.47, *Illus.* 158, 159, 160, Silh. 160.
Sea Fury FB Mk.11, *Illus.* 80. 175, Silh. 175.
Sea Fury T Mk.20, *Illus.* 10, 21, 28, 141, 175, Silh. 175.
Sea Hawk F Mk.1, *Illus.* 6, 7, 102, 139, 179, 196, 203, 204, 206, 207, 224, 226, Silh. 103, 179, 208.
Sea Hornet FR Mk.20, *Illus.* 4.
Sea Hornet NF Mk.21, 182, Silh. 182.
Sealand, *Illus.* 10, 31, 124, 136, 137, 162, 166, 187, 202, Silh. 124, 138, 187.
Sea Prince T Mk.1, *Illus.* 4, 28, 185, 196, 235, Silh. 185.
Sea Prince C Mk.1, *Illus.* 78.
Sea Vampire F Mk.20, *Illus.* 46, 177, 237, Silh. 177.
Sea Venom NF Mk.20, *Illus.* 6, 7, 21. 46, 177, 222, Silh. 177.
Sentinel, *see* L-5.
Shackleton MR Mk.1, *Illus.* 10, 80, 128, 189, 196, Silh. 189.
Shackleton MR Mk.2, *Illus.* 190, 222, 236, Silh. 190, 236.
Shooting Star, *see* F-80 and T-33.
Short SA.4, *Illus.* 28.
Siebel 204D, *Illus.* 10, 23, 59.
Sikorsky HJS-1, *see* HJS-1.
Sikorsky YH-18, *see* YH-18.

50,500 12/52 38-241-0

Sipa S.11, *Illus.* 90.
Sipa S.12, *Illus.* 62.
Sipa S.901, *Illus.* 90.
Skeeter, *Illus.* 229.
Skyknight, *see* F3D.
Skymaster, *see* C-54.
Skyraider, *see* AD-2, AD-4W and AD-5.
Skyshark, *see* A2D.
SM-95, *Illus.* 188, Silh. 188.
SO-30P Bretagne, *Illus.* 58, 80, 106, 116, 118, 128, 186, Silh. 186.
SO-95 Corse, *Illus.* 30, 58, 80, 106, 182, Silh. 30, 182.
Sokol, *Illus.* 90.
Spitfire F Mk.22, 174, Silh. 174.
Spitfire (Trainee Mk.8), *Illus.* 235.
Stampe SV.4C, *Illus.* 90.
Starfire, *see* F-94.
Storch, *Illus.* 143.
Stratocruiser, *Illus.* 141, 156, 189, 235, 237, Silh. 189.
Stratofreighter, *see* C-97.
Stratofortress, *see* YB-52.
Stratojet, *see* B-47.
Sturgeon TT Mk.2, Illus. 42, 68, 141, 182, 196, Silh. 182.
Sunderland GR Mk.5, *Illus.* 189, Silh, 189.
Super Ace, *Illus.* 90, 128.
Super DC-3, *Illus.* 183, Silh. 183.
Superfortress, *see* B-29 and B-50.
Supermarine 508, *Illus.* 6, 7, 58, 140, 237.
Swift, *Illus.* 16, 17, 169, 171, 228, Silh. 18.
Sycamore, *Illus.* 28, 45, 118, 152, 170. Silh. 170.

T-6G Texan, *Illus.* 68.
T-28, *Illus.* 10, 222.
T-33 Shooting Star, *Illus.* 42, 196, 204, 206, 207, 216, Silh. 208.
TBM Avenger, *Illus.* 143, 176, Silh. 176.
Thunderbolt, *see* F-47.
Thunderjet, *see* F-84.
Tigercat, *see* F7F.
Tiger Moth, *Illus.* 90.
Tomtit, *Illus.* 90.
Tornado, *see* B-45.
Traveller, *Illus.* 90.
TU-2, *Illus.* 21, 31 56, 116, 118, 128, 155, 186.
TU-4, *Illus.* 42.
TU-70, *Illus.* 141, 189, Silh. 189.
Twin Mustang, *see* F-82.

UF-1 Albatross, *Illus.* 4, 162, 166, 202.
U-IL-28, *Illus.* 230, Silh. 230.
U-MIG-15, *Illus.* 100, 178, Silh. 100, 178.
Universal Freighter, *Illus.* 4, 59, 68, 128, 191, Silh. 191.

Valetta, *Illus.* 22, 141, 184, 222, Silh. 184.
Valiant (Vickers), *Illus.* 4, 10, 21, 58, 77, 80, 84, 85, 96, 116, 141, 162, 192, 202, 228, Silh. 86, 192.
Valiant (Vultee), *see* BT-13A.
Vampire FB Mk.5, *Illus.* 22, 46, 177 Silh. 177.
Vampire NF Mk.10, *Illus.* 46, 50, 139, 177, Silh. 177.
Vampire T Mk.11, *Illus.* 106, 128, 196, Silh. 117.
Varsity T Mk.1, *Illus.* 10, 99, 116, 125, 141, 184, 235, 237, Silh. 125, 184.
Venom FB Mk.1, *Illus.* 68, 177, 235, Silh. 177.
Venom NF Mk.2, *Illus.* 31, 46, 139 177, Silh. 46, 177.
Viking, *Illus.* 31, 184, Silh. 184.
Viscount, *Illus.* 4, 31.
Voodoo, *see* F-88.
Vulcan, *Illus.* 194, 217, 228, 238.

