

JOINT



SERVICES

# RECOGNITION

*Journal*



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JOINT SERVICES

RECOGNITION JOURNAL

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## The "Freedom Fighter"

THE great number of F-89 Scorpions which have seen years of service across the United States, Canada and Greenland in every kind of weather has probably given the Northrop Corporation as wide an experience of bad weather flying problems as any single company. They are thus particularly well qualified to produce a new all-weather fighter embodying all the latest technological advances and backed with this great experience.

This they have done in the Northrop N-156F, or "Freedom Fighter" as it has been dubbed. The N-156F has been developed in parallel with the T-38 Talon trainer now in production for the United States Air Force, and the family likeness is apparent from the photographs below and opposite. It was built ("from the ground up", as the company put it) as an all-weather weapon, whereas its operational contemporaries, the "Century Series" of fighters, were only adapted to it later in their careers.

The N-156F is unique in that, for the first time, the U.S. Department of Defense is financing the development of an aircraft which it does not intend to put into U.S. service. The object was to design an easy-to-build machine, with first-class performance and a wide choice of weapons, which would suit

both the needs and the pockets of smaller friendly nations overseas—notably the NATO and SEATO countries.

A choice of new jet engines offering high thrusts for low weight greatly assisted the design of this high-speed, low-weight aeroplane while still allowing ample space for a wide variety of essential radar and electronics (some 40 cubic feet of "black box" space is available in the N-156F). Following current U.S. military policy it is twin-engined, a valuable safety factor in any case but of paramount importance in an aeroplane whose job is to fly in bad weather.

Fully developed, the N-156F will be able to fly at twice the speed of sound, have a range of more than 2,000 nautical miles, and the capacity to carry advanced air-to-air or air-to-ground weapons as well as conventional ordnance loads—an impressive performance by any standards, but the more so when contained in an airframe able to use short fields or be shot off standard "zero-length" launchers with a take-off weight of only 5½ tons.

Aerodynamically the N-156F is a clean-cut craft and very easy on the eye. It has the current vogue in wasp-waisted fuselages and the neat tapered wings are set well back behind a large canopy and a long smooth nose. No sales had been announced at the time of writing, but it appears to be a most promising venture: we wish it well.



The N-156F "Freedom Fighter" over the Californian desert

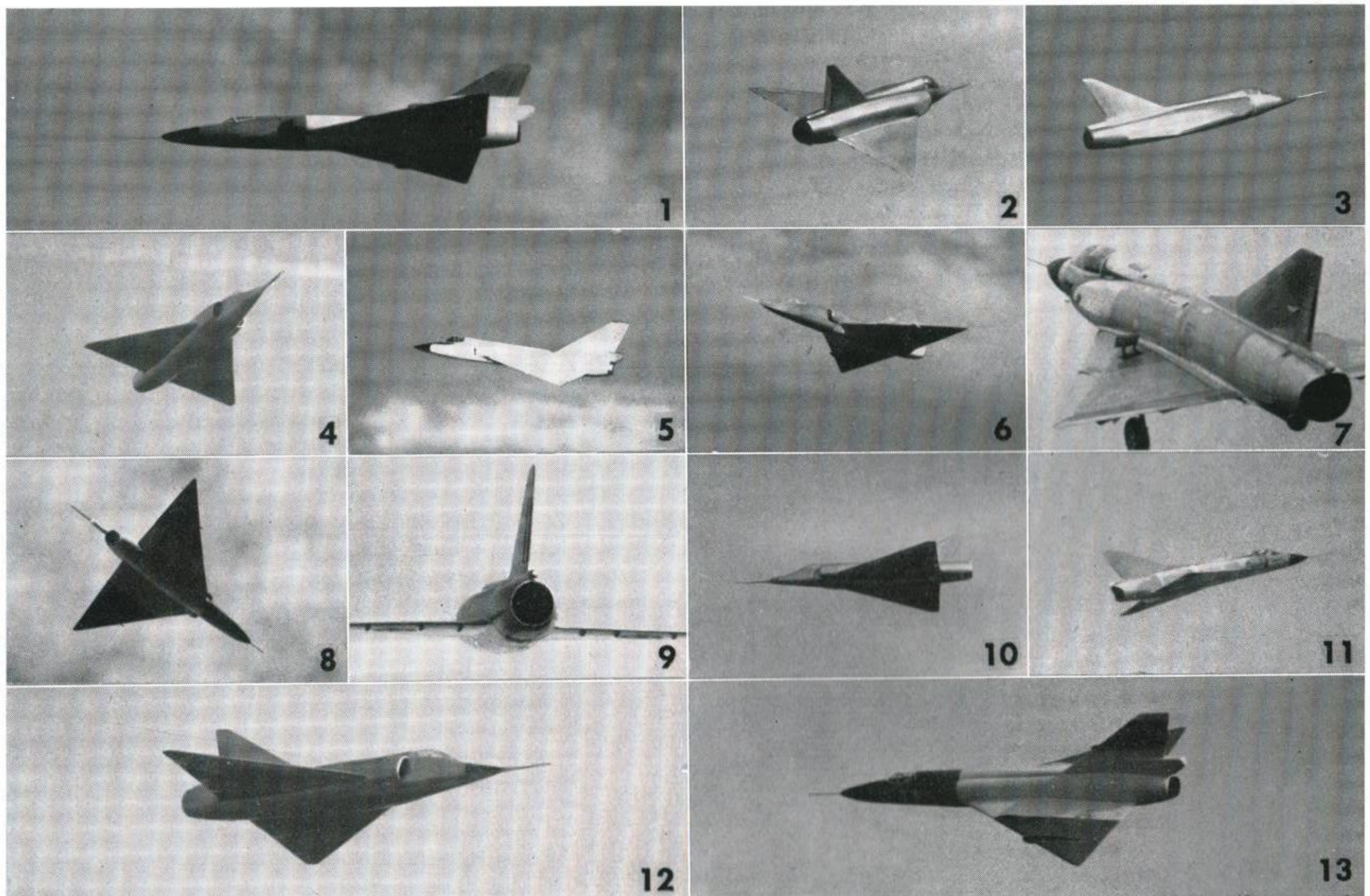
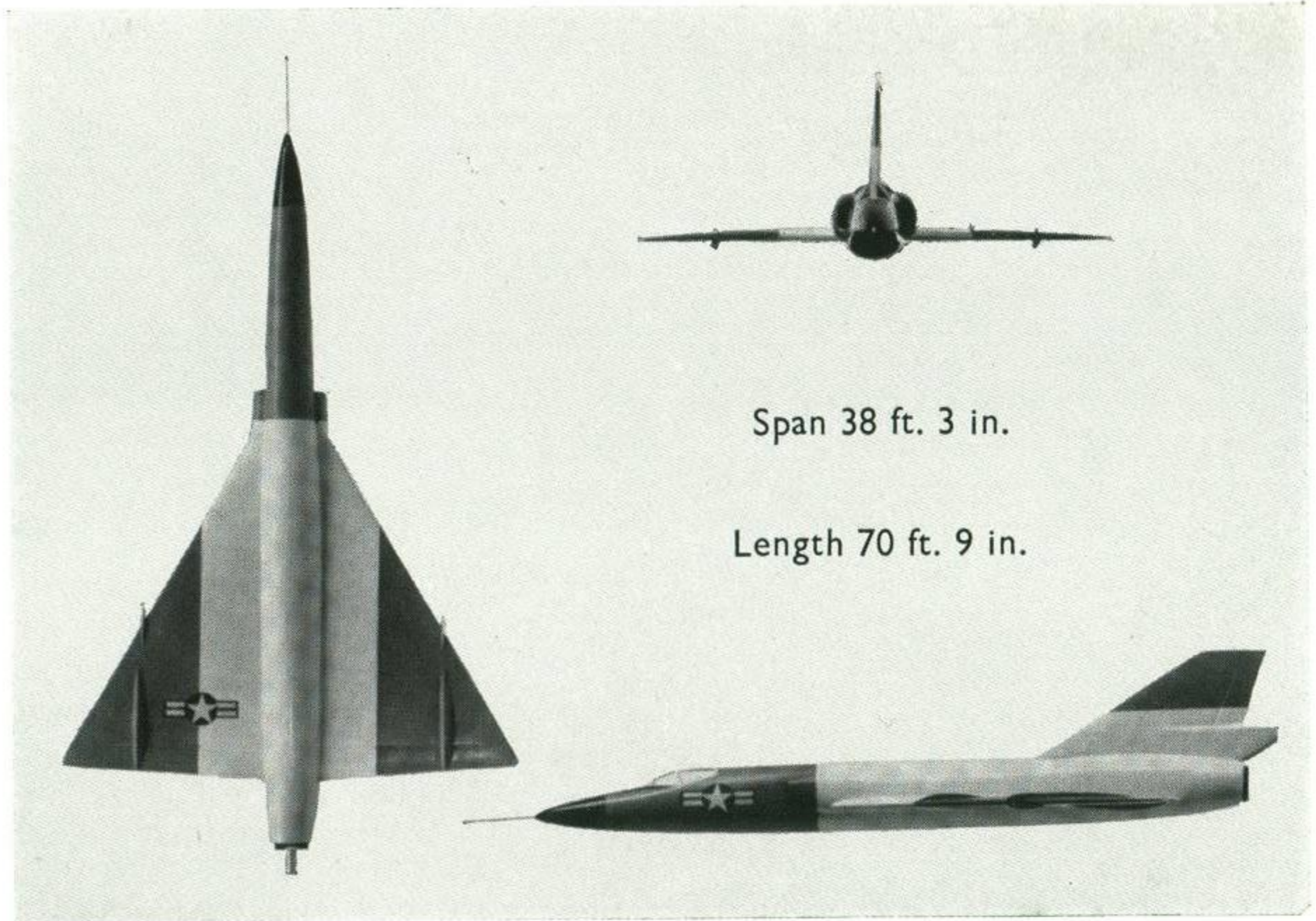
# “You Can’t Tell Them Apart Unless They’re Together”

**T**HIS headline is nonsense, of course. You can tell the Mirage from the Delta Dart any time you like if you know what to look for. And if you don't, here is your chance to find out. Once you can do this you have only one problem left—to be able to name each one swiftly and positively whenever you encounter it in future. You will find that writing down—in full—your own answers to the lesson targets as you go along will help you achieve this as well. One cautionary word: don't set too much store by their different nose shapes. Indications are that by the time it reaches service next summer the Mirage's nose may well have been fattened up with a larger radar installation, but that won't change its character.

## Convair DELTA DART

U.S. Air Force Fighter

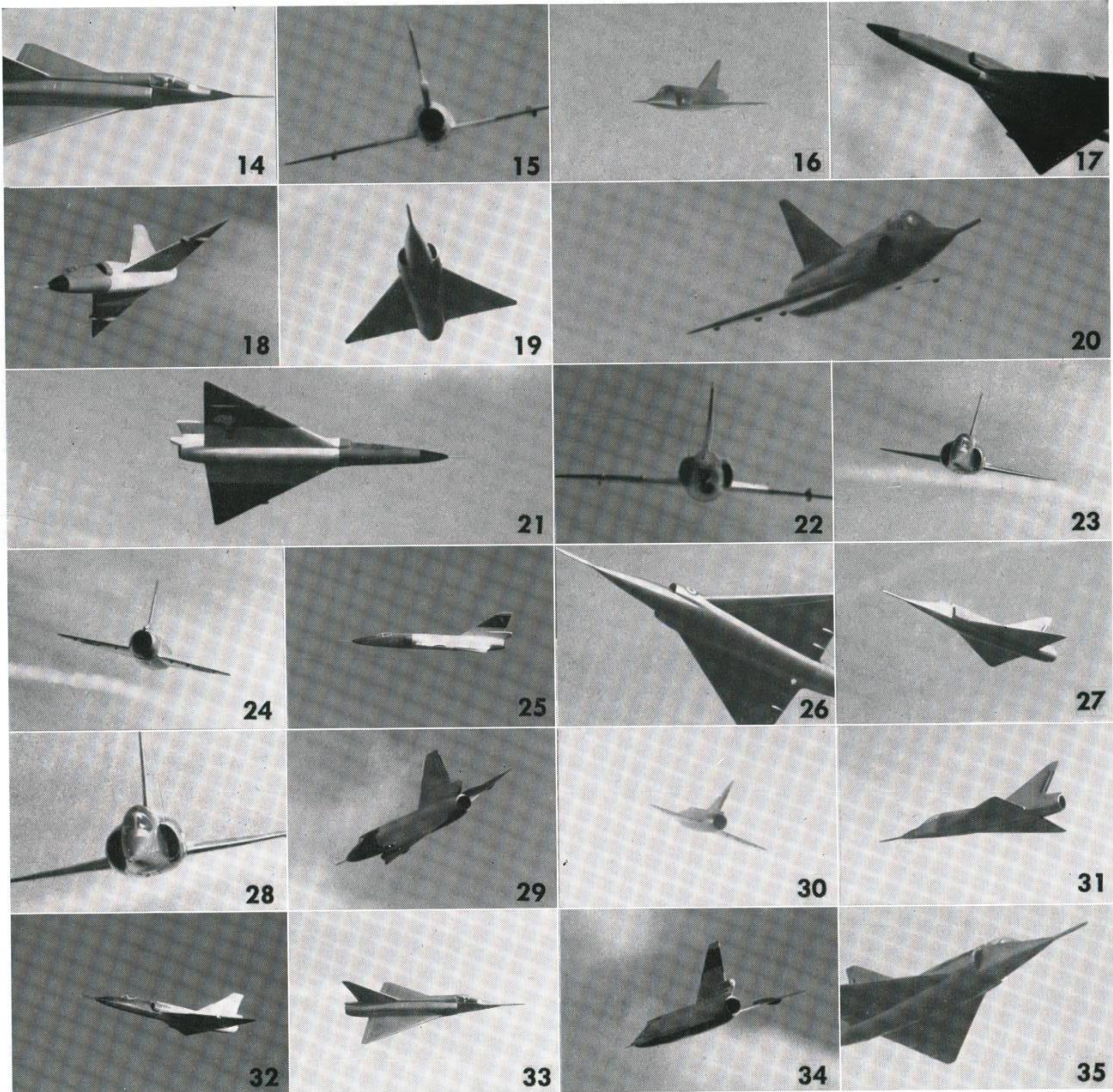
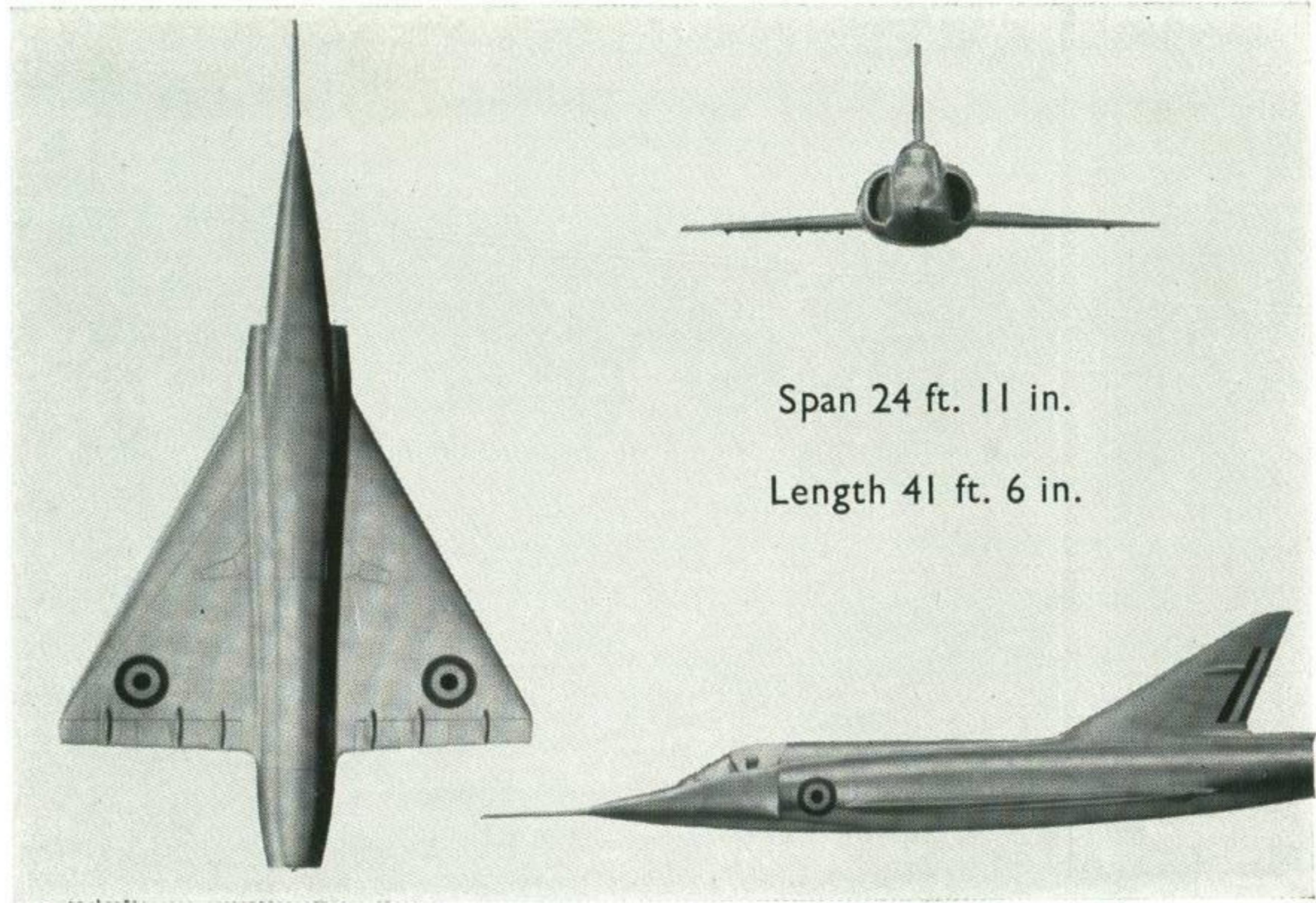
**W**ITH a more stretched-out body than the Frenchman, the DELTA DART looks slimmer—and is a bigger aircraft anyway. The large parachute brake box above the tailpipe is often a good clue, and the wing fences also show up from several angles.



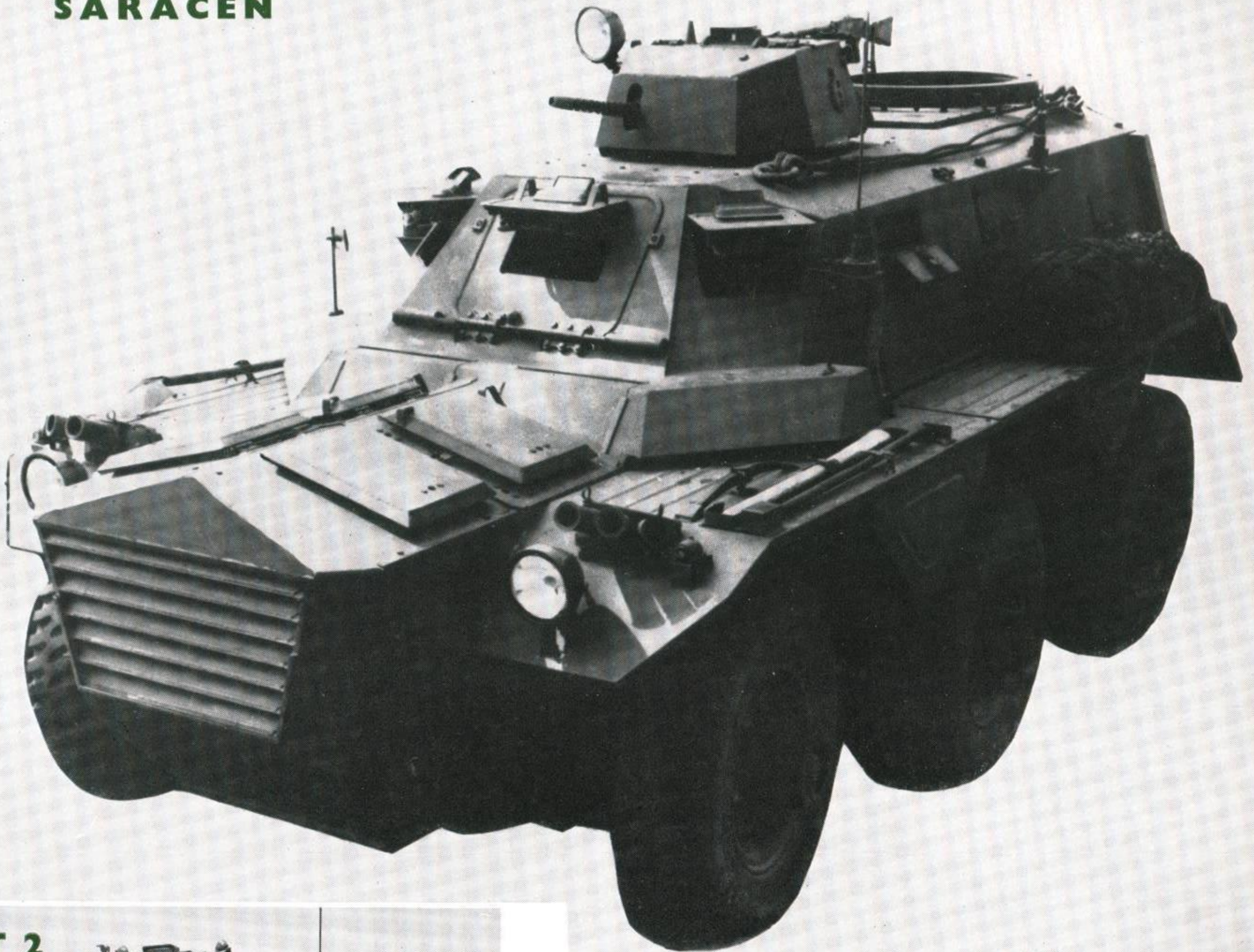
# Dassault MIRAGE III

French Air Force Fighter

**T**HE MIRAGE presents a rather more compact little shape than the Delta Dart, being not quite so long in relation to its wing span. The finer-pointed tail fin with its forward-reaching frontal edge is one useful clue, though you will find others.

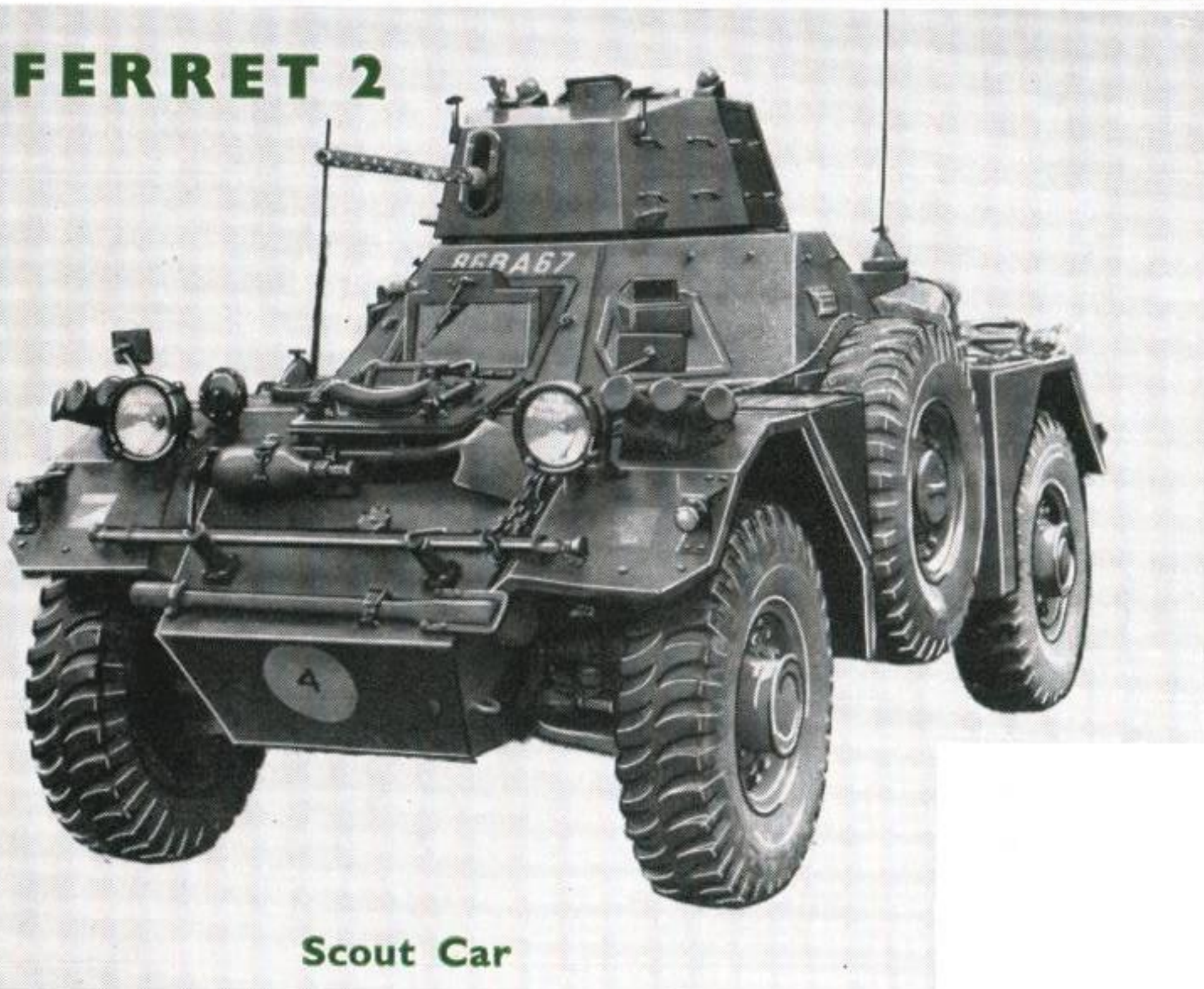


## SARACEN



Armoured Personnel Carrier

## FERRET 2



Scout Car

## Operation

## “Lowdown”-2

### Here's The Lowdown :

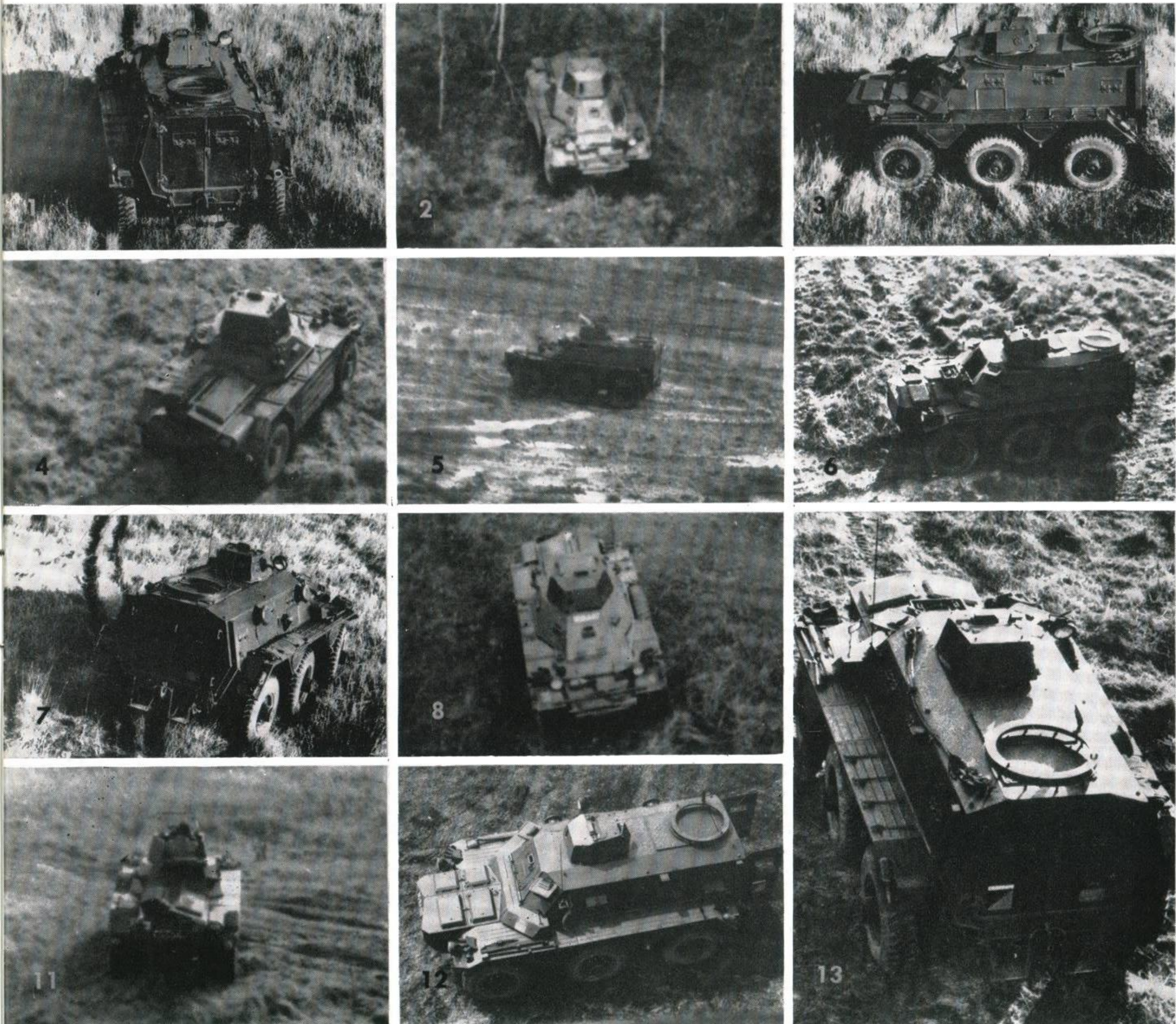
After making a list of the target numbers in the lesson, the named pictures above should be used in association with VIEW 13 (SARACEN) and VIEW 20 (FERRET) as key information, since the latter show the vehicles as seen from the air. All answers to targets should be written out in full, as usual.



