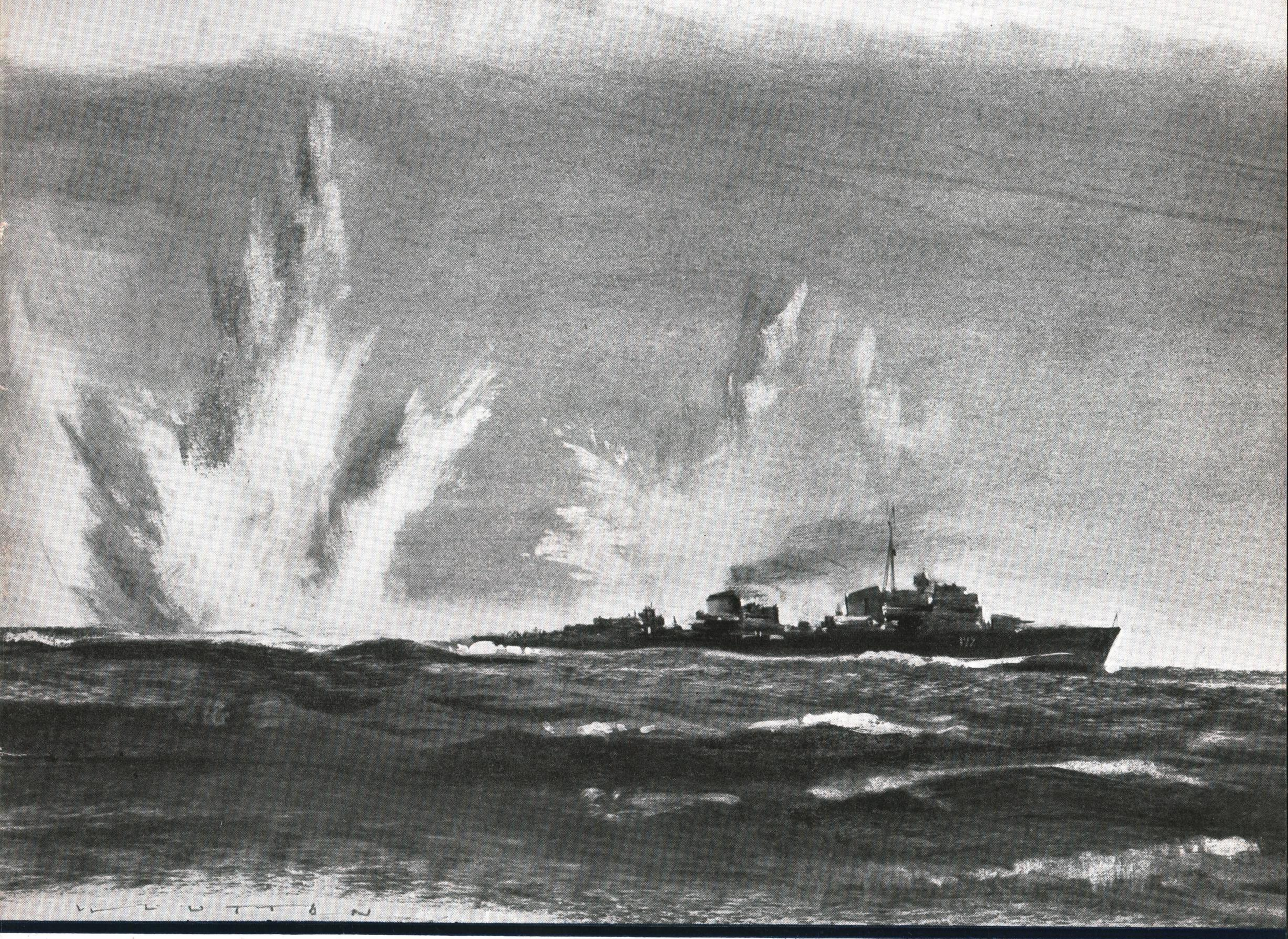
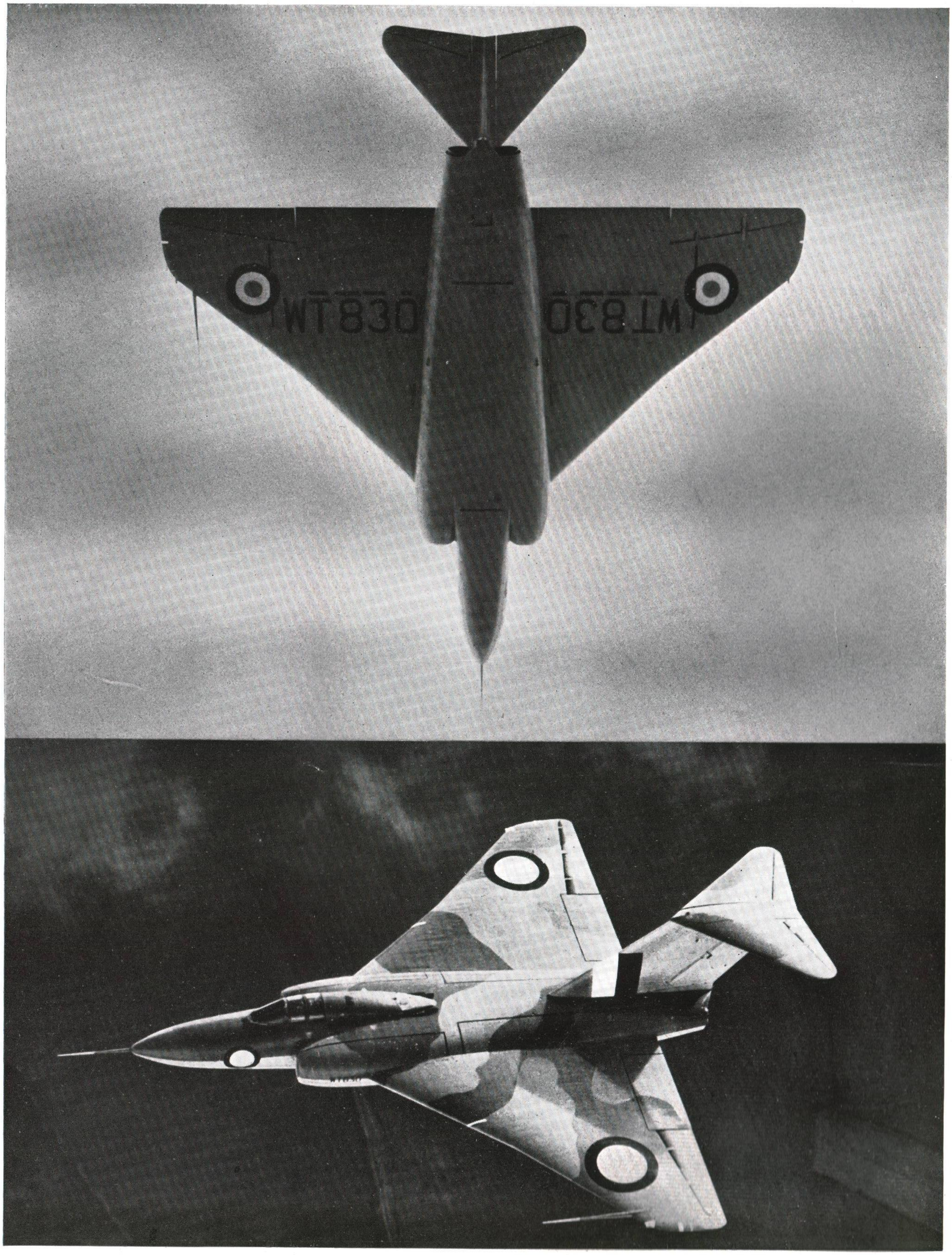
RECOGNITION

JOINT SERVICES Journal



Vol. 9 AUGUST 1954 No. 8



JAVELIN

The wing plan of the Javelin has been modified by blunting the wing-tips and breaking the sweep of the leading edge.

AUGUST 1954 Vol. 9 No. 8

JOINT SERVICES

RECOGNITION JOURNAL

The *Joint Services Recognition Journal* is a monthly publication prepared and produced by the Assistant Chief of the Air Staff (Training), Air Ministry, in collaboration with the Ministry of Supply—Controller of Aircraft—Air Technical Publications. Contributions and correspondence should be addressed to the Editor, *Joint Services Recognition Journal*, Air Ministry, Richmond Terrace, Whitehall, London, S.W.1. The *Journal* is **produced solely for official use and cannot be sold to members of the public.** Applications for copies, which can only be accepted from the Services and other official bodies, should be submitted through the normal official publications supply channels and not to the Editorial Office or direct to the Air Ministry.

CONTENTS

Feature	Page
"O" Class 1 Russian Destroyer (Cover)	185
Javelin	186
Matador	187
Elementary Spotting	188
Comparison Study No. 15—Britannia and Hastings	189
Spot the Provence!	190
Briefs	191
Sillographs	192
Spot the Mystère 4A!	193
Close-Up—F-100 Super Sabre	194
Advanced Spotting	196
Helicopter Flight and How!	197
MiG-15	198
Very Advanced Spotting	200
In Passing	202
Phantasy in Funnels	204
Ship Briefs	205
Cargo Liners	206
Inshore Minesweepers—"*Inglesham*"	210
Solutions to Tests and Exercises	212

MATADOR

MANY OBSERVERS have had considerable war-time experience in recognising pilotless aircraft and will agree that from the visual recognition point of view, it was often easier to recognise the pilotless than the piloted because of its steady height and track: not to mention its noise.

Among the many pilotless aircraft being developed and brought into service to-day, the American Martin B-61 Matador is the first one to go into squadron service. It is reported that two U.S.A.F. squadrons are equipped with these "pilotless bombers" as they call them, and are in fact serving with N.A.T.O. forces in Europe.

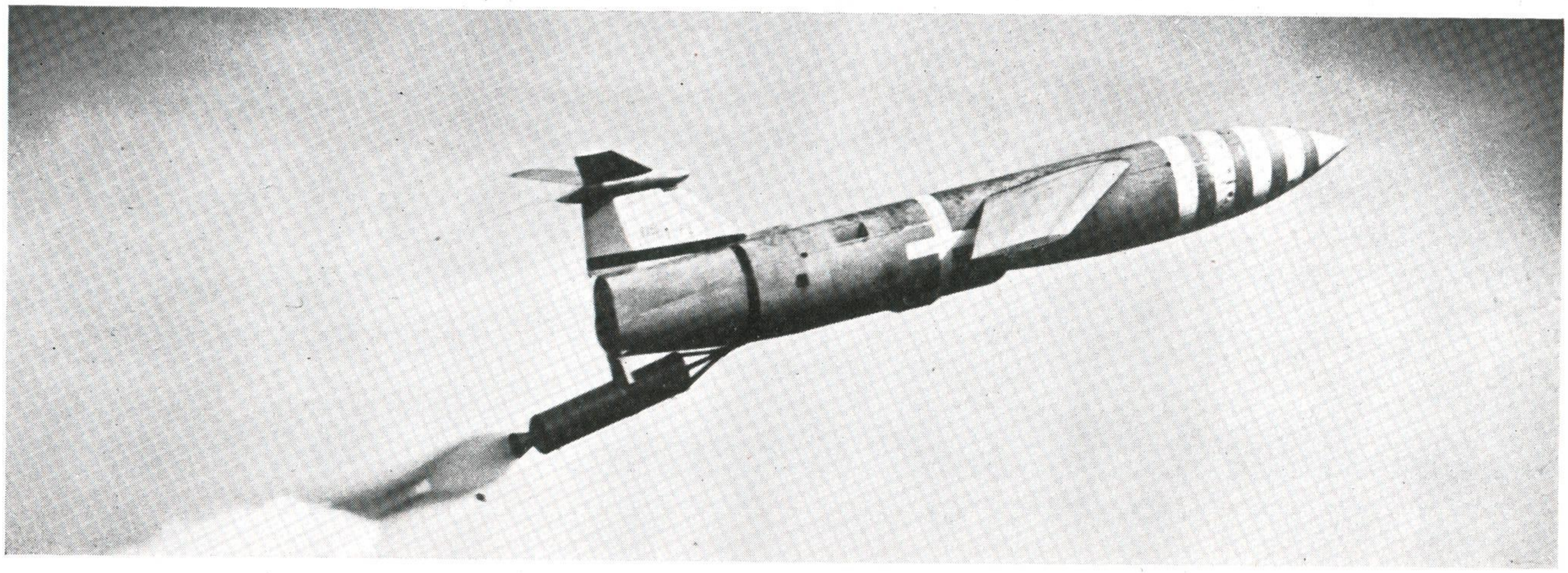
Although the Matador is really a missile it can easily be confused with many current conventional swept-wing jet-fighters, especially since it is mainly jet-powered and sounds like one when free of its take-off rocket. Although no performance data has been released the Matador would undoubtedly approximate to a jet-fighter in speed in the air.

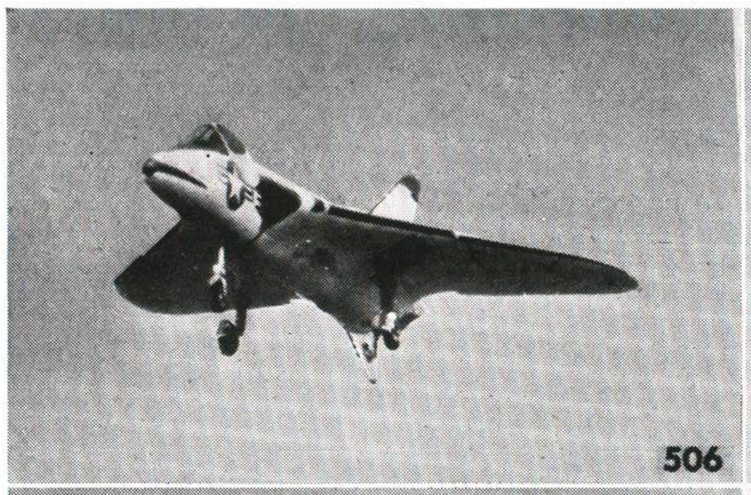
Recognition characteristics include a swept and tapered wing—which is shoulder high and, from available views appears to be "drooped" slightly; a swept tail-plane (with dihedral angle) sits astride the fin tip; a simple fuselage form rather like the body of the V2 rocket contains the turbojet. The intake for the turbojet appears to be at the bottom of the fuselage beneath the wing. There is, of course, no cockpit. Markings, apparently very distinctive in the view below are not always present nor so conspicuous.

The Matador is a ground-launched missile assisted into the air with a rocket which it detaches itself when spent, then the turbojet takes over completely and functions all the way to the target. Visual contact with the Matador is maintained in flight by what is called a "chase" plane, but it is not known whether this aircraft exercises any control over the flight of the Matador.

There are not many views available as yet on the B-61 Matador, but the experienced observer will no doubt be able to get a good grasp of the visual character from the view below and visualise other angles of view. Other photographs of the Matador will be published later.

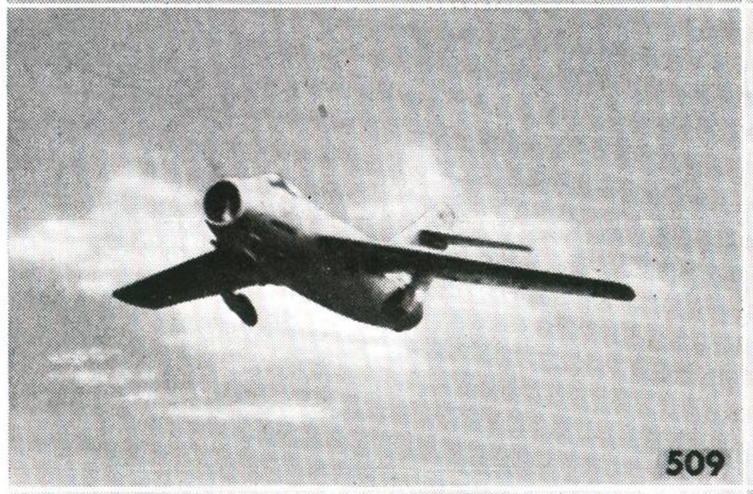
Pilotless, unmanned and/or guided missiles of any kind which are confusable in appearance with conventional aeroplanes will be featured in the *Journal* as and when they come into service.




506

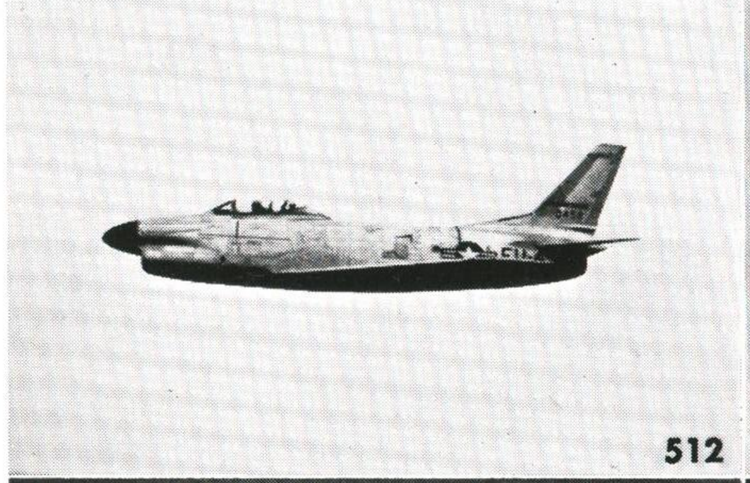

507


508

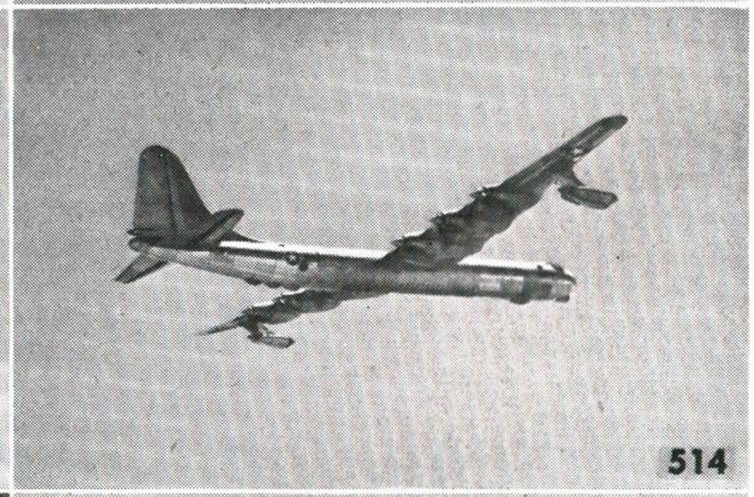

509


510

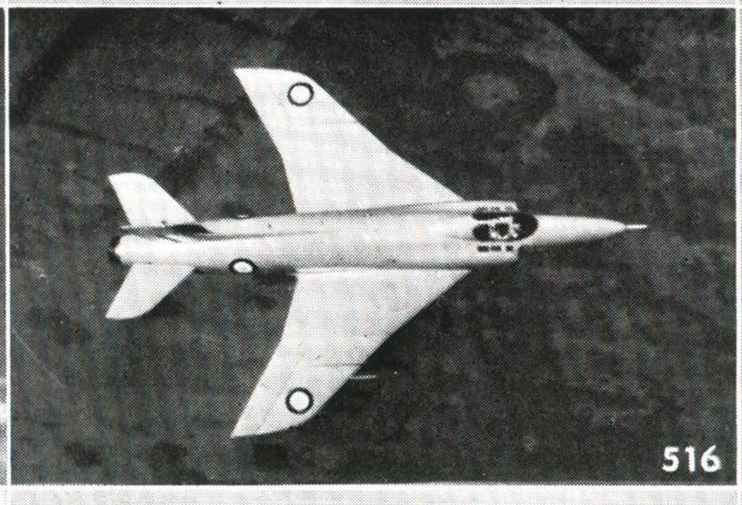

511


512


513


514


515


516

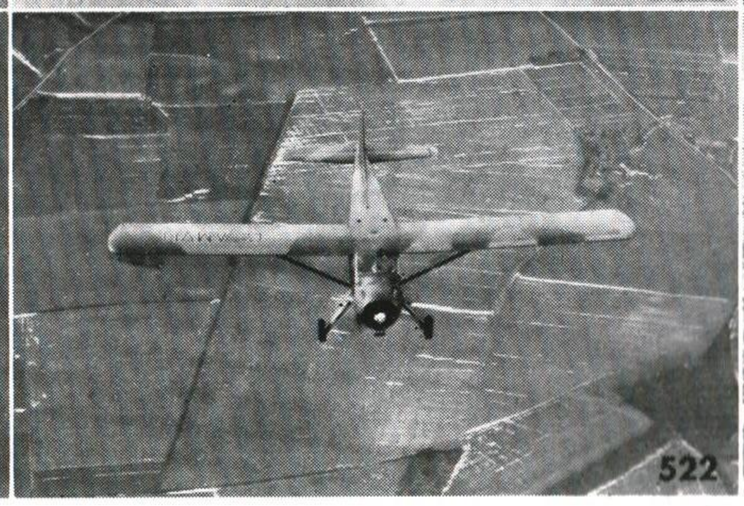

517


518


519

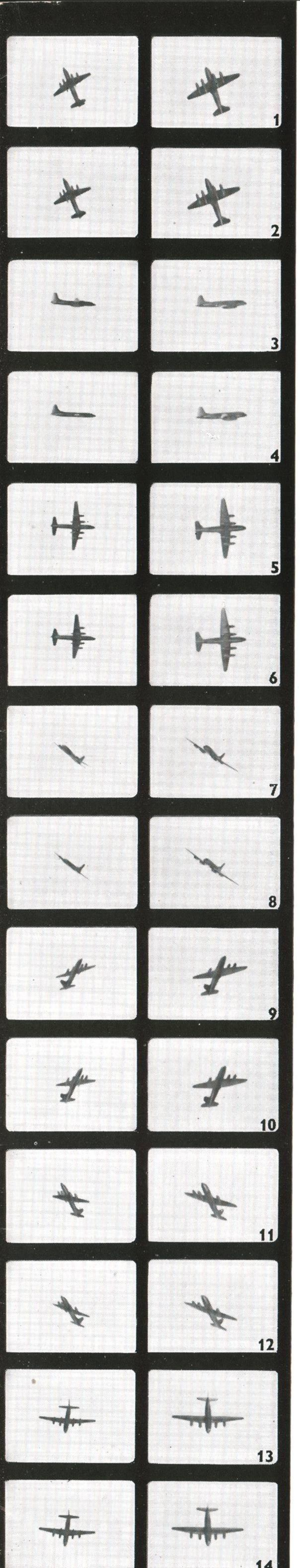

520

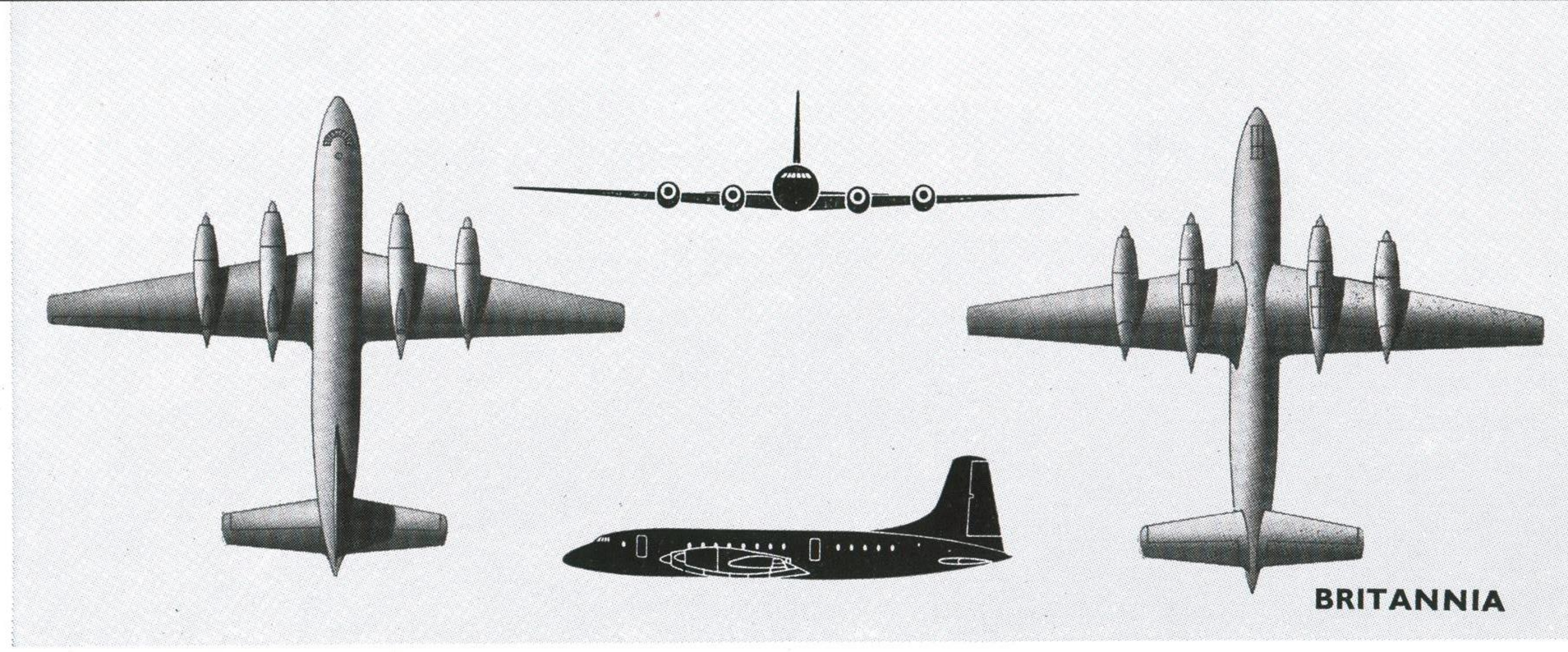

521


522


523

ELEMENTARY SPOTTING





Comparison Study No. 15

Bristol BRITANNIA and Handley Page HASTINGS

THESE two aircraft form an excellent pair to compare as both are four-engined single fin and rudder machines, yet each has a most distinctive character to set her apart from her neighbours. Each represents her generation: the Hastings as the typical robust transport on its way out of the aeronautical scene, the Britannia the new slick turbo-propellered transport of the immediate future.