Wellington T Mk.10, *Illus.* 184, Silh. 184.
Wyvern TF Mk.2, *Illus.* 10.
Wyvern TF Mk.4, *Illus.* 2, 4, 28, 40, 63, 106, 141, 175, 196, 227, 235, Silh. 41, 175.

YAK-3, *Illus.* 21, 158, 159, 174, Silh. 160, 174.
YAK-9, *Illus.* 28, 31, 174, Silh. 174.
YAK-15B, *Illus.* 21, 78.
YB-52 Stratofortress, *Illus.* 67, 107, 123, 192, 237, Silh. 192.
YB-60, *Illus.* 107, 123.
YH-18, *Illus.* 152.
York C Mk.1, *Illus.* 44, 191, Silh. 191.

SHIPS

Battle Class, *Illus.* 127, 211, 213, 214, 215, 220, Silh. and deck plan 212.
H.M.S. Belfast, *Illus.* 93, 94, 95, Silh. and deck plan 92.

"C" Group, *Illus.* 69, 213, 214, 215, 220, Silh. and deck plan 212.
Casablanca Class, *Illus.* 98.

Daring Class, *Illus.* 75, 127, 213, 214, 215, Silh. and deck plan 212.

Eagle, *Illus.* 3, 26, 47, 69, 82, 126, Silh. 26.
Essex Class, *Illus.* 47.

Fiji Class, *Illus.* 93, 95, Silh. and deck plan 92.

Glory Class, *Illus.* 98.
Gordy Class, *Illus.* 220.

Illustrious Class, *Illus.* 47, 69.
Implacable Class, *Illus.* 69, 126.
Independence Class, *Illus.* 69, 98.
Iowa Class, *Illus.* 69, 121, 144.

King George V Class, *Illus.* 47.
Kirov Class, *Illus.* 12, Silh. and deck plan, 11.

Majestic Class, *Illus.* 69, 98.

Queen Elizabeth, *Illus.* 25, 48.

Saipan Class, *Illus.* 98.
Southampton Class, *Illus.* 47, 93, 94, 95, Silh. and deck plan 92.
Sumner Class, *Illus.* 213, 214, 215, Silh. and deck plan 212.
Swiftsure Class, *Illus.* 93, 94, 95, Silh. and deck plan 92.

"T" Class anti-sub. frigate, *Illus.* 140.

Uganda Class, *Illus.* 47, 93, 94, 95, Silh. and deck plan 92.

Vanguard, *Illus.* 47.

Weapon Class, *Illus.* 47, 69.

TANKS

Centurion, *Illus.* 35, 51, 79, 87, 150, 223, 234, Diag., 35, 150.
Chaffee, *Illus.* 22, 36, Diag. 36.
Churchill *Illus.* 35. 150, Diag. 35, 150.
Comet, *Illus.* 35, 150, 234, Diag. 35, 150.
Cromwell, *Illus.* 22, 36, 87, Diag. 36.

JS-2, *Illus.* 37, 70, 71, Diag. 37.
JS-3, *Illus.* 37, 70, 71, 87, 105, 130, 131, Diag. 37, 131.
JSU-122, *Illus.* 71.
JSU-152, *Illus.* 22, 38, 70, 71, 87, Diag. 38.

M.10, *Illus.* 38 150, Diag. 38, 150.
M.47, *Illus.* 201.

Patton, *Illus.* 201.
Pershing, *Illus.* 22, 36, 87, 150, 201, Diag. 36, 150.

Sherman, *Illus.* 22, 37, 70, 150, Diag. 37, 150.
SU-76, *Illus.* 105.
SU-100, *Illus.* 38, 70, 71, 87, 105, Diag. 38.

T 34-85 *Illus.* 22, 37, 67, 70, 71, Diag. 37.
T 34-76, *Illus.* 22, 70 82.
T 41 Walker Bulldog, *Illus.* 36, Diag. 36.

Valentine, *Illus.* 38, 87, 105, 145, 150, 168, Diag. 38, 150.

GENERAL

British and American Fleet Destroyers, 211.
British Cruisers—6-inch gun group, 91.
Curve of Pursuit, 156.
Eyes, Speed and Altitude, 114.
Heat Barrier, 231.
Night Interception and Visual Recognition, 154.
Russian Cruisers, 11, 12, 13.
Sabre and MIG-15, 134.
S.B.A.C. Show, 227, 228.
Tank Synopsis, 35.
Why is the Delta—a Delta ? 163.

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