LAST MONTH we compared the Saracen with the Daimler Armoured Car; this month it is compared with the Ferret Mk. 2 car which is replacing the Daimler. Indeed, both of this month's vehicles are in large-scale service with the British and other Western Armies. Their turrets are identical, but there the similarity ends. Differentiating them may be easy to the tank expert, but these lessons are primarily for the not-so-expert, who may confuse the pair from certain angles. If he studies the key photographs along with the written clues, however, identification will be made more easy.

**Saracen:** A six-wheeled vehicle with the wheels evenly spaced each side. Front-engined, and has a high rectangular body with a square-cut back. On top: turret at the front, machine-gun ring at the back.

**Ferret 2:** Four wheels and a low squat body, topped by a small turret located centrally on a cut-off "pyramid" fighting compartment. Rear-engined, the back protruding in "ducks-disease" fashion. Spare wheel on left-hand side.



## IN A FLASH!

Body shapes—"Coffin" for the Saracen, "ducks disease" for the Ferret

Turret positions—Saracen front, Ferret central

Wheels—Saracen six, Ferret four plus one spare

Engines—Saracen front, Ferret rear

## FERRET 2



Scout Car

## SARACEN



Armoured Personnel Carrier

# Operation "LOWDOWN"—2



The SARACEN and the FERRET may be somewhere here—perhaps once, perhaps more than once, perhaps not at all.

What do you think?



Answers on the rear cover

# Briefs

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



## Canadian Capers

Eight squadrons of the Royal Canadian Air Force serving under NATO in Europe are to be equipped with American F-104 Starfighter interceptors. Discussions took place recently on plans to put the Starfighters into imminent production in Canada. Avro (Canada) Ltd. will probably be among those concerned with production (214 Starfighters are to be ordered), but the solution of Canada's home defence problem is still ultimately dependent upon the inclusion of the Bomarc-B missile, it is understood.

\* \* \*

## Titled Trio

Just in time to save this month's "Briefs" from having an all-Canadian flavour came this photo from Convair of their three flight-test 880 jet transports on the San Diego tarmac. Six months intensive testing have proved that a 615 m.p.h. level speed is possible, and the first Convair 880 for airline use is due to reach Trans World Airlines this month. May we draw the attention of other aircraft manufacturers to the informative, as well as decorative, appearance of these tail fins? If only identification were always made so easy for us!

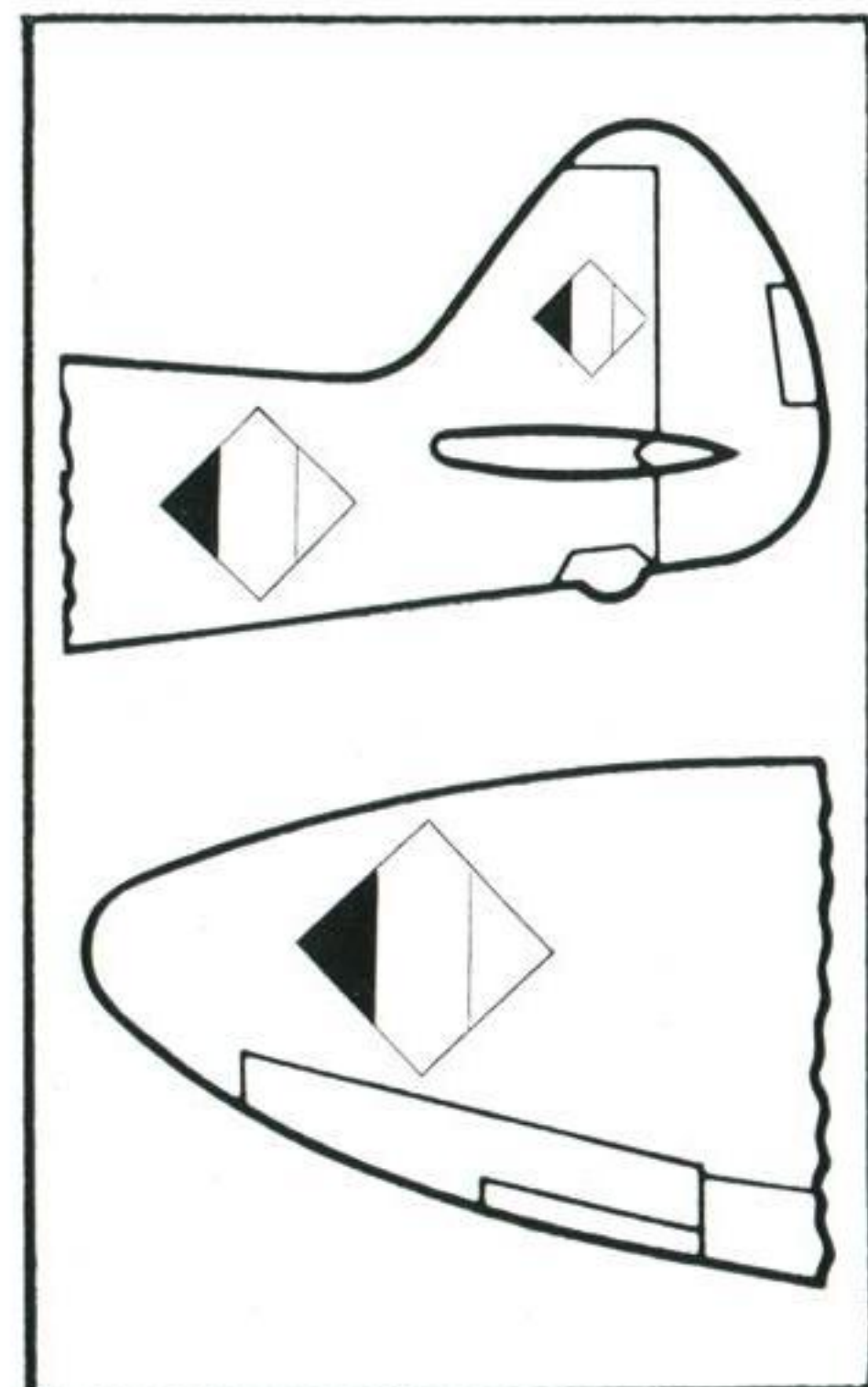
## A.S.R. Addition

The Grumman Albatross, used for many years now as a search-and-rescue amphibian by the United States forces, is to be introduced into the R.C.A.F. in 1960 under the designation CSR-110. An order for 10 machines has been placed; they will differ from the standard Albatross in having a retractable nosewheel (specially designed for use when beaching) and more powerful engines. The photograph shows an SA-16A Albatross of the U.S. Air Force.

\* \* \*

## Two Maritime Marathons

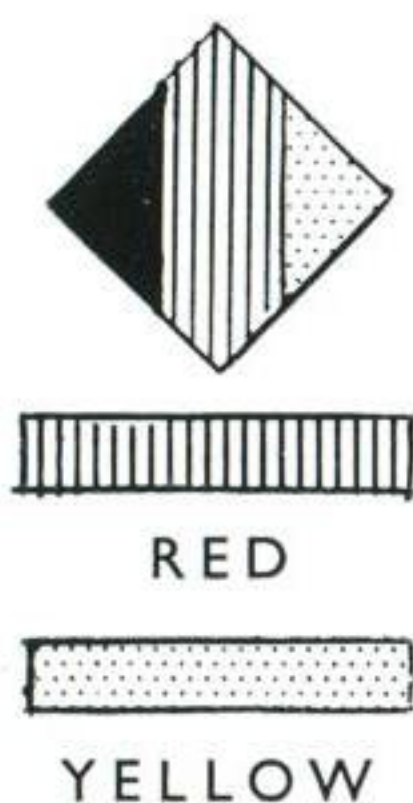
The Canadair Argus, which is serving with the R.C.A.F. Maritime Air Command, was recently demonstrated to the Canadian press. A party of reporters were flown on a 3,000-mile trip from Greenwood, Canada, to Bermuda and back to Montreal non-stop in 13 hours. Another Argus, in June, set what is believed to be a Canadian distance record with an 18 hr. 48 min. flight from Greenwood across the Atlantic to the Irish coast and back non-stop—4,500 miles—without refuelling.



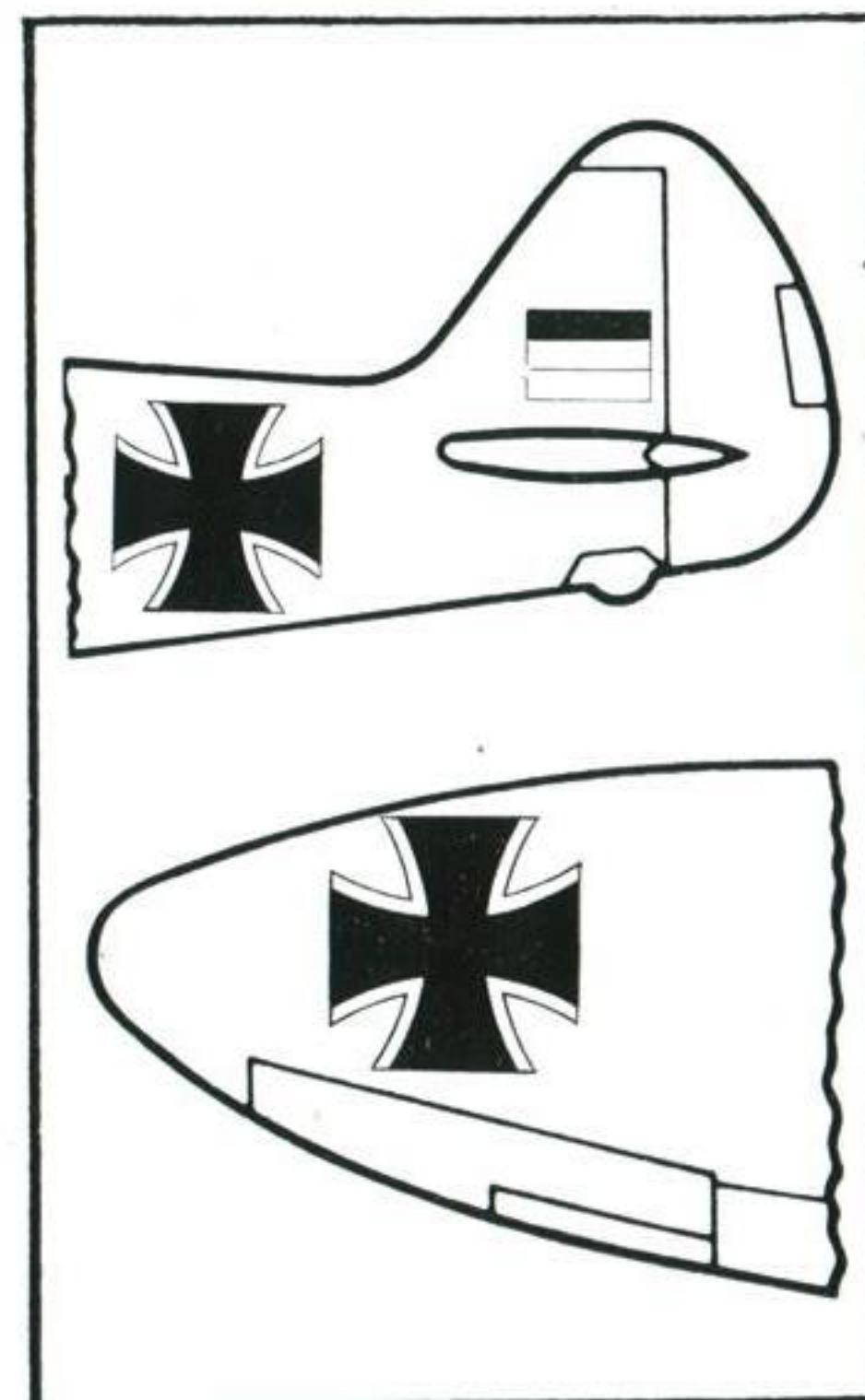
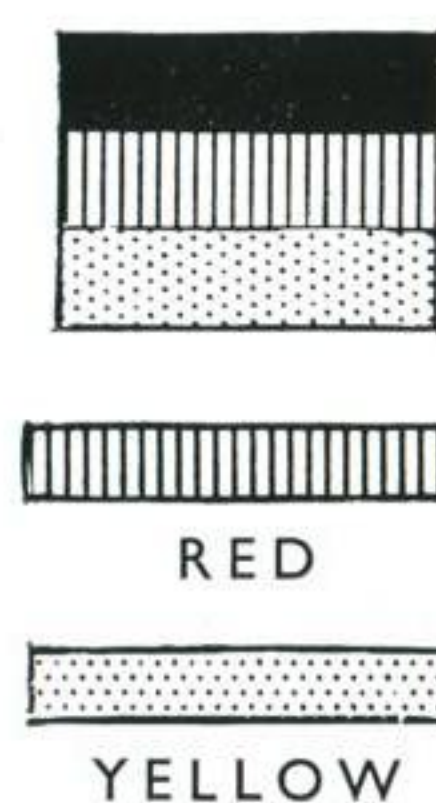
EAST GERMANY

## Aircraft National Markings

FROM time to time the *Journal* will publish new or revised diagrams of national insignia as information becomes available and space permits. The Aircraft National Markings Chart (Air Diagram 4625) has not been withdrawn, but it will not be reprinted in its entirety. Each larger drawing should be treated as below and stuck on to the Chart to keep it fully amended.



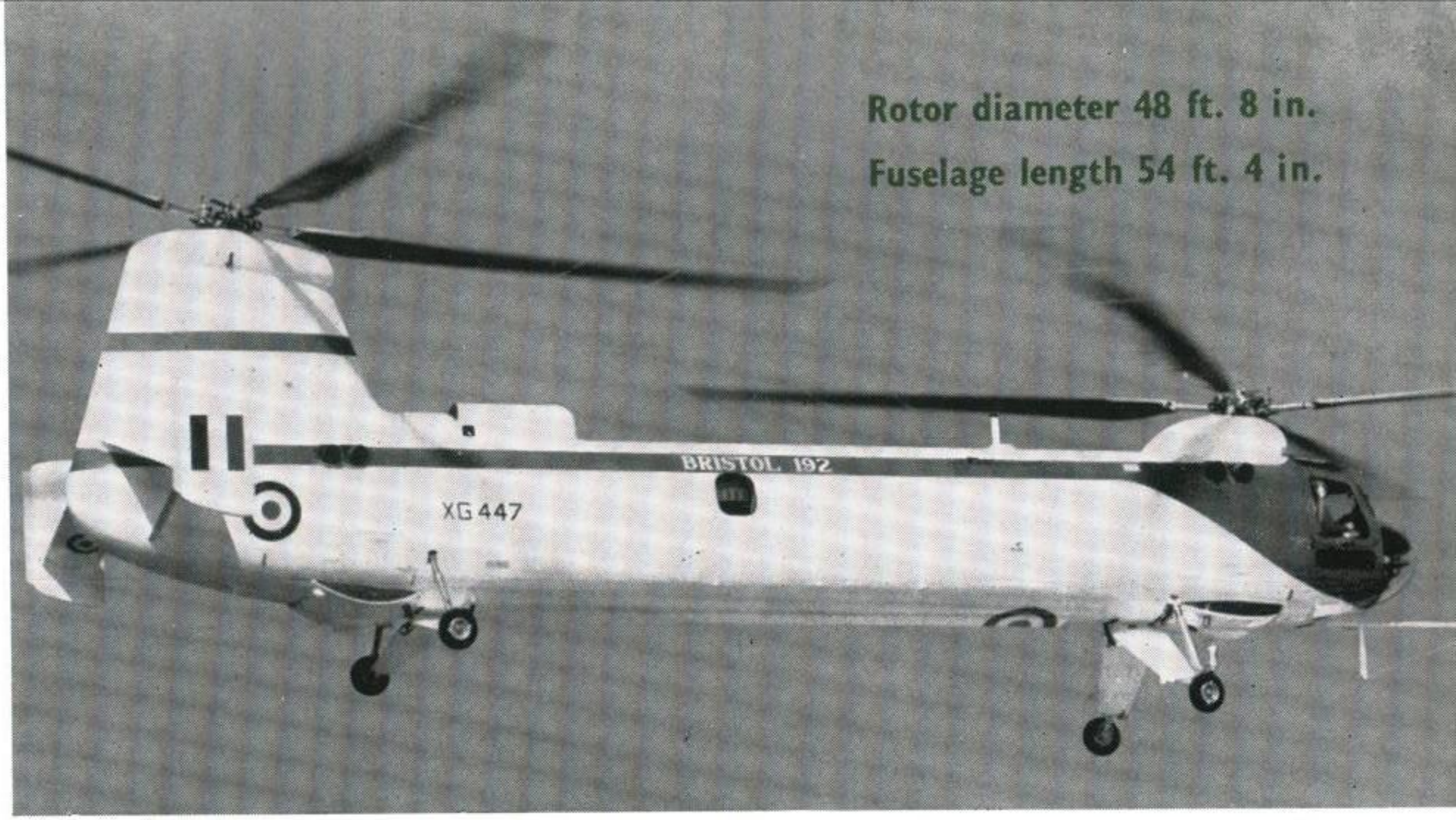
Each large diagram should be coloured in accordance with the smaller "key" and then affixed in its appropriate position on A.D.4625.



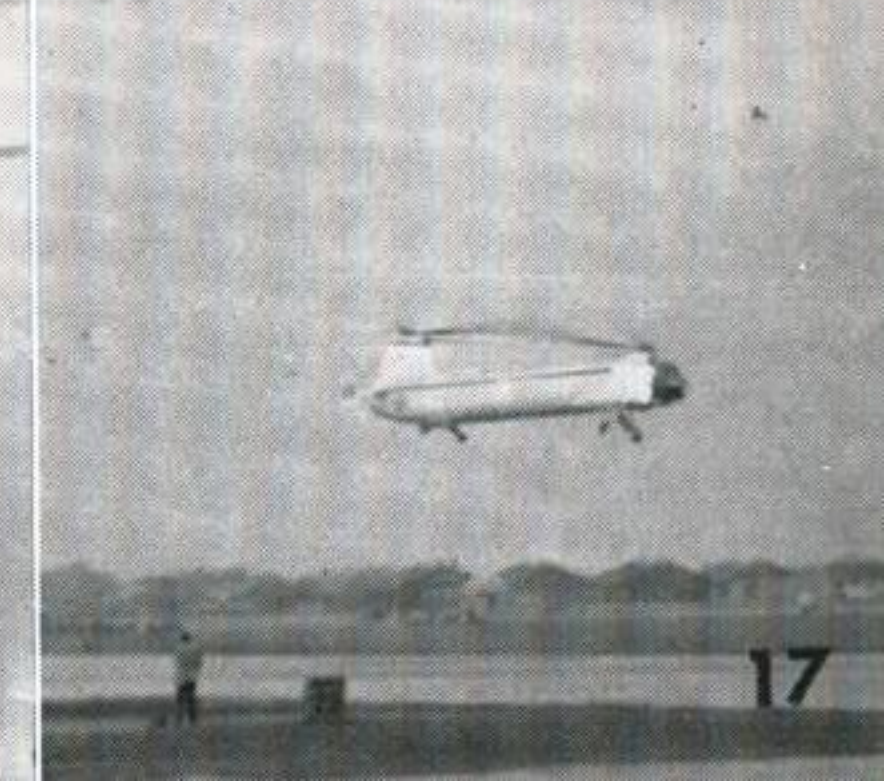
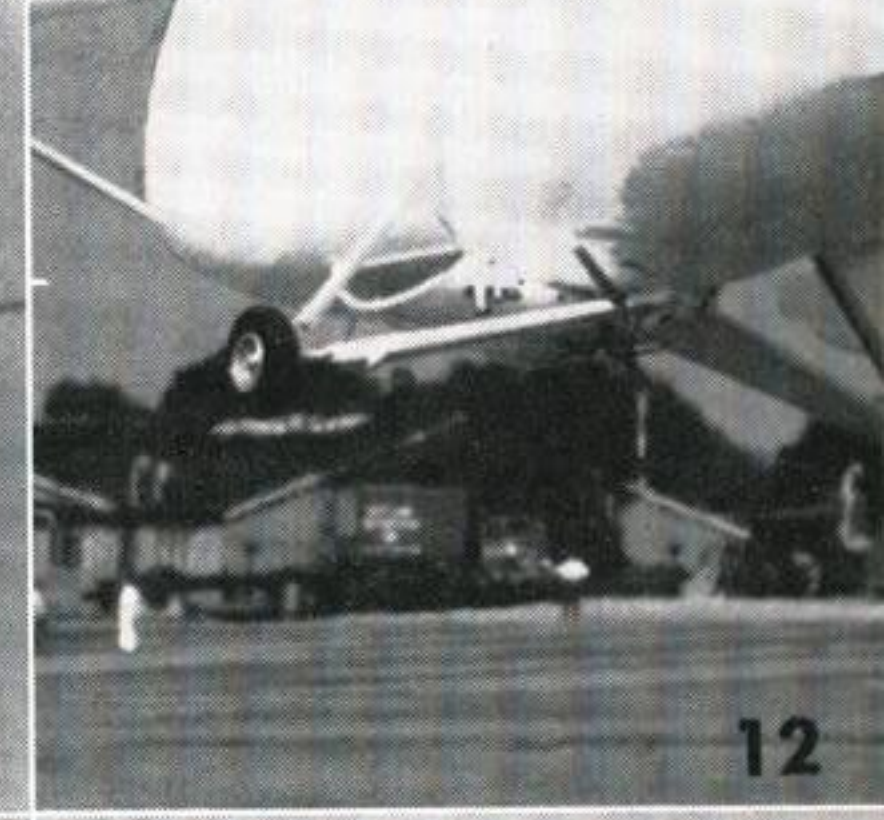
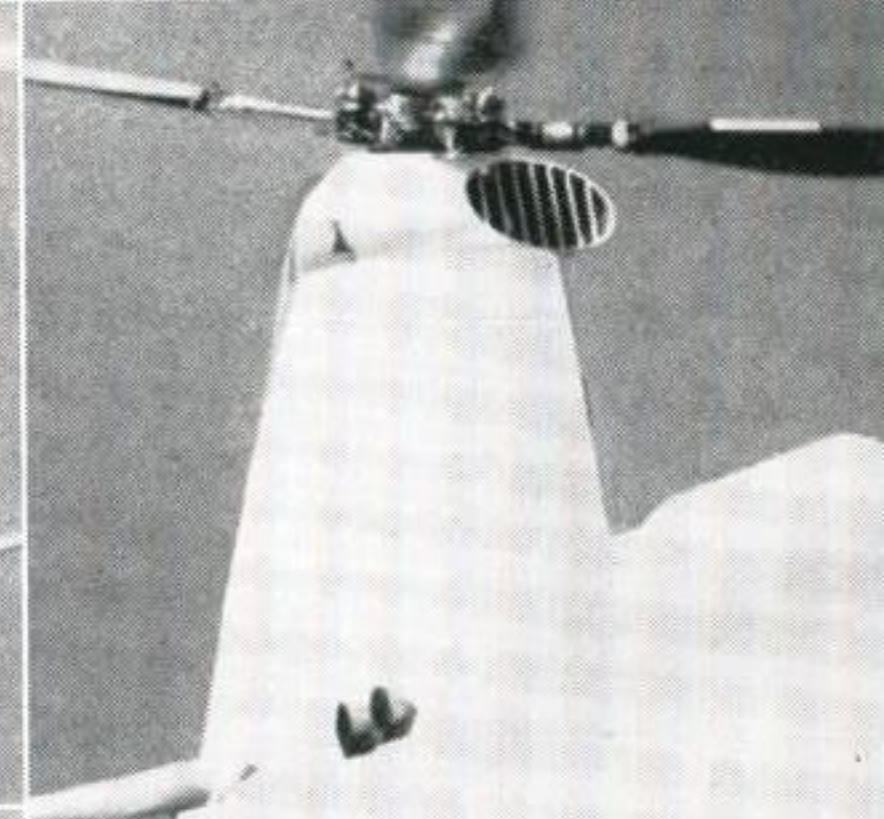
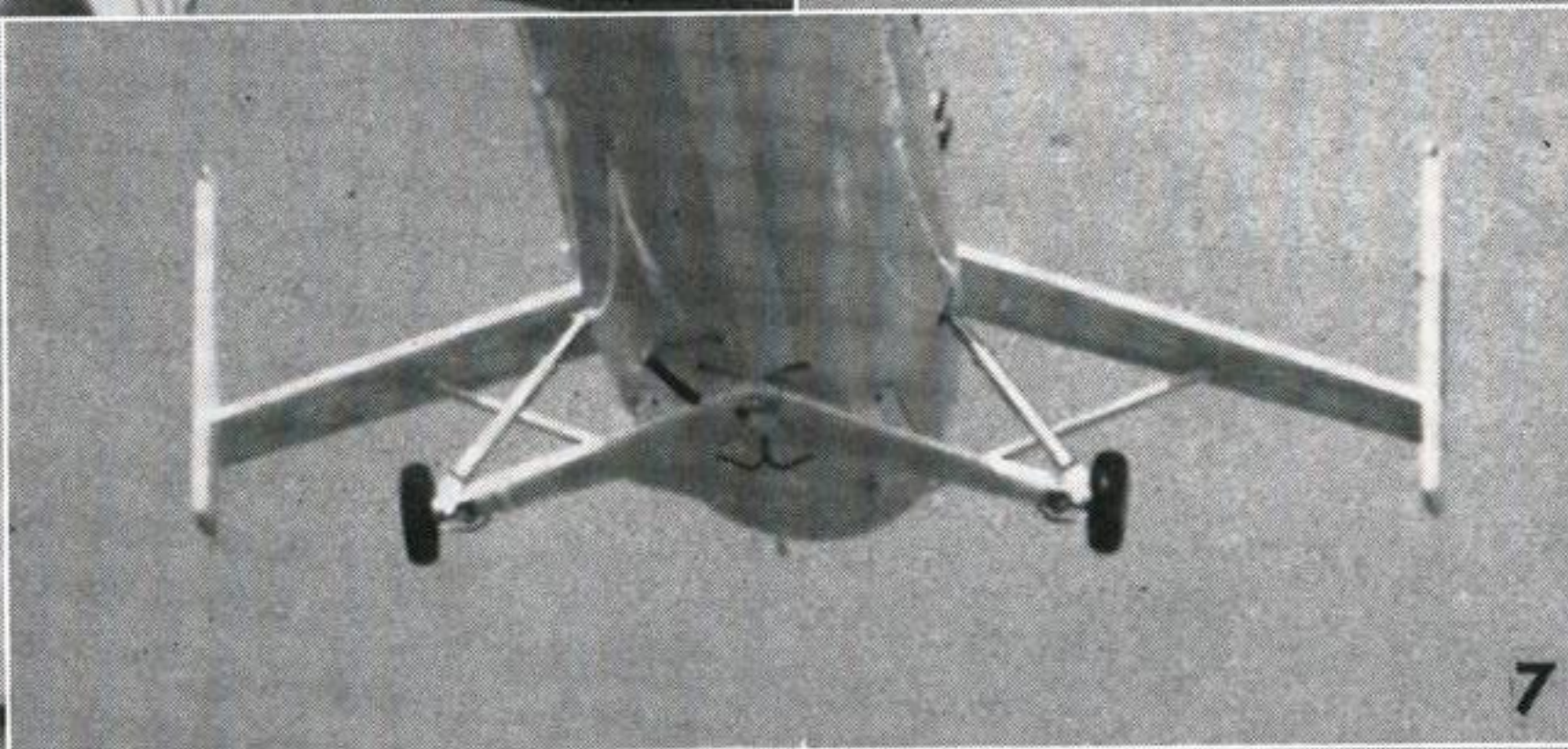
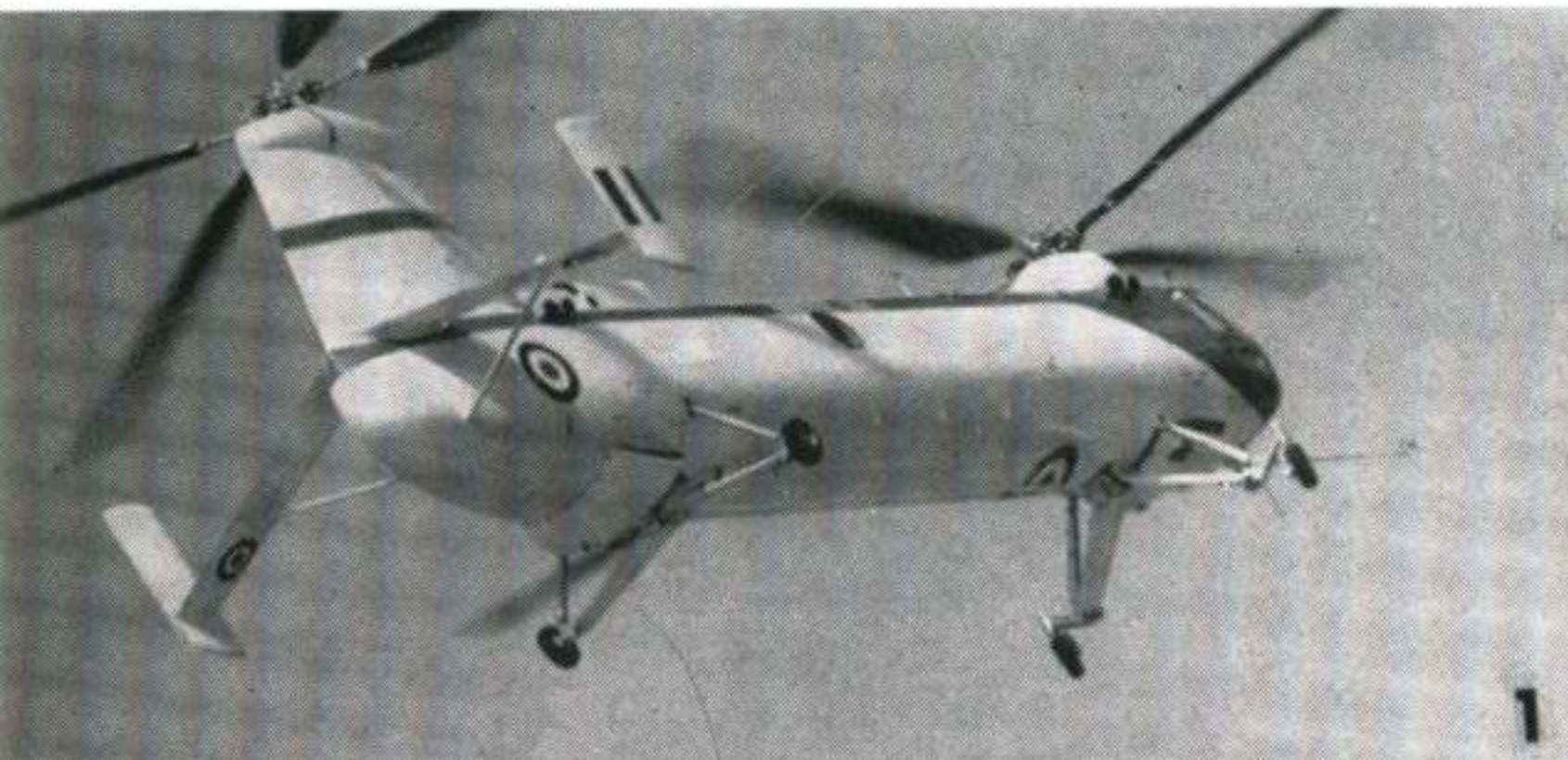
WEST GERMANY