The basic differences are in the plump and chunky look of the Hastings with her underslung engines, and the thin-nosed slender-engined and over-all trimmer form of the Britannia.

Pairs 1 and 2. On the left the thin nose of the Britannia stands out against the snub nose of the Hastings; the higher aspect ratio of the Britannia, and her oddly visible projecting nacelles. Note that both machines have under-wing nacelle bulges; and that tails are of little help.

Nos. 3 and 4. One would have expected help from the tails here, but the difference (at a distance) between the fuller rounded top of the Hastings and the flatter top of the Britannia is not valid. Here again it is the more slender side view of the Britannia which tells, especially her thin pointed nose.

Nos. 5 and 6. Look at the noses, at the Britannia's "cleaner" high aspect ratio wings and the projecting inner nacelles, as against the over-all chunkiness of the Hastings.

Nos. 7 and 8. Here it is chiefly nose and engines which count. The plump snub nose of the Hastings makes a difference in perspective to the thin-nosed Britannia; but the underslung engines of the Hastings are the outstanding feature here, against the centrally set and slimmer turbines of the Britannia.

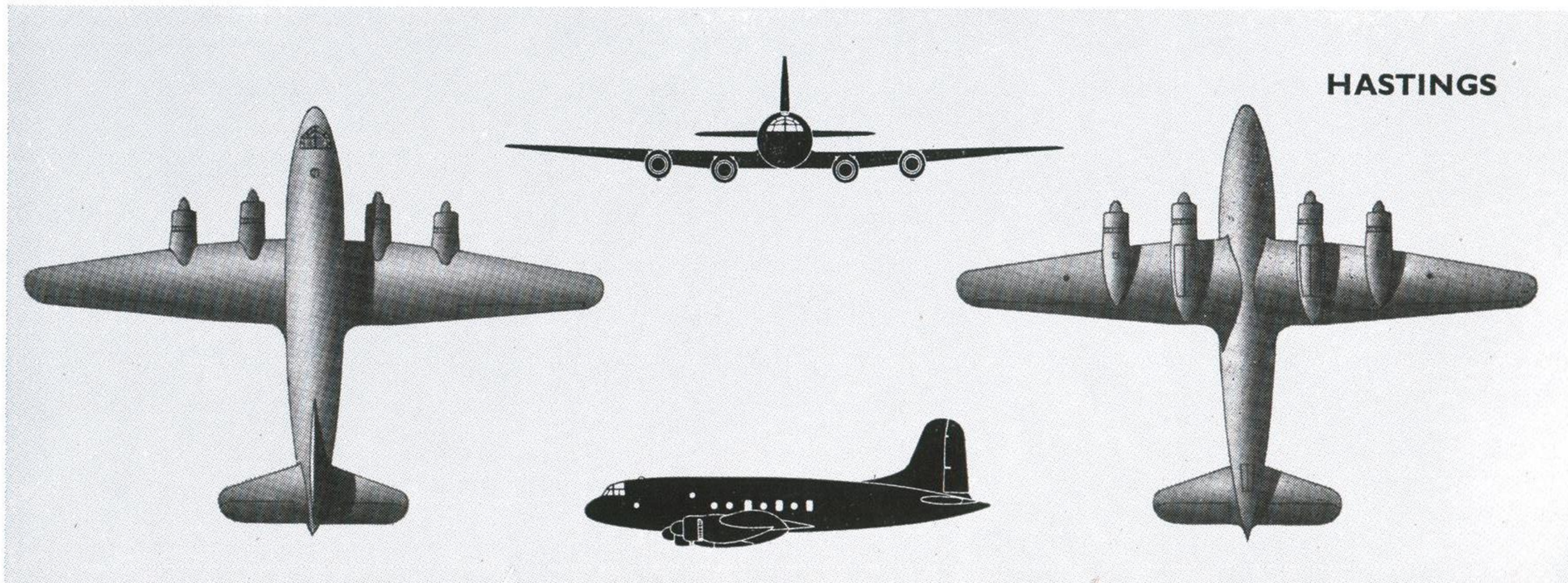
Nos. 9 and 10. Noses again and nacelles, and the aspect ratio tells strongly too. Note again how comparatively useless the tails are for comparison purposes. The more slender Britannia fuselage also tells here.

Nos. 11 and 12. These are the most difficult views and one of the differences which would be more in evidence in practice than in photos are the bold underslung nacelles of the Hastings. Noses still tell, as do the projecting Britannia nacelles.

Nos. 13 and 14. Noses tell least here and a quick reference feature is the clean top wing surface of the Hastings as opposed to the nacelle ridges on the Britannia (more visible in reality than here, and the projecting nacelles). The greater girth of the Hastings is evident, but is not a very good guide here.

So it is pointed thin nose against plump snub nose; projecting nacelles against a clean trailing edge; centrally set engines with top and under surfaces against underslung bold radials; high aspect ratio and general trim lines against over-all robustness and bulkiness. C. H. GIBBS-SMITH

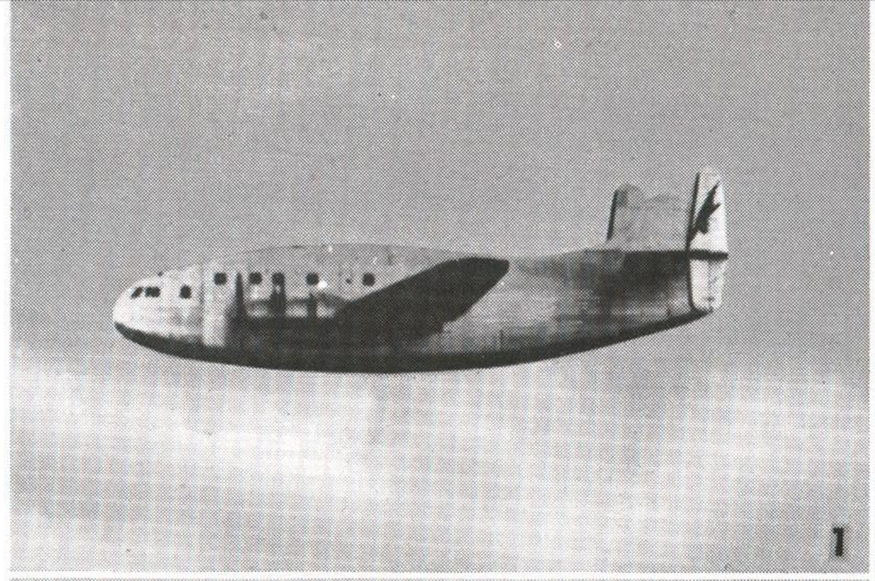
The miniature views may also be studied to advantage with a magnifying glass: this has the same effect as if one were looking at real aeroplanes through binoculars.



BREGUET PROVENCE

Looking at view No. 2 of the Breguet 763 Provence (maker's name is Deux Ponts) no one could say that it is an ordinary looking aeroplane. It is either bigger or fatter in one direction or another than most and yet it makes a conventional whole in the air. The Provence is in fact quite a pleasing character when you get to know it and this exercise will help you to do so. (1) List the numbers (1 to 16), write down the name Provence each time you identify it beside it write "Span 141 ft." Solve the easier views first and cross-refer between target views as you go along. Work carefully rather than quickly and watch out for "jokers" which need not be identified beyond being able to say "Not Provence".

The solutions are on the rear cover.


1

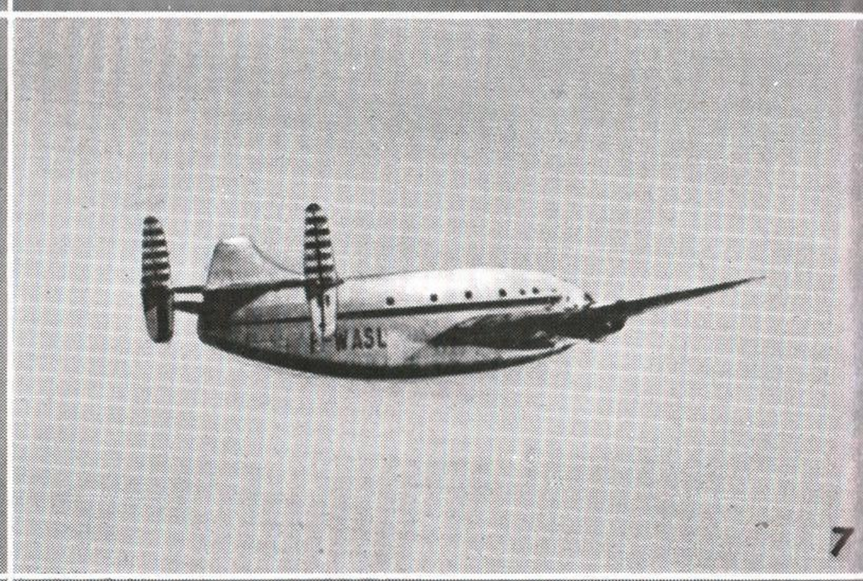

2


3

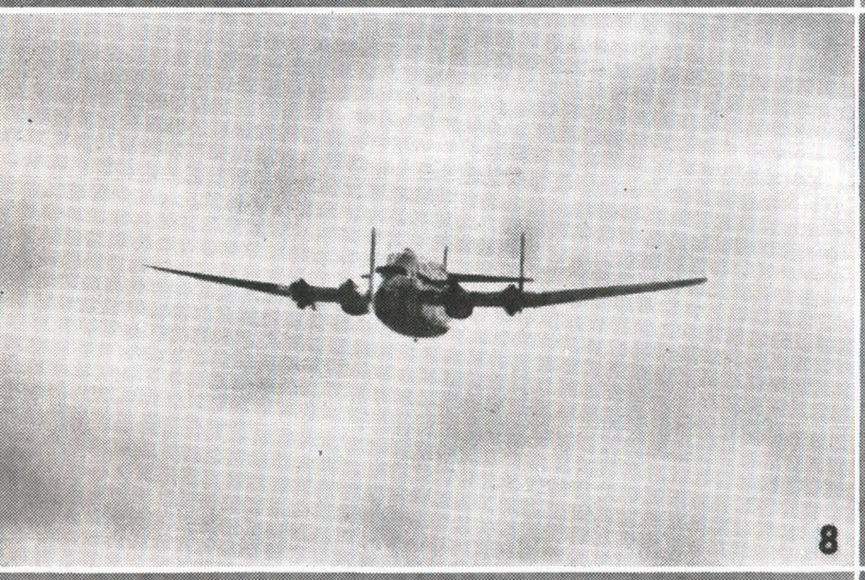

4

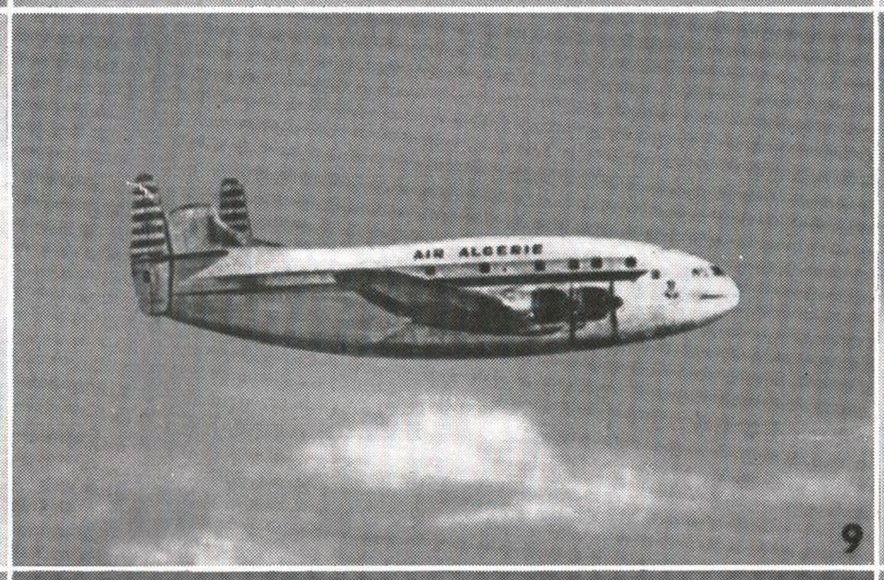

5


6



7

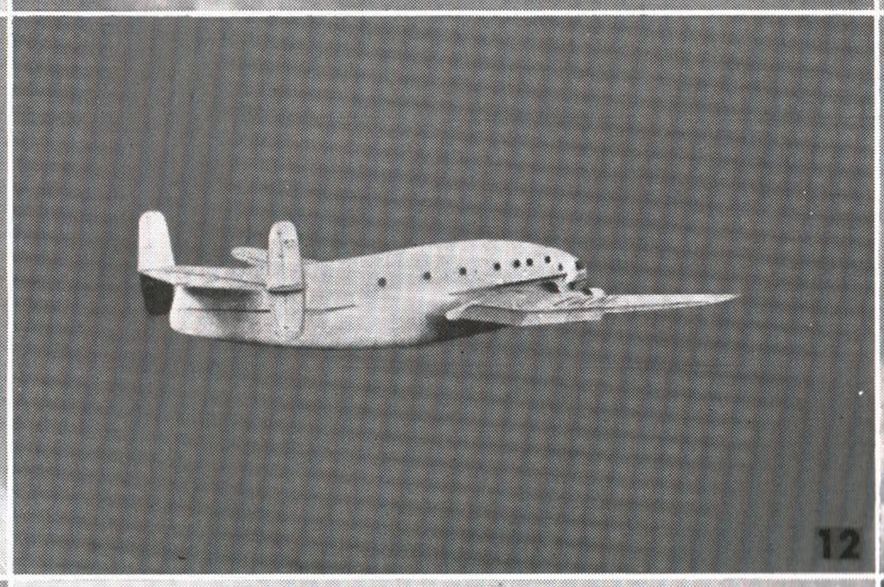

8



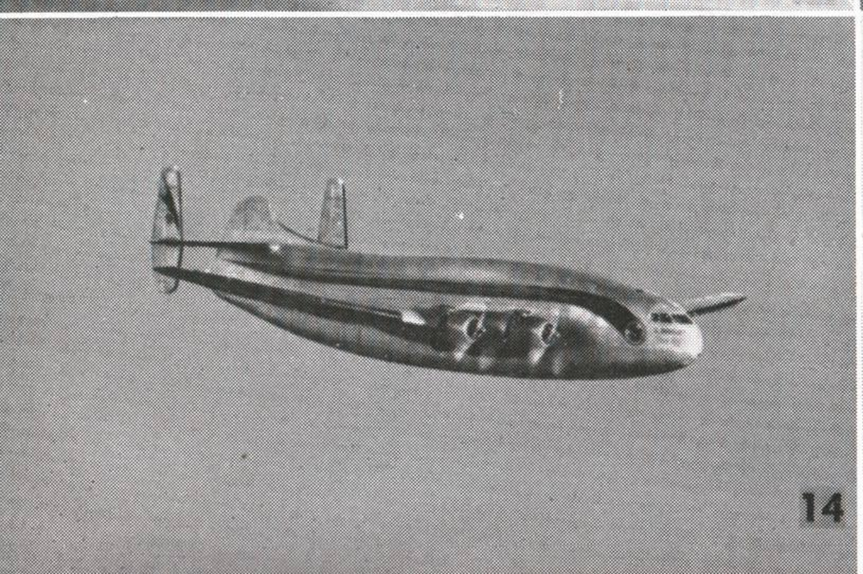
9

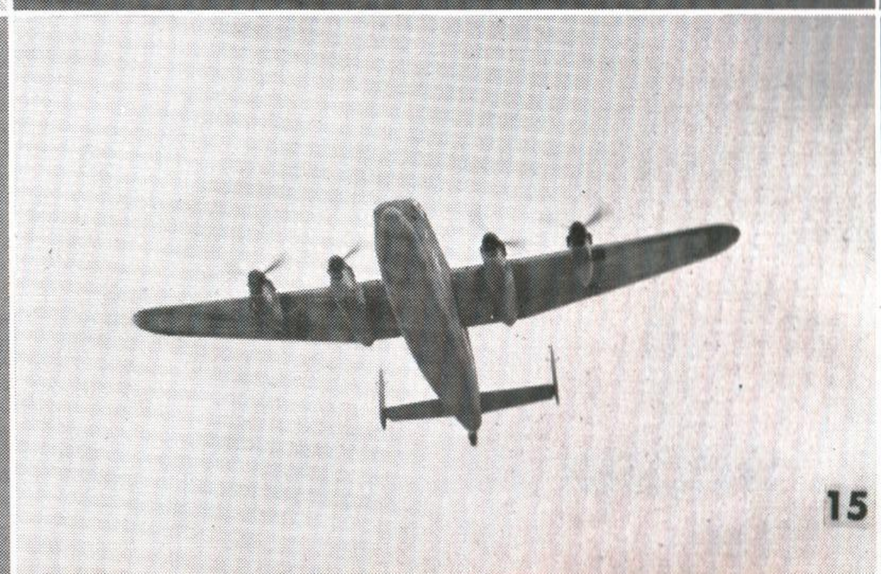

10


11


12


13


14


15

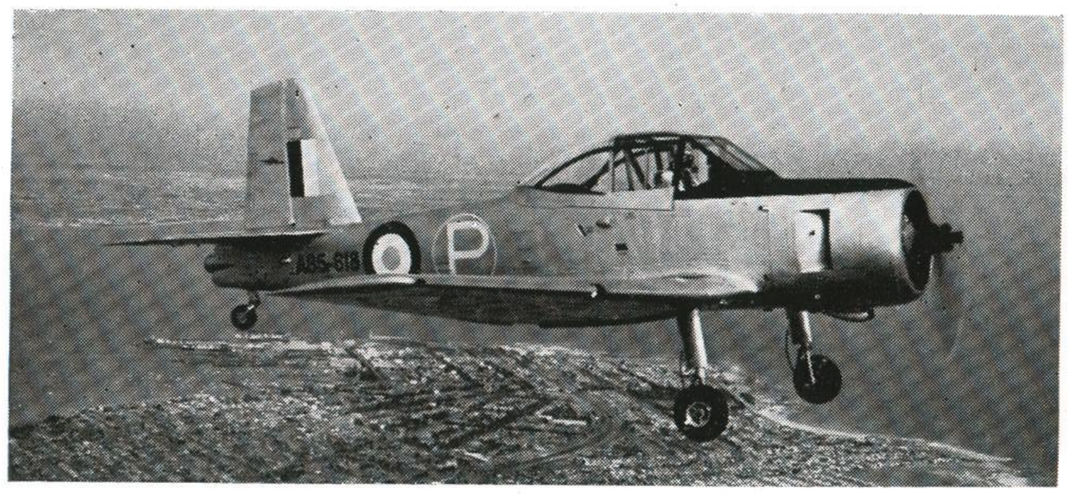

16

Briefs

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

Australian Provost

The new Commonwealth CA.22 Winjeel, a three-seat basic trainer is now in production for the Royal Australian Air Force.



Republic F-103

News of Republic's latest fighter is that it will be constructed mostly of Titanium and will be of revolutionary shape—extremely long with tiny delta wings.

* * *

New Cougar

A new model of the Grumman "Cougar" has been developed. Modifications to wings and a lengthened fuselage have improved the all-round performance. The new Cougar first flew in January, is powered by a Pratt and Witney J-48 and is designated the F9F-8.

* * *

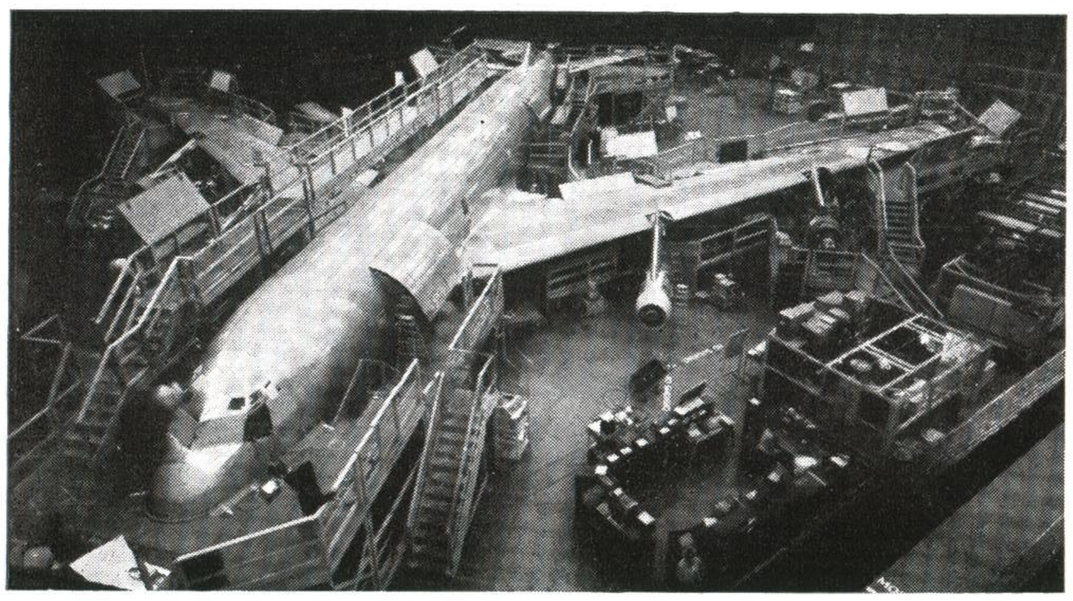
Viperous Canberra

If a Canberra is seen flying with wing-tip jets it will probably be testing the new Armstrong Siddeley Viper ASV5 turbojet designed to power the Jet Provost. Only one Viper will be installed, the other "nacelle" will be a dummy for counter-balance. Span: 39 feet.

* * *

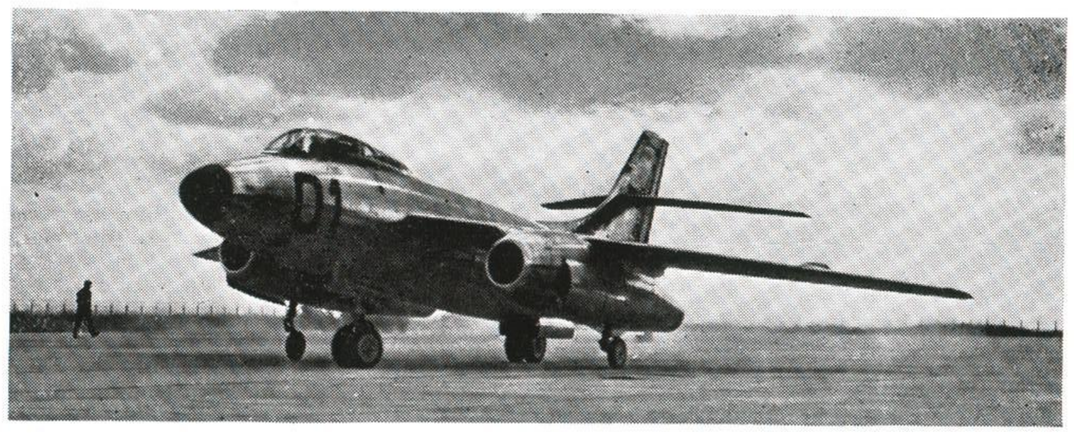
Jet Liner/Jet Stratotanker

are the names given to the new Boeing 707 jet transport (picture below, while under construction) for its Civil and Military roles, respectively. This aircraft—barring accidents—should have flown by the time you read this. Boeing claim a record development time for the "707"—the period between commencement of production and roll-out being from late 1952 to May, 1954. As a civil airliner the "707" will carry 80—130 passengers non-stop across the North Atlantic in under seven hours at a maximum cruising speed of 550 m.p.h. Its span is 130 feet.



Off-Shore Vautours ?

It is reported as likely that in view of recent trials the U.S.A. may place an off-shore order for Vautours (S.O. 4050) for use in N.A.T.O.



* * *

Cutlass in Service

Deliveries of the F7U-3 Cutlass have now been made to the U.S. Navy. This "supersonic" plane also has excellent low-speed characteristics and when flying at low altitude can conserve fuel by flying on only one of its two engines. Normal landings and overshoots can also be made on one engine.

* * *

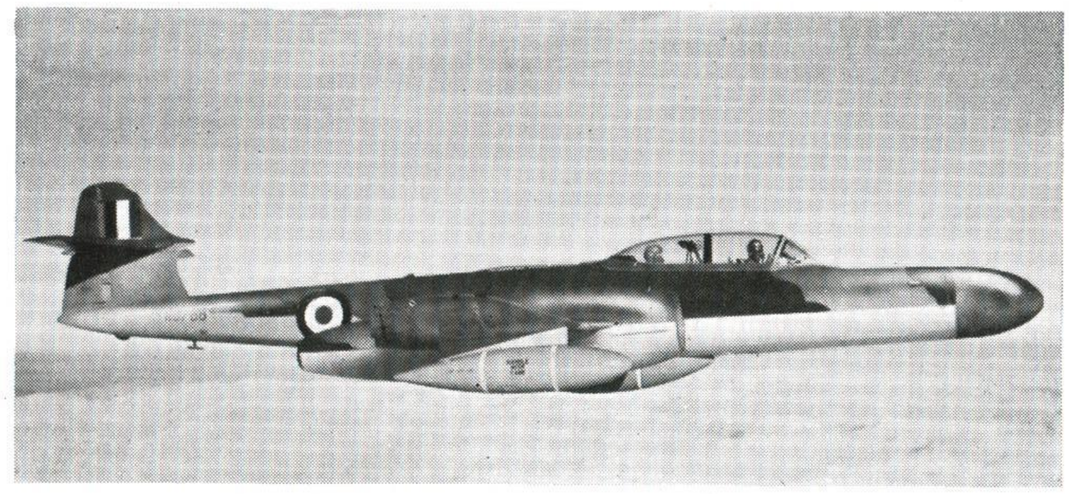
Expensive Experiment

The fly-away cost of the prototype B-52 is said to have exceeded $12 million (over £6 million).

* * *

New Meteor

The NF Mk.14; it has a longer fuselage than the NF Mk.11, a modified fin and rudder and a bubble-type cockpit canopy. (*See* picture.)



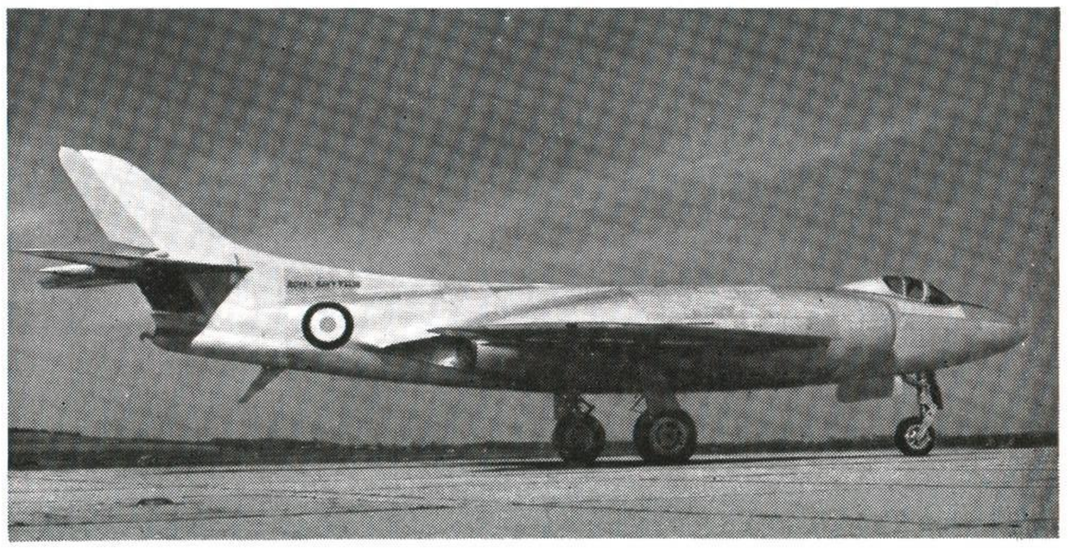
Light Fighters * * *

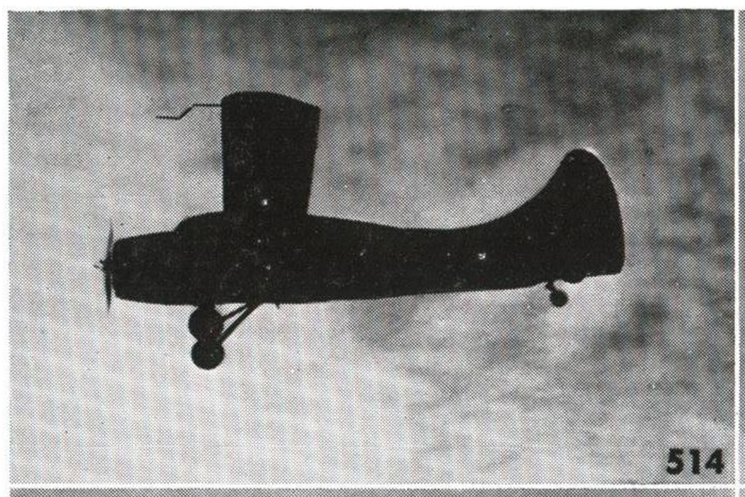
Britain and France do not appear to be alone in the light fighter field. Grumman Aircraft (U.S.) announce that they are working on a light fighter project designated F9F-9 which is to be used by the Navy.

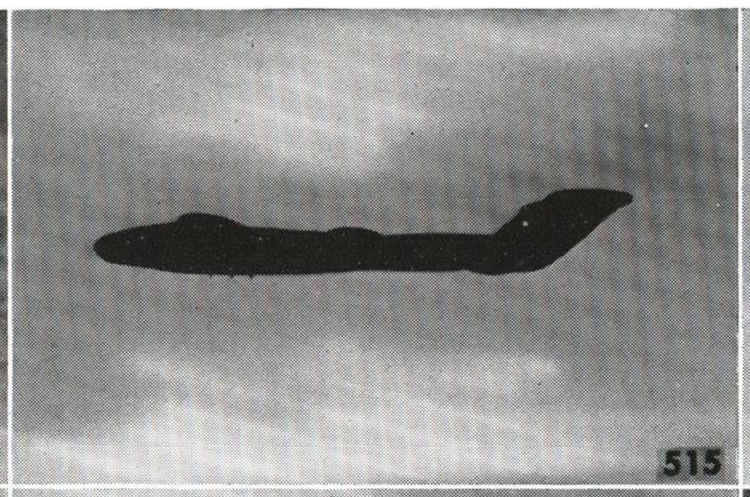
* * *

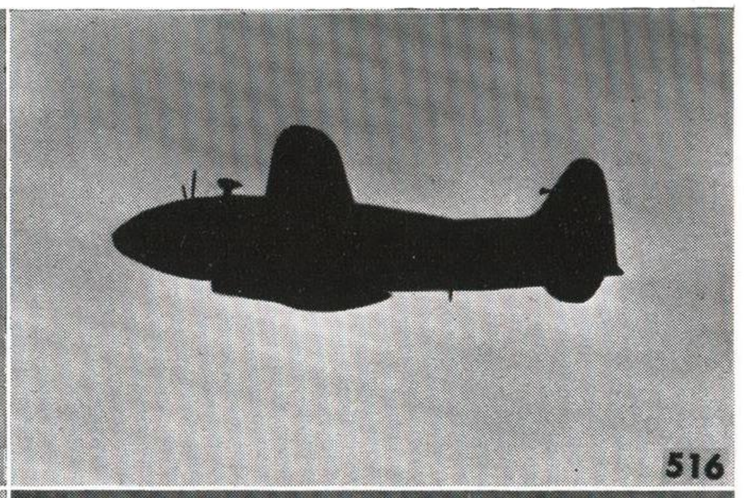
New Fighter for Royal Navy

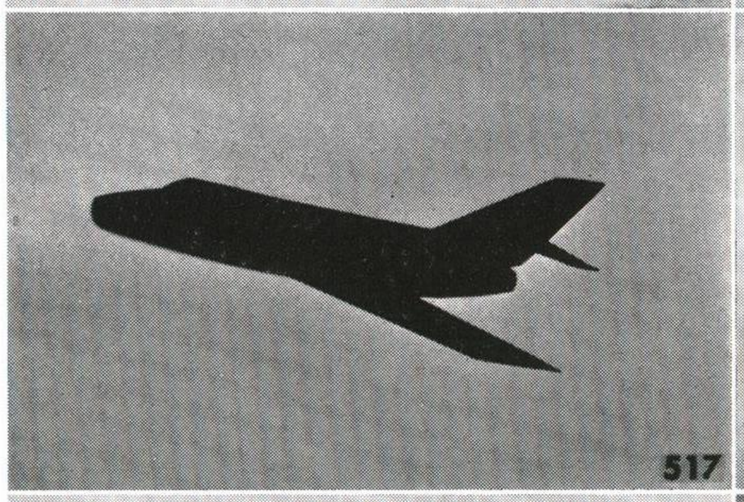
The prototype Vickers Supermarine 525, pictured below, flew in May. This aircraft with two Avons and swept-wings, developed from the "508", is the fastest and most powerful aircraft to be designed for aircraft carrier operations.

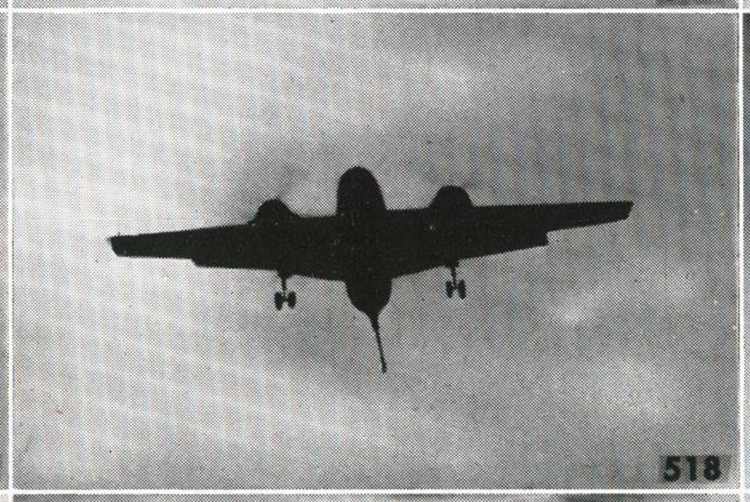



514

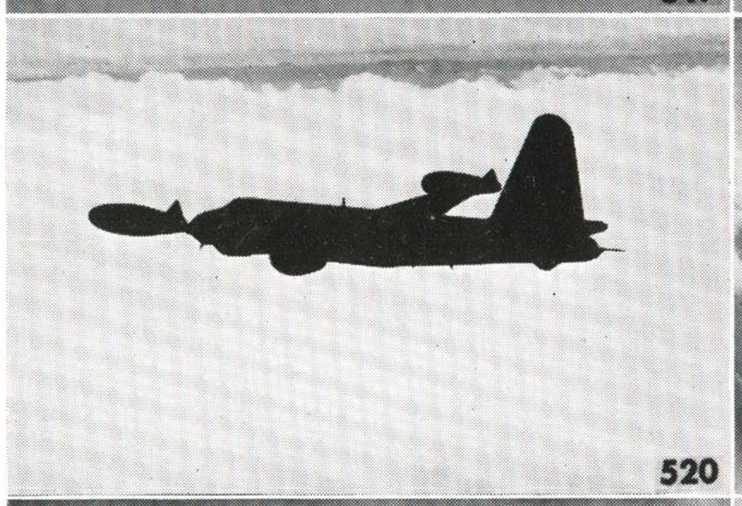

515


516

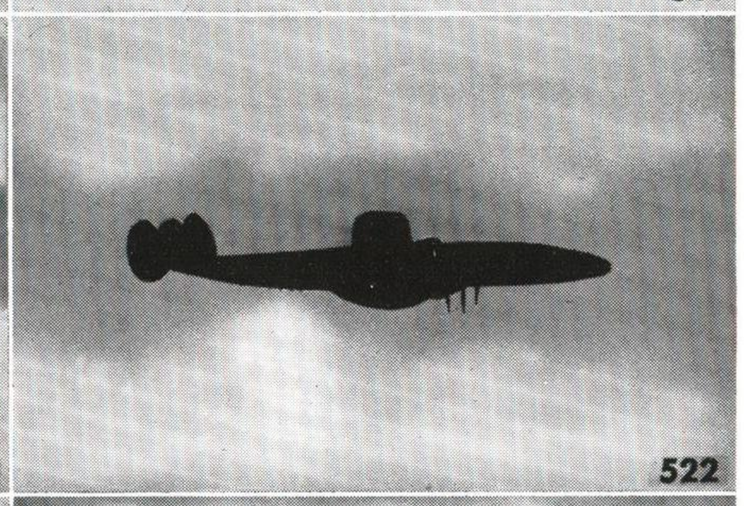

517


518


519


520


521

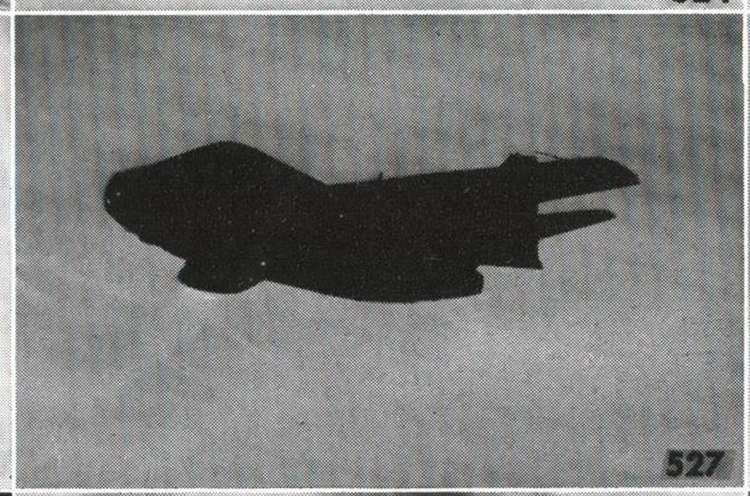

522

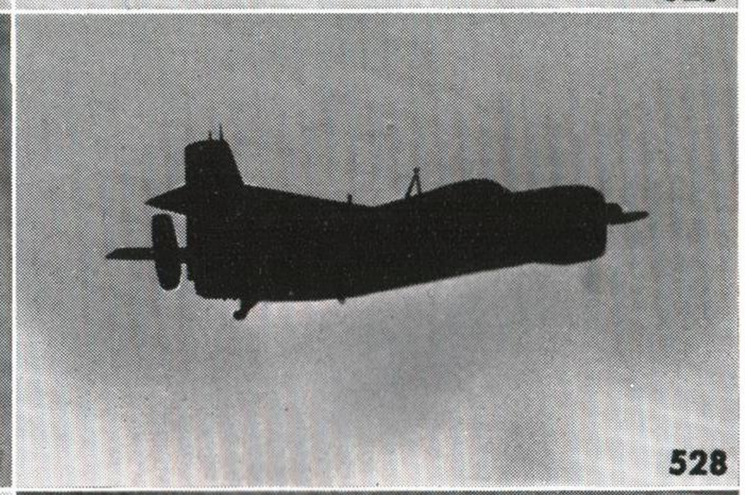

523

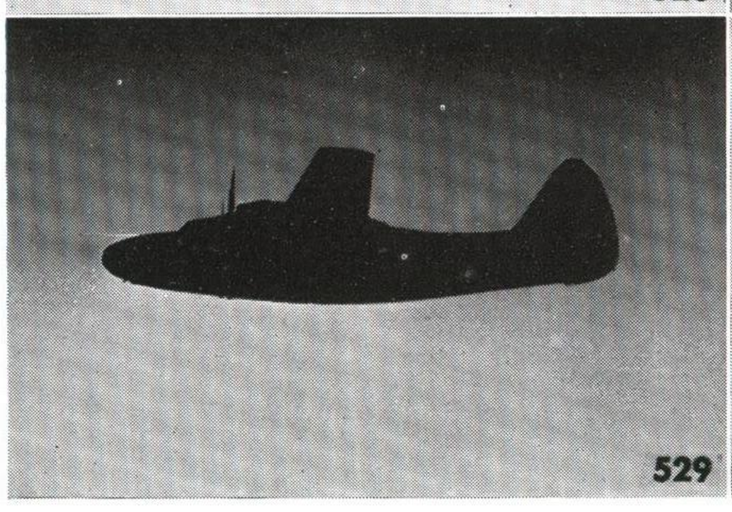

524


525

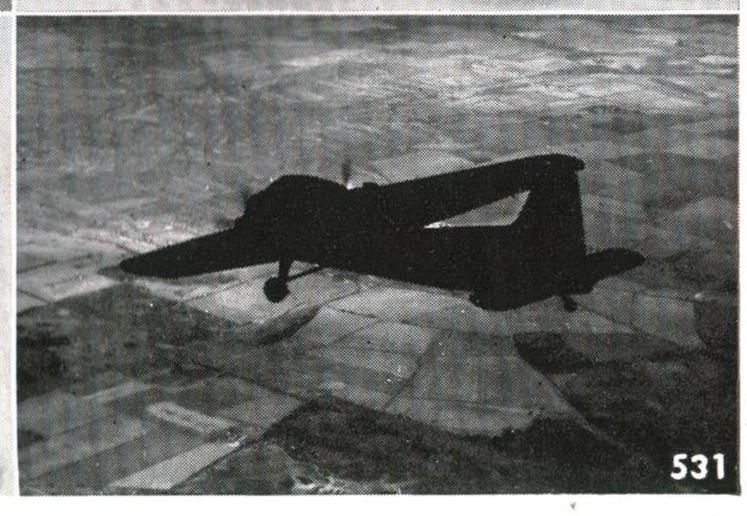

526


527


528


529

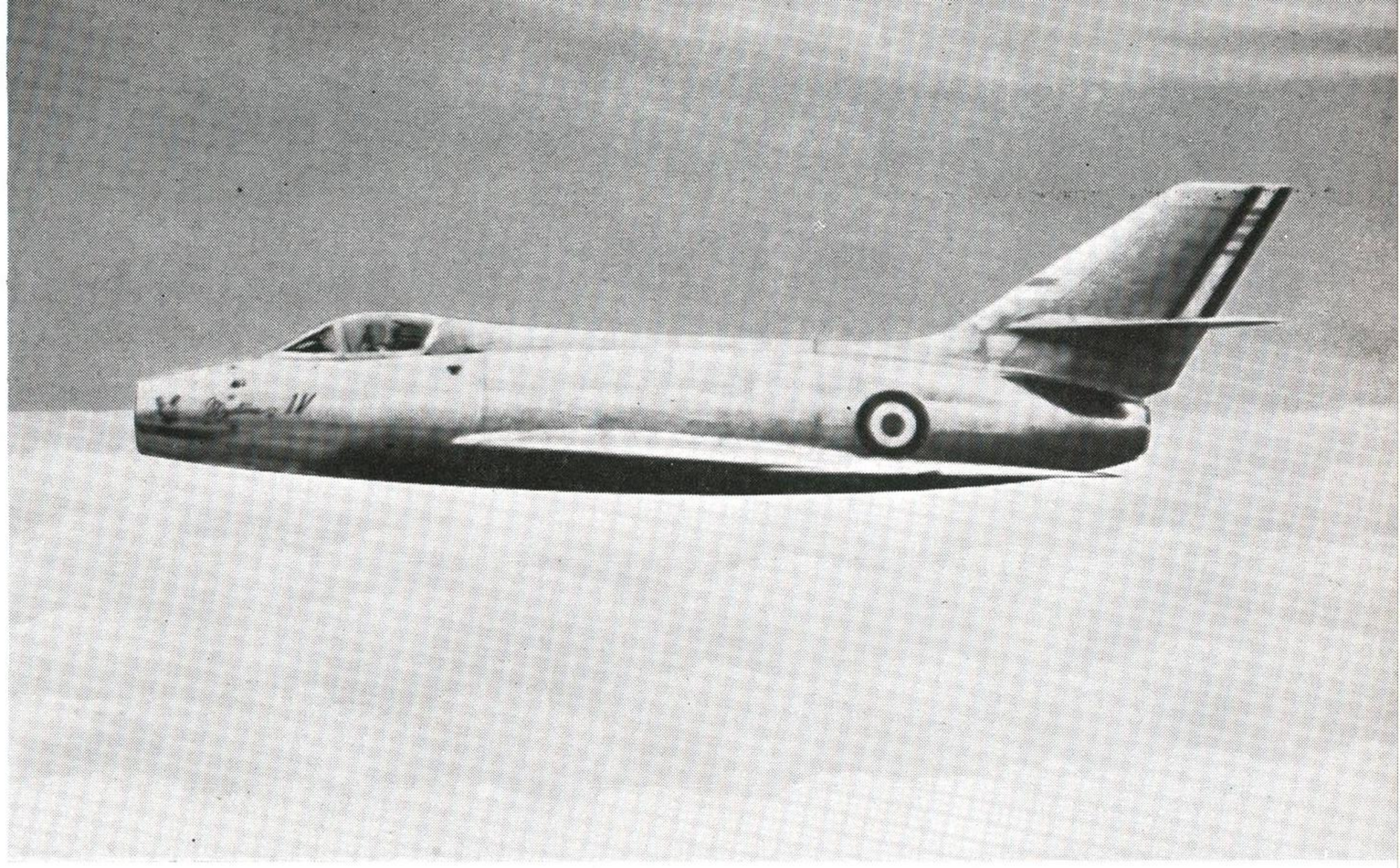

530


531

SILLOGRAPHS

MYSTÈRE IVA

This is an advanced exercise on the Mystère IVA, a French jet fighter in the swept-wing group. With it are one or two views of the Mystère II which is similar but less "swept" and has slightly different tail shapes. Recognition clues and characteristics of the Mystère IVA are displayed in the key photo and target view No. 1. Tail configuration, wing-form, and fuselage spine are helpful features, but not the only ones with which to identify other views. If you are sufficiently experienced on the Mystère IVA's you will be able to recognize the targets unaided. If not, the most efficient way to do this exercise is to : (1) List the numbers of the target views (1 to 25) ; (2) Identify a few obvious and easy views to gain more clues ; (3) Identify the rest cross-checking between targets as well as with the key view. Watch for "jokers".