# BRISTOL 192

THE BRISTOL 192 bears no relation to the cigarette of the same name, although we may be pardoned for thinking so, especially when that long cylindrical body is finished in white as it is here. At the forward end is the Bristolian nose we know so well from the Sycamore, while on and around the tail fin lie a regular cluster of assorted grilles and apertures (dare we say—filter tips?). This general-purpose helicopter will be in R.A.F. service soon. Take a tip—learn the Bristol!



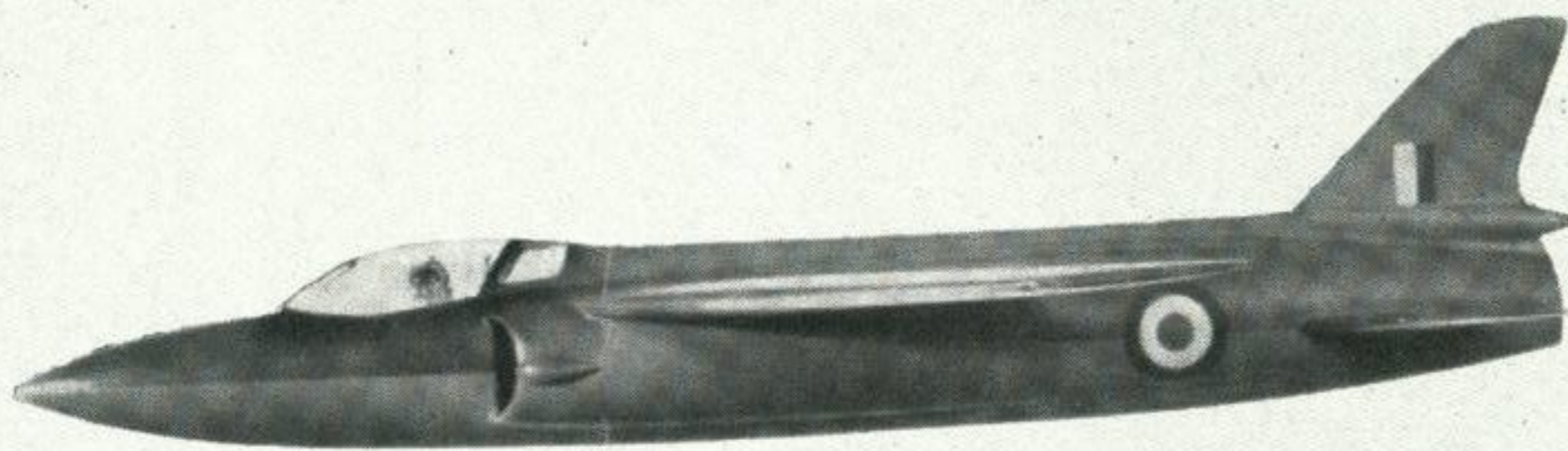
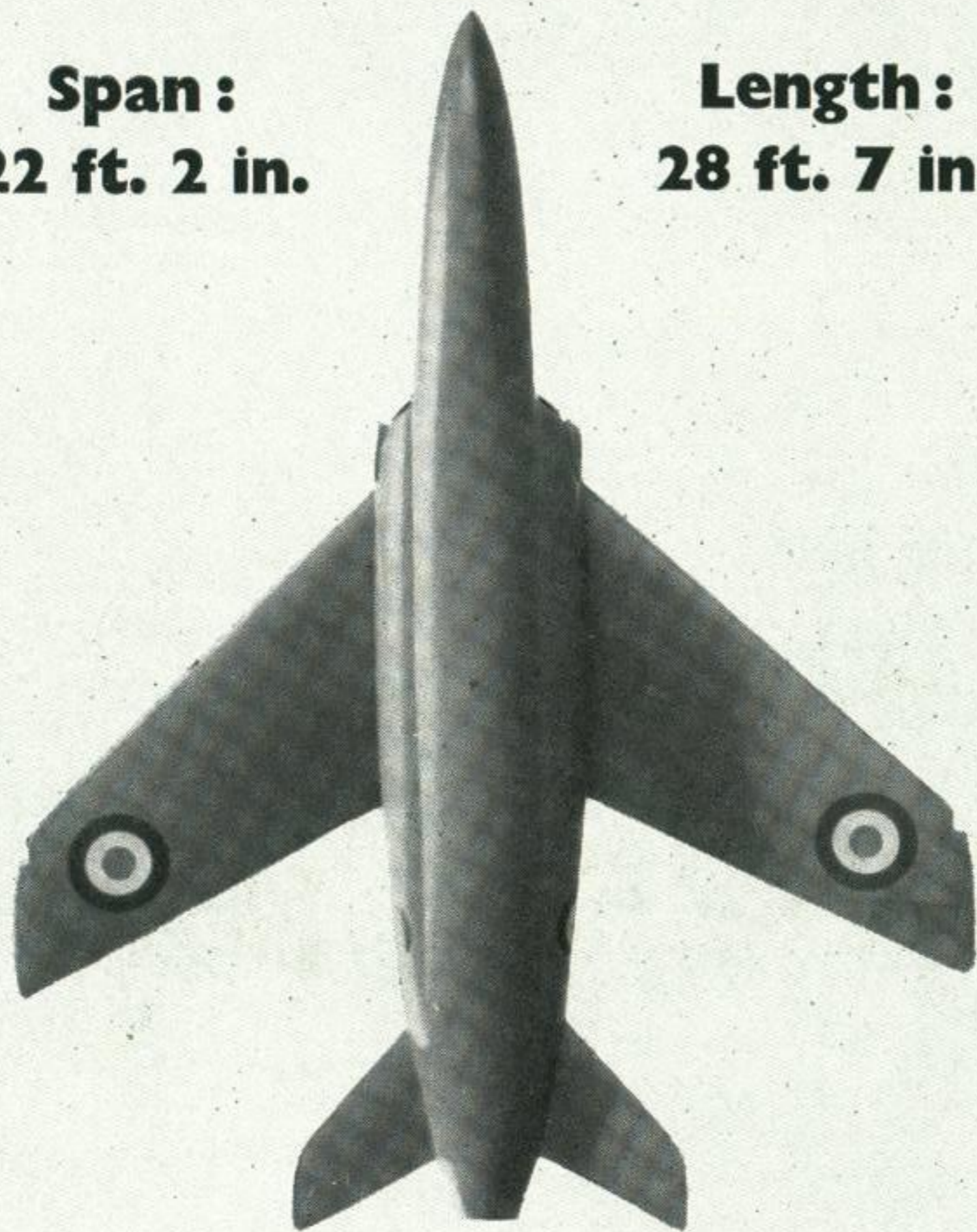
Rotor diameter 48 ft. 8 in.  
Fuselage length 54 ft. 4 in.





**Span :  
22 ft. 2 in.**

**Length :  
28 ft. 7 in.**



Letter to A

**GNAT**

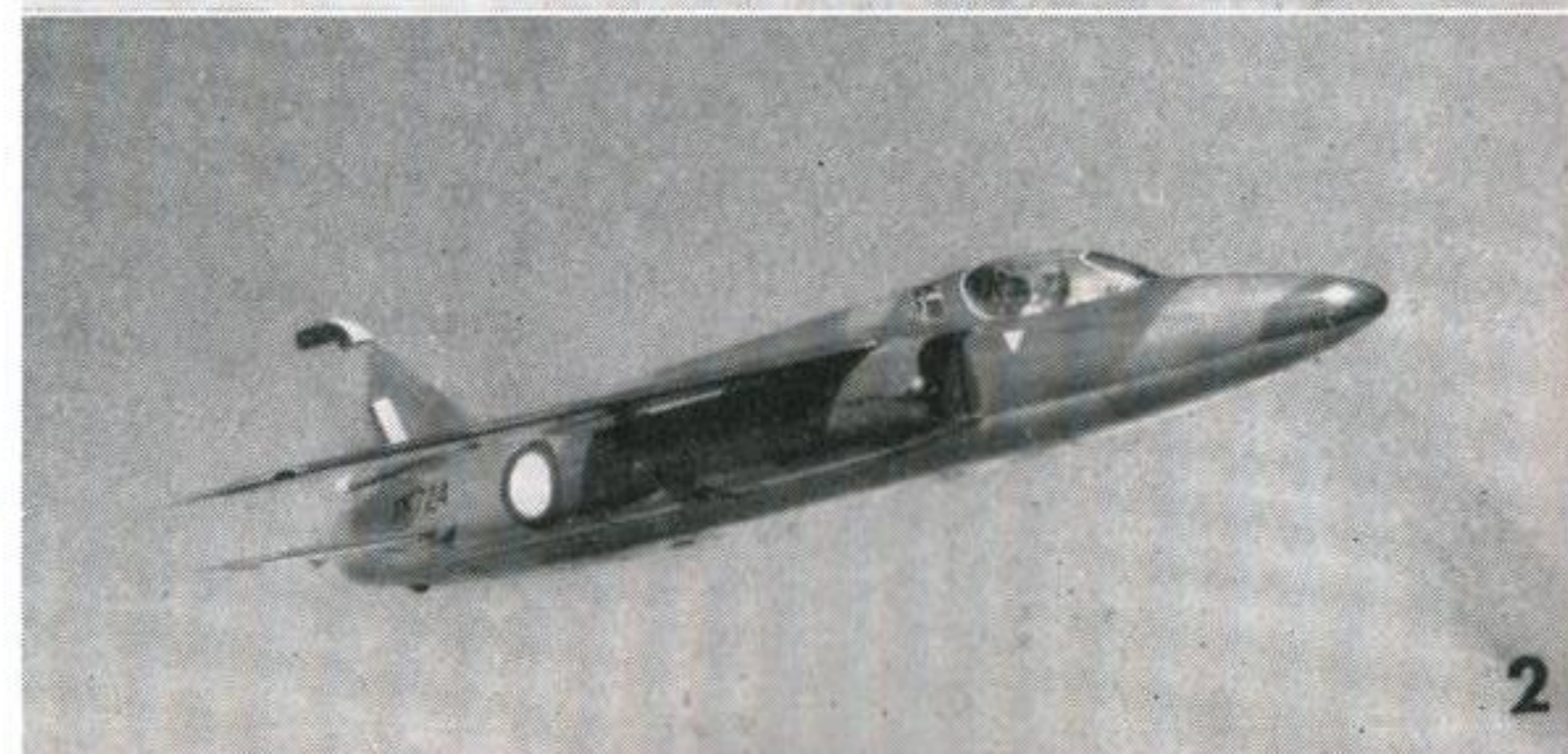
Dear Gnat,

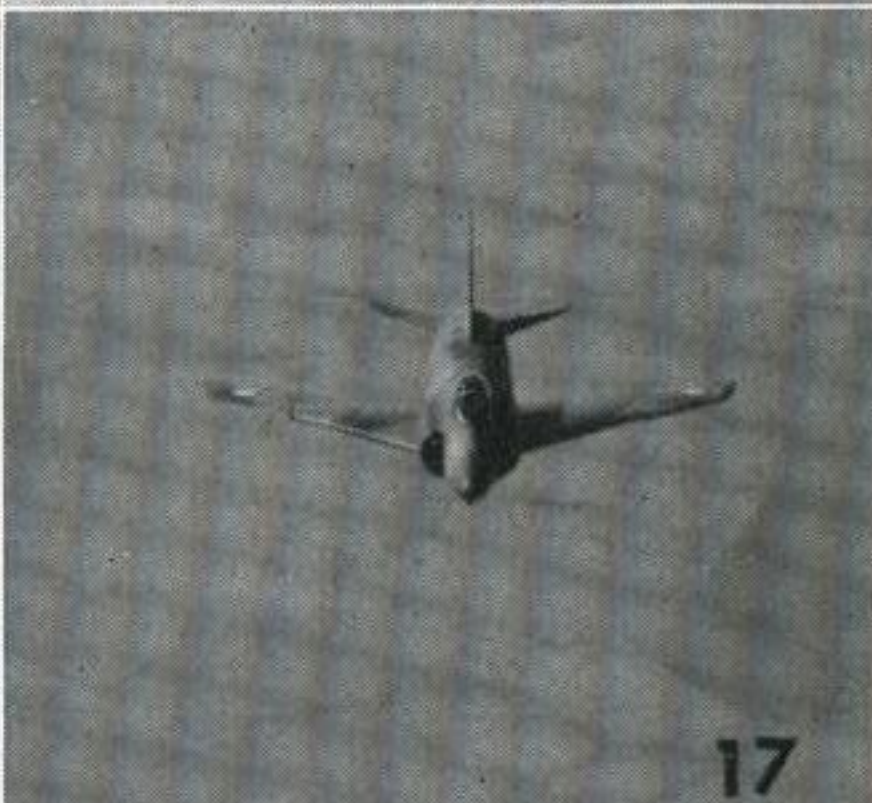
You may remember we met in the static park at Farnborough last year, and very nice you looked too in your Finnish finish. I'm sure Mr. Petter must have been very proud of you, and I am told that Mr. Nehru is quite sold on you too, not to mention Marshal Tito being interested. You certainly seem to know how to win friends and influence people.

Of course, you're just the right kind of chap for countries with small budgets who want an adaptable fighter-bomber-trainer with a good modern performance, that is able to use small or improvised airfields and doesn't want a lot of looking after. And I hear that when you've grown up a bit more you will be doing all this at well over Mach One. Judging, too, by some of the pictures I have seen of you, you carry a pretty varied selection of hardware with you on your business trips. I'm sure I shouldn't like to meet up with you on a dark night!

With all best wishes,  
Yours sincerely,  
THE EDITOR.

P.S. Heard the other day from your swollen-headed brother who is going into the R.A.F. He has grown another foot.





## SPOTTING THE GNAT

Prepare a list of the numbers (1-26) and give the targets a quick look over. Some may strike you as more easy to identify than others: work these out using the given key information, and when you are certain of an identity write the name "Gnat" on your list against the relevant number. The more you solve, the more you learn and the easier the identifying of the remainder becomes. After a final check of your results, compare them with ours on the rear cover.



# Rossiya

“ . . . He doth bstride the narrow world  
Like a Colossus; and we petty men  
Walk under his huge legs, and peep about . . . ”  
SHAKESPEARE (*Julius Caesar*, Act. I, Sc. II).



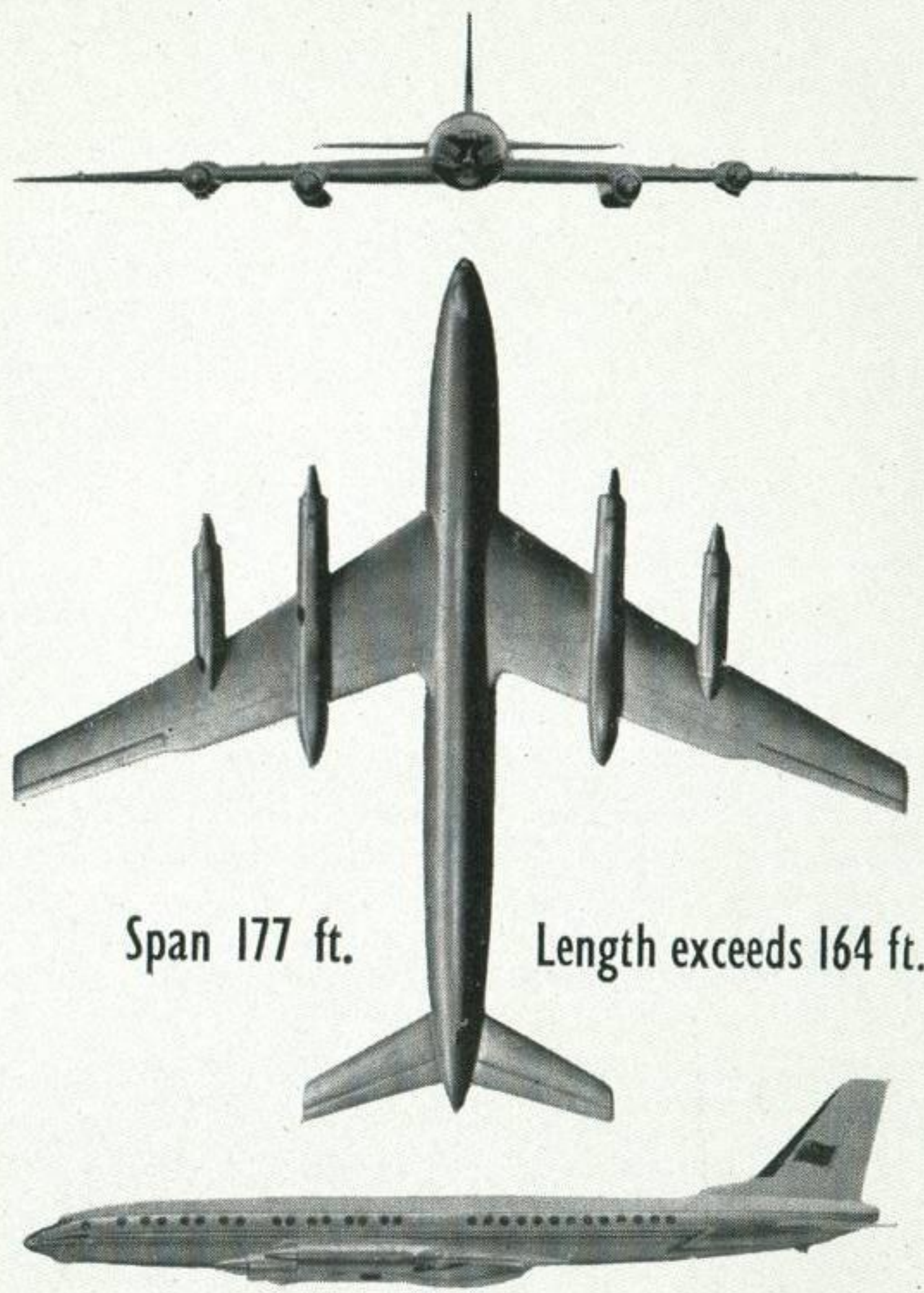
**A**N unexpected arrival at Le Bourget for the 23rd Salon de l'Aeronautique was the titanic Tupolev Tu-114, the *Rossiya*. It easily dwarfed every other aeroplane in the Show, America's huge Cargomaster included, and mere dimensions alone could never convey the sense of size so well as a picture like this. The small view in the opposite corner marks the start of a recognition lesson overleaf.

Span 177 ft. Length more than 164 ft.  
Four Kuznetsov NK-12 turboprop engines  
Loaded Weight 400,000 lbs.



# Rossiya

(NATO Code Name : Cleat)



Span 177 ft.

Length exceeds 164 ft.

**A**NDREI TUPOLEV'S far-ranging, crowd-carrying Colossus has been much in the news this summer—in fact in June it was bustin' out all over. At the beginning of that month it flew down to the Mediterranean to bring Mr. Krushchev back from Albania; a week or so later it made its surprise appearance at Le Bourget for the closing stages of the Paris Air Show; and at the end of the month it flew Russia's First Deputy Premier, Frol Kozlov, and Tupolev himself non-stop from Moscow to New York (in just over 11 hours at an average 420 m.p.h.). Whilst in New York, Tupolev was reported as saying that some 12-15 Rossiya's were ready for service and would start operations with *Aeroflot* this autumn. For the lesson here all you need are pencil, paper and perseverance: with these your results should be perfect.





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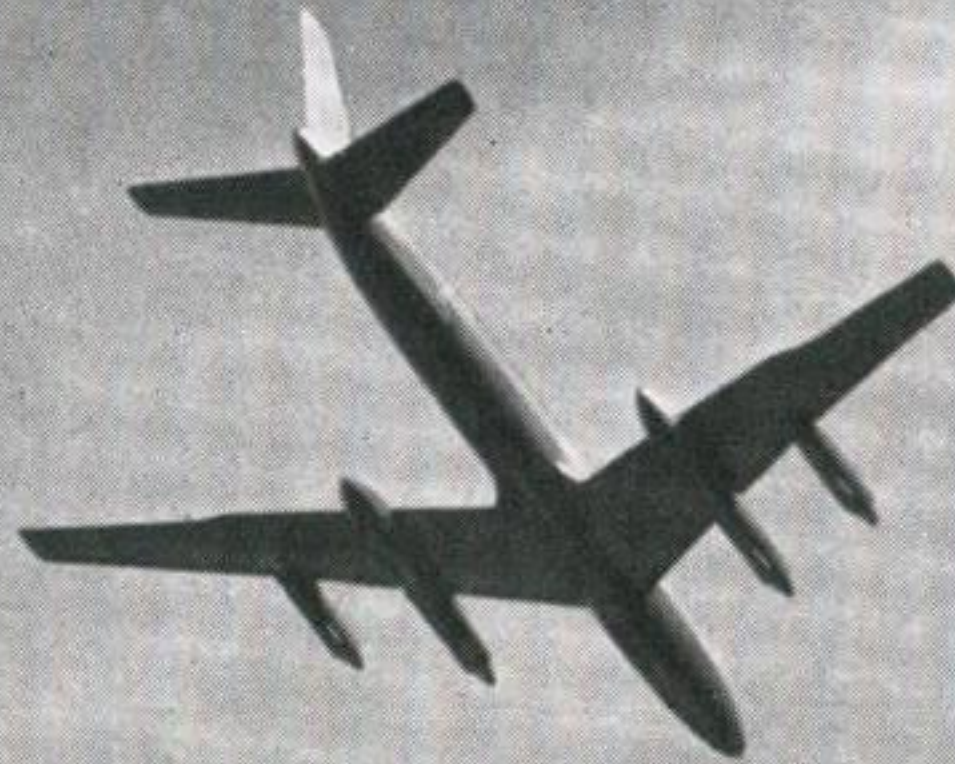
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# A PLAIN MAN'S GUIDE TO THE SUPERSONIC AGE

Modern high-speed flight, besides bringing many new technological problems, has also given rise to a wide new vocabulary of aeronautical terms. An attempt is made below to simplify for the layman the broad meaning of some of the terms in more common usage today. The aero-engine drawings are reproduced from SHELL AVIATION NEWS.