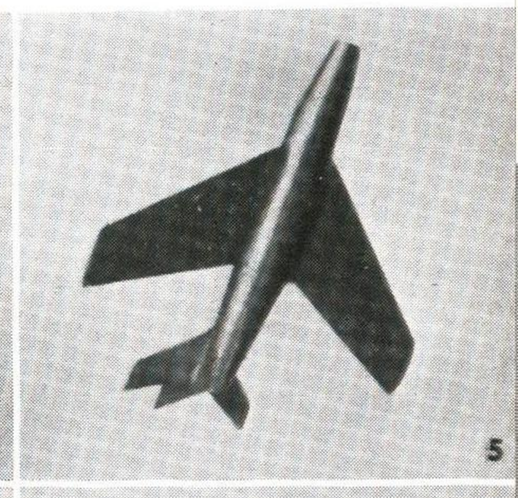



1

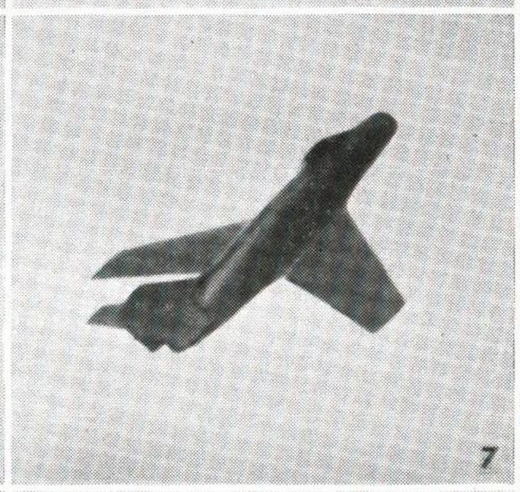

2

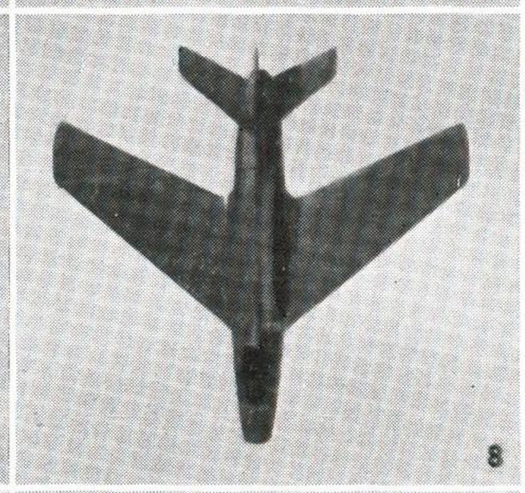

3


4

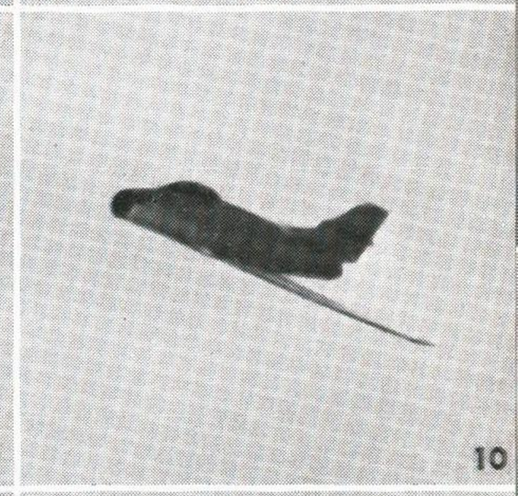

5


6


7


8


9

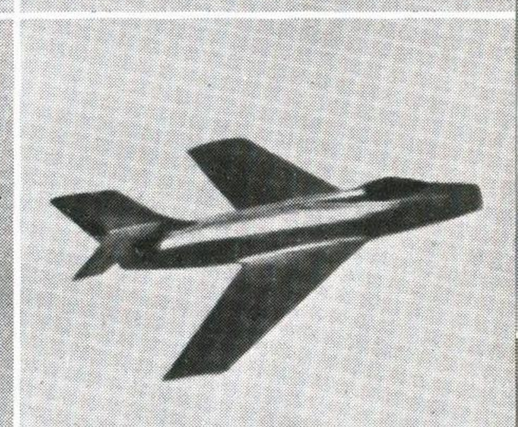

10

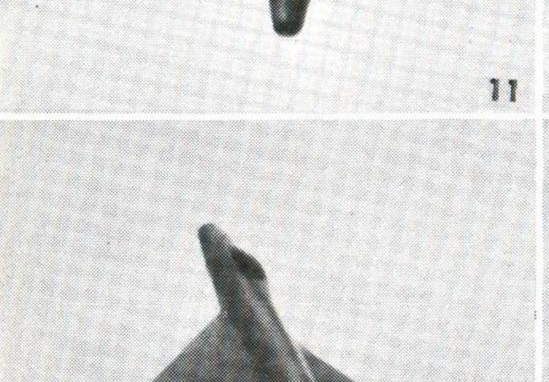

11

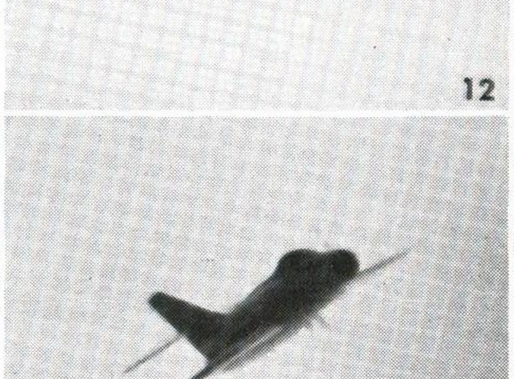

12

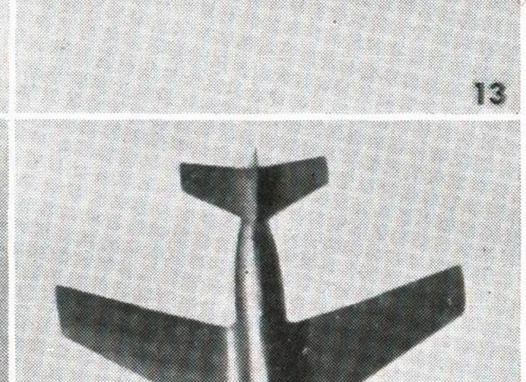

13


14


15

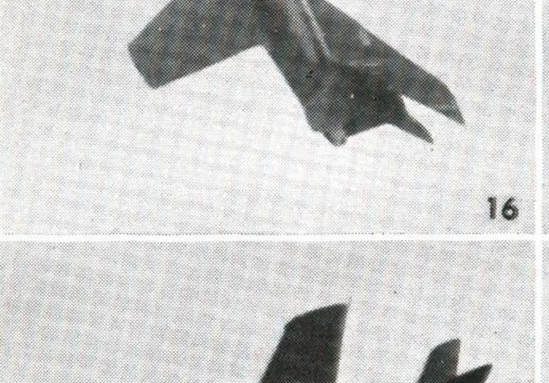

16


17

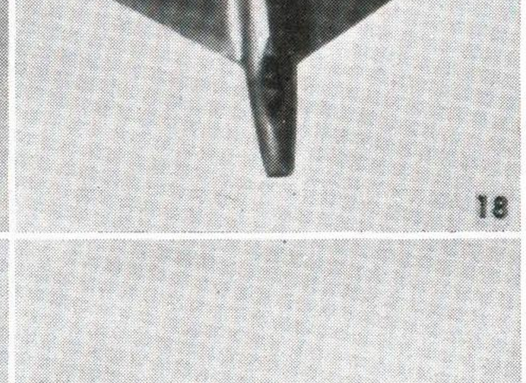

18

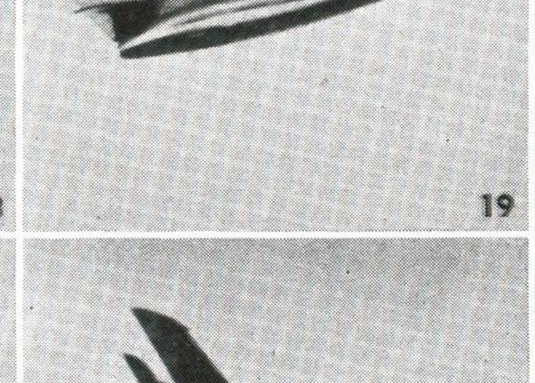

19

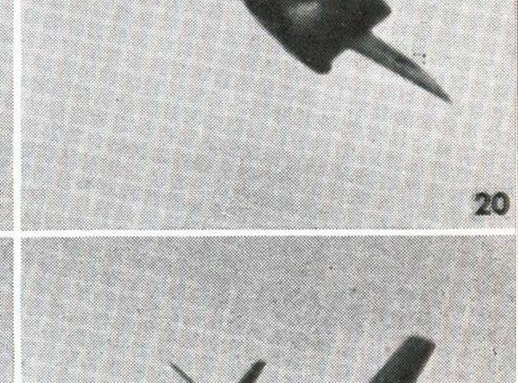

20


21


22


23


24


25

Close-up—Super-Sabre

The F-100 Super-Sabre is now in production for the United States Air Force and is, incidentally, the present holder of the World Air Speed Record. The close-up views below will give you a more detailed knowledge of the aircraft. The F-100 bears no resemblance to its famous forebear the F-86, and must therefore be learned as an entirely different aircraft.

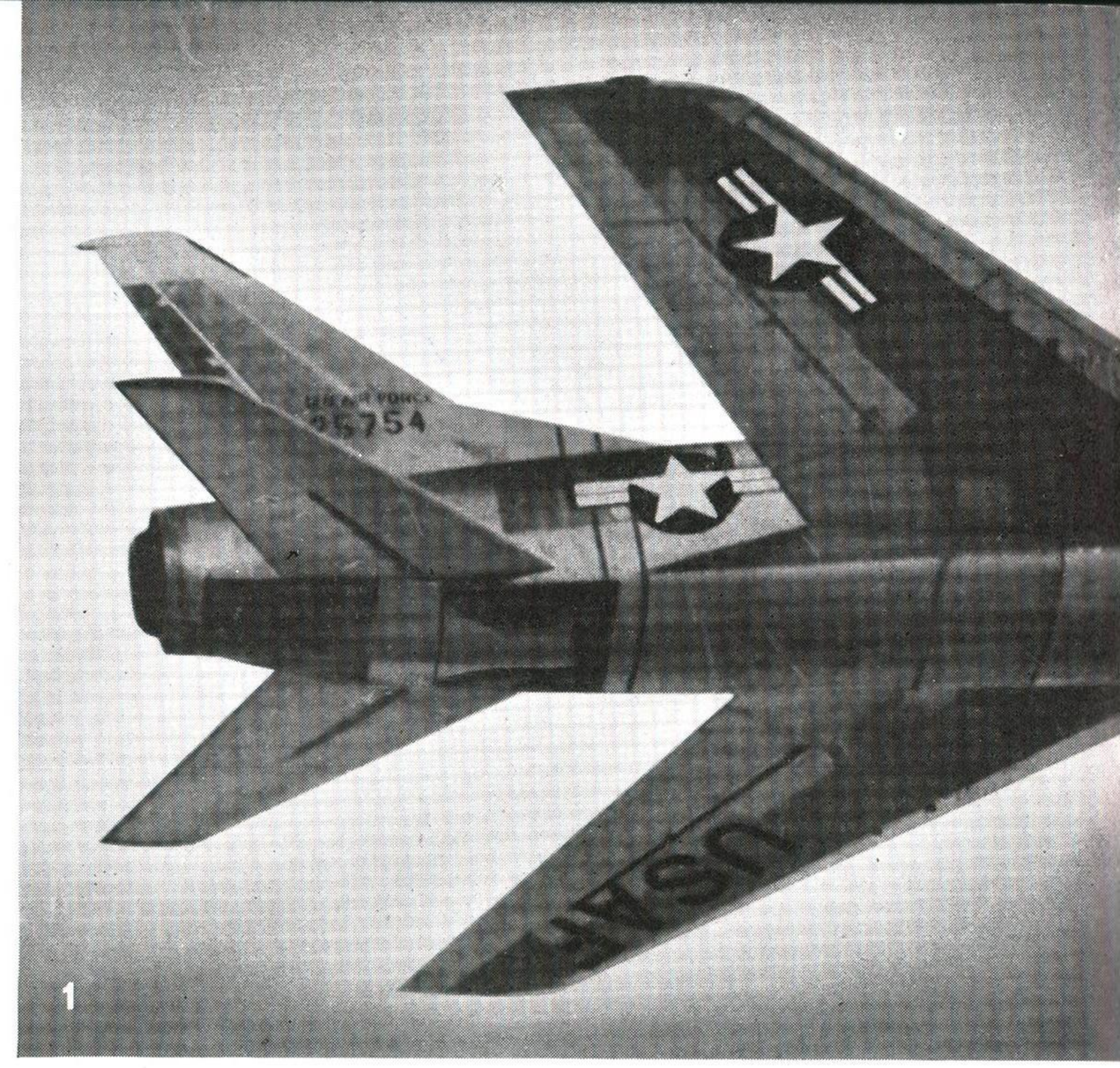
View No. 1. Note the very short distance between the main plane and tail plane, both of which are low set.

View No. 2. Long tail-pipe extending behind the sharply swept, angular tail unit.

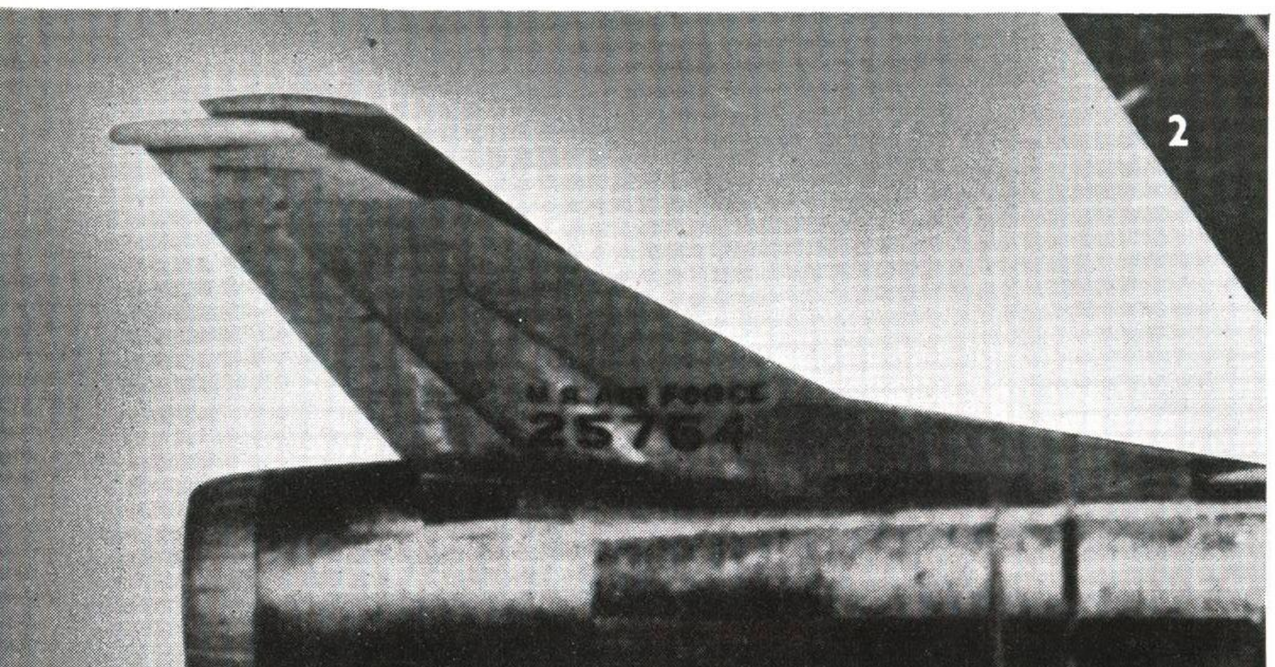
Views Nos. 3 and 4 display the long, flat and pouting intake, also the long shallow cockpit canopy.

View No. 5 shows the "broken back" fin fairing on the swept-back, angular fin and rudder and the low-set tail-plane with lengthy tail-pipe behind.

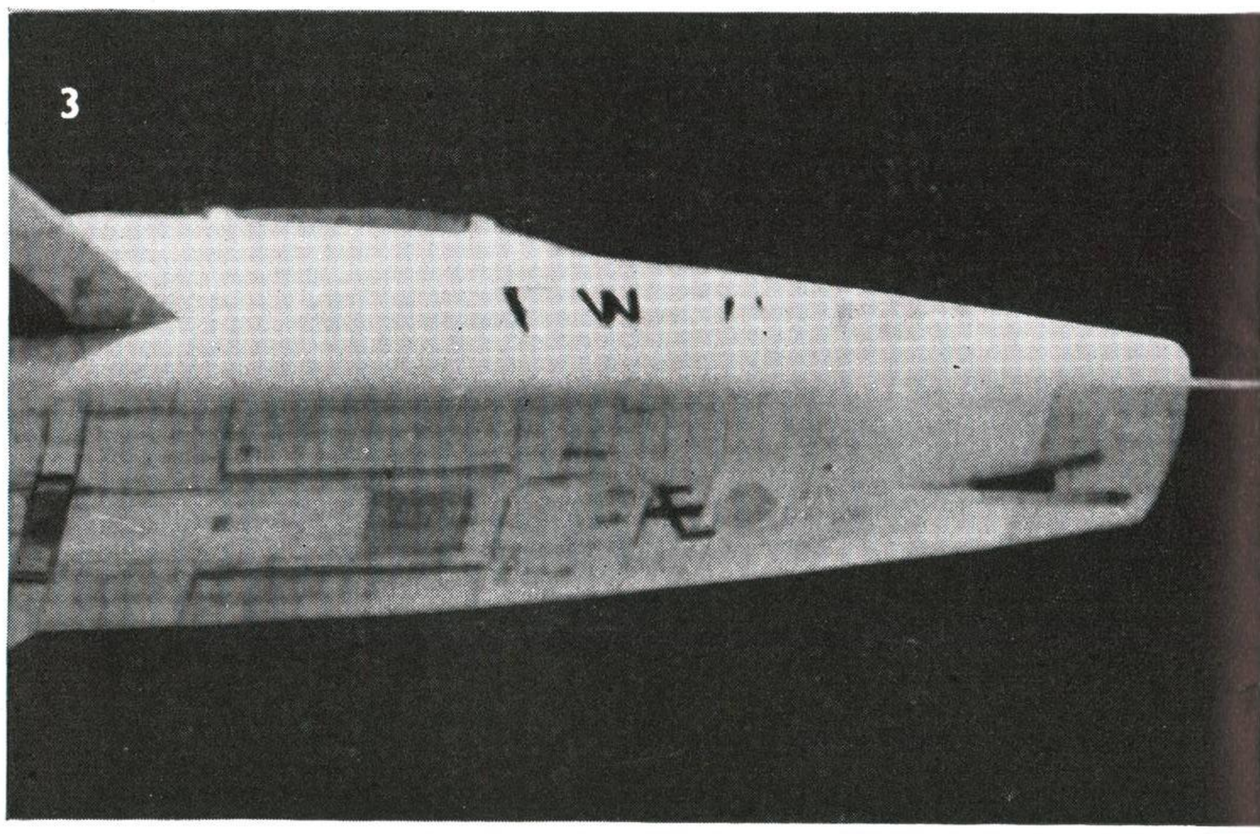
The searching examination of these views of the F-100 with the aid of the four-view drawing opposite will greatly improve your "visual feeling" for this supersonic swept wing fighter.



1



2



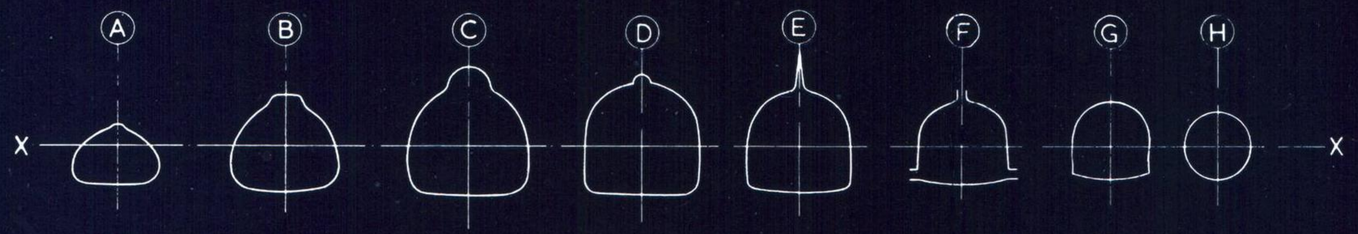
3



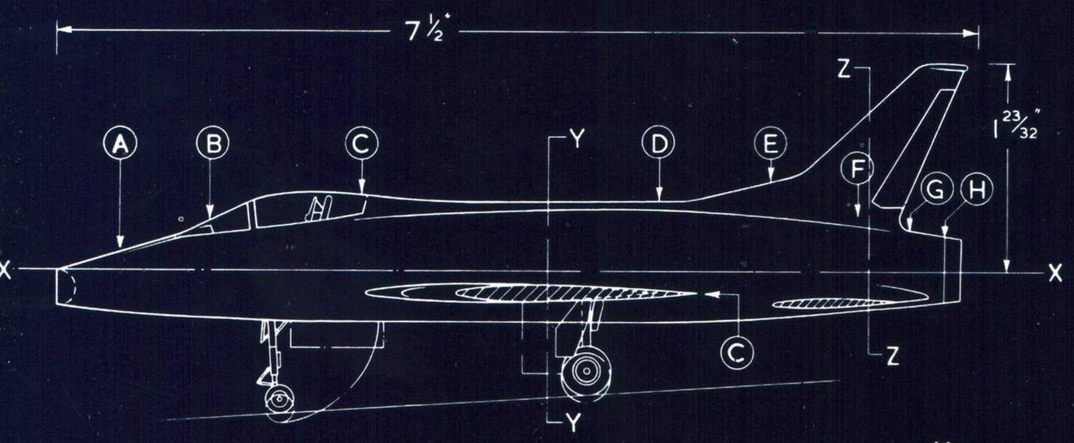
4



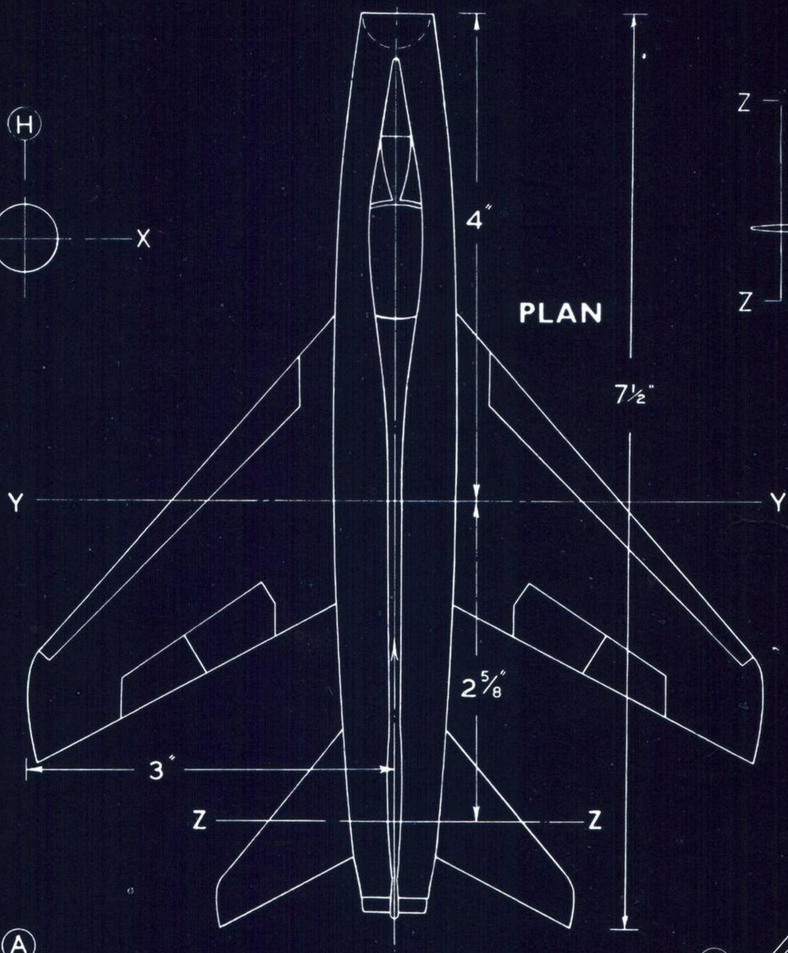
5



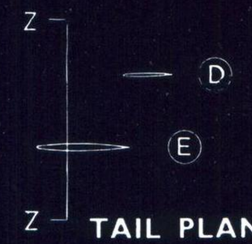
FUSELAGE SECTIONS



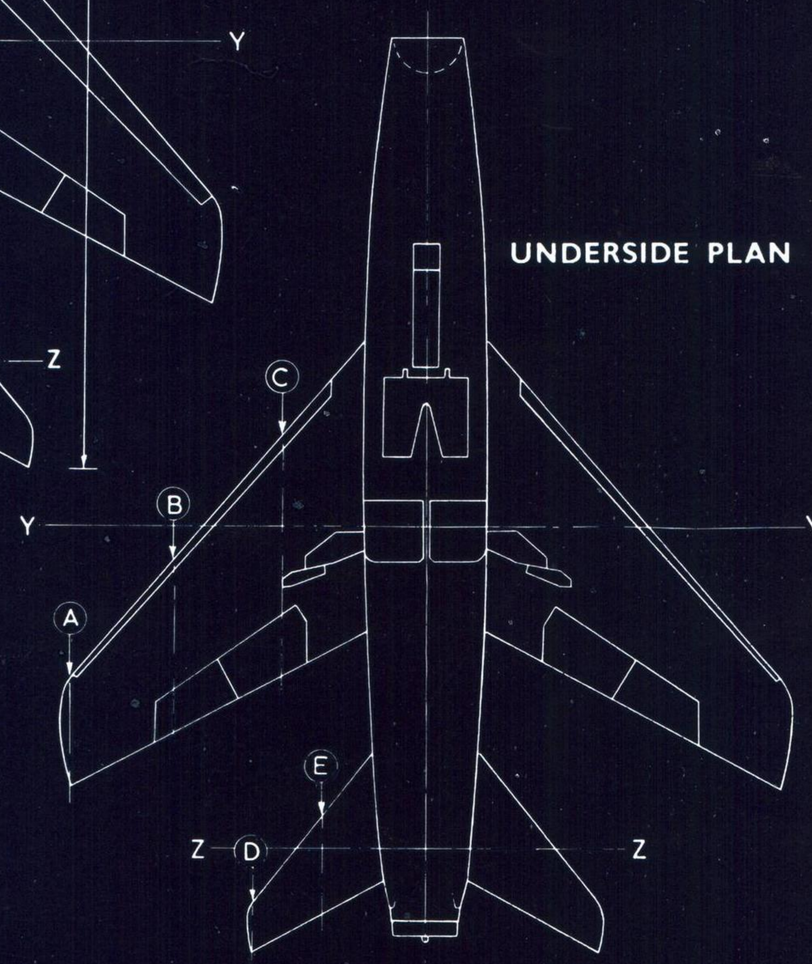
PORT SIDE *(Wing and Tail plane removed)*