**Aerodynamic Heating** (colloquially "Heat Barrier" or "Thermal Thicket"). As an aircraft flies through the air, heat is generated by virtue of the work done upon that air; the temperature rise is proportional to the speed, and as speeds become high the temperature rise becomes significant. For example, at Mach 2 (twice the speed of sound) the temperature rise is over 300 deg. Fahrenheit. The strength of normal aircraft materials starts to deteriorate at these temperatures: at Mach 3.5 the temperature rise results in aircraft temperatures of the same order as the *turbine* temperature in a jet engine.

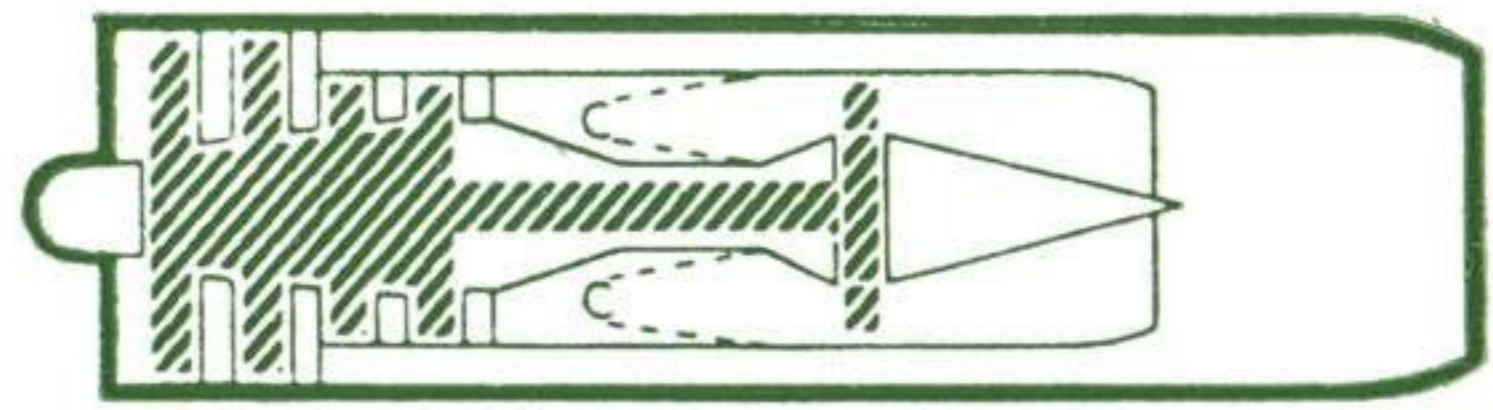
**Area Rule.** This is a formula applied in the design of an aircraft to refine the total cross-sectional area in order to reduce wave drag at a particular supersonic speed. One of its more familiar applications results in the "waisting" of the fuselage at the wing root (in such aircraft as the Convair F-102A Delta Dagger, for example), at which point there would otherwise be an increase in air turbulence, and thus more drag.



**Athodyd.** A more technical term for ramjet, it is a contraction of Aero-Thermo-Dynamic Duct. See under *Ramjet*.

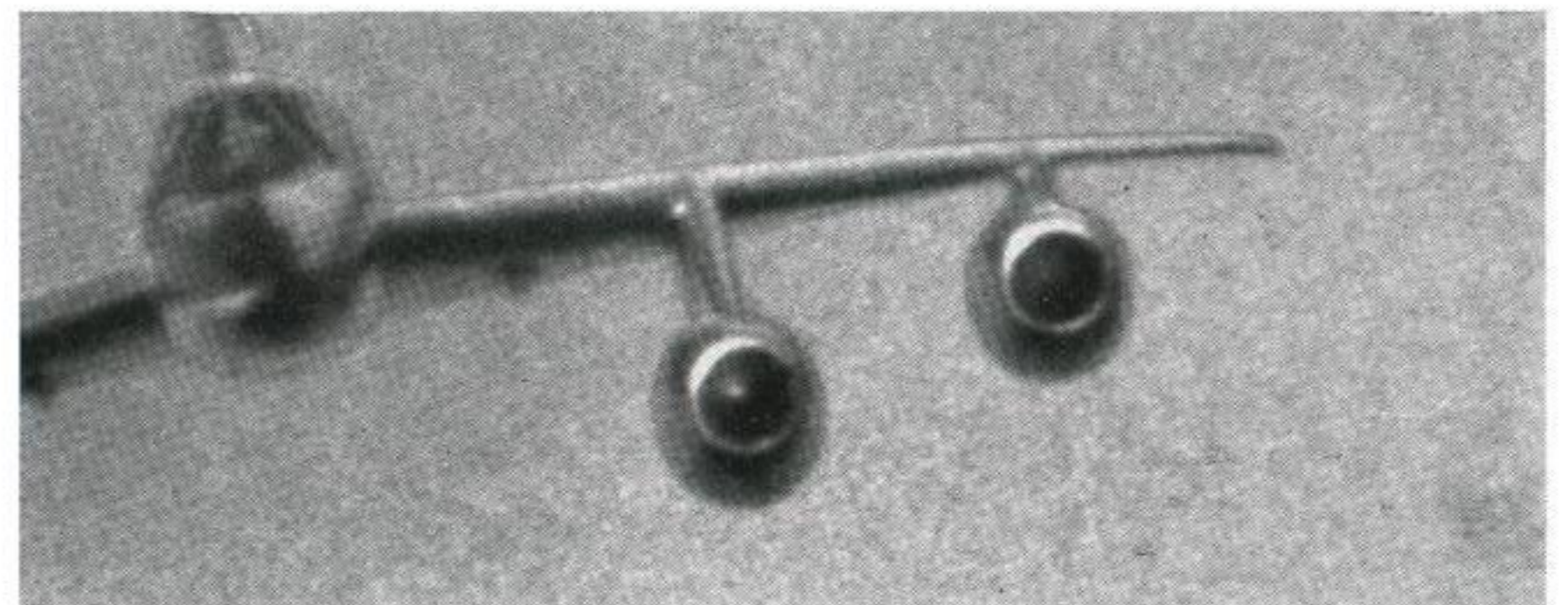
**Boundary Layer Control.** In one form of boundary layer control, air is tapped from the jet engine to drive a small turbine which sucks in, through small holes in the wing, the thin layer of air flowing directly over the skin of the aircraft and blows it out again, faster and close over the flaps to increase their efficiency and shorten take-off distances. In flight, boundary layer control increases the lift drag ratio and thereby increases range performance. This supercirculation (or "blown flap") form of boundary layer control is employed in the Supermarine Scimitar.

**By-Pass Engine.** In a by-pass type of engine, only a proportion of the incoming air is burned: the remainder by-passes the combustion system and turbine and rejoins the heated gases in the jet-pipe to mix with them and lower their temperature before the whole mixture is ejected at a lower velocity than in the "simple" jet engine.



**Compound Engine.** The compound engine, of which there are several forms, is designed for very long-distance flights. It is a combination of piston and gas turbine engines connected to drive a propeller; the turbine part of the engine is used to increase the supercharging of the piston engine, or it may in addition feed power directly to the propeller. It should not be confused with the turboprop engine (q.v.)

**Conical Camber.** A type of wing camber with a leading edge which "droops", more towards the tip than at the root. It is so called because, separated from the wing, it is in the form of a section of the surface of a very elongated cone. One effect of conical camber is to improve low-speed handling characteristics of a wing designed for supersonic performance. The Convair Hustler is an aircraft which has a wing with conical camber, the "droop" being plainly visible in some views.

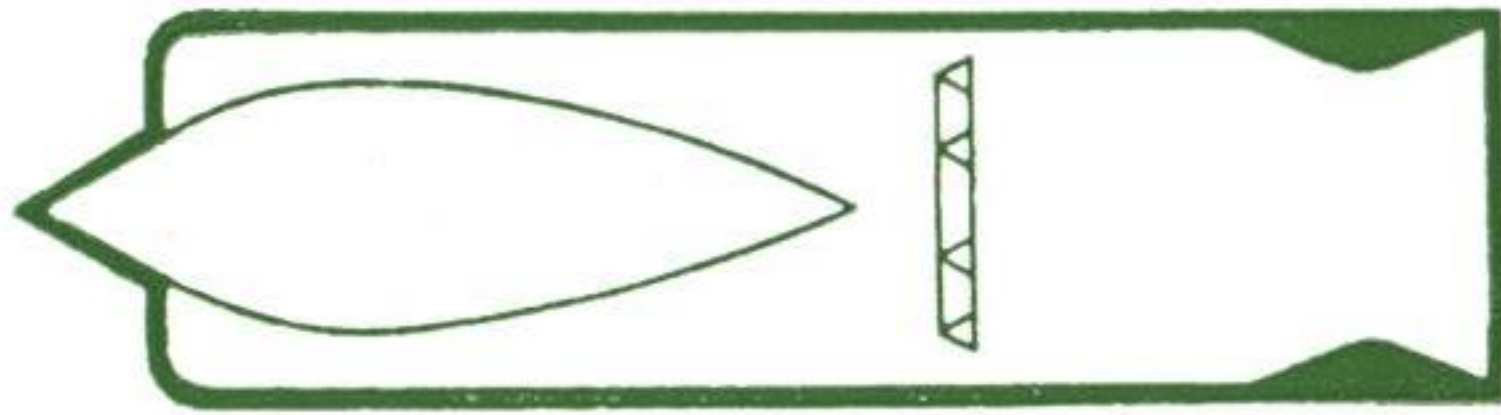


**Gas Turbine.** The generic name for both jet and turboprop engines, gas turbine, is derived from the name of the spinning disc of blades that provides power internally to drive the compressor (and, in turboprop engines, the propeller as well). Turbine engines can have axial or centrifugal flow compressors, or both, and can be of twin-spool, by-pass, or ducted-fan design, or a combination of each. (The compound engine is only partly a gas turbine.) Re-heat can be applied to a jet engine for extra thrust. The ramjet and rocket motor, which are jets in the very broadest sense, are however *not* gas turbines.



**Mach Number.** A means of expressing the speed of an aircraft as a ratio of the *local* speed of sound (*i.e.*, according to altitude and temperature).

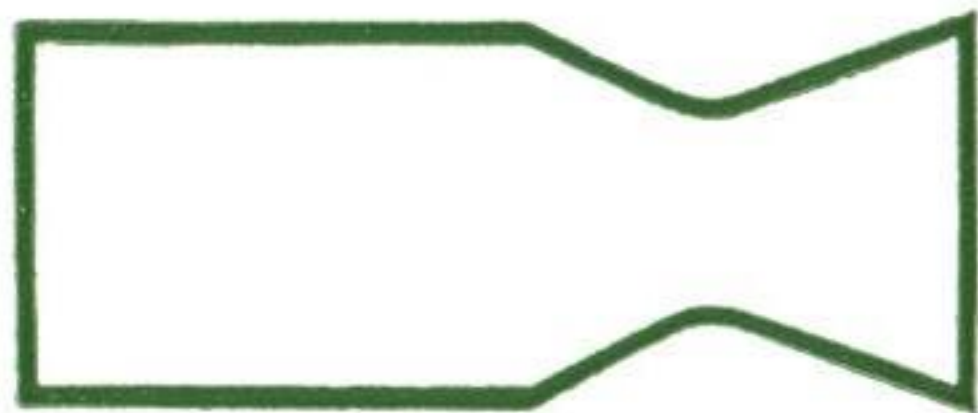
**Ramjet.** This is a simple "stovepipe" type of engine and has no working parts. It is *not* a gas turbine. It is very expensive on fuel, but gives great power at height and high speed. At normal supersonic speeds below Mach 3.5 it uses more fuel than a turbojet but less than a rocket. The airflow produced by forward speed is rammed direct into a combustion chamber, and the hot gases rush out from the rear end as a high-speed jet.



**Re-heat.** Also referred to as afterburning, this is an effective way of getting great increases in thrust in a jet engine for short periods during acceleration, climb and combat. Net fuel is injected into the jet-pipe aft of the turbine, and this fuel is burnt by the hot gases as they travel towards the exit of the jet-pipe, thus giving extra thrust. This process is expensive in fuel.



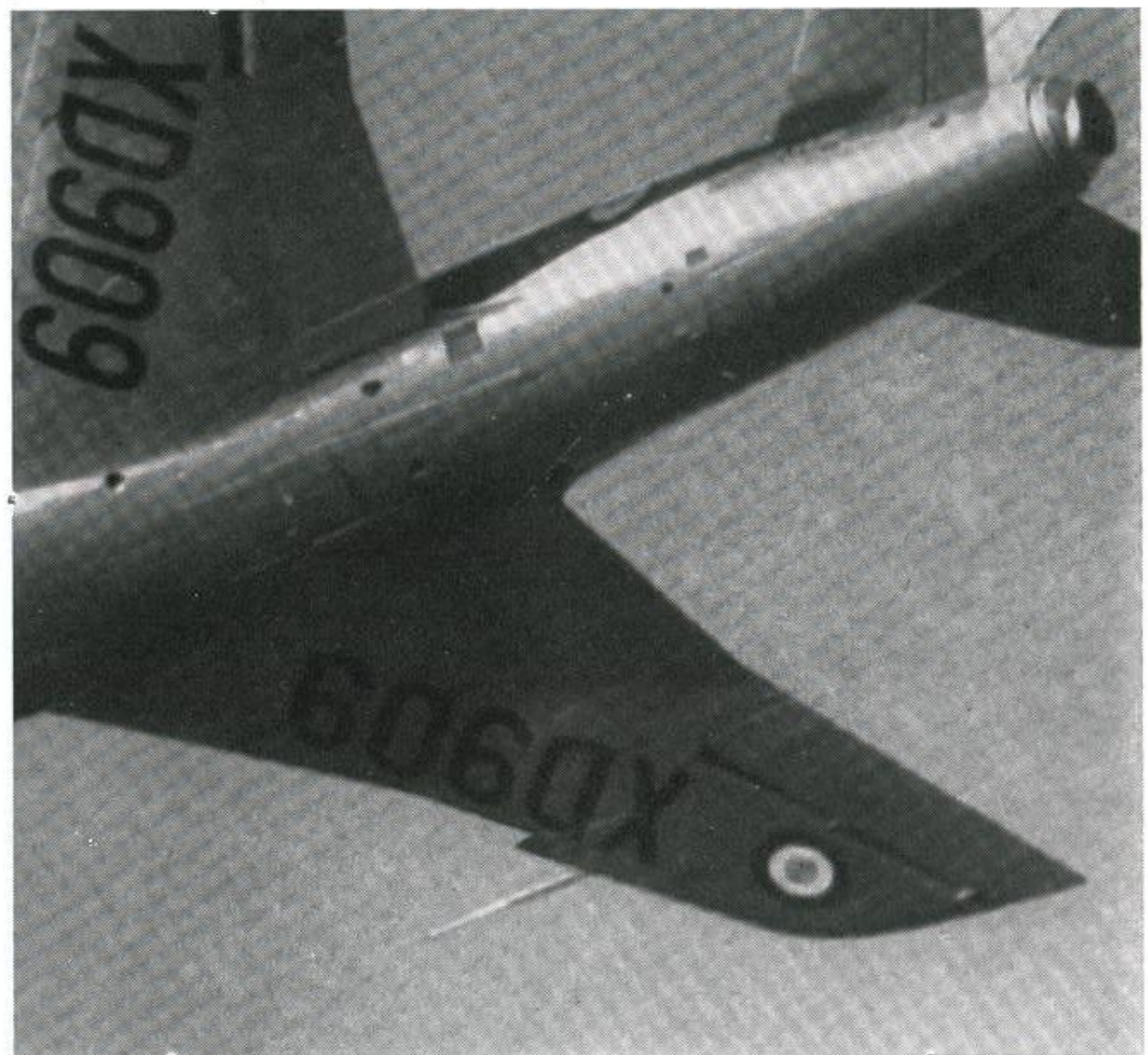
**Rocket.** The rocket motor (again not a gas turbine) comes into its own for flight very high up above the stratosphere and in space, because it carries all the materials required for combustion inside itself and so can operate without atmosphere (the turbine and ramjet both rely on oxygen from the air to burn with their fuel). The thrust comes from the rapidly expanding gases released by combustion being forced through a nozzle.



**Saw-cut.** A small slice taken out of the leading edge of a swept wing at approximately two-thirds span which effectively cleans up the airflow over the outer portion of the wing and prevents outward flow. The wing of the P.1B has saw-cuts.



**Saw-tooth** A (sometimes alternatively called "dog-tooth"), sudden forward increase of wing chord at approximately two-thirds span to give increased lift over the outer portion of the wing and therefore prevent outward flow. The Supermarine Swift has a good example of a saw-toothed leading edge to its wing.



**Shock Wave.** As an aircraft moves through the air, each portion of it propagates a disturbance which spreads at the local speed of sound. Thus the air ahead of the aircraft is "warned" of its impending approach and starts to move out of the way. When the aircraft speed is equal to or greater than the local speed of sound, *i.e.*, supersonic, the air ahead does not receive prior warning and the boundary of the warning propagation forms a shock wave. Since the air is not warned, and cannot anticipate the coming of the aircraft, the air is displaced in a very violent manner.

**Static Thrust.** A measurement, usually in pounds, of the propulsive force generated by a jet engine.

**Subsonic.** This refers to speeds lower than the speed of sound.

**Supersonic.** This refers to speeds faster than the speed of sound.

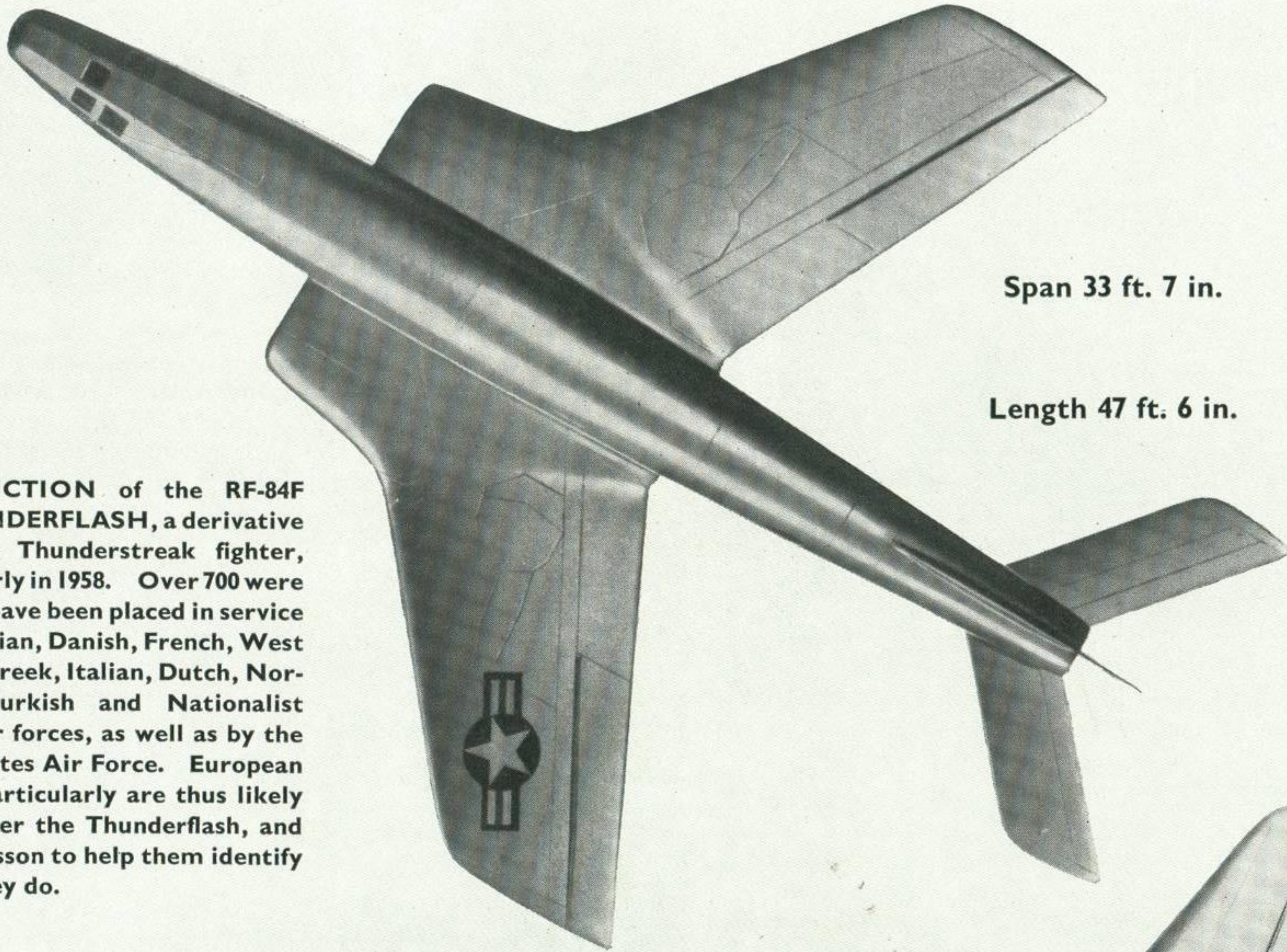
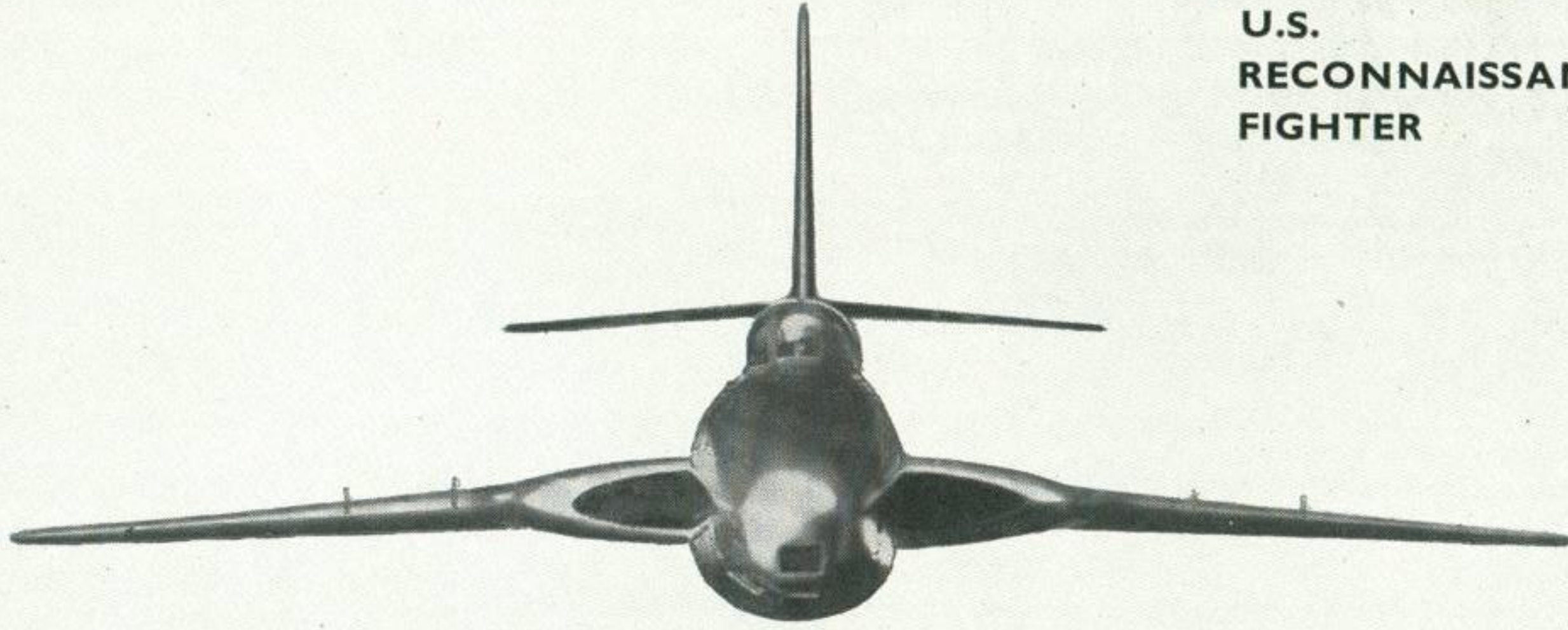
**Transonic.** This refers to speeds in the region of the speed of sound. An aircraft whose maximum level speed is *subsonic*, but which can reach *supersonic* speed in a dive, is said to be transonic.

**Turboprop Engine.** Basically, this is a turbine engine in which the energy of the gases, instead of acting as a jet, is almost entirely used to turn a turbine connected to a conventional propeller.



# THUNDERFLASH (RF-84F)

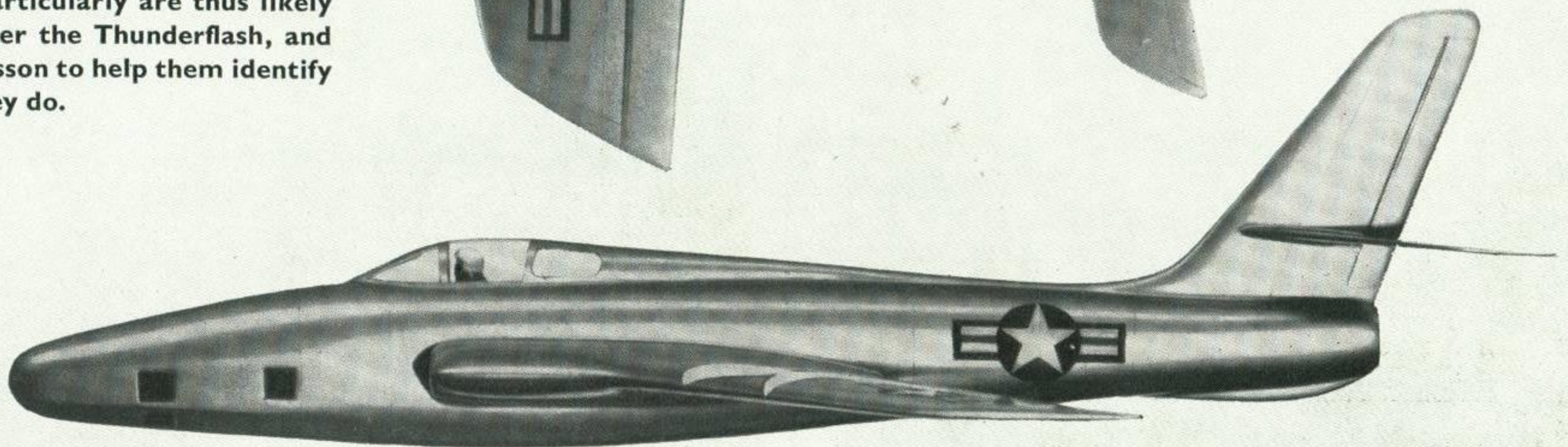
U.S.  
RECONNAISSANCE  
FIGHTER



Span 33 ft. 7 in.

Length 47 ft. 6 in.

**P**RODUCTION of the RF-84F THUNDERFLASH, a derivative of the Thunderstreak fighter, finished early in 1958. Over 700 were built, and have been placed in service by the Belgian, Danish, French, West German, Greek, Italian, Dutch, Norwegian, Turkish and Nationalist Chinese air forces, as well as by the United States Air Force. European spotters particularly are thus likely to encounter the Thunderflash, and here is a lesson to help them identify it when they do.



TARGETS  
START  
HERE



1



300

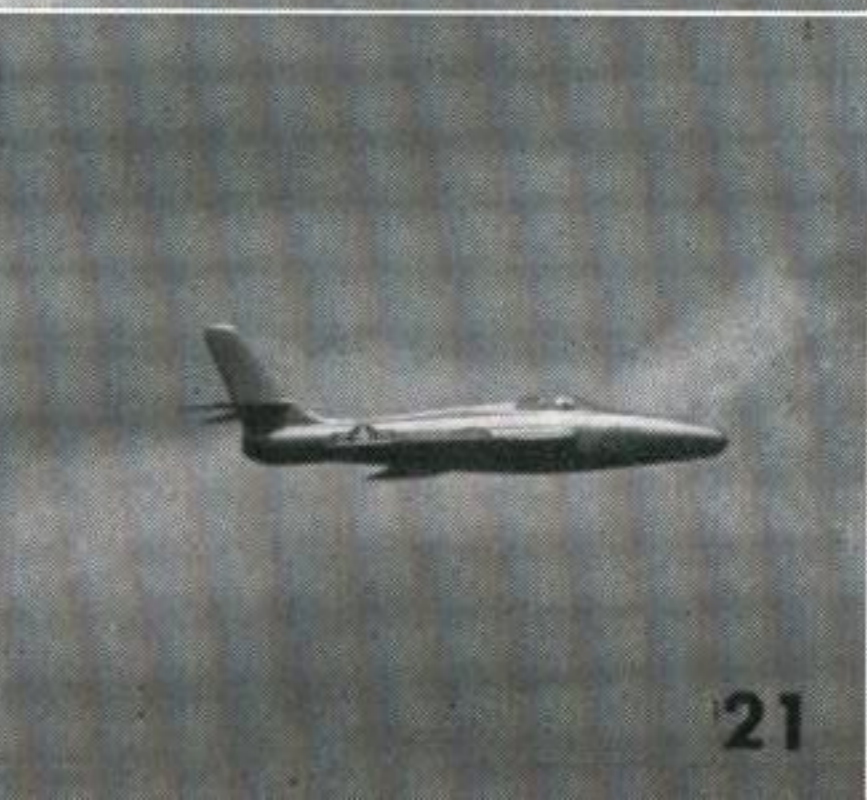
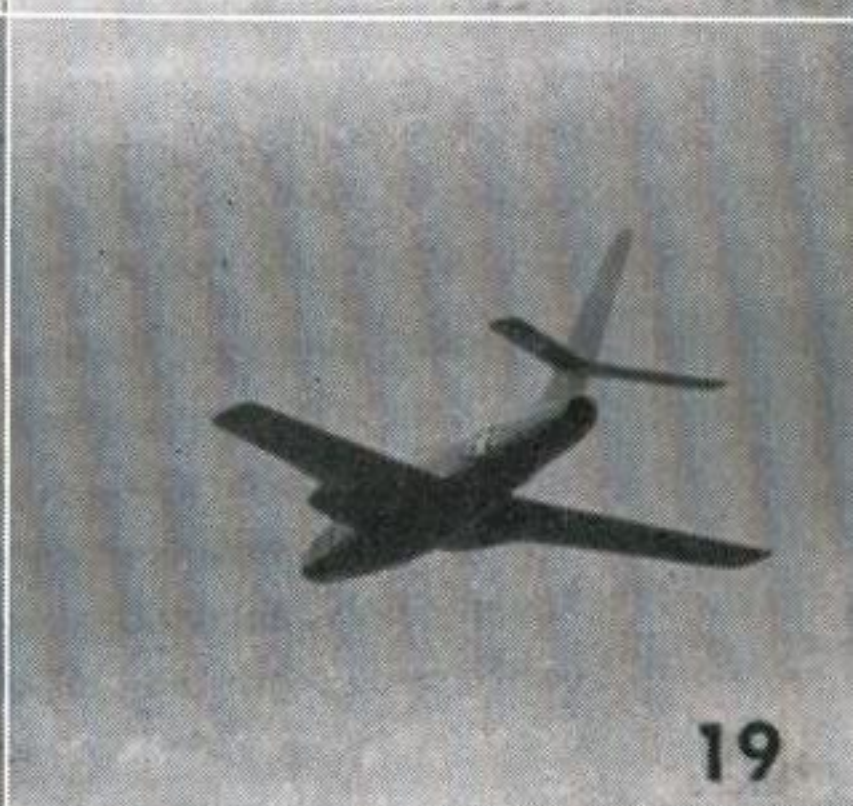
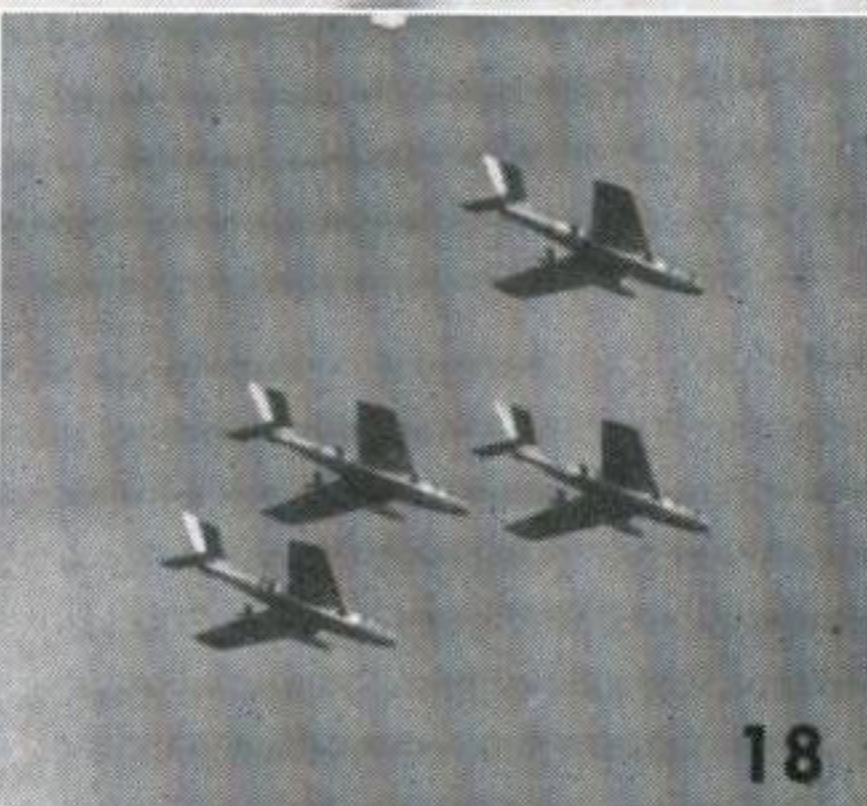
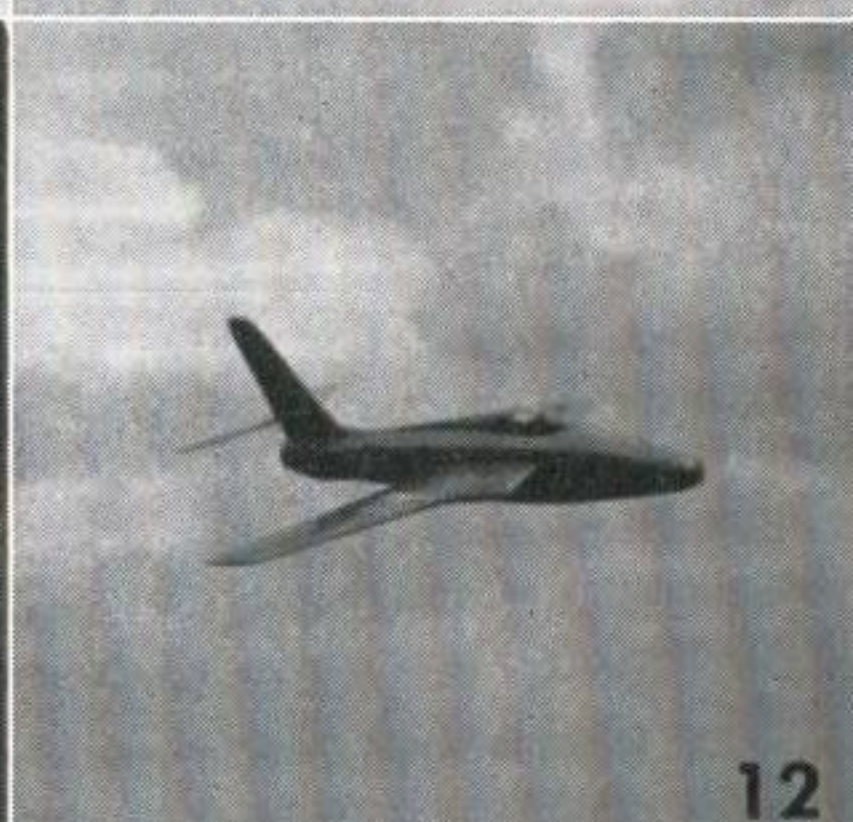
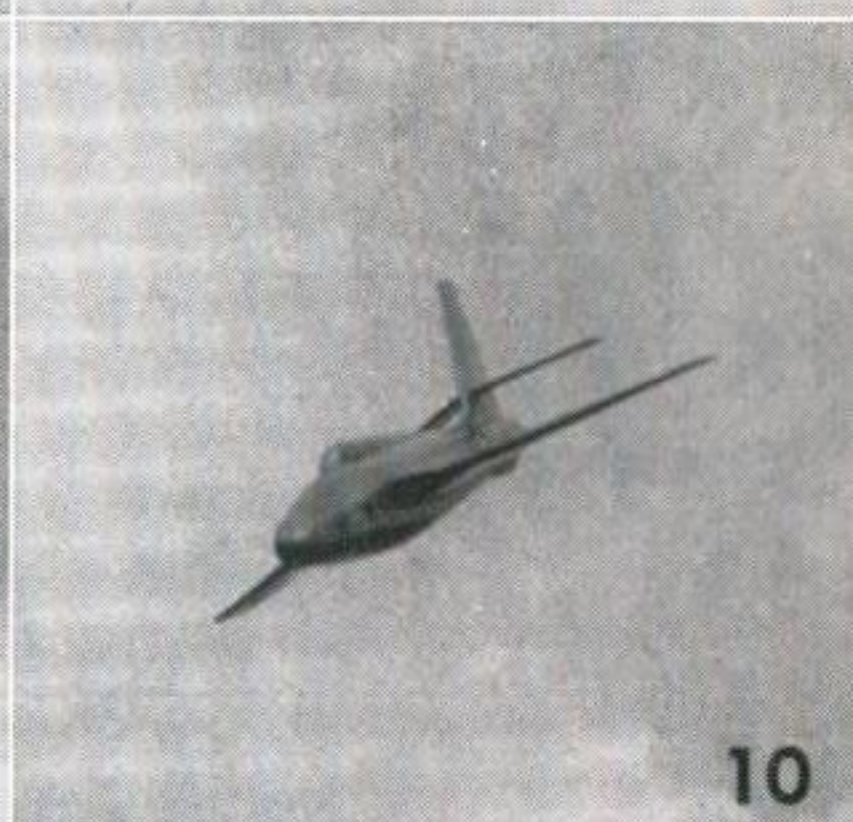
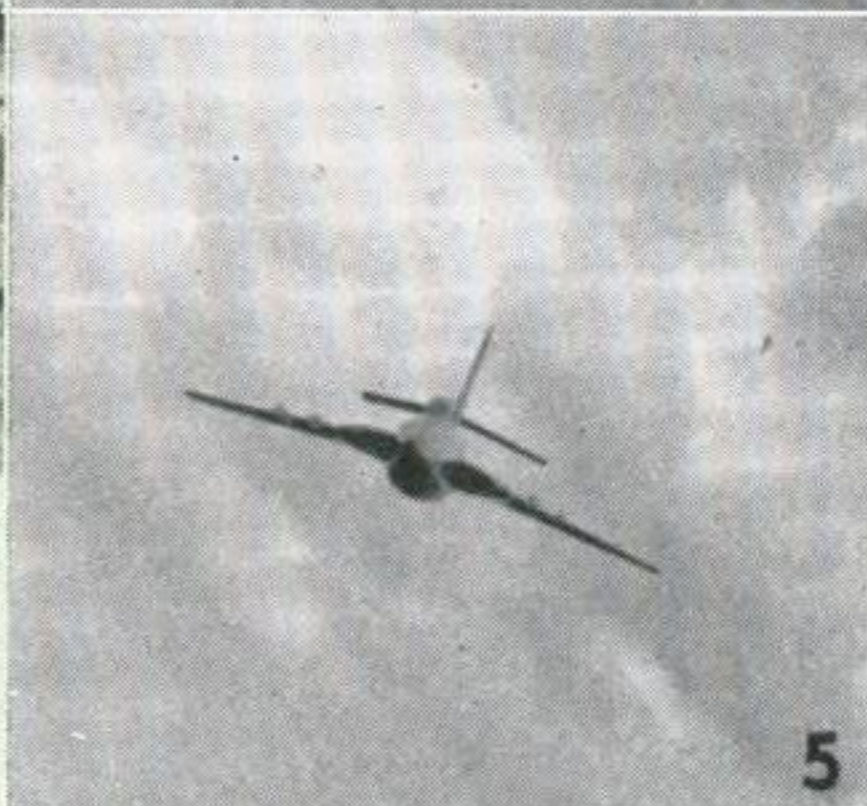
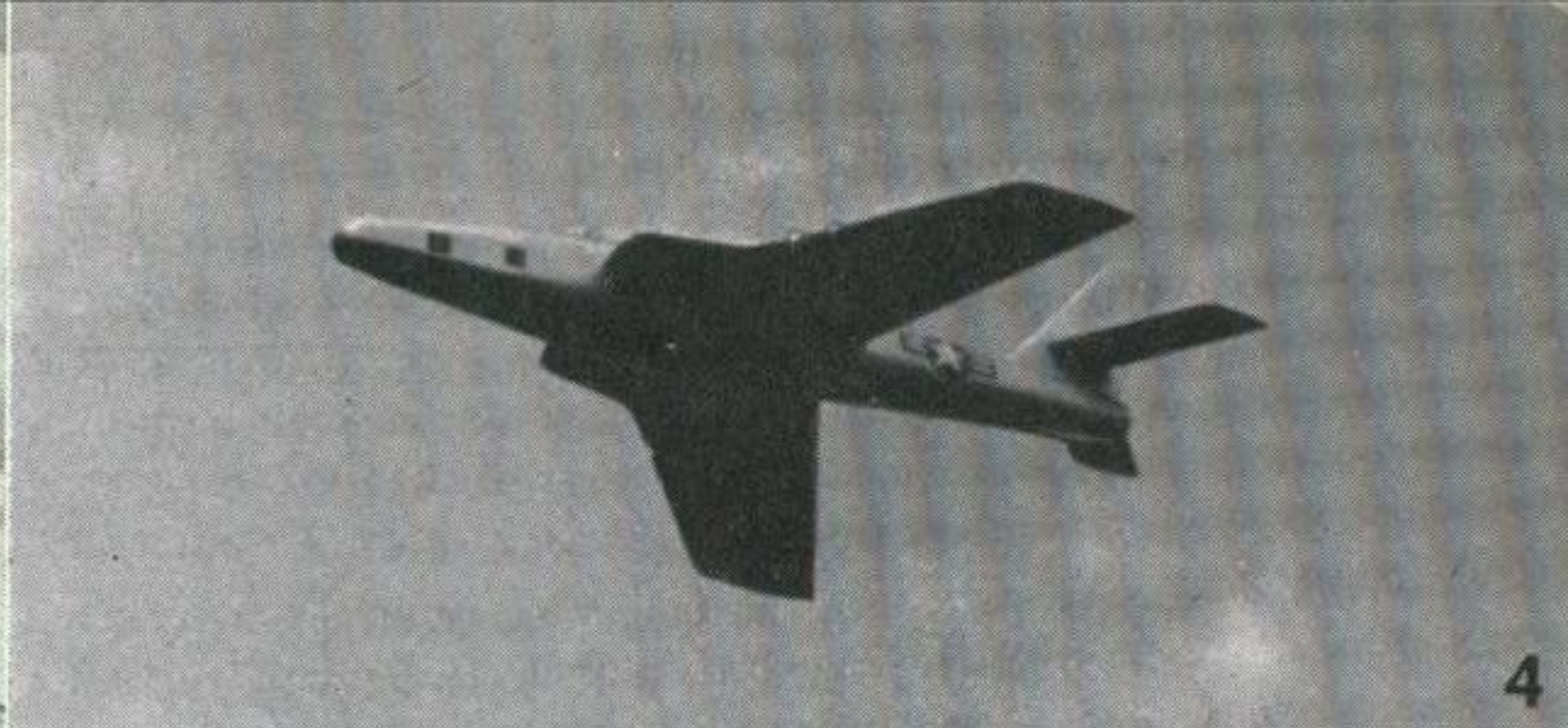
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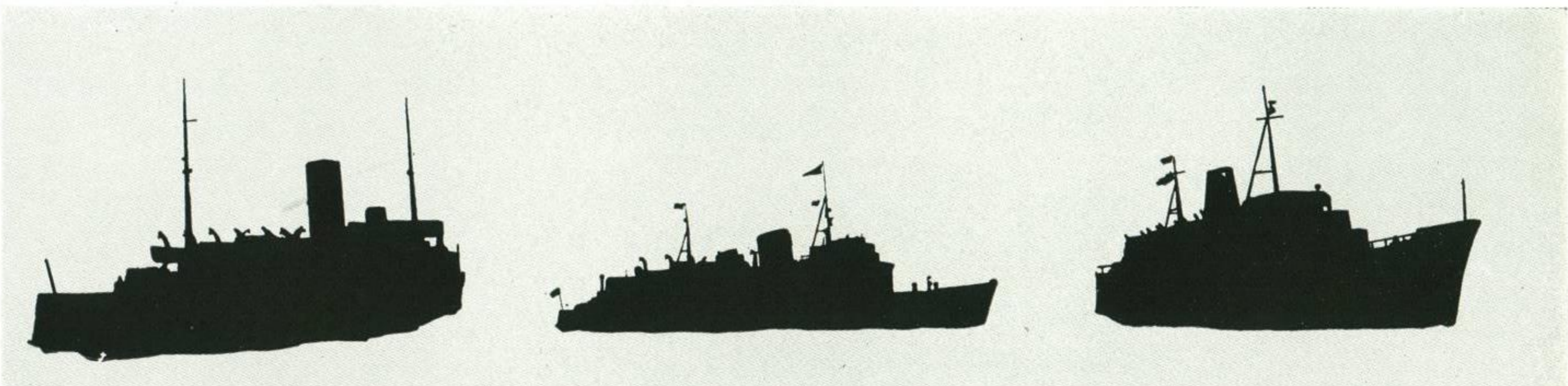


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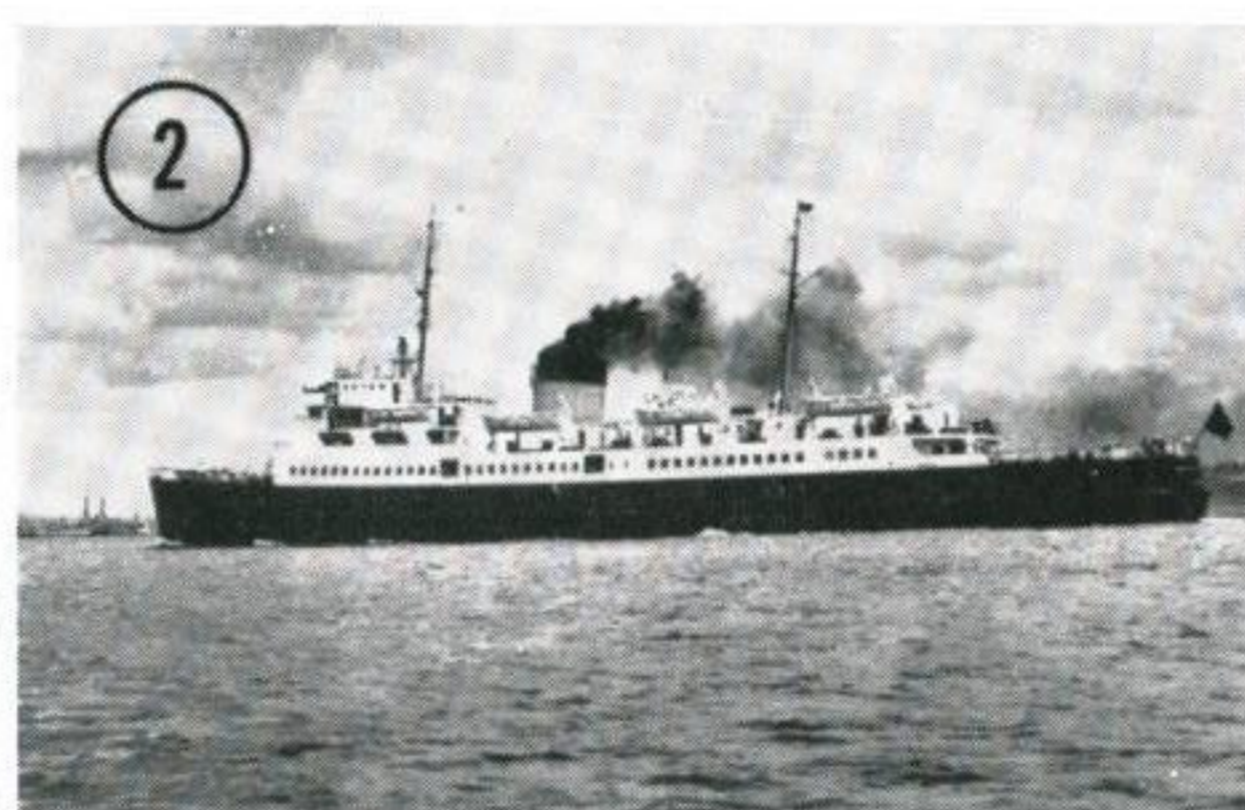


Close-up of the Thunderflash's camera battery. With additional fuel in the external drop-tanks, the Thunderflash has a combat radius of over 1,000 miles.