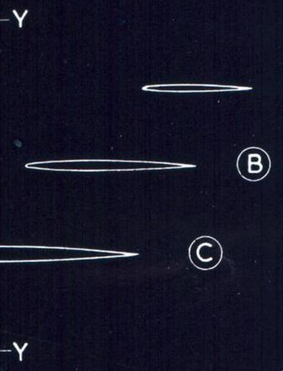
PLAN



TAIL PLANE SECTIONS



UNDERSIDE PLAN

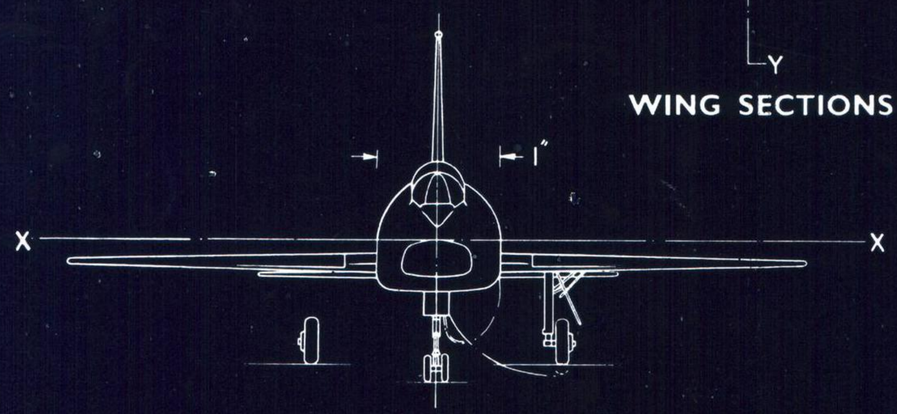


WING SECTIONS

Recommended material :
Close grained hardwood such as American Whitewood, Lime. or Basswood

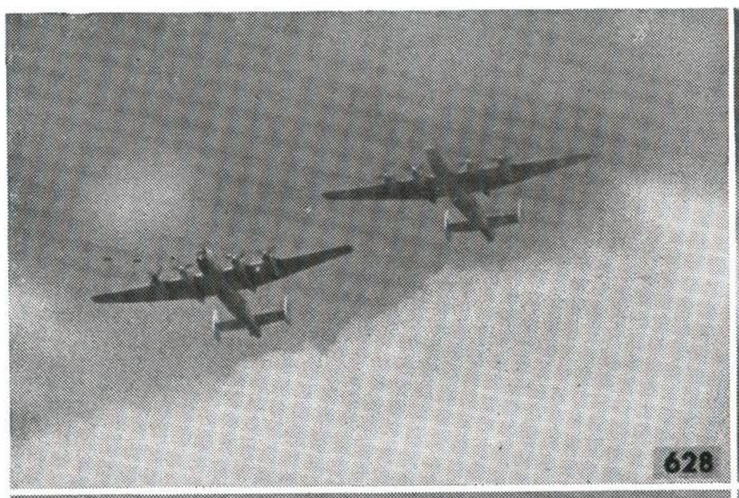
Datum Planes :
X *Horizontal plane through fuselage*
Y *Vertical plane through wing*
Z *Vertical plane through tail*

Colour scheme :
High gloss finish in the following colour :—
Overall aluminium

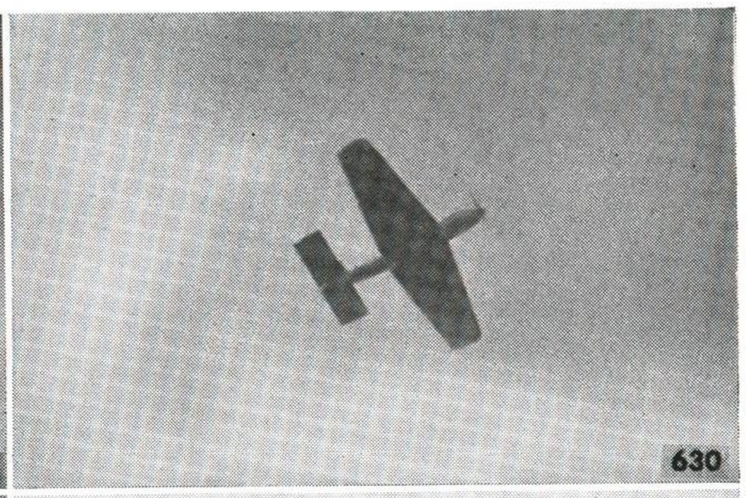


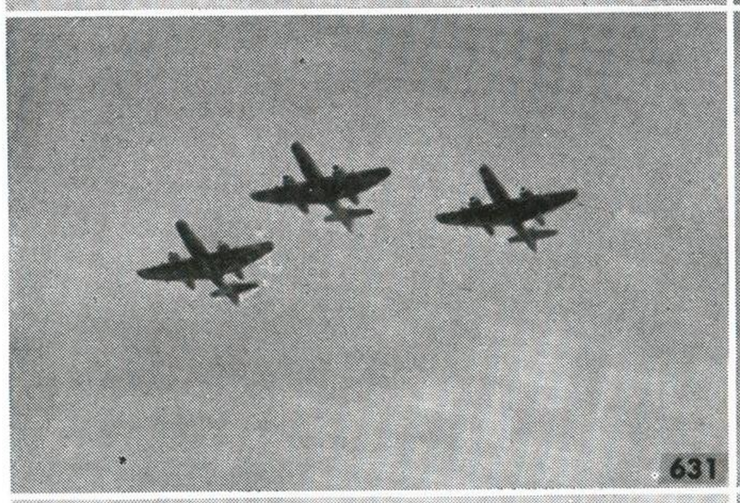
HEAD ON

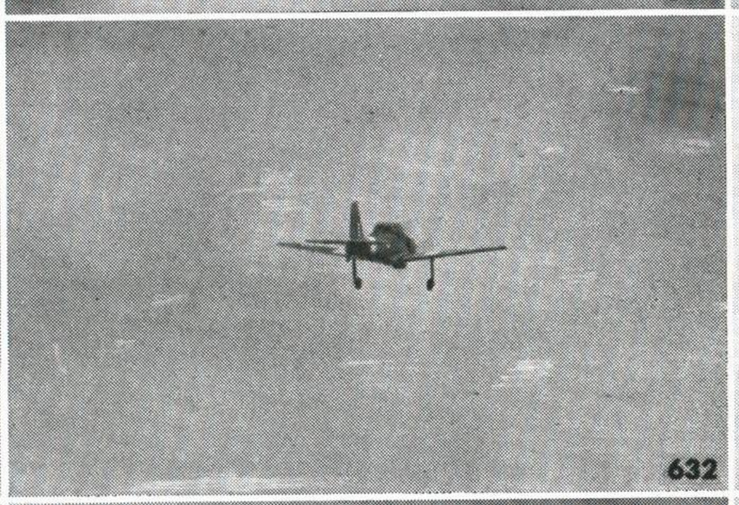
F-100 SUPER SABRE


628

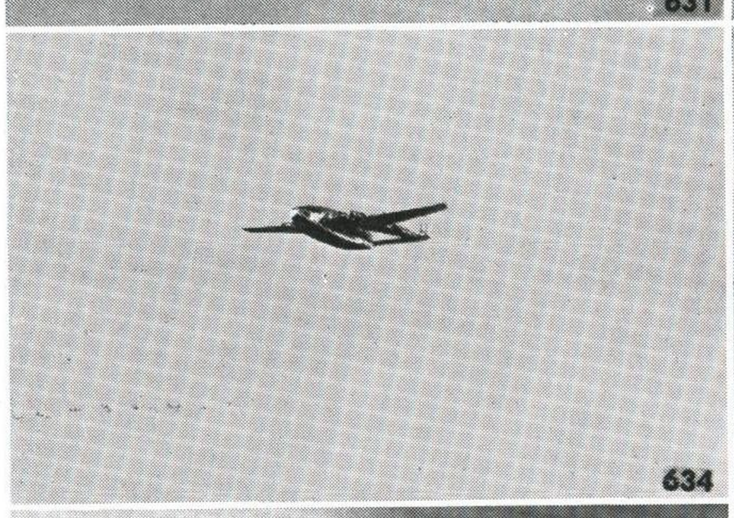

629

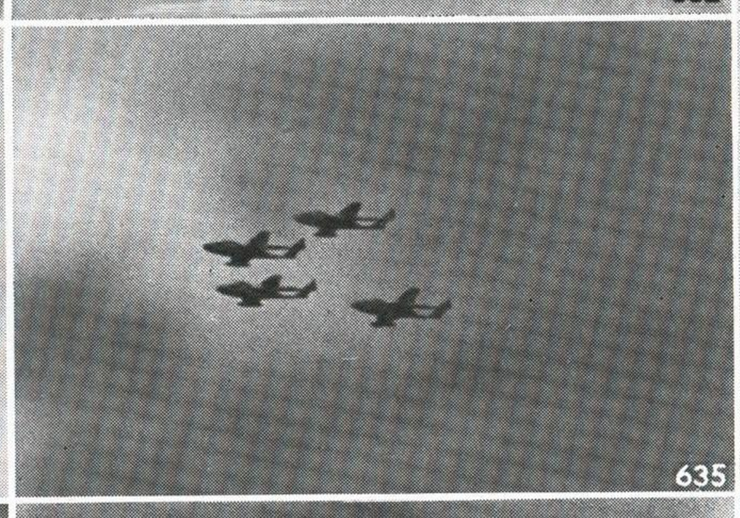

630


631

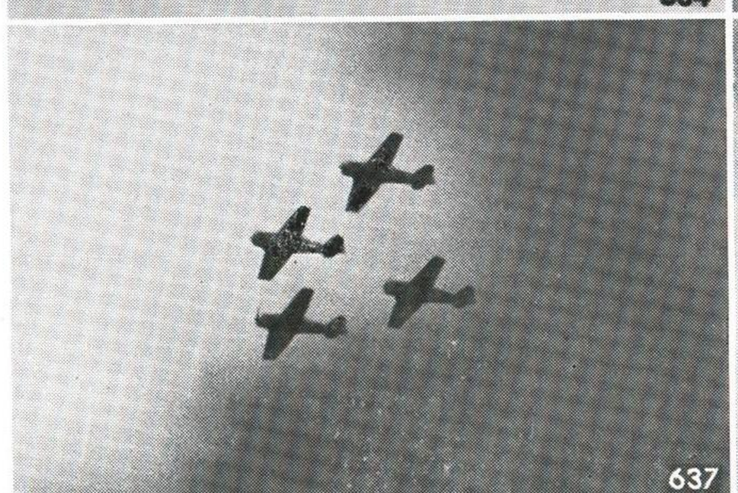

632


633


634

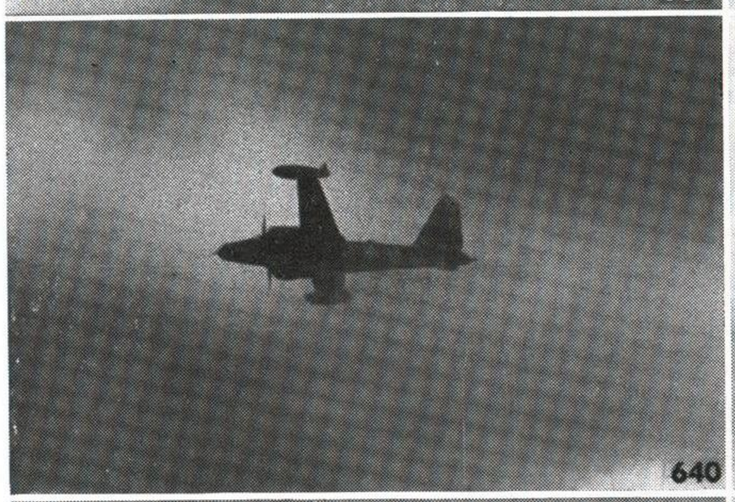

635

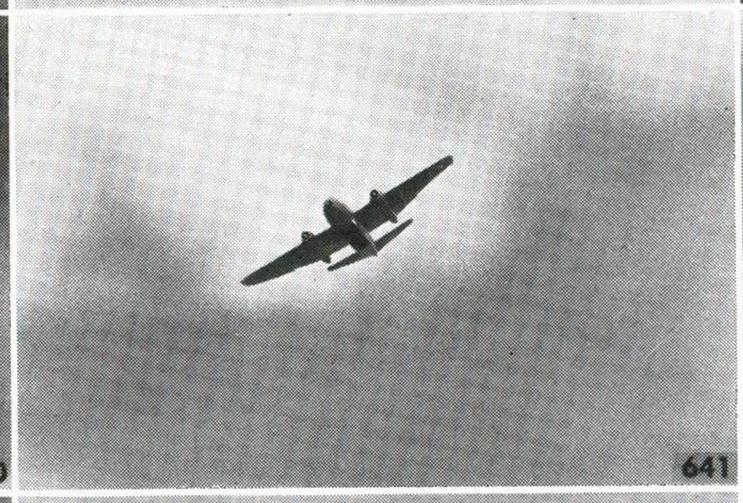

636

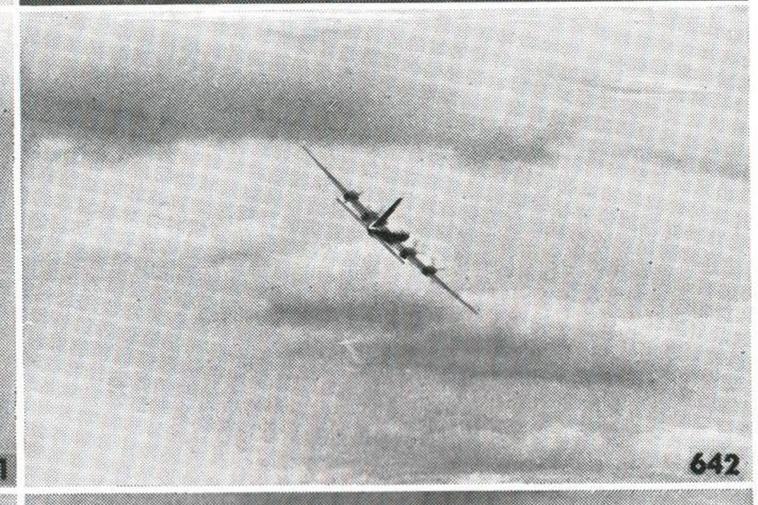

637

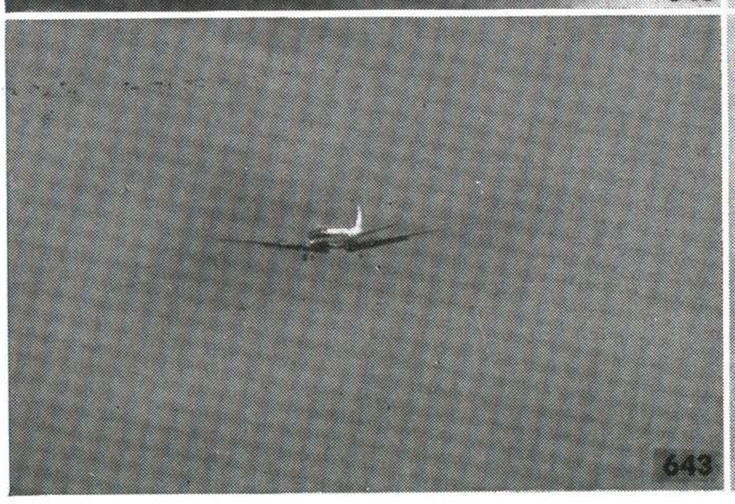

638


639


640


641


642


643


644


645

ADVANCED SPOTTING

HELICOPTER FLIGHT—AND HOW!

MOST people know roughly how a fixed-wing aircraft flies and how it is manœuvred in the air, but few know the facts about rotating wing aircraft—helicopters. How do they work?

Take, for example, a simple small "penny farthing" type of helicopter with its main rotating wings horizontally overhead and the "farthing" tail rotor fitted sideways on at the tail.

First, the engine, which is positioned with its crankshaft vertical. A clutch, similar to that in a car, connects the engine with the main rotor drive shaft. The clutch mechanism is, however, so arranged that the drive is automatically engaged when the engine speed reaches 1,000 r.p.m. and, conversely, disengaged when the revs drop below 1,000. It is a centrifugally-assisted unit—that is, the higher the drive speed, the harder the clutch plates grip. The hollow drive shaft is flexibly coupled both with the clutch and the gearbox. The main rotor is supported on this gearbox and driven through it by a simple reduction gear. There is a freewheel device in the gearbox so that if the engine fails, the rotors can still continue to turn (this is autorotation, the equivalent of power-off gliding in a fixed wing aeroplane). A secondary drive is taken from the gearbox to the tail rotor, and there are auxiliary drives for the generator and other services.

Three Controls

The helicopter pilot has three primary controls—the cyclic pitch lever, which looks like the "stick" of a conventional aircraft; the collective pitch lever which slants up at an angle beside his seat, and rudder pedals, again similar in appearance to those in a fixed-wing aircraft. By combining the use of these three controls the pilot can manœuvre the helicopter in any desired direction.

The rotating blades of the helicopter produce lift in the same way as the forward moving wings of the fixed-wing aircraft. The difference is that instead of moving control surfaces—ailerons, elevators and rudders—to manœuvre, the helicopter's wings or blades are themselves moved to change its altitude or flight path—the controls simply alter the angular setting of blades to produce the required movement.

Moving up and down

Each blade is linked to the central rotor hub in such a way that the pitch angle at which it meets the air (the angle of attack) can be varied. This angle of attack determines the lift produced by the blade at a given r.p.m. The variation can be applied in two ways—*cyclically*, where the angle of *each* blade is progressively altered as it sweeps round, or *collectively*, where the angle of *all* the blades is altered simultaneously, by the same amount.

When is cyclic pitch used and when collective pitch? While the helicopter is hovering, the main rotor system can be thought of as a horizontal disc with its axis passing vertically through the centre of gravity of the helicopter. The total lift produced by the blades exactly counterbalances the weight of the aircraft. When the pilot raises the collective pitch lever he increases the blades' pitch angle and the aircraft will gain height. Depressing the lever reduces pitch, decreases lift, and the helicopter sinks. All this time, however, the rotor disc remains level—and the helicopter will only move vertically up or down because the direction of lift is till the same—upward—it only varies in magnitude.

Moving forward and backward

To move the helicopter forward, backward, or sideways, the pilot uses the cyclic pitch control. If he decides to fly forward, for instance, he moves the cyclic pitch lever between his knees forward a little; thus causes the pitch of each blade successively to increase as the blade sweeps over the tail. The result is to produce greater lift at the back of the rotor disc and less at the front—the disc is tilted forward and some of the lift is used to pull the helicopter along. Whichever way the pilot moves the cyclic pitch lever, so the rotor disc tilts and the helicopter moves in that direction.

Using the Rudders

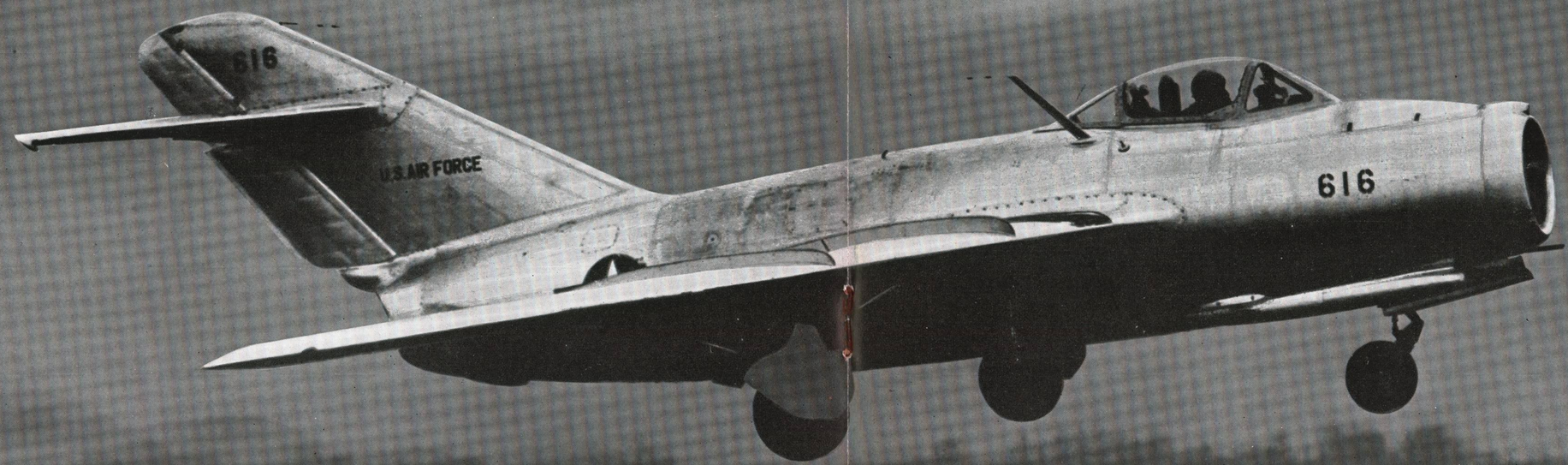
One other point about control—how does the pilot control the direction in which the body of the helicopter points? What prevents it from just swinging around and around beneath the moving rotors?

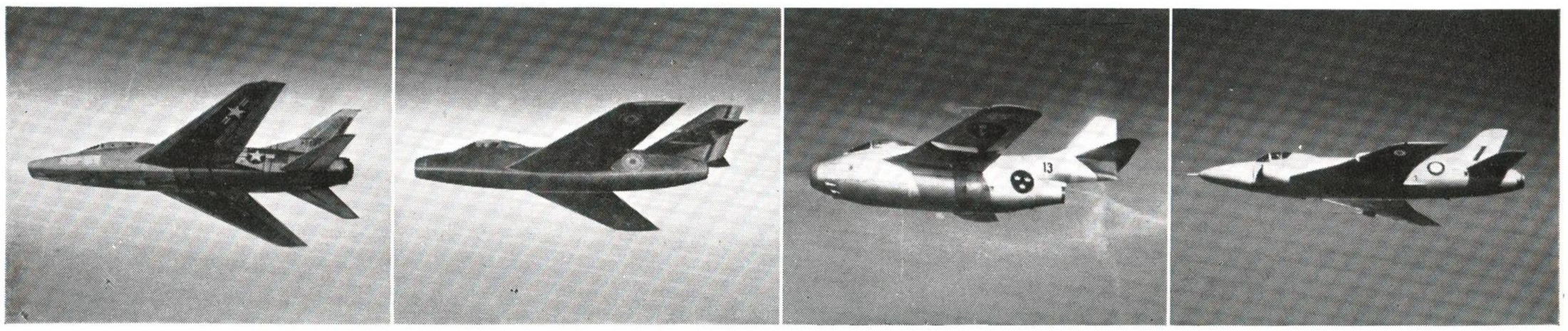


DRAGONFLY—This picture illustrates the "pitch" of the rotor blades during forward flight. It will be observed that the pitch on the rearmost blade is much more than on the one that is just passing over the nose, thus "lifting" the Dragonfly forward.

The answer is that the pilot's rudder pedals control the pitch of the tail rotor, and by moving the pedals the pilot swings the helicopter on to any desired heading. This is possible because the tail rotor is set sideways on, so that its thrust resists the turning force, known as torque reaction. When the pitch of its small blades is altered, the effect of the lateral thrust and the torque reaction combine to determine the heading of the helicopter.

Mig 15

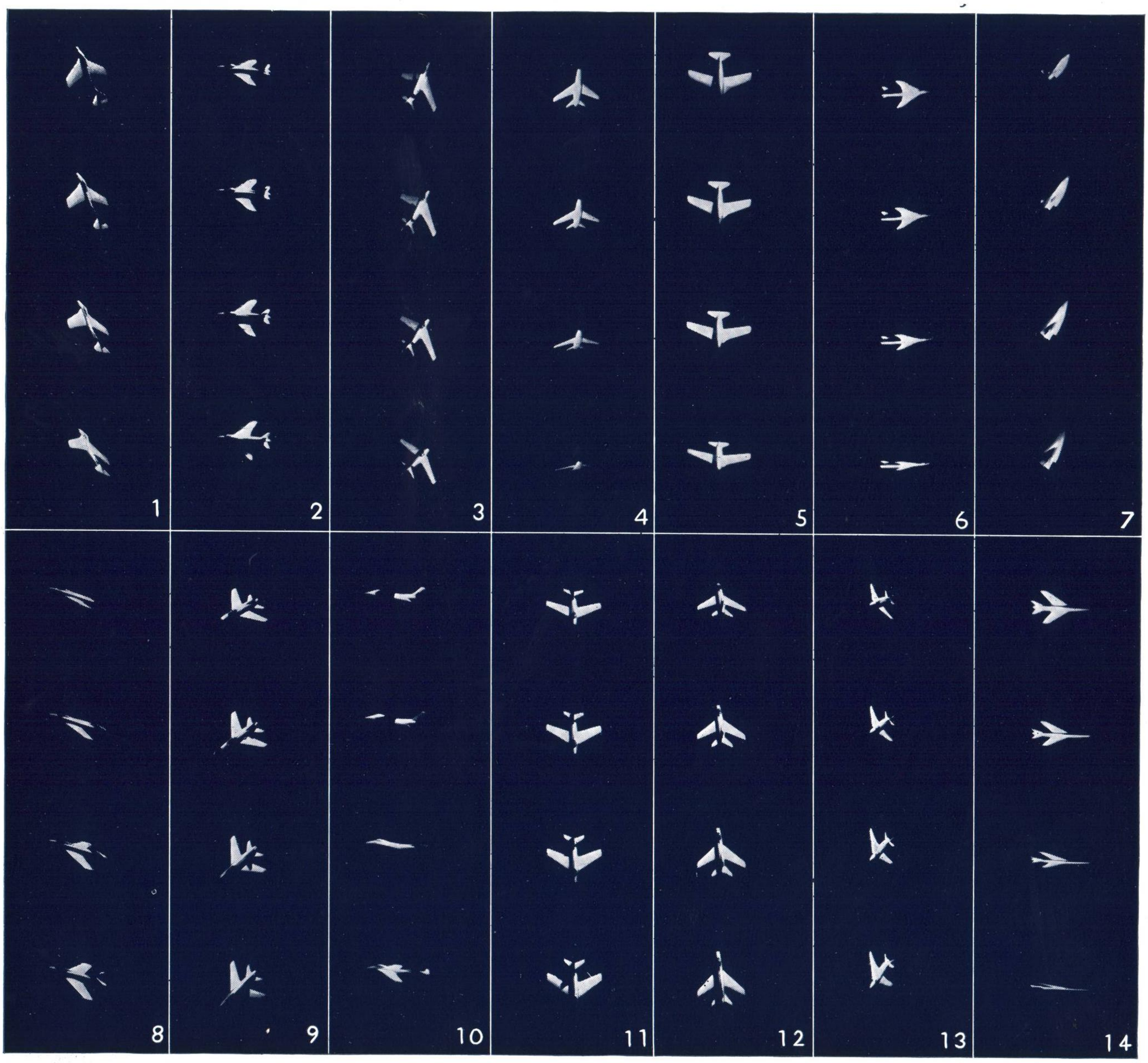




SUPER-SABRE **MYSTÈRE IVA** **SAAB J-29** **SWIFT 4**

VERY ADVANCED SPOTTING

This exercise simulates conditions which observers may encounter when spotting aircraft which are at great heights. Strong lighting attended possibly by haze often leaves a minimum of clues, and the safest recognition comes from as much experience as possible of the aircraft concerned in those conditions. With the aid of the clues obtained from the views of Super-Sabre, Mystère IVA, Saab J-29 and Swift 4 above, identify the aircraft in the strips of views below and opposite. First list the numbers (1 to 42), then carefully identify a few easy views so as to augment your key information. Finally do the most difficult. Accuracy is more important than speed in this exercise. Solutions on the rear cover.




15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42

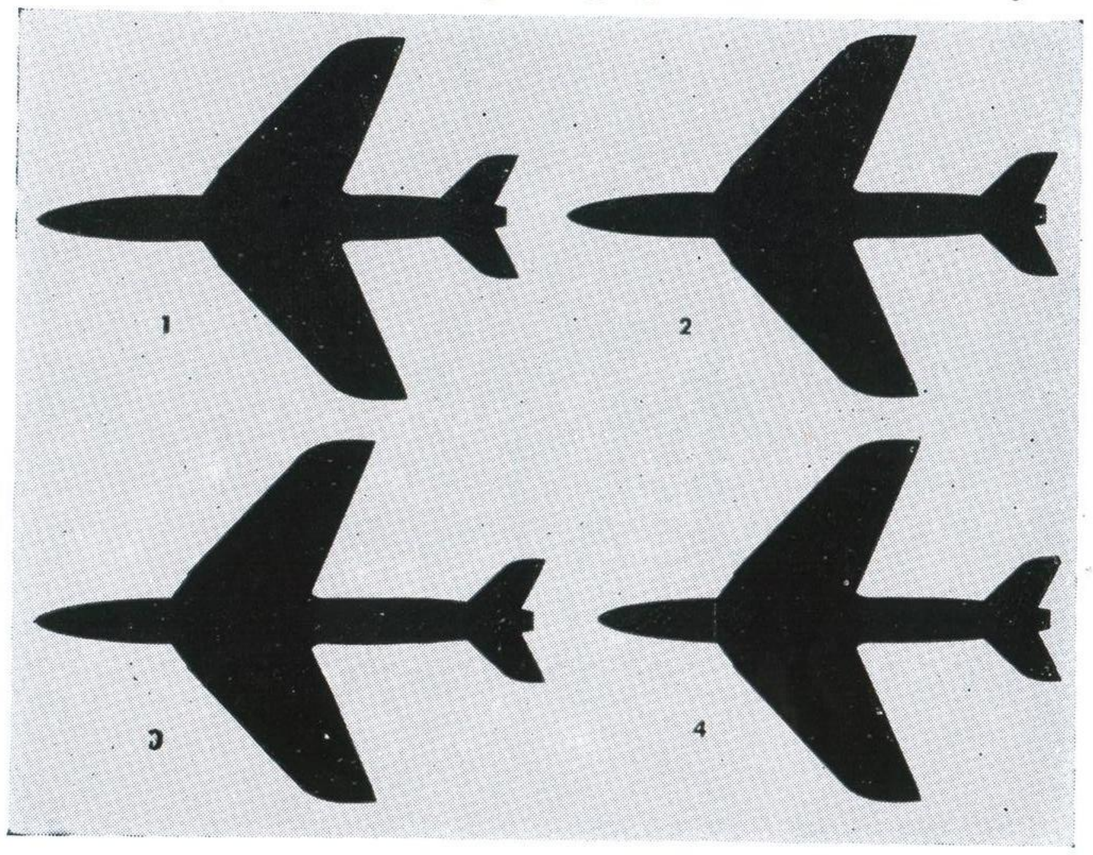
In Passing . . .

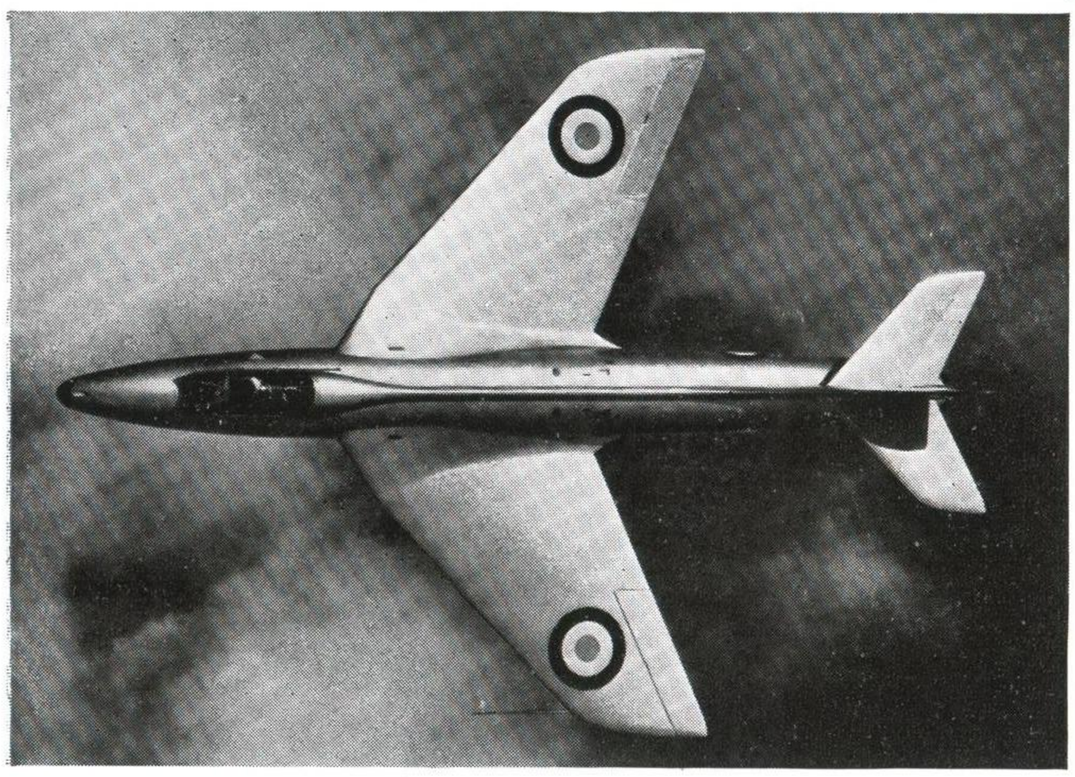
Technical Accuracy and Characteristic Correctness

Last months views of the SHACKLETON were :—

1. Fuselage too thick,
2. Correct,
3. Tailplane too short and distance between inner and outer engines too short.

This month's views are all characteristic of the Hunter. From your experience of the Hunter, can you tell (by observation rather than physical measurement) which view is technically accurate ? Use the photograph below if necessary.





INAUGURAL EXHIBITION OF THE SOCIETY OF AVIATION ARTISTS

The inaugural exhibition of work by the Society of Aviation Artists opened on 15th June at the Guildhall Art Gallery, London, and closed, all too soon, we thought, on 3rd July.

Almost all branches of aviation were represented, and scenes from the earliest days of flying through two World Wars to the present day were portrayed. Highlights of flying events between the wars were also to be seen. The post-war picture of civil aviation was well covered and portraits of aviation personalities by famous portrait painters combined with the rest to form a very colourful panorama of this Air Age as seen through the eyes of Britain's Aviation Artists. But probably the numerous excellent portrayals of individual aeroplanes, which included many by such well-known painters of the aviation field as Cuneo, Nockolds and Wootton, will appeal most to many readers of the *Journal.*

Readers may like to know that the Council of the Society of Aviation Artists invite all who are interested in promoting a greater appreciation of the artistic opportunities of flight and kindred subjects, to become lay-members of the Society. Application for membership should be addressed to THE SOCIETY OF AVIATION ARTISTS, 33, ALBEMARLE STREET, LONDON, W.1.

Incidentally, it is hoped to open exhibitions in certain provincial towns during the coming months.

* * *

H.M.Y. BRITANNIA

When the Queen goes to sea, said the Powers-that-Be,
She should have the most suitable yacht ;
So the order was signed, and the vessel designed,
And the cost—oh, the cost was a lot.

Then the Powers-that-Be felt that *they'd* be at sea
If the yacht was a yacht and no more ;
So with praiseworthy unction they doubled her function
As a hospital ship in a war.

This all seemed good sense, and the saving immense,
Till I told that G.I. in the pub,
Who upped and exclaimed "You should all be ashamed
"Of that beggarly Tale of a Tub.

"Why, if ever the day should arrive when they say
"That you can't give your Queen a nice boat—
"And not just a boat, but the finest afloat—
"Then, brother, Britain's sure had her day."

C. H. Gibbs-Smith

* * *

"Stovepipes" to Drive Missiles

ANYONE who has seen a film of tests with guided missiles will have noticed that the missile's initial thrust comes from a cluster of rockets, which, once the missile is on its way, fall off. From this point, the guided missile is powered by its main power unit, either a larger rocket, or, more probably, a ramjet, or "flying stovepipe" as it is sometimes called.

Although the ramjet has this undignified nickname (earned because of its shape and rugged simplicity), British designers believe it is a power plant of considerable promise, which is expected to power certain types of missiles flying at speeds of from one and a half to four times the speed of sound—that is about 1,000-3,000 m.p.h. at sea level.

Incidentally, designers also believe the ramjet may have its uses at the other end of the speed-scale, fitted to the rotor tips of helicopters.

How It Works

When a ramjet is flying at a speed of Mach 2, or about 1,500 m.p.h. at sea level, it is travelling so fast that the air ahead of it has no warning of its approach. A shock-wave therefore exists over the nose of the engine—rather like the cone-shaped wave of water at the prow of a fast-travelling speedboat.

The cone is made of a very thin sheet of air only about one-tenth of a thousandth of an inch thick. Yet although the incoming air has only this minute distance to travel, its

velocity, as it passes through the shock wave, drops from a speed of 2,200 ft. per second to about 800 ft. per second.

This virtually instantaneous slowing-down of the air is accompanied by a corresponding instantaneous rise in pressure—the air is compressed to about four times its free pressure in this process. It is also heated—from, say, 15° C. outside to about 150° C. as soon as it passes the wafer-thin shock-wave. This all happens before the air has entered the engine.

Inside the ramjet, the air can expand again, thus slowing down still more and once more increasing in pressure. At the end of the entry section of the engine, the air pressure is roughly six times its free pressure, its speed is about 250 ft. per second, and its temperature of the order of 200° C.

To sum-up, this fast-flowing, hot air has been rammed into the engine by its forward motion through the air—and, what is more, it has already been compressed, so there is no need for a "compressor" as in the ordinary gas turbine.

At this point, fuel is injected into the system through an array of fuel sprays. Immediately downstream of this is a device aptly named the flame-holder. This is a grid which creates a turbulence in the air stream which literally holds the flame from being blown down the tube.

Jet Thrust Effect

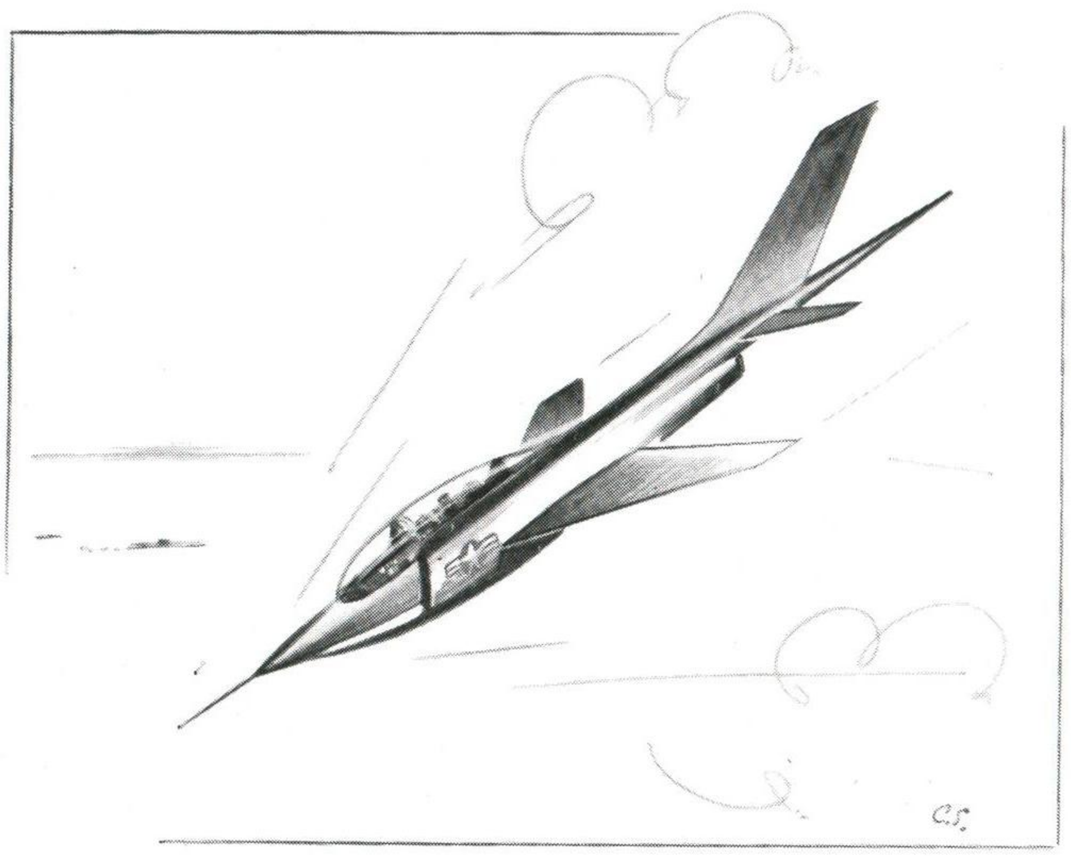
The effect of burning fuel is to liberate energy which at once goes to work and further speeds-up the gas stream ; the reaction from fast-flowing gas stream (the jet) drives the unit forward.

There are, of course, more sophisticated aspects of this "stovepipe" design. One such refinement developed by British designers is to place a "bullet" in the intake orifice of the ramjet. This produces a strong, sharply-defined shock-wave of truly conical form ; the bullet is so positioned that the shock-wave produced gives the best possible flow into the intake. The bullet itself is also a convenient place in which to house a number of the engine accessories.

* * *

Aero-Caricature — **THE DEMON**

The Demon is rightly named and it certainly looks more like a creature out of hell than out of the pure air. The needle-fitted pointed nose is ready to dig transgressors in the ribs or posterior—according as to whether they are fighting or fleeting—and the deep belly is full of venom for the sting. The raking tail unit not only protects the Demon's own hind quarters, but is thrust out as far rearwards as his maker could devise, short of attaching it to a towrope. Altogether an unholy monster designed for aggression and obviously eager to go about it. C.H.G-S.



New Recognition Material

The undermentioned new material is now available and initial distribution has been made. Applications for supplies should be made through the normal official publications channels and not to the editorial office or direct to the Air Ministry.

NIGHT SILHOUETTE

A.D. 6005 Vulcan B Mk. 1.

WORKING DRAWING 1/72nd SCALE MODELS

A.D. 5776 Vampire T Mk. 11
A.D. 5777 Super DC-3
A.D. 5779 F-100 Super Sabre

PICTORIAL CHARTS

A.D. 5770 Super DC-3
A.D. 5775 Saab J-29

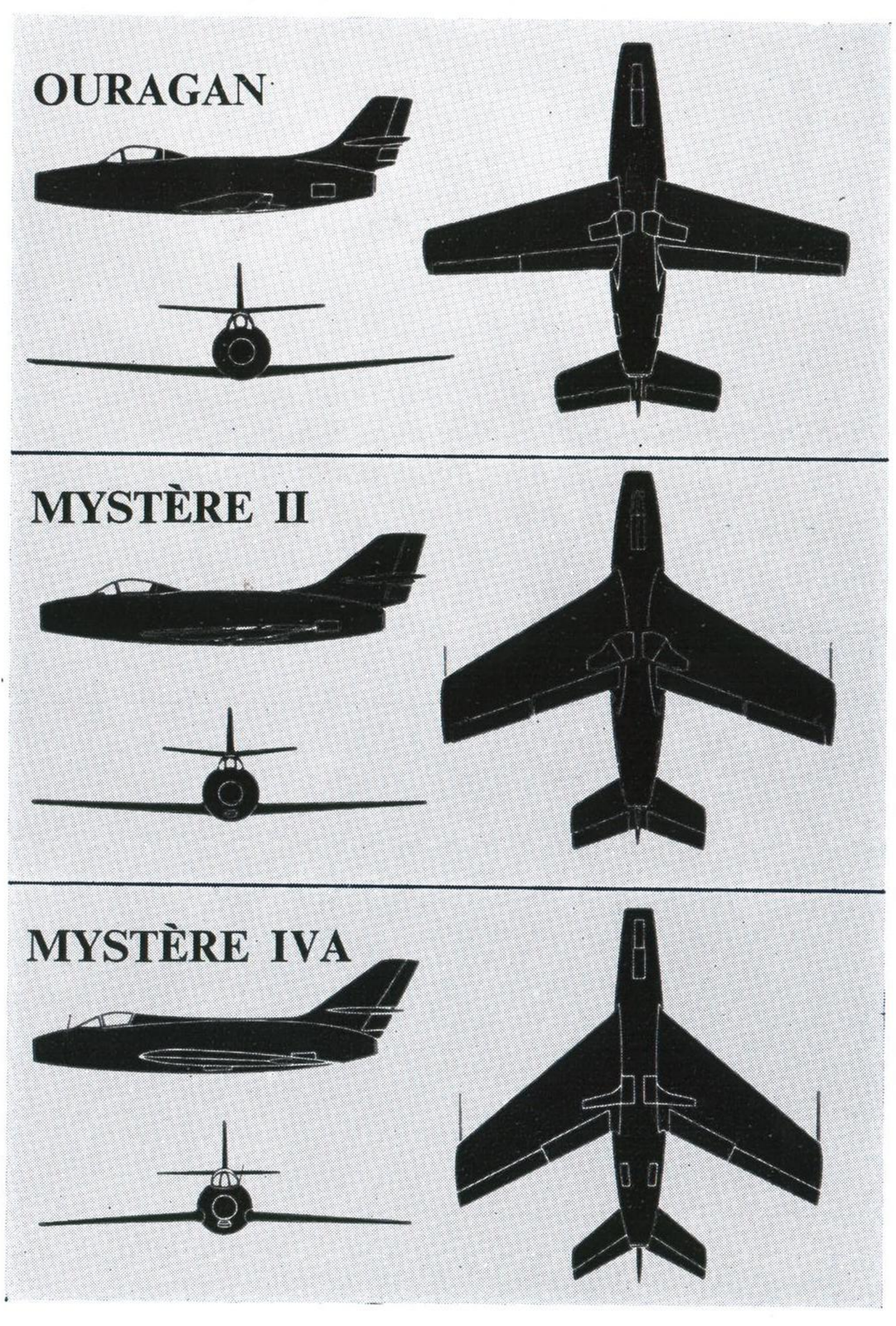
MODEL AIRCRAFT

R.A.F. Stores Ref.	*Navy Patt. Ref.*
984	6071 Gannet AS Mk. 1
1019	6076 Vulcan B Mk. 1

* * *

THREE FRENCH JET FIGHTERS

French jet fighters are increasing in importance. Below for easy reference and comparison we present three from the Dassault School which should be known. Substantial numbers of the Ouragan are in service with the French Air Force, and they are also in use with the Indian Air Force. The Mystère II is in quantity production, and there is an order running into hundreds for the Mystère IV. An exercise on the Mystère IVA appears on page 193. The Mystère IVB is similar to the IVA but has a Sabre-like lip at the intake. The IVN is a night-fighter version.