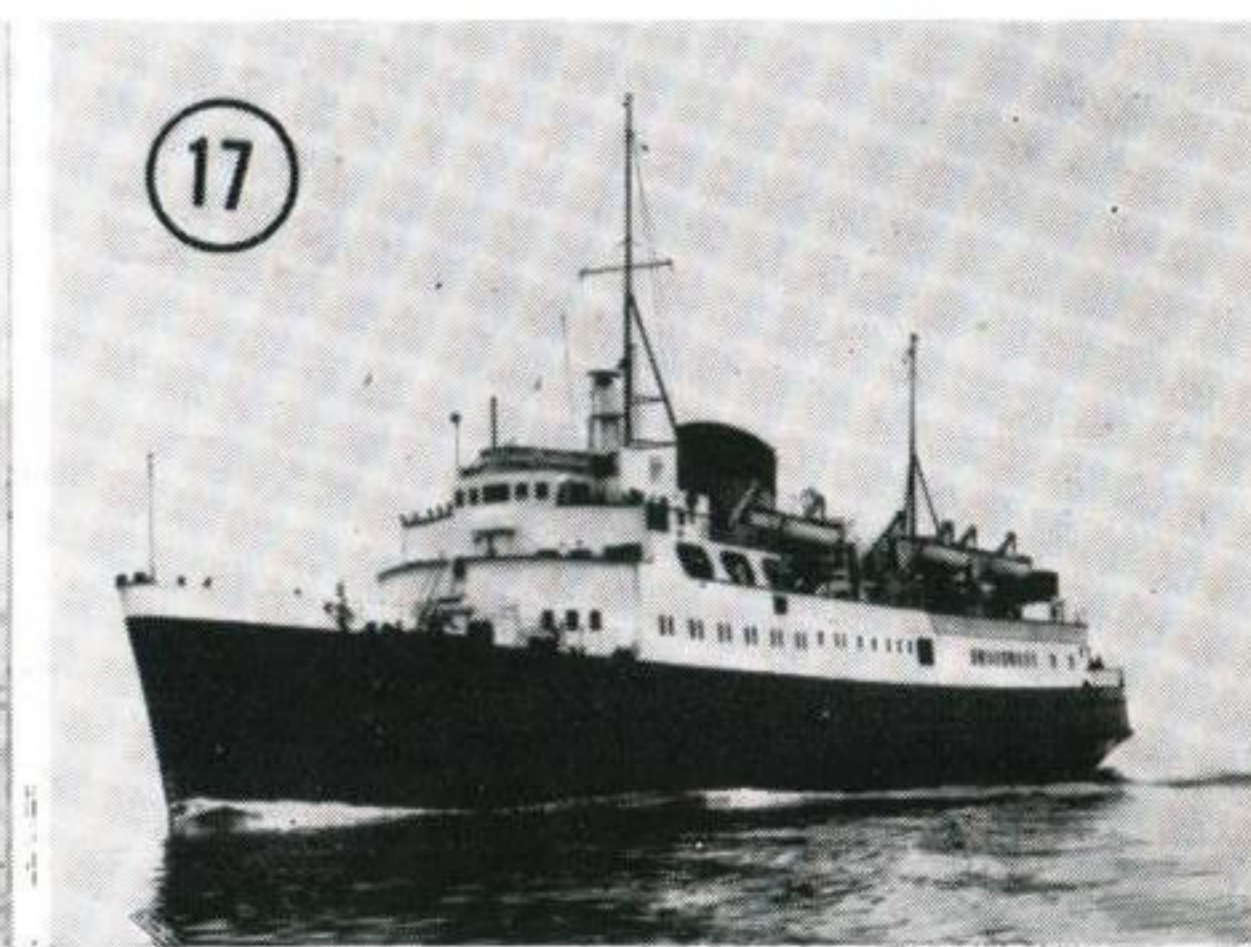
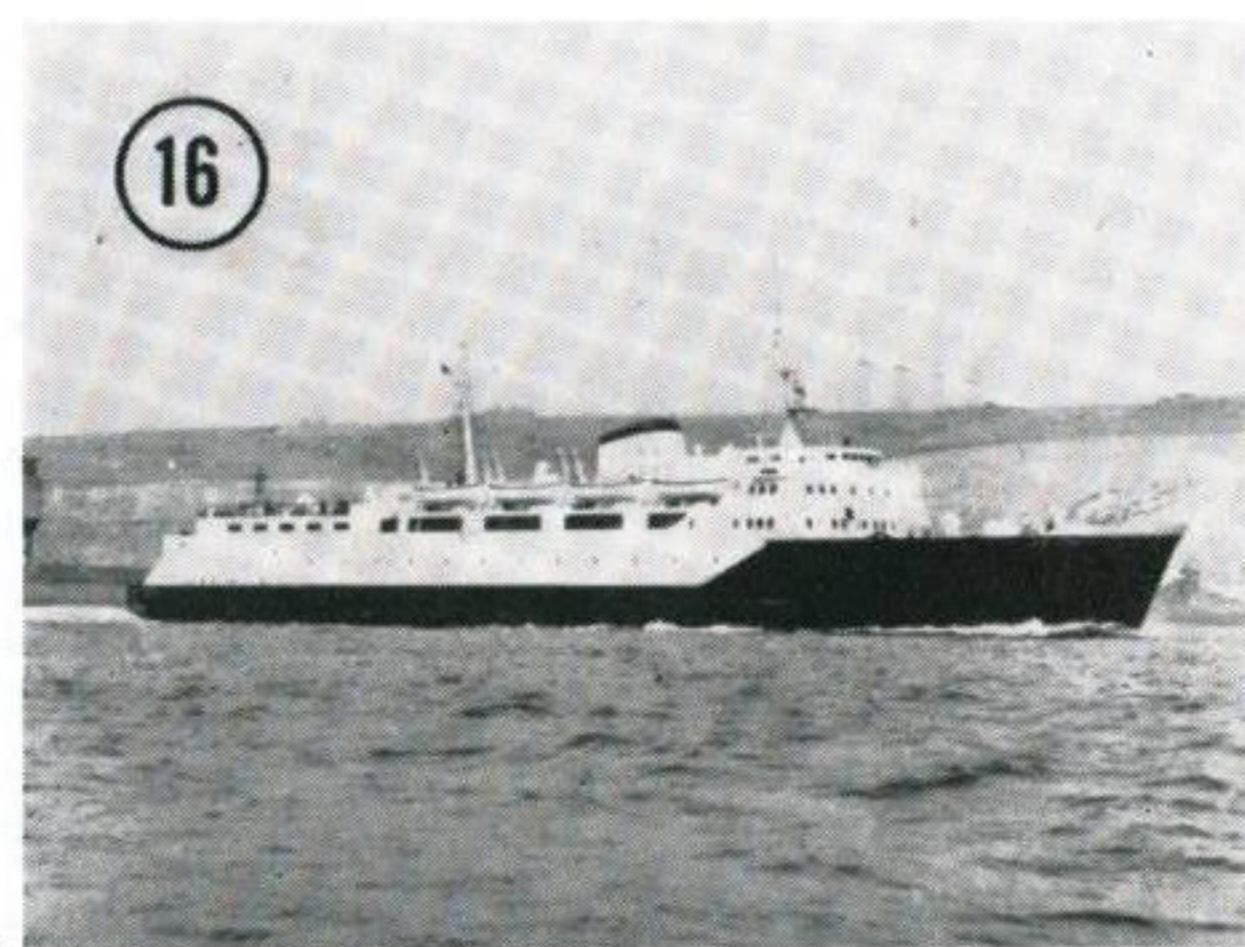
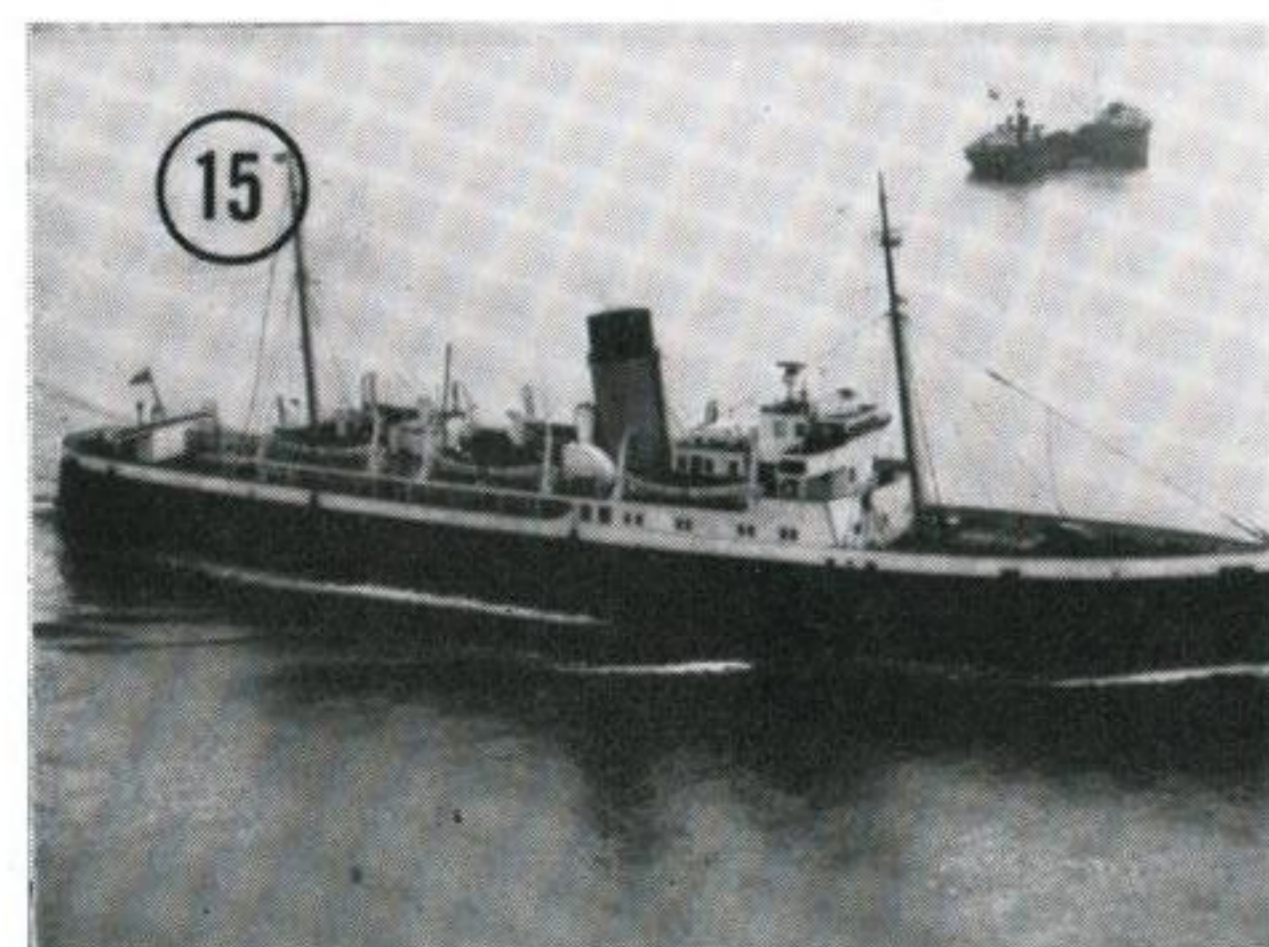
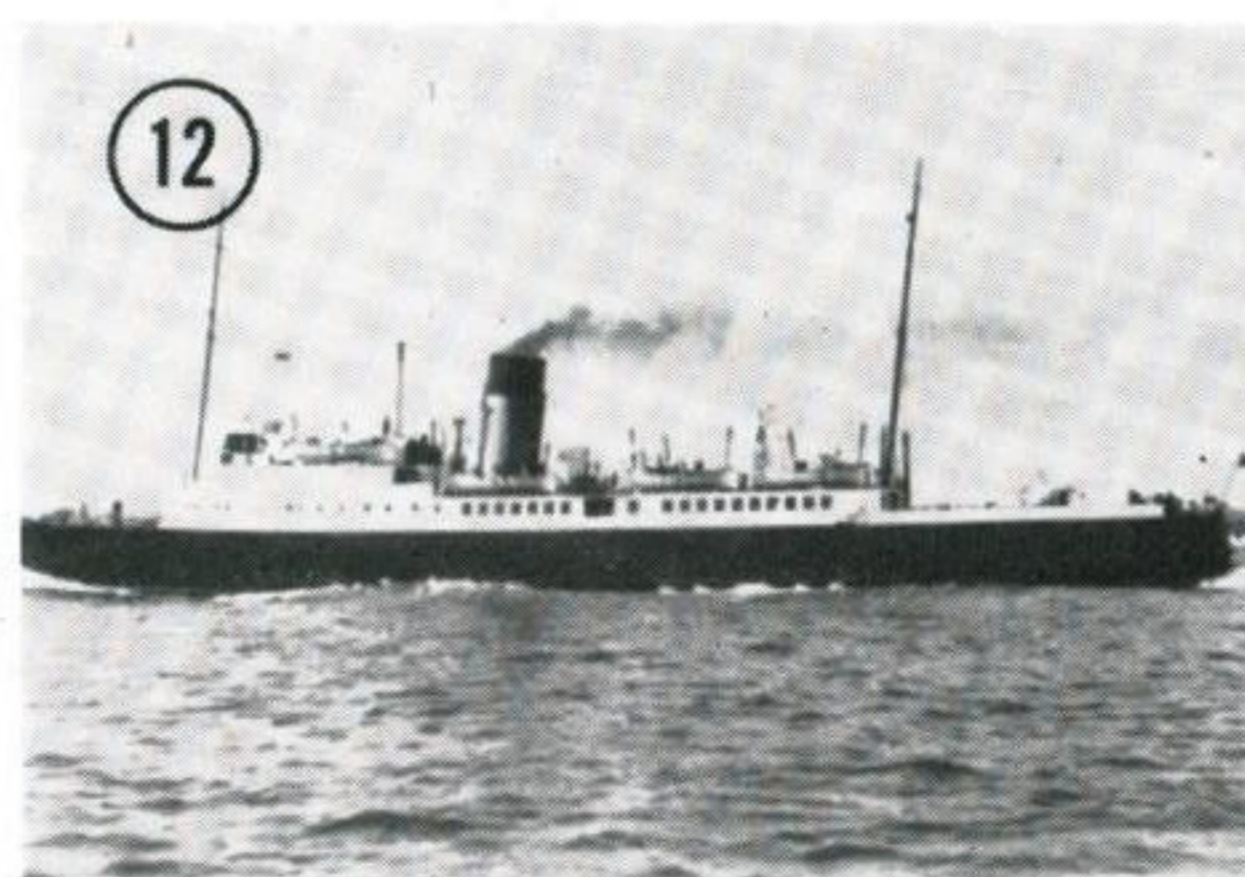


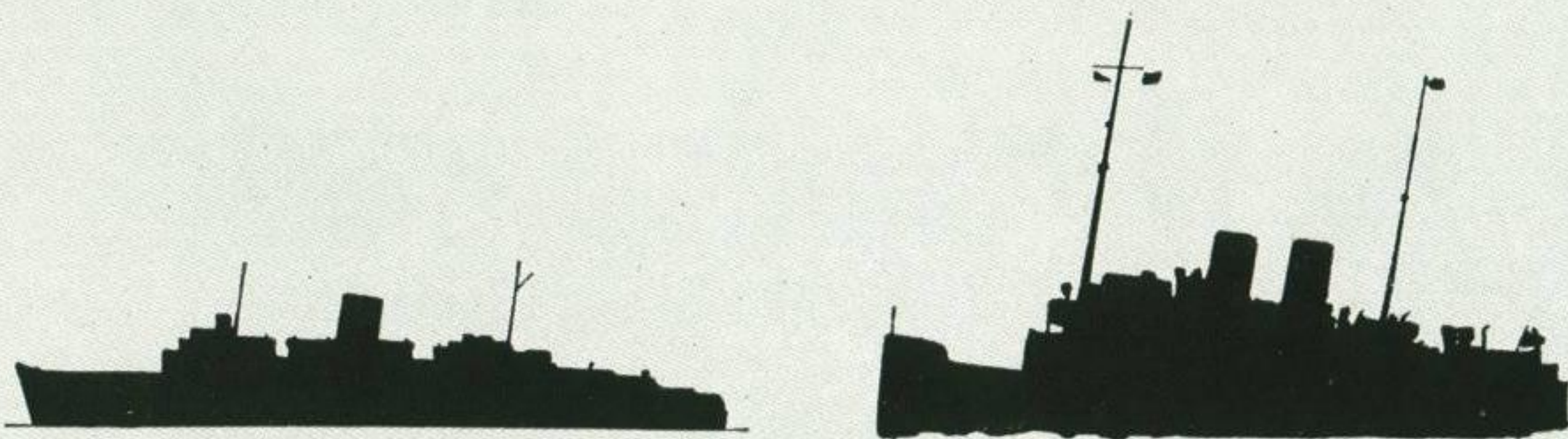
# *The Character of the Packet*



**T**HE PACKET is a small, fast passenger vessel designed and built to operate on short sea routes such as the English Channel, North Sea, Irish Channel, trans-Mediterranean, etc. It derives its name from earlier times when letters for foreign destinations were made up into packets for transport across the English Channel by the "packet boat". Packets of letters were collected together at Dover and put on board vessels sailing for the Northern French ports.

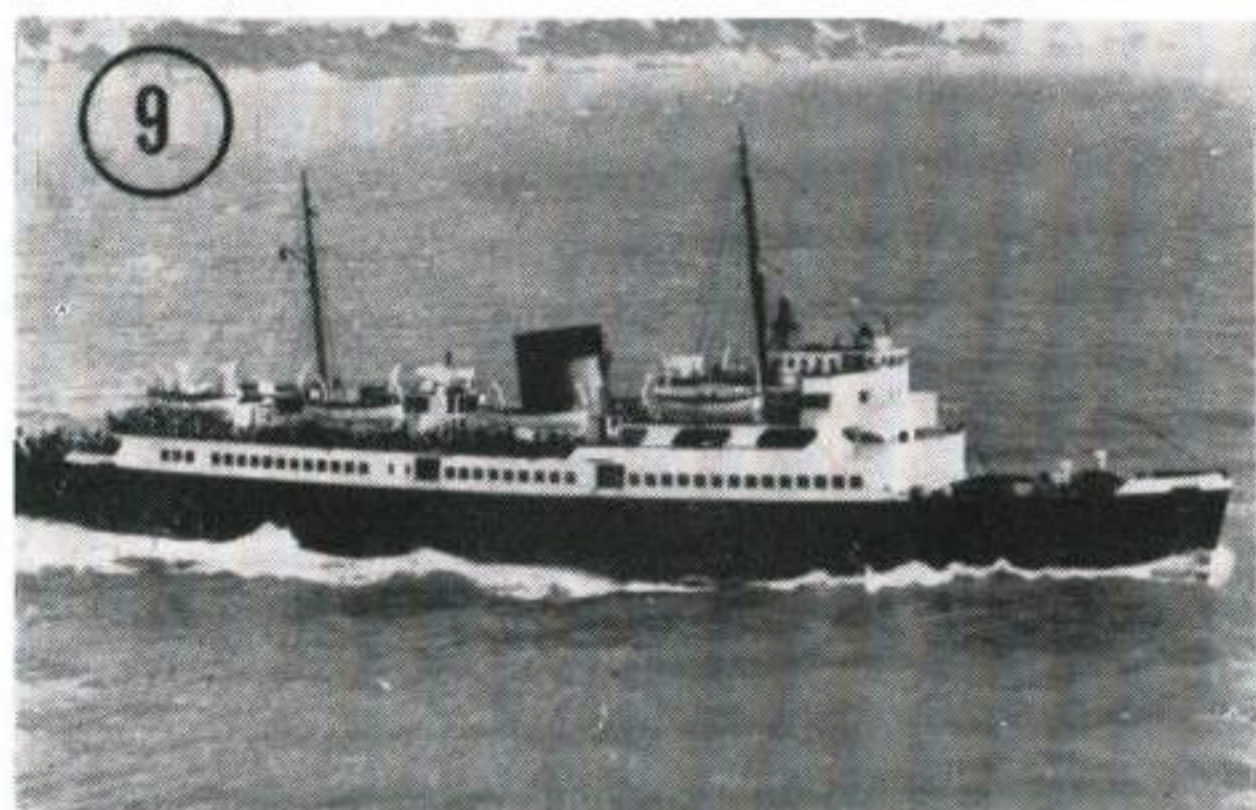
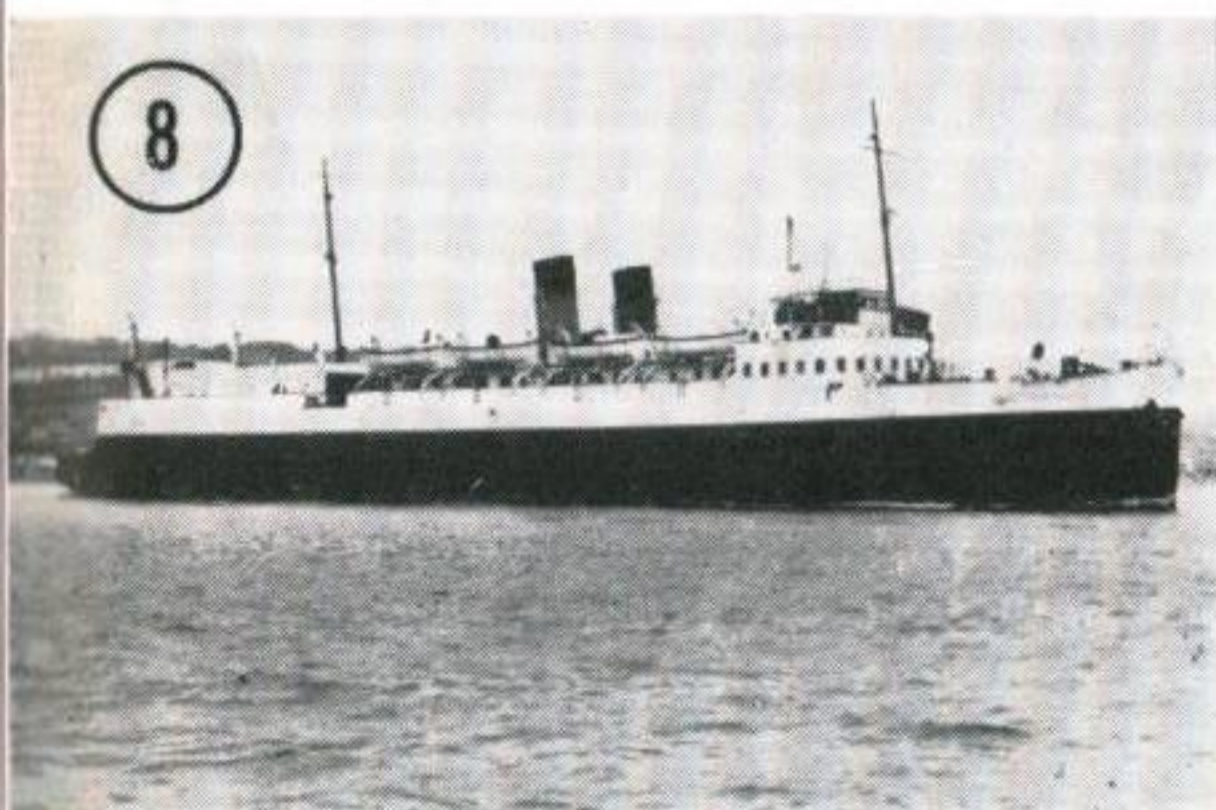
In times of sail, the French spelling "paquette" was often used but became "packet" in time. Sail eventually gave way to steam and a race of fast steam vessels was developed. Some packets bearing characteristics of the older type





The recognition characteristics of the Packet are :

- (1) Large size of features such as funnels, superstructure, lifeboats, windows, etc.
- (2) Funnels, often only one, are generally very large in proportion, low built, broad and bulky and always dominating.
- (3) The superstructure of the Packet looks disproportionately large and "piled up" and makes the ship look "dumpy".
- (4) The bridge is often a large and dominating piece of structure.



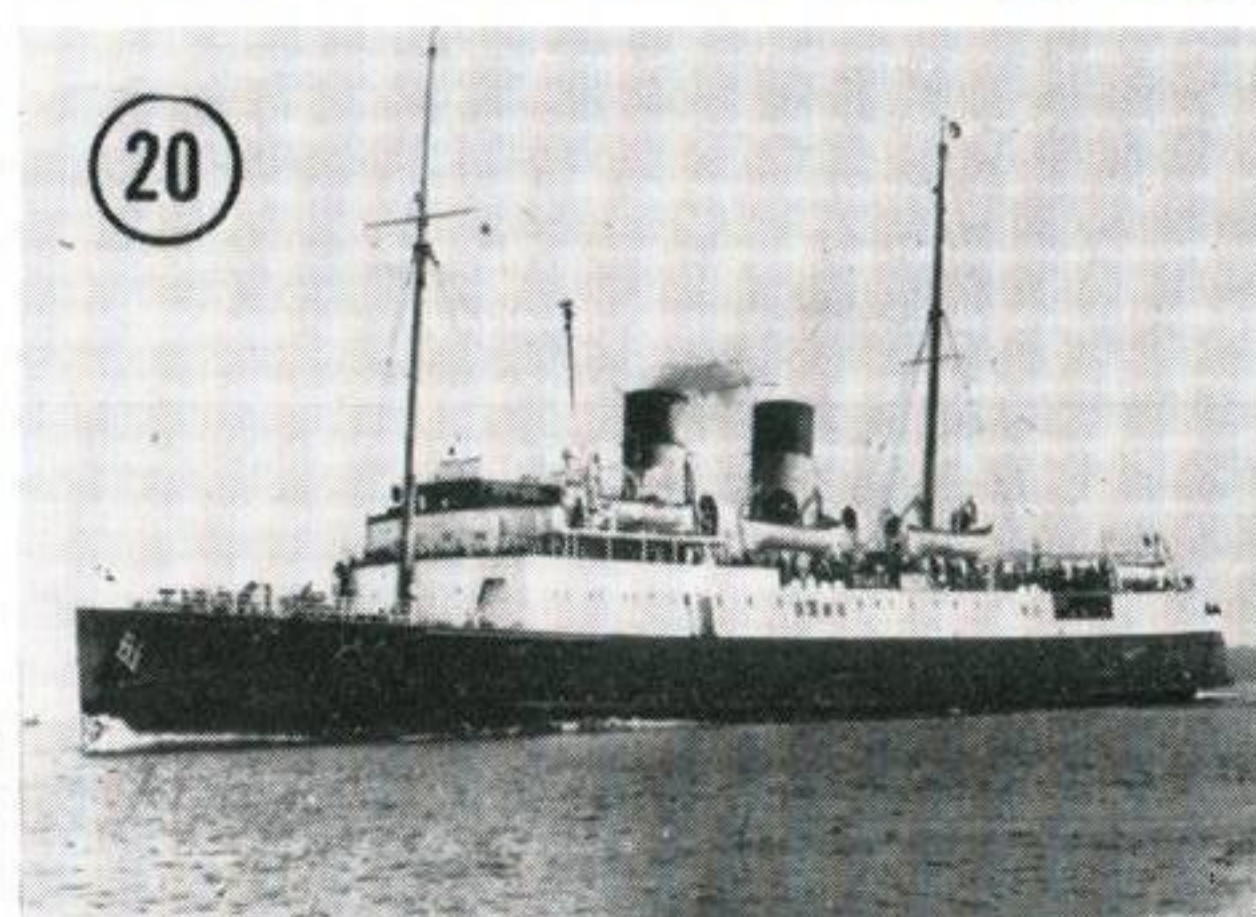
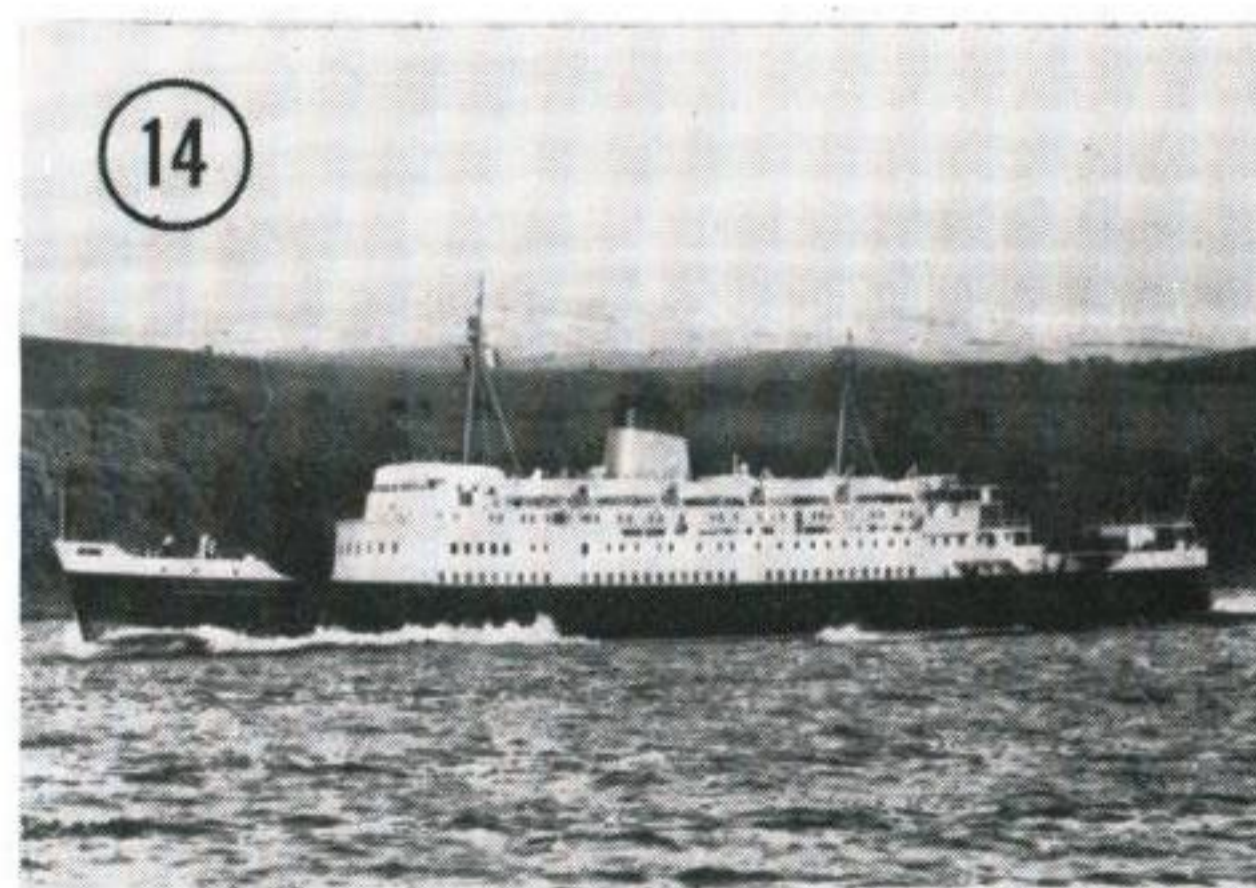
(tall, thin funnel(s)) exist today and are included here. Many lost in the War have been replaced by larger more modern vessels.