PHANTASY IN FUNNELS

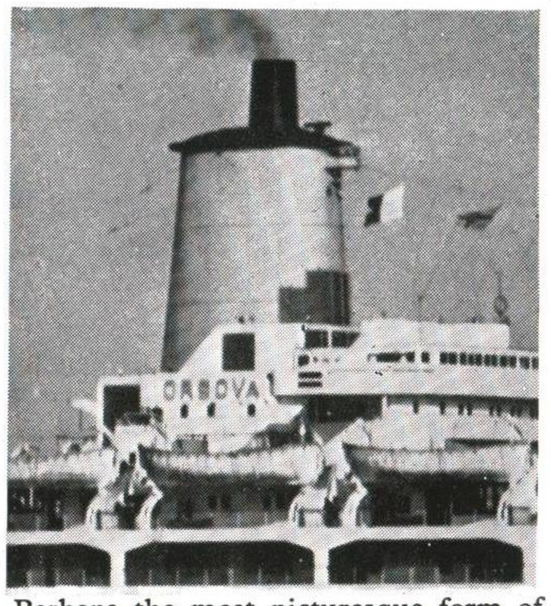
TO the landsman, and perhaps to the majority of ship passengers, the most distinctive outward feature of a ship is her funnel or funnels. To-day this outstanding feature has many strange and confusing appearances, and it is difficult to forecast with any confidence its next manifestation. The funnel began as a strictly functional chimney—a name still used by some shipowners with long steamship traditions. Early funnels were tall, thin, and severely practical. Then came aesthetics—and the serrated top. When sails disappeared entirely and the funnel became almost the sole excrescence on which the designer could vent his artistic feelings, the essential thin smokestack was soon surrounded by a massive steel outer funnel in due course given pseudo-scientific justification by making it an elongated pear-shape. This often gave the impression that its real purpose in the owner's eyes was the publicity claim that a fleet of buses or a shed full of locomotives could be driven simultaneously through it side by side—not that there is any real record of anyone so ambitious, or experimentally minded, as to try. Of course, these towering monsters gave excellent scope for bold and colourful displays of company pride, if not always with the most harmonious results, though somehow in the rush to provide even bigger expanses for ever brighter colours the prime purpose of the funnel was, not infrequently, forgotten. It was still needed as an efficient chimney. Yet, nevertheless, some steamships developed an unhappy knack of depositing a substantial quantity of dirty combustion waste products on the most desirable and frequented passenger decks.



"Flat hats" adorn the tops of the tall funnels of the Orient liner *Otranto*.

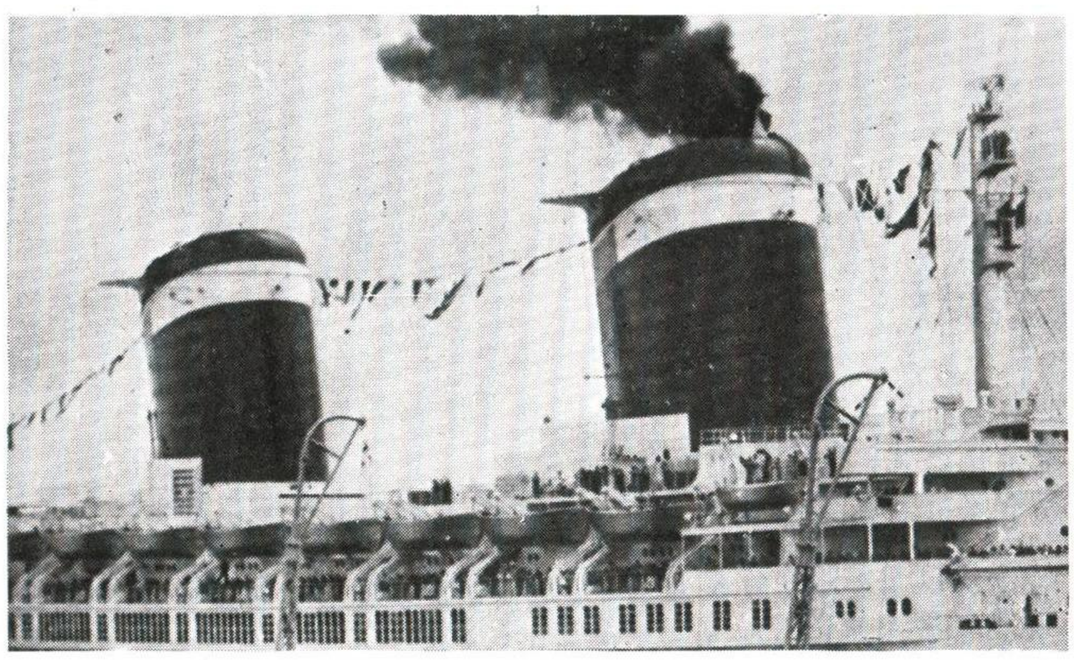
The arrival and growth of the diesel-driven vessel did little to resolve the problem, since the first impression that such vessels would settle the difficulty by eliminating the funnel proved short lived. Even motorships have some exhaust gases, so why not discharge these also through genteel advertising boardings? Eventually motorships had the broadest, squattiest funnels of them all. And even their exhaust gases annoyed passengers, who could sometimes enjoy the further pleasure of looking down the funnel when, as sometimes happened, it was so stumpy and so heavily raked aft that parts of its upper edge were below eye level when seen from the boat deck.

The nineteen-fifties, however, resemble the eighteen-fifties in some respects. We are again firstly functional, even if we do claim, rightly or wrongly, that our taste is better than our grandfathers', and that we are better at combining purpose with beauty. So the wheel turns full cycle, and funnels again become primarily chimneys. All manner of kinds are tried—tall, thin tubes, resembling naked derrick posts more than anything, forcibly discharge exhaust gases upwards at incredibly high velocities in an attempt to surmount any free air likely to embrace the ship's after structure, while advertisement, deprived of a dummy outer funnel, is still satisfied by turning the wheelhouse into a mock funnel, complete with false sloping bulwarks above and company colours in full bloom. On the other hand, those who still want to drive buses through ship funnels are given even better facilities. Bigger single funnels replace the two or three slightly smaller edifices which were needed before, and now, as light alloys replace steel, these become even larger. No longer, too, does reason control the outward shape—the parallel outer funnel with its humdrum rake aft gives way to circular cones, to forward leaning oblongs more like cathedral buttresses than anything previously seen at sea, plus the ingenious, if not always elegant, plinths carrying the ship's name in illuminated letters apparently intended to be read by the naked eye some 10 miles away. Here advertisement wins another victory—or is there hidden necessity behind this new signboard rash?

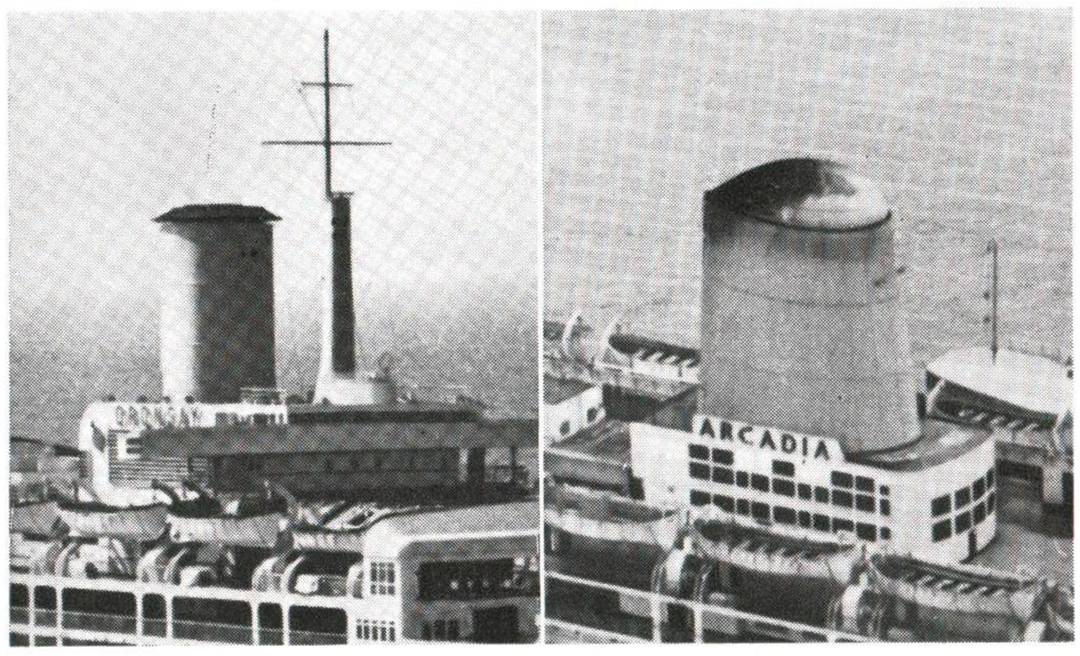


Perhaps the most picturesque form of funnel headgear so far is the "Welsh Hat" of Orient liner *Orsova* This hat is so lifelike that one wonders why the designers did not go the whole way and incorporate a device for raising it on suitable occasions.

Necessity, if not reason, has provided another flourish. Large steamships now expel their waste gases through giant chimneys surmounted by all manner of strange devices. To prevent these unpleasant vapours obstinately returning to spotless decks below, invention has run riot in providing amusing, if not always elegant or effective, headgear for funnels. Angels' wings, admirals' caps, upturned pudding bowls, skeleton triplanes—all these and other fancies now proudly sail the oceans in the cause of science and clean decks. What shall we see to-morrow? Perhaps someone may get rid of those obnoxious fumes somewhere else? Why not through the stern?



This picture shows the smoke deflector fins—"angels' wings"—on the twin funnels of the *United States*.



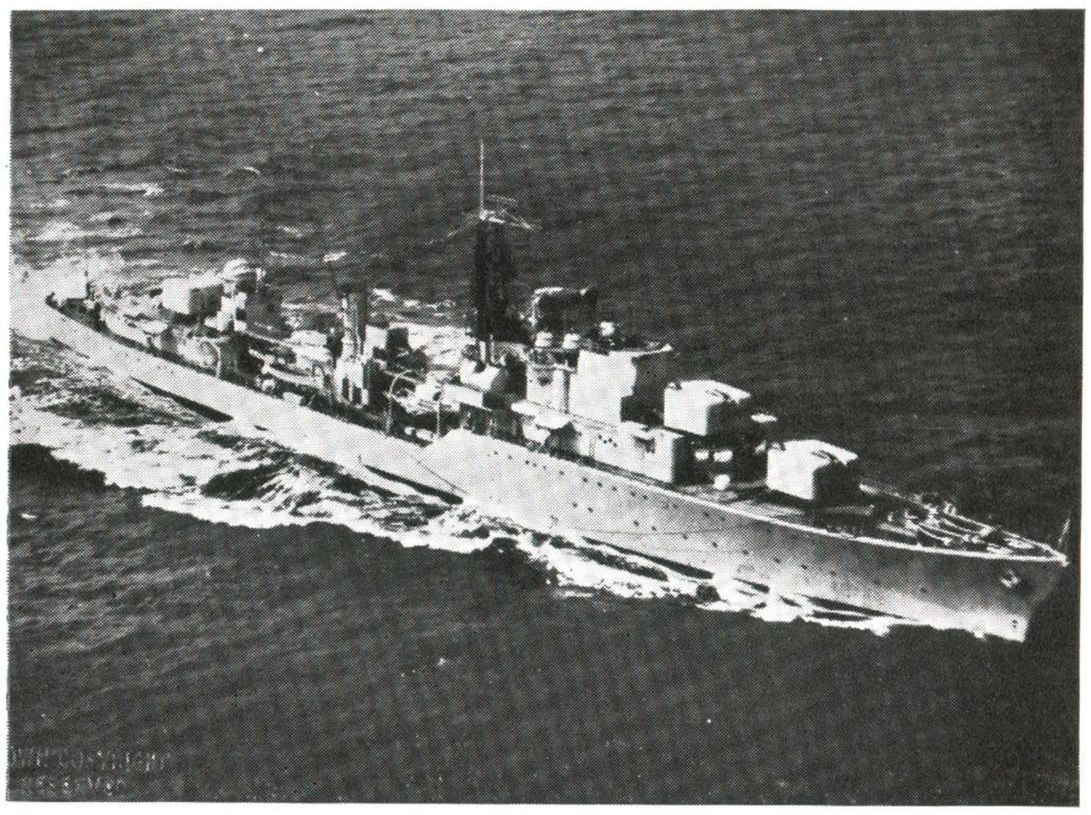
Plinths at the funnel base carrying the ship's name can often be read at considerable distance. Orient Line *Oronsay* combines a straight cylinder with a discreet "lid"—note the stump mast—whilst P. & O. *Arcadia* displays an elegant taper surmounted by a streamlined dome or "pudding basin".

We are indebted for the text of this article to the *Shipbuilding & Shipping Record.*

Ship Briefs

Daring in the Far East

In the news recently was Daring class ship H.M.S. *Defender* (picture below). She is believed to be the first of this class to fire her guns in action, in a bombardment against terrorists in Johore State. H.M.S. *Defender* attended the Coronation Naval Review in June, 1953, and sailed on the following day for the Far East where she has since been actively employed.



* * *

Hermes Class

Light Fleet Carrier H.M.S. *Centaur* of the Hermes Class—due at the time of writing to start her trials—has now been modified to incorporate the angled deck. H.M.S. *Albion*, also of the same class, is nearing completion and should, by the time this edition reaches readers, have been accepted into service. *Centaur* and *Albion* are both fitted with a view to improving living conditions of those on board. There are canvas bunks for all ratings and a comprehensive electrical installation provides many improved facilities for catering, lighting, broadcasting, and telephones, right down to power for potato peelers and drinking water coolers. Both ships are 737 ft. in length and armament consists of 11 multiple- and single-barrelled Bofors gun mountings controlled by close-range director systems.

* * *

Vidal

The first survey ship to be built since the war, H.M.S. *Vidal*, has recently been undergoing trials. She is also the first survey vessel to be fitted with a helicopter deck and hangar. *Vidal* is a single funnel ship with a flush deck line only broken at the extreme aft by the lip formed by the flight deck.





New Minesweepers

Coastal minesweepers of the new construction programme are to be allocated as sea-going tenders to the Royal Naval Volunteer Reserve. The first of these ships, H.M.S. *Alfriston* and H.M.S. *Alverton*, belong to the Coniston group (illustrated in the June *Journal*). It is understood that they will be allocated temporary names.

* * *

French Escorts

New construction for the French Navy are the Surcouf Class fast escorts. They are twin-(hooded) funnel vessels with lattice masts immediately forward of each funnel. Superstructure is in three groups, the main one rising steeply on the forecastle, with a subsidiary group attached aft of the second funnel and a further one isolated further aft.

* * *

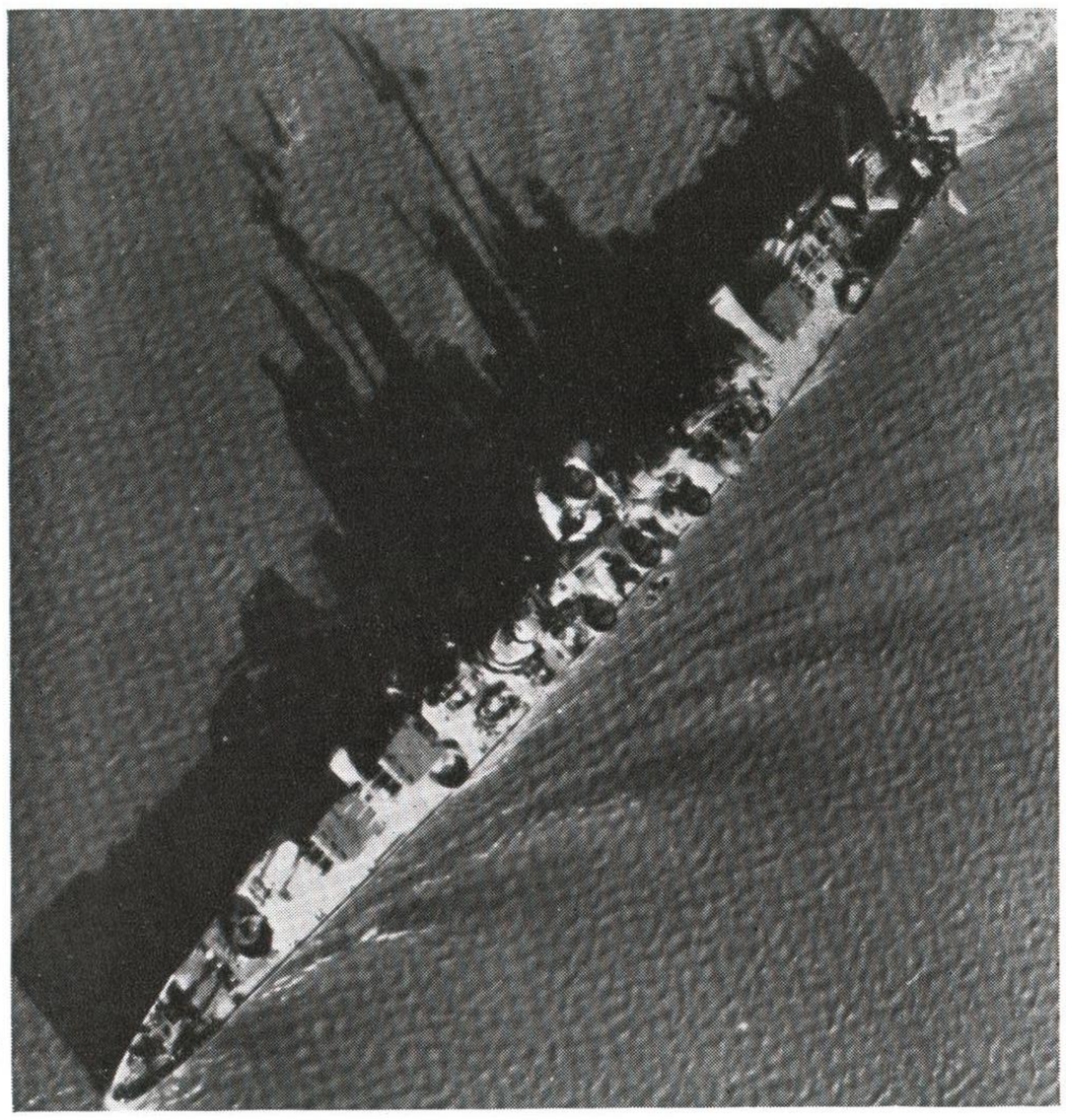
Ark Royal Class

H.M.S. *Ark Royal*, sister ship to *Eagle* mentioned in April *Briefs*, is due at the time of writing for sea trials. It is expected that she will be commissioned early next year.

* * *

What's in a Shadow?

As far as this picture is concerned, quite a lot. Turn it sideways, and you have, presented by nature's low sun, the air-to-sea spotters' dream of a side view silhouette. Practically all the features of the Baltimore Class Cruiser are exposed : funnels, masts and guns. In actual practice, of course, the movement of the sea and the ship would make things just a shade more difficult. Compare the features in the shadow with the silhouette below.





Previous editions of the Journal have included articles on Tramps and Passenger-Cargo Liners, but there is, as it were, an "in between" type—the Cargo Liner. This is an important class of ship and is worthy of the special attention of those engaged in shipping observation of any kind.

CARGO LINERS

by Flight Lieutenant M. GILLETT

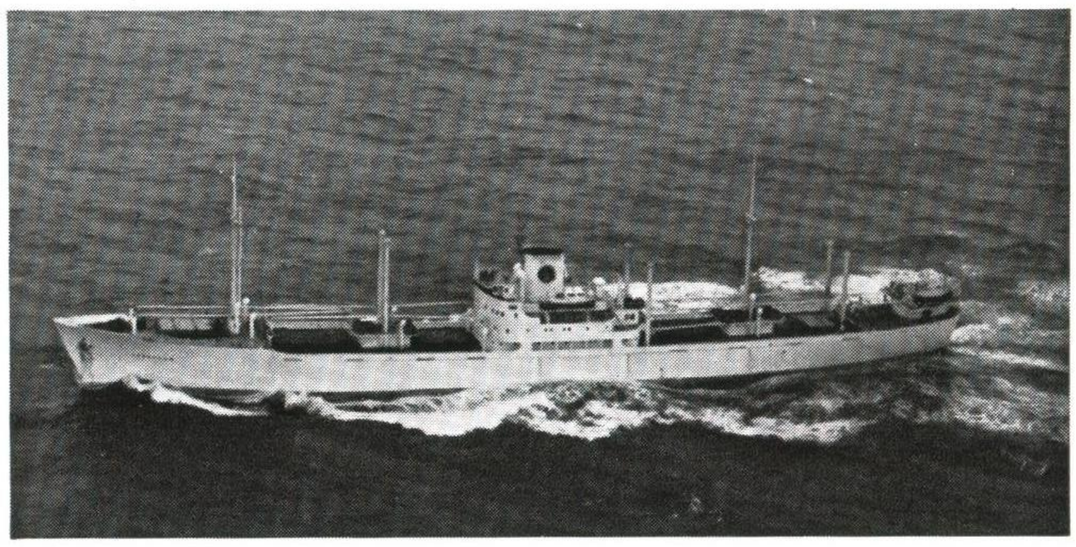
THE rôle of the cargo liner is different from that of the tramp because it plies a regular route at regular intervals. It specializes in transporting cargo and will carry only few (up to 12) if any passengers. To distinguish the cargo liner as such is not without its difficulties, but experience soon begins to tell.

In general appearance the cargo liner overlaps both the tramp and the passenger-cargo liner, but it generally has less superstructure than the latter and more king posts and superstructure than the former ; it also carries a lesser number of lifeboats than the passenger-cargo liner.