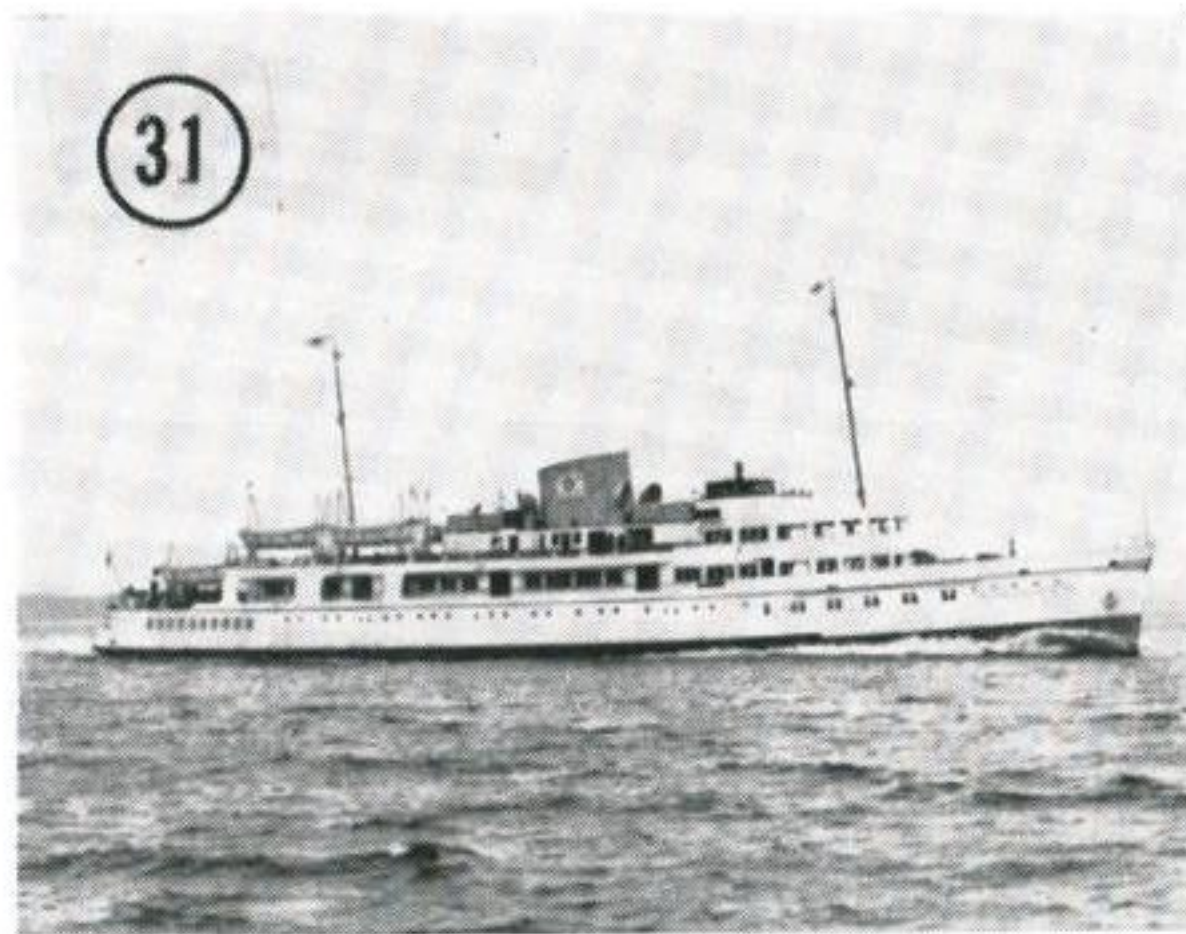
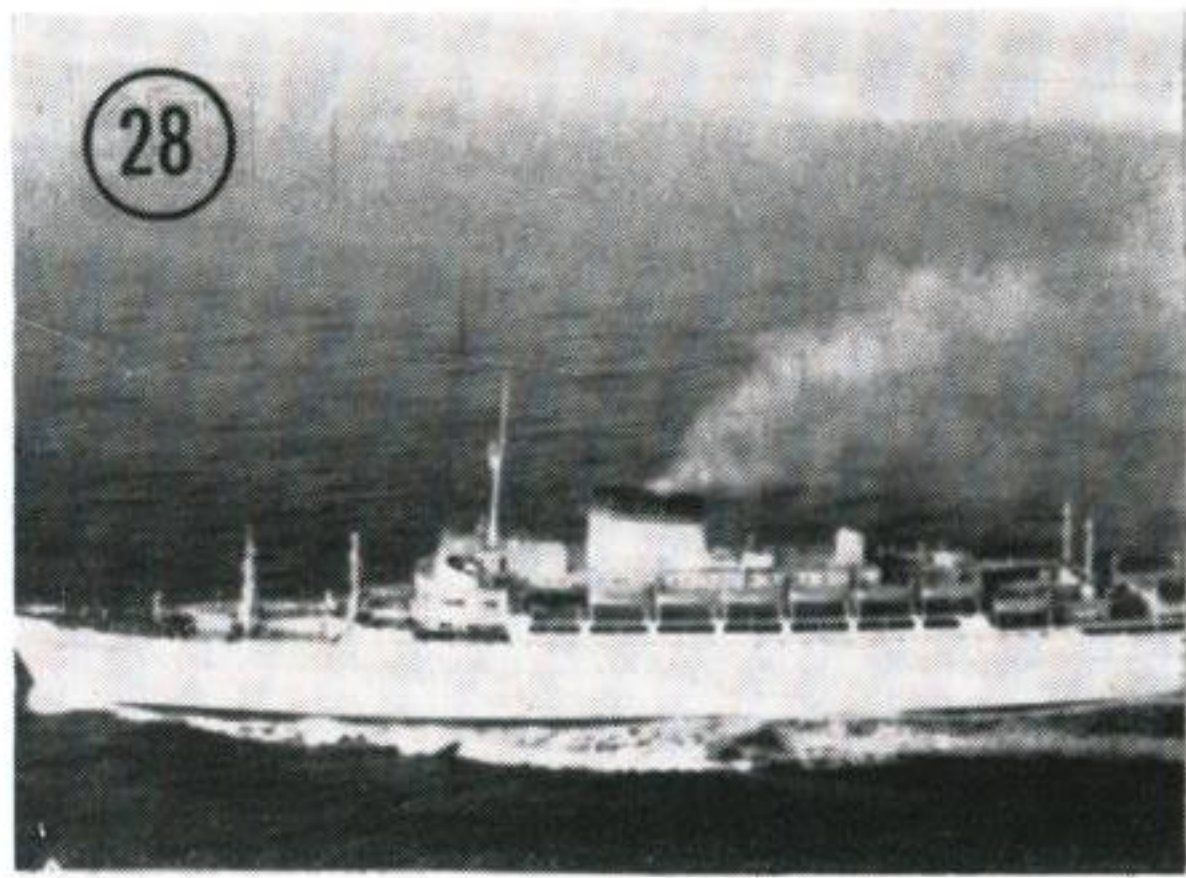
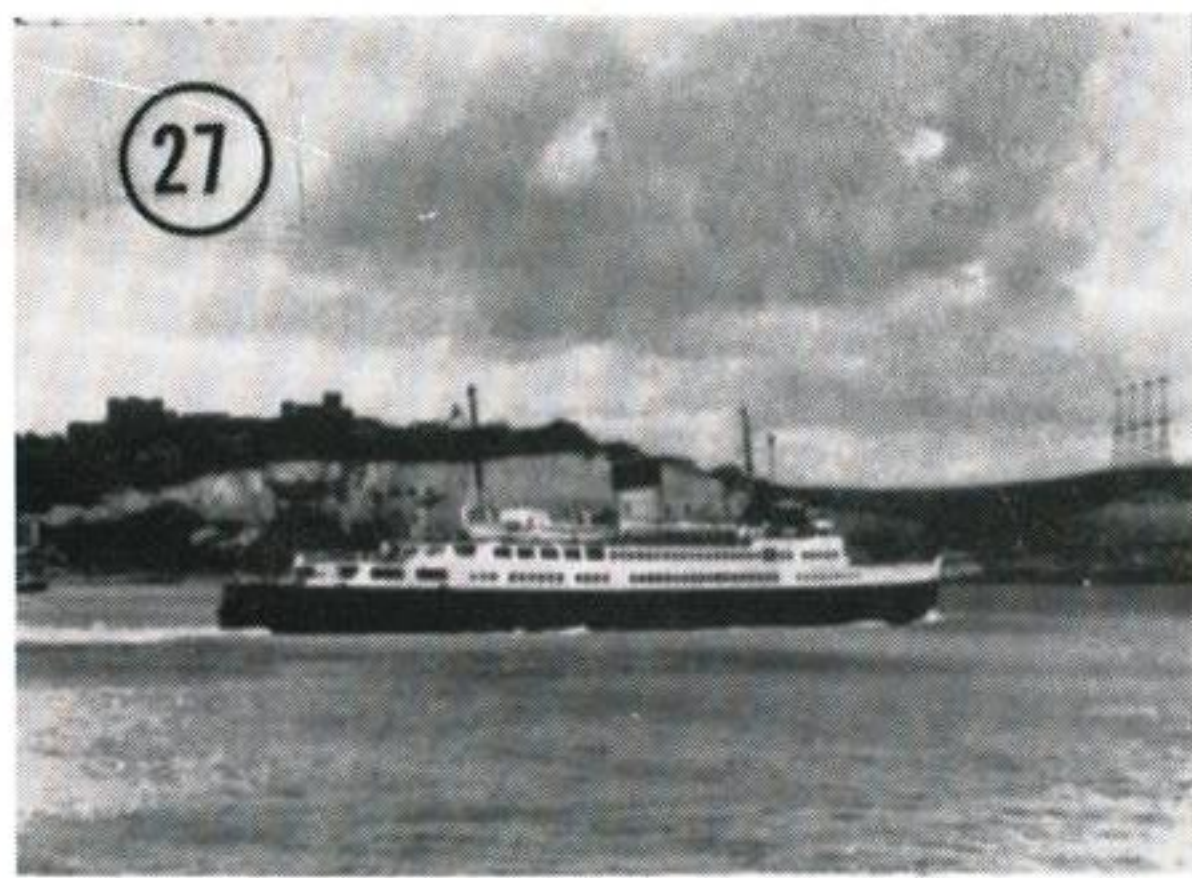
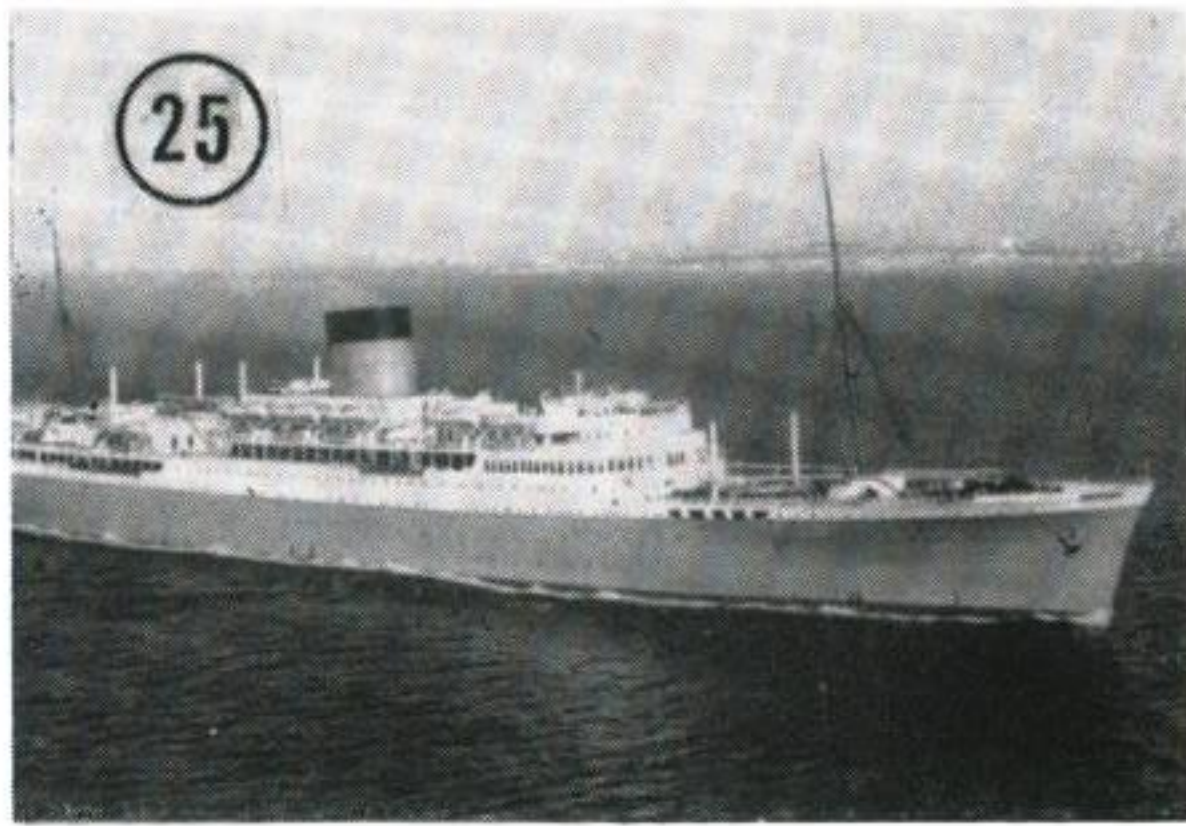
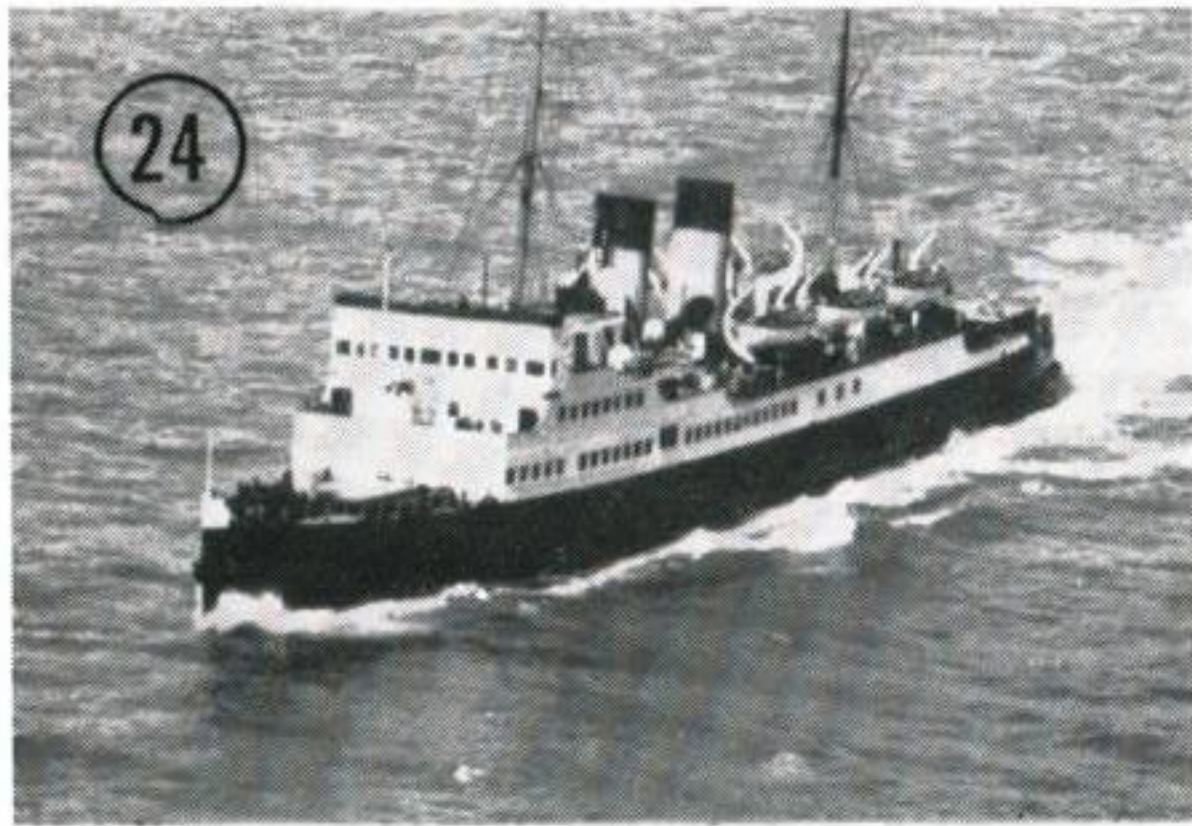
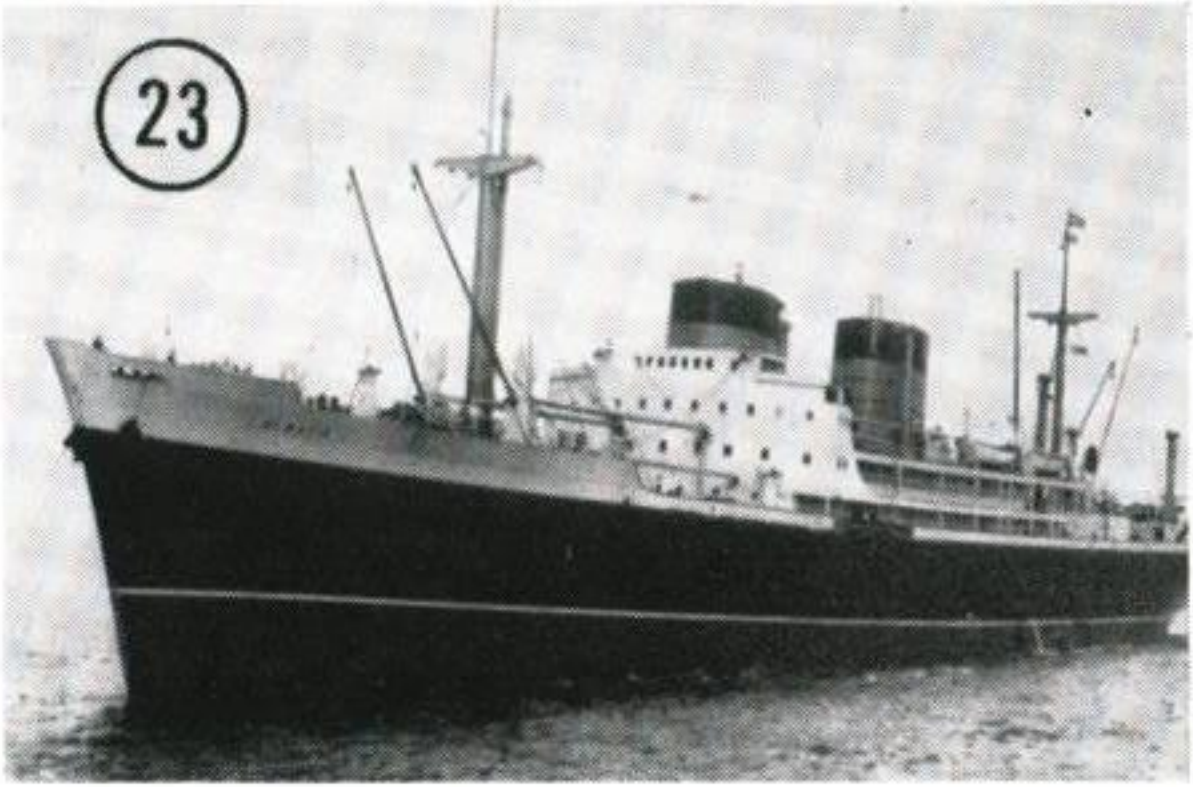
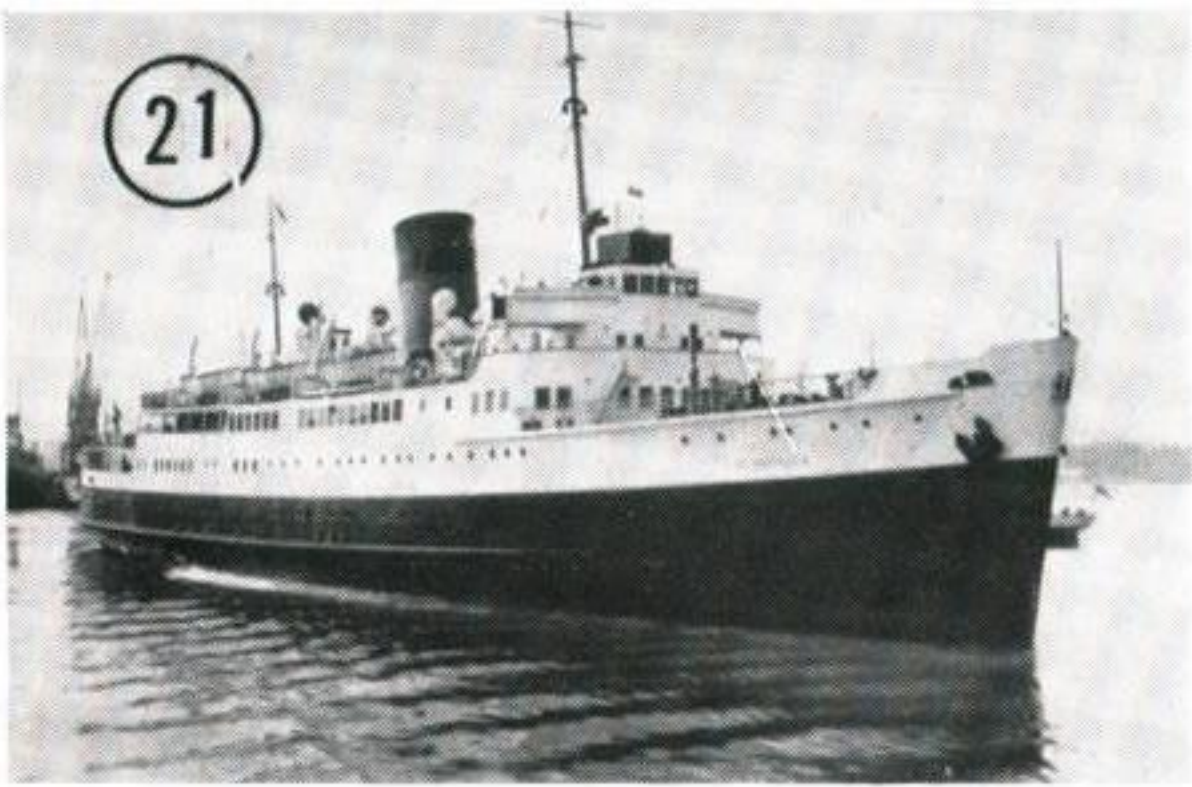
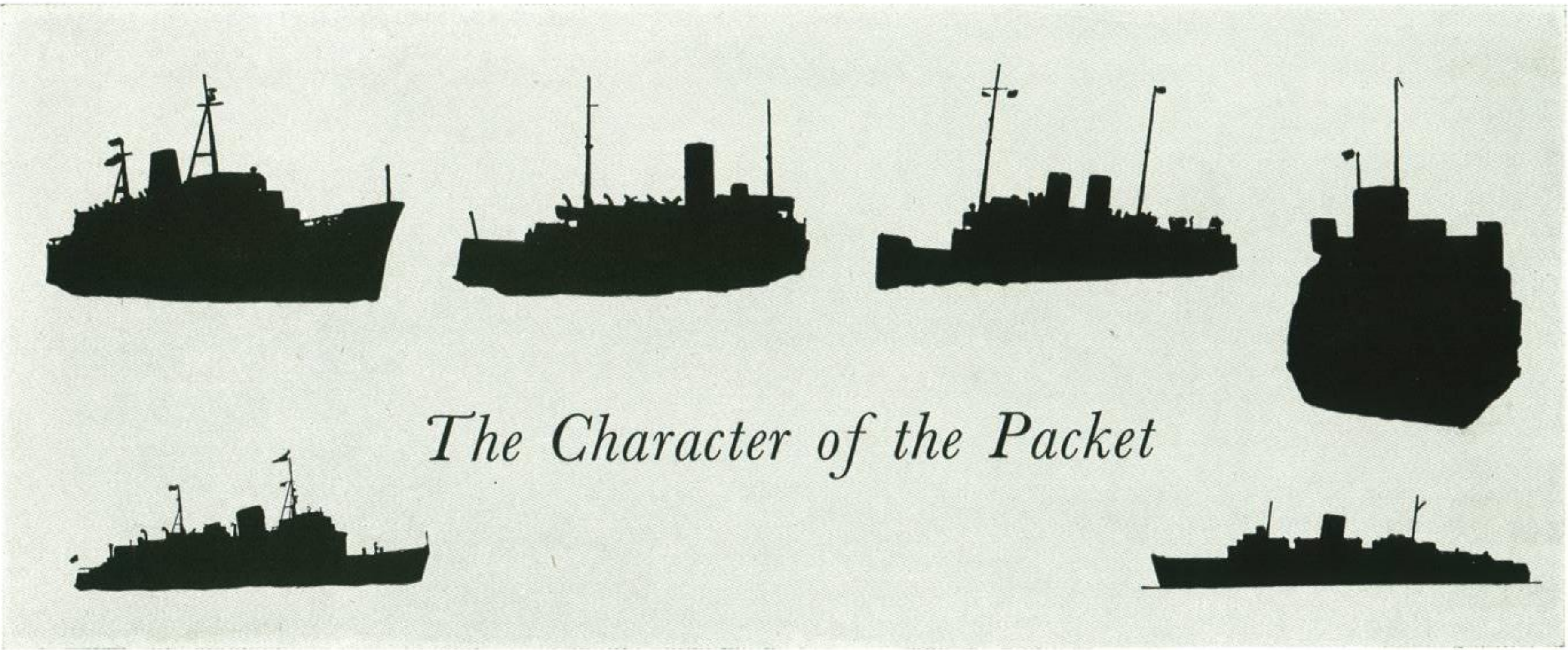
The modern Packet tends to resemble a passenger liner and it can truly be described as a "liner in miniature".

**Lesson Instructions**

*(Mainly for Beginners)*

Along the top of this page is a line of silhouette drawings showing the character of the Packet. Using these drawings as a guide, identify whether the vessels in the target pictures are Packets or not. Write out a list of numbers before commencing the lesson and write down the word "Packet" every time you are certain that the vessel you are examining is a Packet. There is no need to identify the types that are not Packets. A list of answers will be found on the cover of this Journal.





# In Passing . . .

## “KOOL, MAN, KOOL, DADDY-O”

The following item is reproduced from *Naval Aviation News*. If you don't “dig” the meaning you will find a “translation” on the rear cover.

“We were scratching along about 35 when three goofy loopers jumped us about 4 o'clock high. I called, “Blow Man Blow” and started to yo-yo. We were soon looking up their tailpipes closing fast. I called “Kool, Man, Kool” and we started riding just above their wash.

“We closed in and found out they were up on an IFR, so we plugged in for a practice drink from the Buddy. It wasn't easy as we were riding the backside of the curve. Soon as we finished we dropped the boards and headed for the ramp. I picked up a low meatball, rode over the top and boltered on on my first pass, but came right down the glide slope and trapped on the second.”

If you overheard a conversation similar to this and haven't been exposed to jet types, angle deck carriers or mirror mechanisms which have made their debut in the Fleet during the past few years, don't panic. The beatniks and “cats” haven't taken over—you're just a little bit square. Catch up on a few of these terms and everything will be George man—real George.



### True or False ?

The October puzzle was a section of the starboard wing and engines of a Bristol Britannia airliner. Any ideas about this one? It is a pretty fast horse and you would have to be a hot jockey to ride it, but what is it? This worm's-eye view is a highly unusual one, but you ought to be able to identify the aeroplane about to land. Solution next month.

\* \* \*

### Mm-mmm, These Doors Are Delicious !

“Space planners are seriously considering proposals for an edible spaceship. Interior walls and insulation would be made of dehydrated food which the crew could munch during long flights.”

—from *Newsweek*, 7th July 1959.

\* \* \*

### Talking Point

“If you think you are indispensable stick your finger in a bowl of water and notice the hole that's left when you take it out.”

—from *The Roundel*, July/August 1959.

\* \* \*

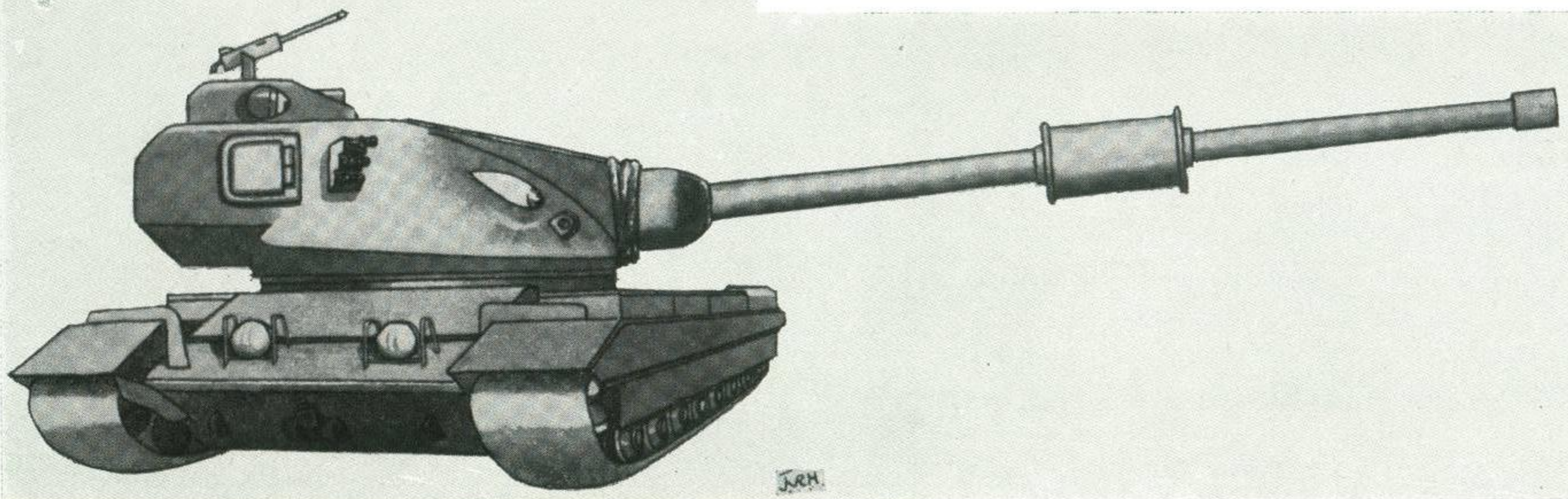
## Tank Offerings—7: The CONQUEROR

*The Major and the Brigadier,  
While walking by the bank,  
Were most surprised to come across  
A quite tremendous tank.  
“Good gracious”, said the Brigadier,  
“I take it you're a Yank?”*

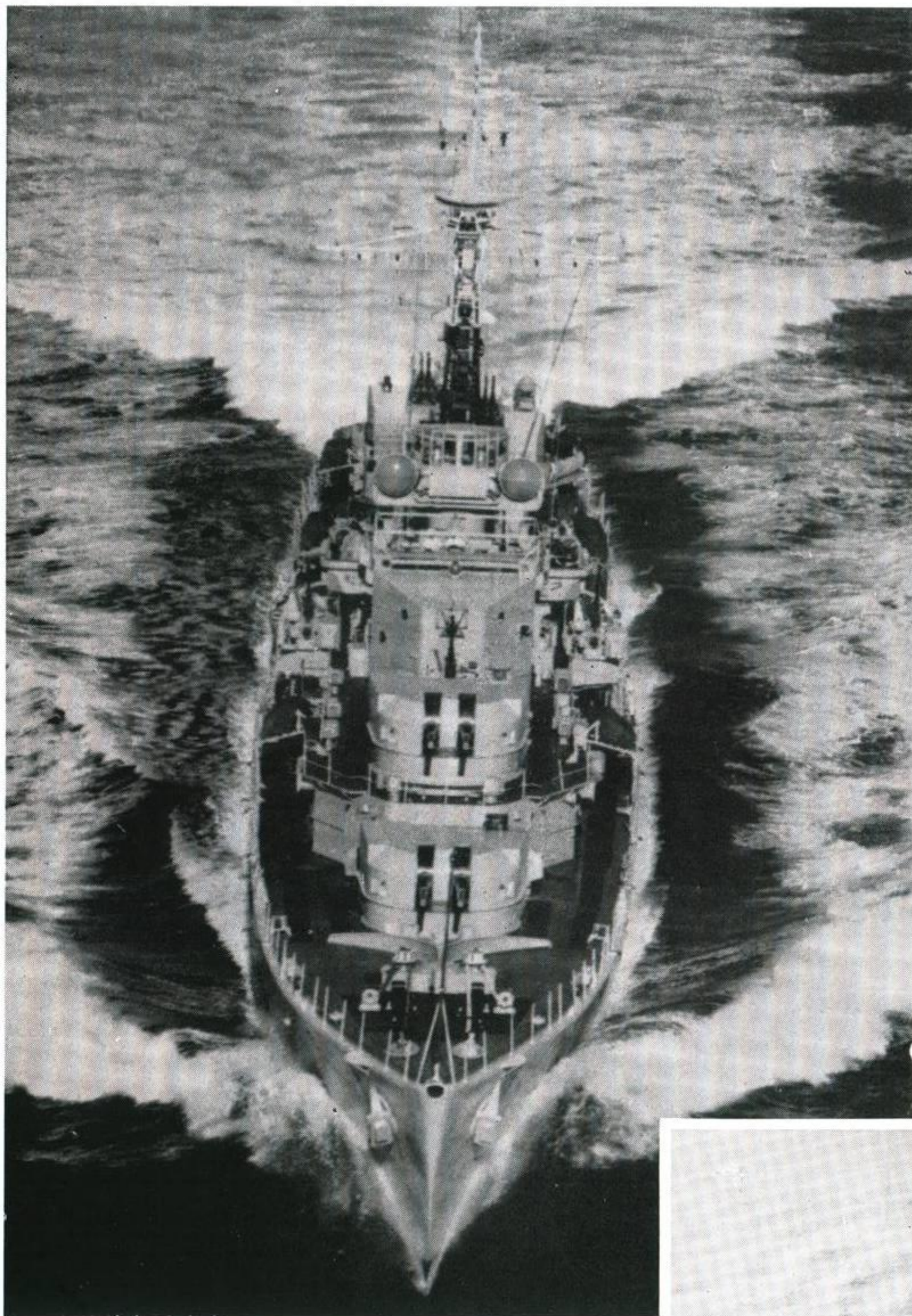
*“No, sir”, the Conqueror replied,  
“I'm British through and through—  
“Regard my wheels, my skirting plates,  
“My turret shape, and view  
“My long gun (with that cotton-reel)—  
“The Conqueror to you”.*

### JOURNALS, PHOTOGRAPHS AND RECOGNITION MATERIAL

Many enquiries are received from readers who wish to obtain copies of *Journals*, photographs or other recognition material shown or listed in this publication. We regret that it is not possible to supply these from the Editorial Office. Applications from the Services and other official bodies for copies of the *Journal* and the recognition charts, diagrams, etc., should be addressed through the normal official publication channels, and not direct to the Editorial Office or to the Air Ministry. The *Journal* is not on sale to the public. We also regret that we have no facilities for supplying photographs or technical information.



# Search and Find



**BATTLE CLASS**

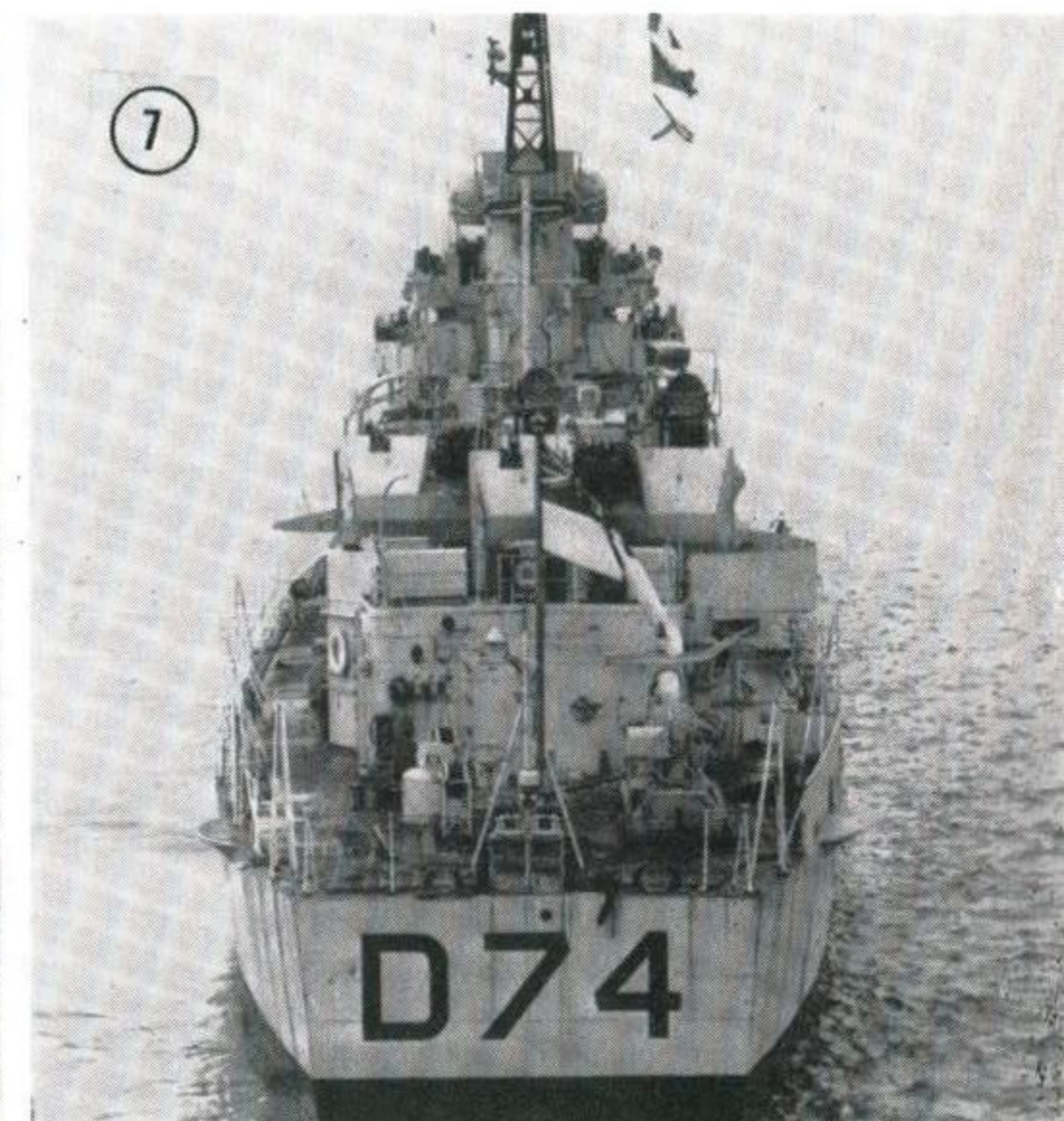
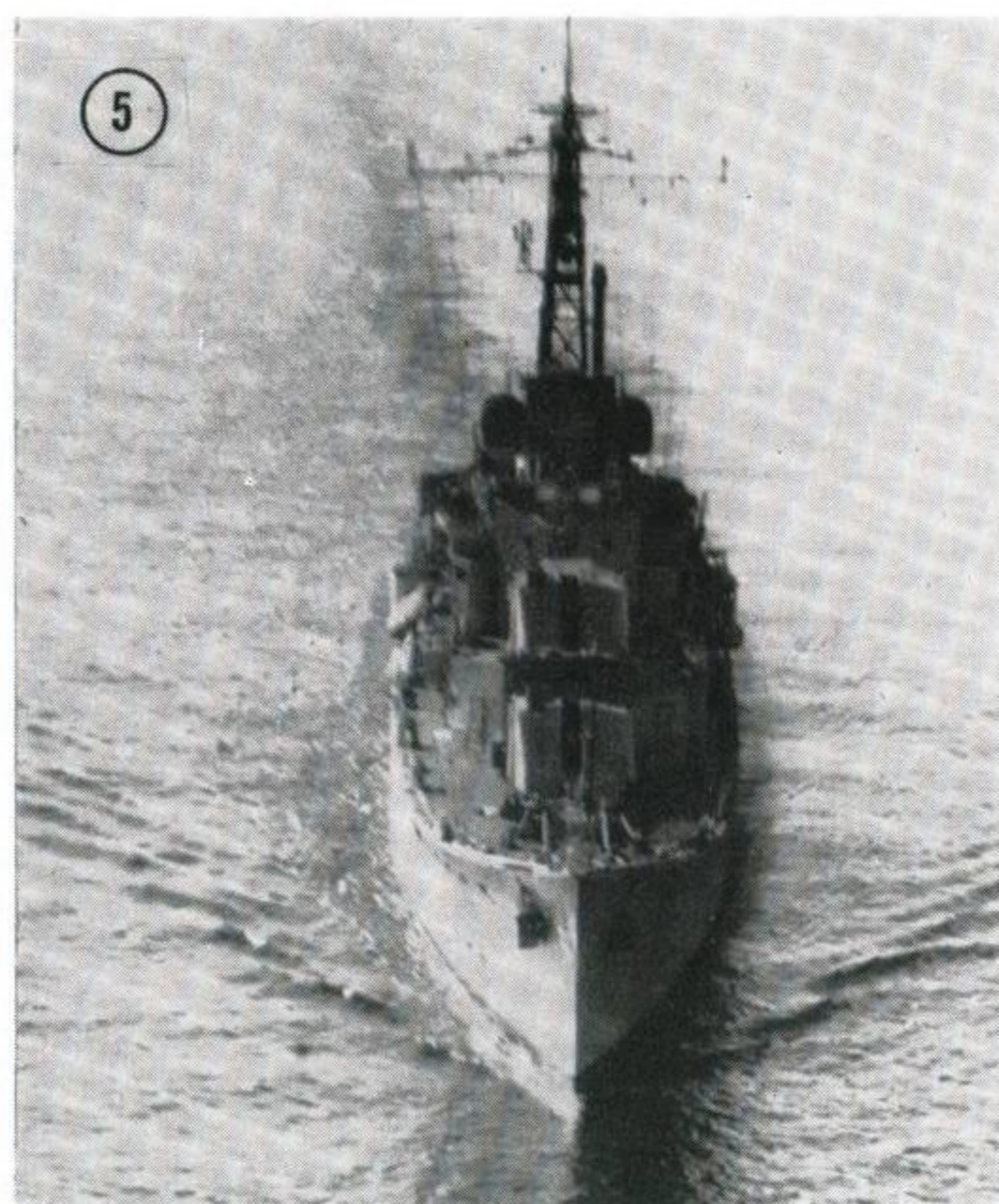
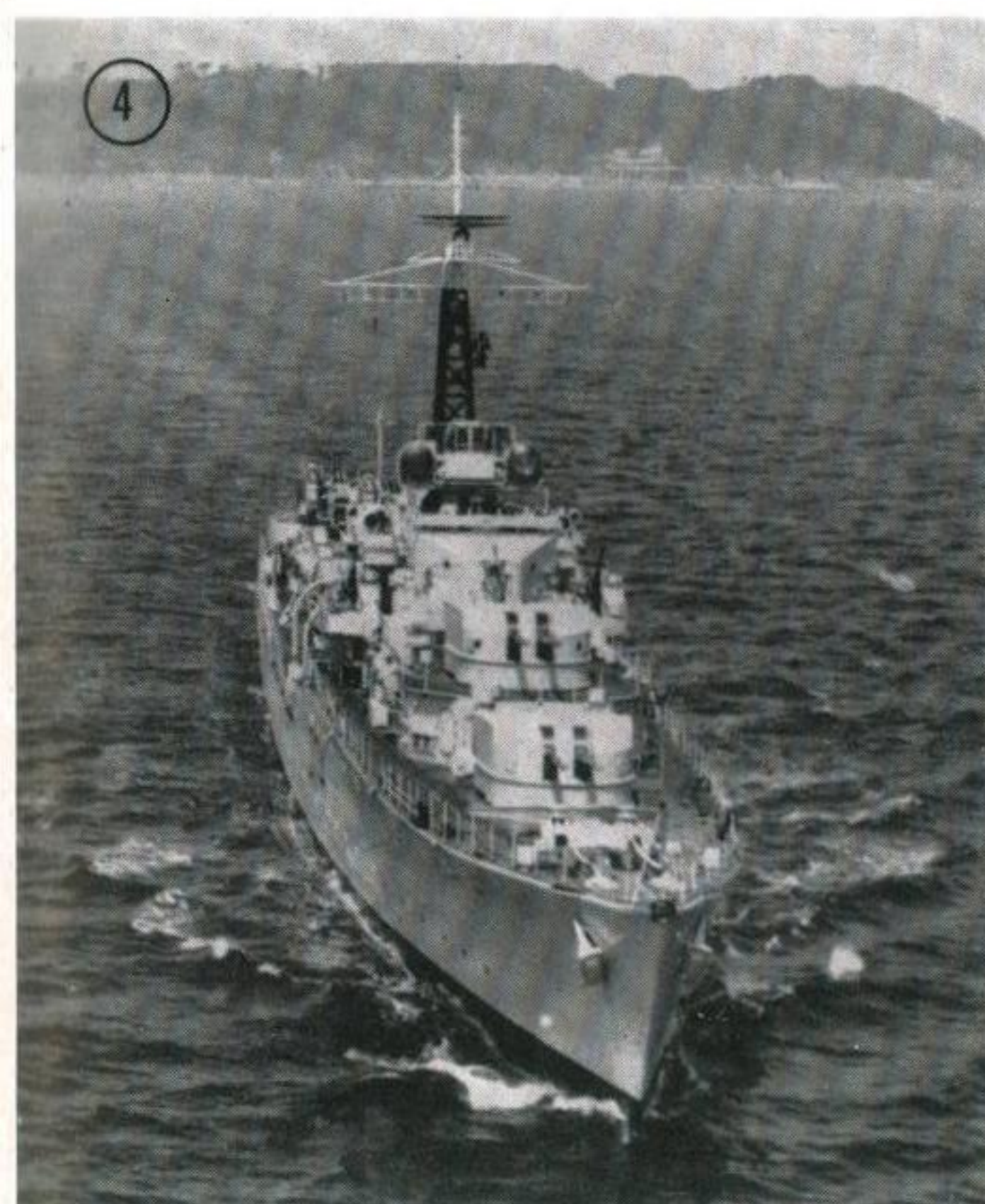
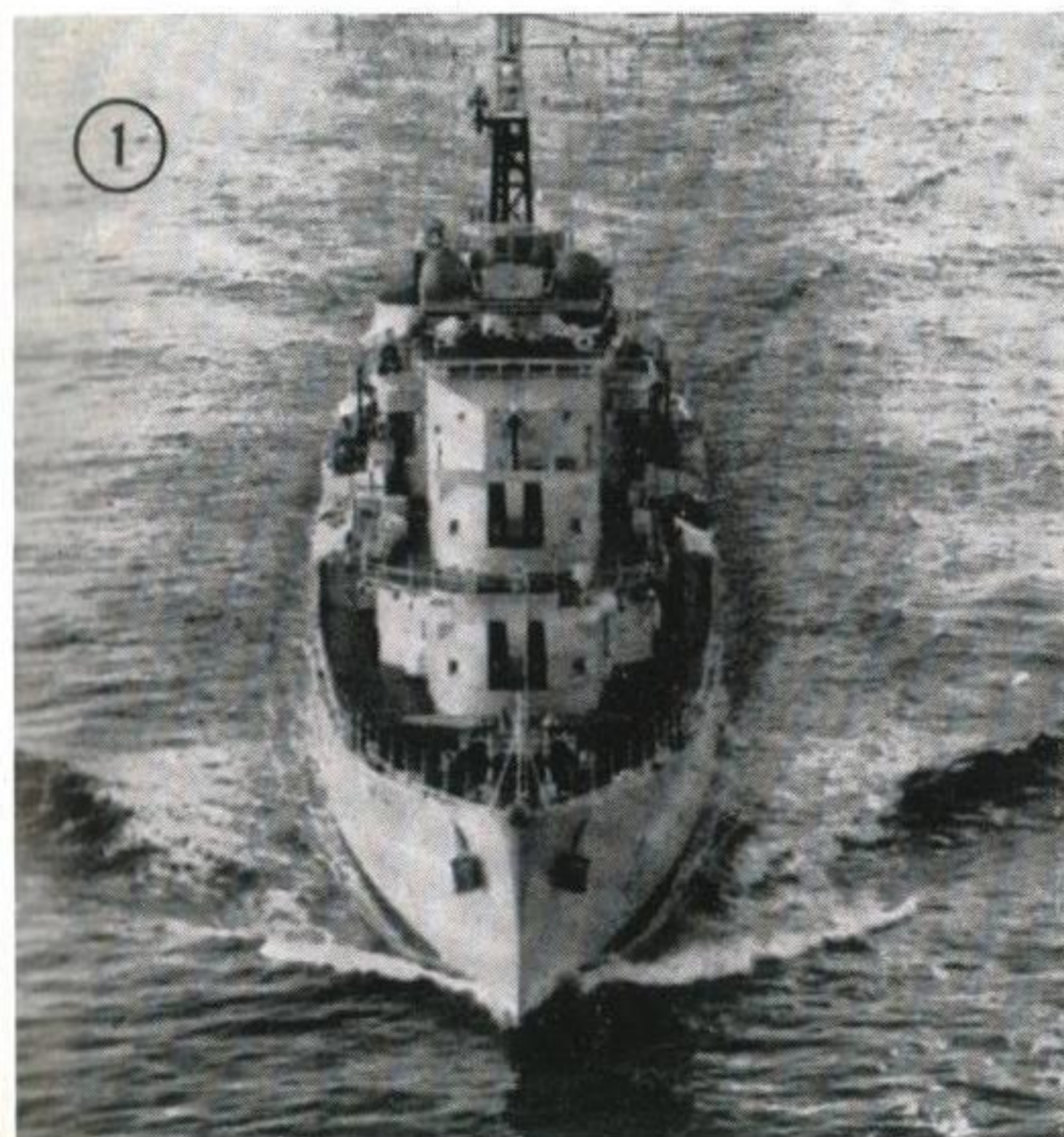
**T**HIS MAY BE A SHORT LESSON —there are only seven targets— but that doesn't mean you can hurry over it. Identification of objects from end-on is always tricky and requires extra care, the more so when two similar objects are compared with one another as they are here. You have two good key photos of each ship: use them wisely and well and you will score full marks. Don't forget to write down your answers *in full* every time.



**“C GROUP”**



**BATTLE CLASS**



*Solutions on the rear cover*

**“C GROUP”**



**Cover Picture:** Almost a complete panoply of aviation in one picture—bomber, fighter, transport, trainer and missile. Flying by is the first intercontinental Boeing 707 in B.O.A.C. livery, while on the ground are a B-52 (left) and an R.A.F. Victor (centre). Beyond the Victor stands a Delta Dagger interceptor, and to its right a Canadian Silver Star trainer. The picture was taken by a Boeing photographer at the "Golden Anniversary of Flight" air show at Vancouver in July.

### "KOOL, MAN, KOOL, DADDY-O"

**Scratching.** Leaving contrails.

**35.** 35,000 feet, of course. Some of the old terms are still used.

**Goofy Loopers.** From the bomb delivery of the same name used by light attack pilots. Aircraft is pulled up into a 4G loop and bomb is released at a predetermined point.

**Blow, Man, Blow.** Also Go, Man, Go. Terms are used to inform wingmen of after-burner application.

**Yo-yo.** A form of clover leaf scissors executed while ascending or descending and used in jet tactics.

**Kool, Man, Kool.** Cut out afterburner.

**IFR.** Not Instrument Flight Rules in this case, but In-Flight Refueling.

**Plugged in.** Insertion of probe into drogue as hook-up is made with tanker aircraft.

**Buddy.** Light attack refueler aircraft are known as Buddy tankers.

**Boards.** Speed brakes.

**Low Meatball.** A low-placed glob of light reflected in the landing mirror, indicating that the pilot is below the glide slope on his landing approach.

**Boltered.** A "go-around" as they say in some flying circles.

**Trapped.** Arrested landing.

### ROSSIYA

The target views are all **Rossiyas** except Nos. 12 and 21, which are **Bear** bombers.

### THE CHARACTER OF THE PACKET

Name of Ship	Gross Tonnage	Overall length (feet)
1. Normannia .. .. .	3,543	309
2. Maid of Orleans .. .. .	3,777	341
3. Isle of Sark .. .. .	2,188	306
4. Liner .. .. .	51,839	893
5. Brittany .. .. .	1,522	260
6. Lord Warden .. .. .	3,300	362
7. Cote D'Azur .. .. .	4,037	365
8. Shepperton Ferry .. .. .	2,800	360
9. Maid of Orleans .. .. .	3,777	341
10. Isle of Jersey .. .. .	2,143	214
11. Virgin of Africa .. .. .	3,392	340
12. St. Julien .. .. .	1,943	292
13. Duke of Lancaster .. .. .	4,757	357
14. Duke of Lancaster .. .. .	4,757	357
15. Brittany .. .. .	1,522	260
16. St. Germain .. .. .	3,594	300
17. Brighton .. .. .	2,875	312
18. Lord Warden .. .. .	3,300	362
19. Lord Warden .. .. .	3,300	362
20. Isle of Guernsey .. .. .	2,152	356
21. St. Patrick .. .. .	3,482	321
22. Hampton Ferry .. .. .	2,989	360
23. Cargo Liner .. .. .	7,200	?
24. Dinard .. .. .	1,800	316
25. Liner .. .. .	28,205	742
26. Victoria .. .. .	3,310	340
27. Invicta .. .. .	4,191	347
28. Liner .. .. .	27,090	662
29. Passenger-Cargo Liner .. .. .	10,470	?
30. Normannia .. .. .	3,543	309
31. Royal Sovereign .. .. .	1,851	288
32. Lord Warden .. .. .	3,300	362

## SOLUTIONS TO TESTS AND LESSONS IN THIS EDITION

### THUNDERFLASH

The target views are all **Thunderflashes** except Nos. 15 and 18, which are **Thunderstreaks**.

### MIRAGE III AND DELTA DART

- |               |                |                |                |
|---------------|----------------|----------------|----------------|
| 1. Delta Dart | 10. Mirage III | 19. Mirage III | 28. Mirage III |
| 2. Mirage III | 11. Mirage III | 20. Mirage III | 29. Delta Dart |
| 3. Mirage III | 12. Mirage III | 21. Delta Dart | 30. Mirage III |
| 4. Mirage III | 13. Delta Dart | 22. Delta Dart | 31. Mirage III |
| 5. Delta Dart | 14. Mirage III | 23. Mirage III | 32. Delta Dart |
| 6. Delta Dart | 15. Delta Dart | 24. Mirage III | 33. Mirage III |
| 7. Mirage III | 16. Mirage III | 25. Delta Dart | 34. Delta Dart |
| 8. Delta Dart | 17. Delta Dart | 26. Mirage III | 35. Mirage III |
| 9. Mirage III | 18. Delta Dart | 27. Mirage III |                |

### GNAT

The target views are all **Gnats** except No. 13, which is a **Hunter**, and No. 17, which is a **Swift 5**.

### SEARCH AND FIND

- |                 |                 |
|-----------------|-----------------|
| 1. Battle Class | 5. "C" Group    |
| 2. Battle Class | 6. Battle Class |
| 3. "C" Group    | 7. Battle Class |
| 4. Battle Class |                 |

### BRISTOL 192

The target views are all of the **Bristol 192** except No. 15, which is a **Vertol H-21 Workhorse**.

### OPERATION "LOWDOWN"—2

- |             |                   |              |              |
|-------------|-------------------|--------------|--------------|
| 1. Saracen  | 9. Saracen        | 17. Saracen  | 25. Ferret 2 |
| 2. Ferret 2 | 10. Saracen       | 18. Ferret 2 | 26. Saracen  |
| 3. Saracen  | 11. Ferret 2      | 19. Saracen  | 27. Saracen  |
| 4. Ferret 2 | 12. Saracen       | 20. Ferret 2 | 28. Saracen  |
| 5. Saracen  | 13. Saracen       | 21. Ferret 2 | 29. Saracen  |
| 6. Saracen  | 14. Saracen ("e") | 22. Saracen  | 30. Saracen  |
| 7. Saracen  | 15. Saracen       | 23. Ferret 2 | 31. Saracen  |
| 8. Ferret 2 | 16. Ferret 2      | 24. Saracen  |              |



"Well, I wish you *wouldn't* wait to order it straight off the drawing board."