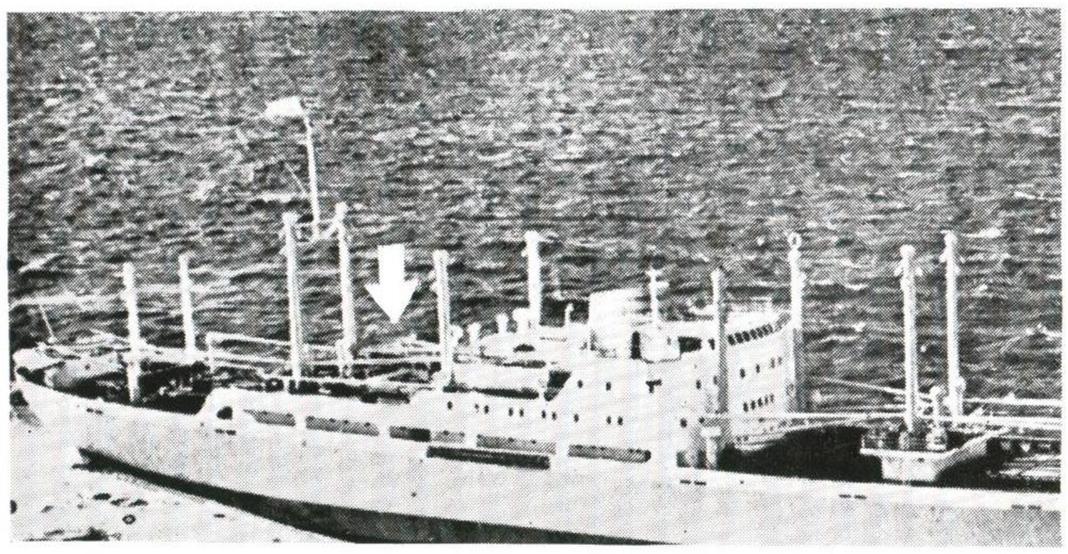
As regards size, the gross tonnage of cargo liners lies between 5,000 and 14,000 tons, the average is between 5,000 and 10,000 tons. The speed ranges from 12 to 20 knots.

As a general rule it can be said that the cargo liner will have one or two decks of superstructure : the engines will be amidships and there will only be one funnel. The *Alsatia* and *Andria* are noteable exceptions, both having two funnels (*illustration below—right*).

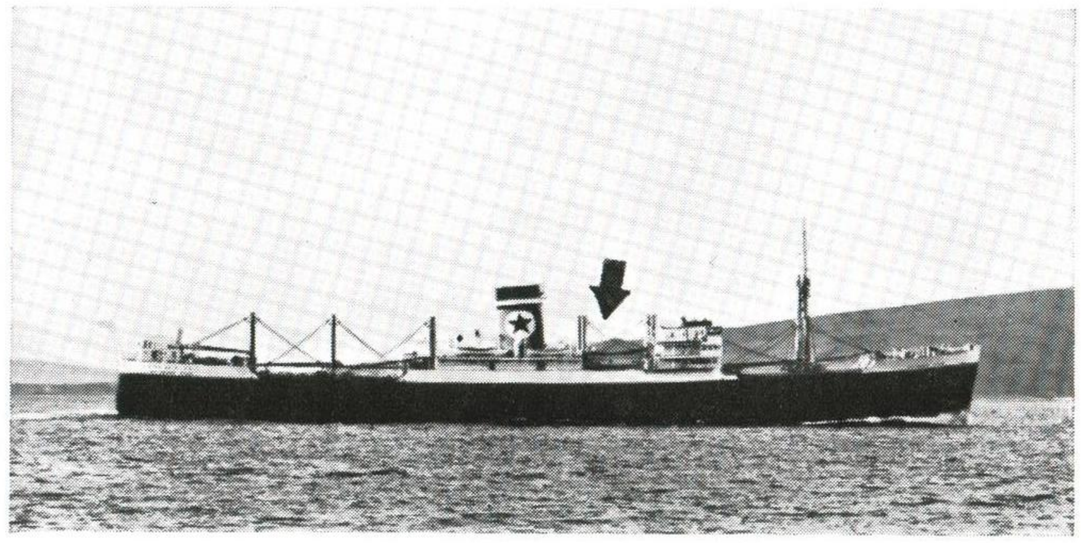
There is great variety in hull and superstructure design of the cargo liner. Few types have completely flush decks, and the most popular hull design is a raised fo'c'stle, a short bridge deck, or else a poop. Some British firms still favour the three island layout although this is not popular with foreign owners. Superstructures may be "split" or "composite" and vary widely in form as follows :—



1 Both island and superstructure may be short, of equal length, and have no hatches.

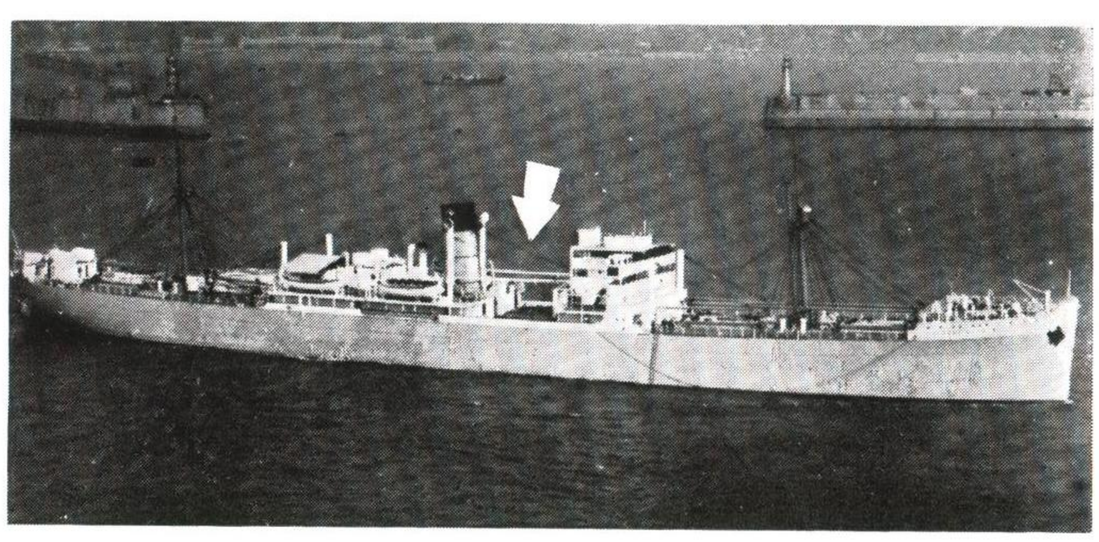


2 The island may extend beyond the superstructure it carries, and have a hatch (*arrowed*) at one or both ends. In this example the island extends only aft of the superstructure.



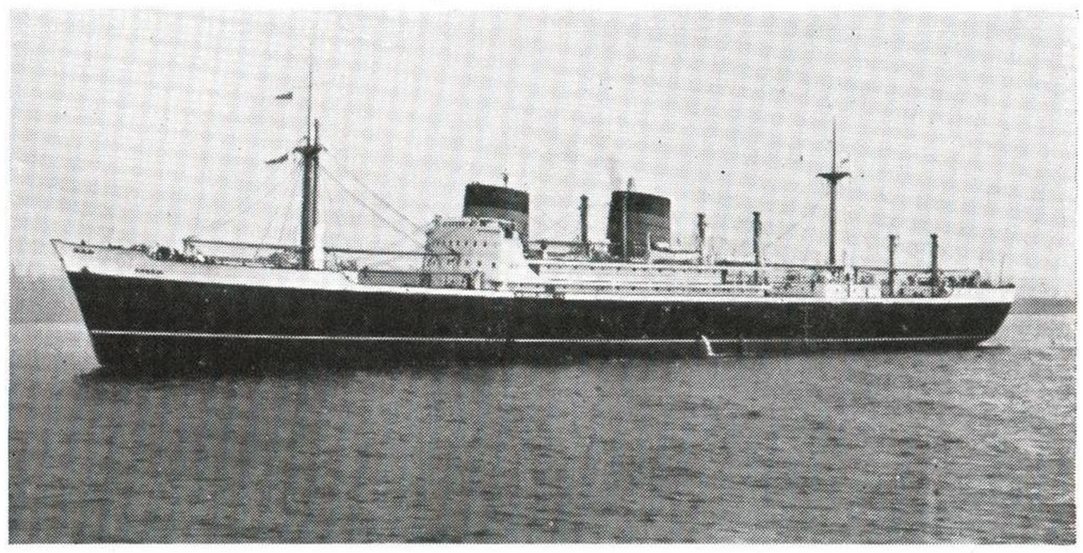
3 The superstructure may be split and have a hatch (*arrowed*) on the bridge deck between the bridge and the funnel ; king posts give the clue.

4 In some cases the split is not deep. In others the hatch is raised and the cabin accommodation rises at either end.



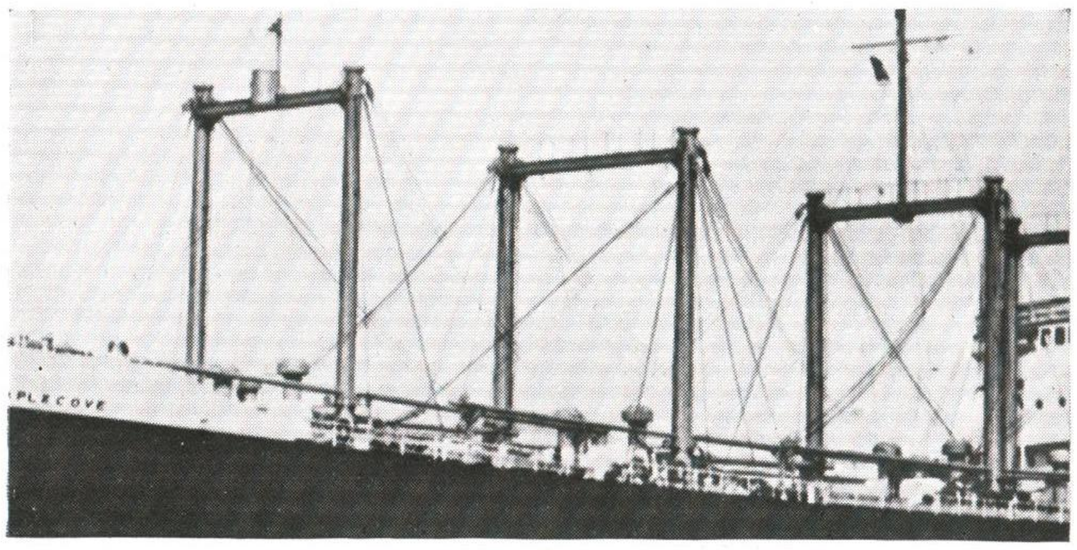
5 Alternatively the split (*arrowed*) may be very deep, the bridge may be its own island and separate from the remainder of the superstructure.

During the last 25 years there have been considerable changes in the designs of all kinds of merchant ships, affecting stems, sterns and bridges of the cargo liner. Some of these variations can be seen in the accompanying illustrations. The cargo liner has also received an elaborate array of king posts and derricks, mostly heavy in appearance,

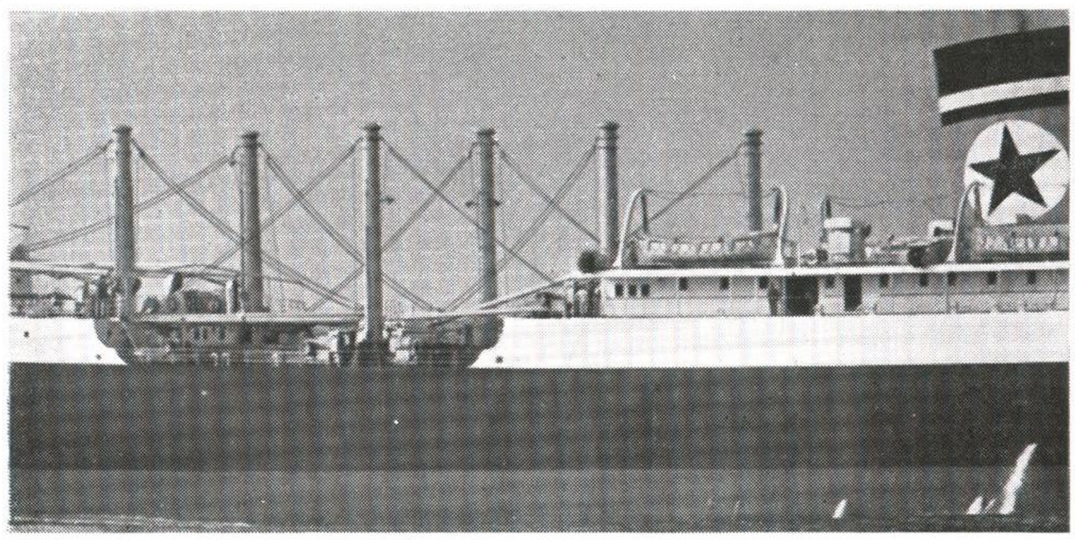


Most cargo liners have one funnel. The *Alsatia* and the *Andria* (shown above) which have two, are exceptions. The forward funnel is a dummy.

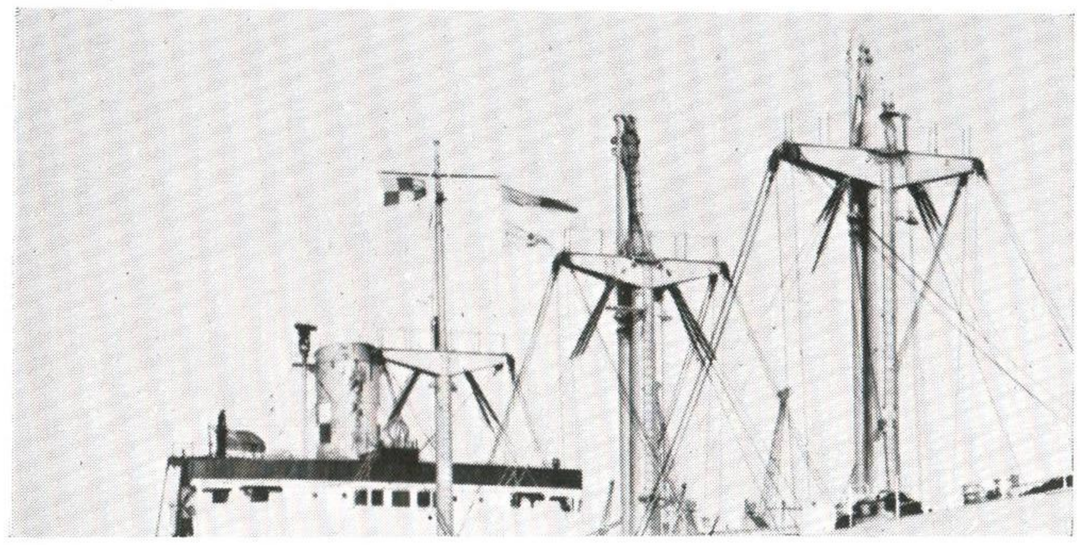
numerous, often in pairs, and sometimes of the " goal post" type. The modern streamlined superstructures too differ considerably from the "old look" and may mislead the unwary observer into thinking he is looking at a *de luxe* passenger liner rather than at a cargo liner. (*See illustration.*)



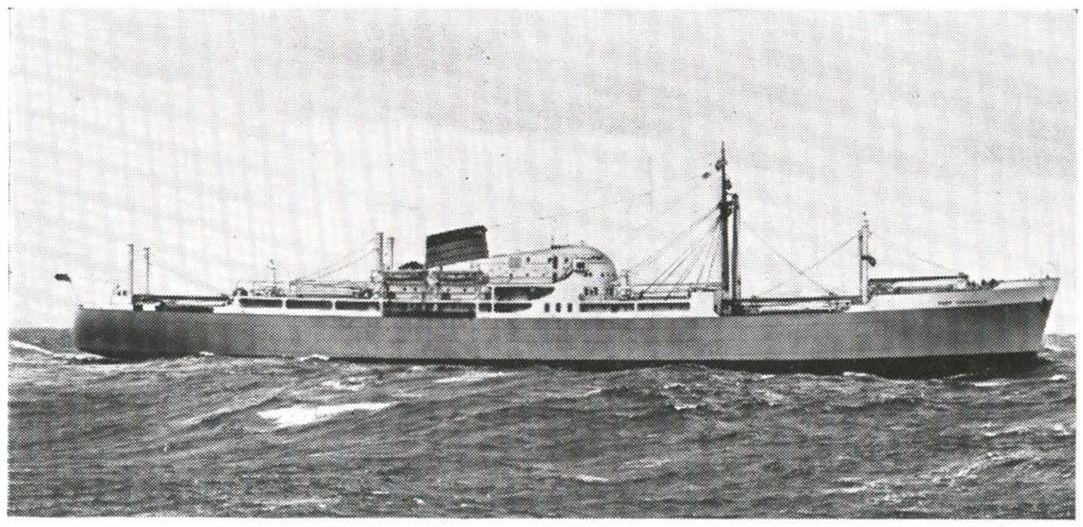
GOALPOSTS



KINGPOSTS



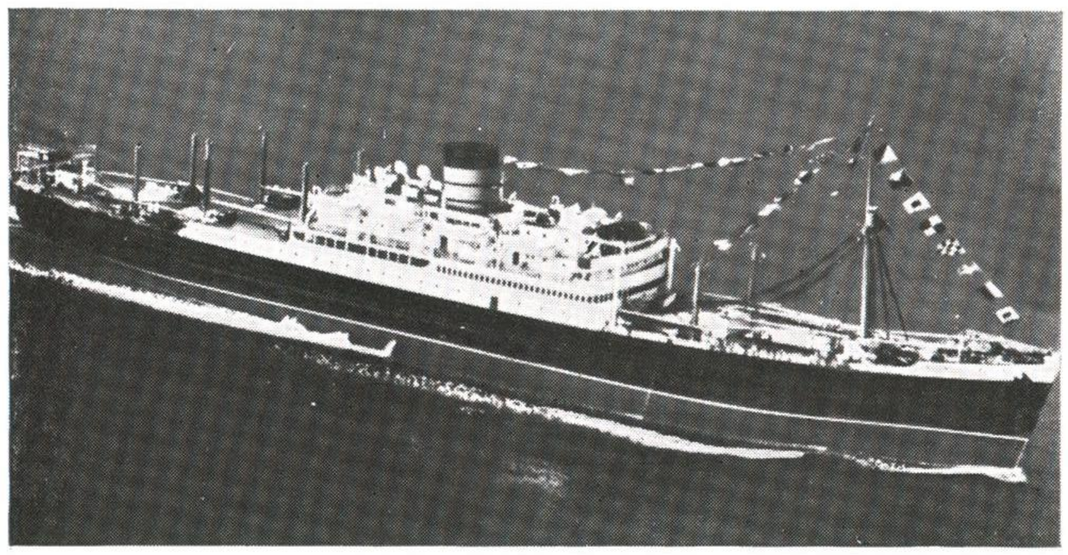
KINGPOSTS WITH CROSSTREES



The modern streamlined superstructure differs considerably from the "old look".

A word about superstructure and its effect on the calculation of gross tonnage. A gross ton, it will be remembered, is internal capacity calculated at a 100 cubic feet of enclosed space per gross ton. Therefore in calculating the gross tonnage of a ship any large amount of superstructure must be included. With the cargo liner, approximately one-quarter to one-third of the ship's length is covered by superstructure. Some allowance must therefore be made and it is usual to allow between 1,000 and 2,500 tons in direct proportion to the amount of superstructure. To this amount there must be added an allowance of 1,500 tons per hatch, the total of these two figures giving the final gross tonnage. This method is not foolproof, but will give results to within 15 per cent. of the gross tonnage in over 80 per cent. of cases and is usually far more reliable and accurate than chance guessing.

Some difficulty may be experienced in trying to distinguish between the large cargo liner and the small passenger-cargo liner around the 10,000 tons mark, especially when viewed from the air. In such cases special care must be exercised in relating the proportions of various parts of the superstructure and number of decks and their relative heights, and in the proportions of lifeboats to various other pieces of structure. Experience is the thing that counts in this case and some may be gained from the exercise overleaf.



Compare these two air-to-sea views of the passenger-cargo liner (above) and the cargo-liner (below).



To sum up then the recognition features of a cargo liner :—

1. Superstructure covers one-quarter to one-third of the deck length.
2. Single funnel amidships.
3. One to two promenade decks.
4. Two to four lifeboats (either side).
5. Heavy king posts (single, pairs, goal post).
6. Numerous hatches (above four).

To assess the tonnage :—

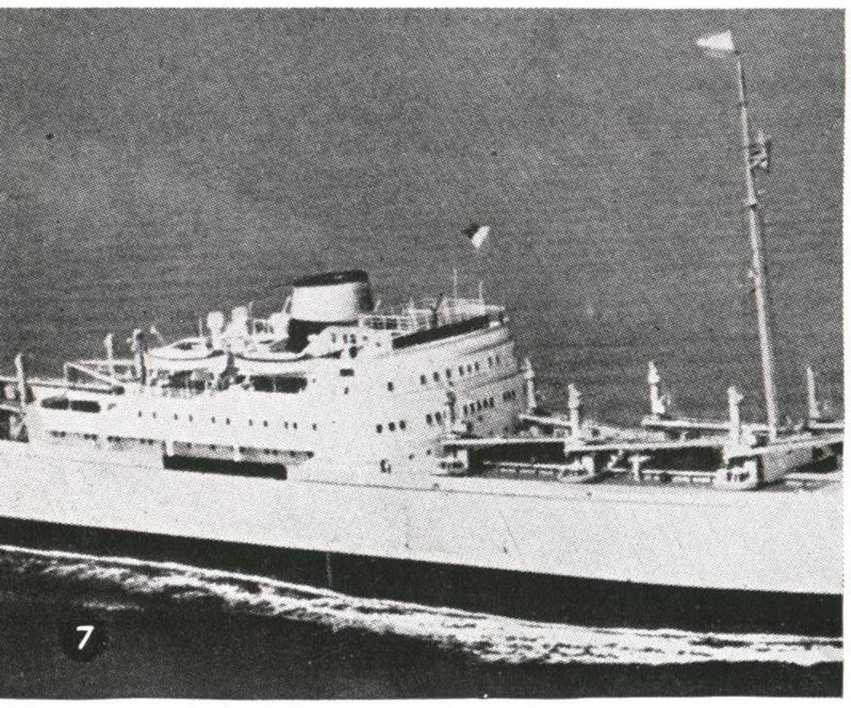
Allow 1,500 tons per hatch and add 1,000 to 2,500 tons for superstructure, in proportion to the amount of superstructure.

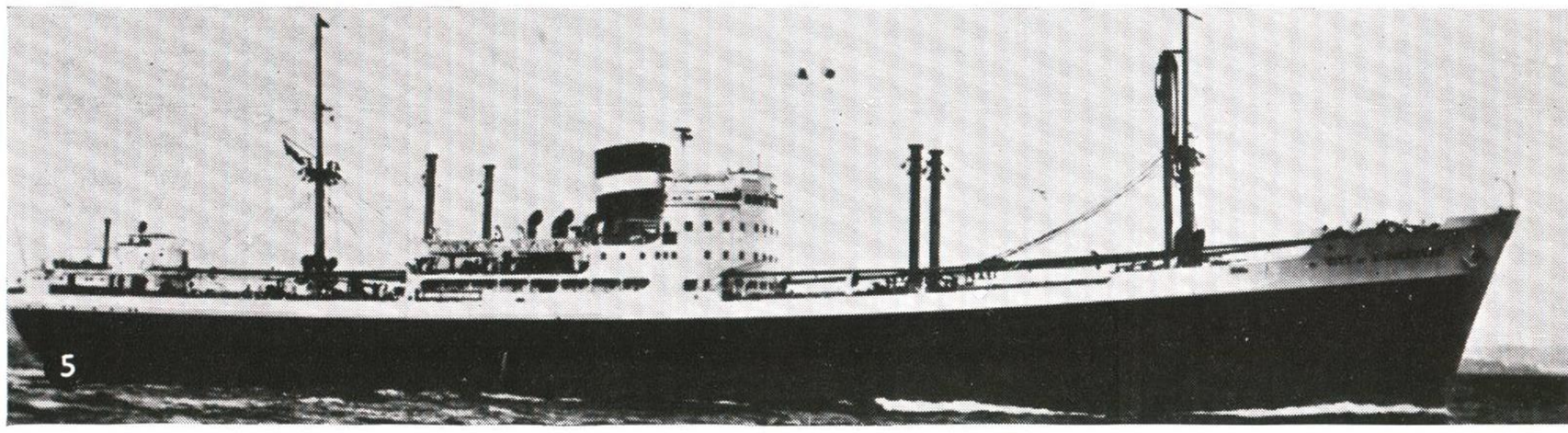
Exercise follows . . .

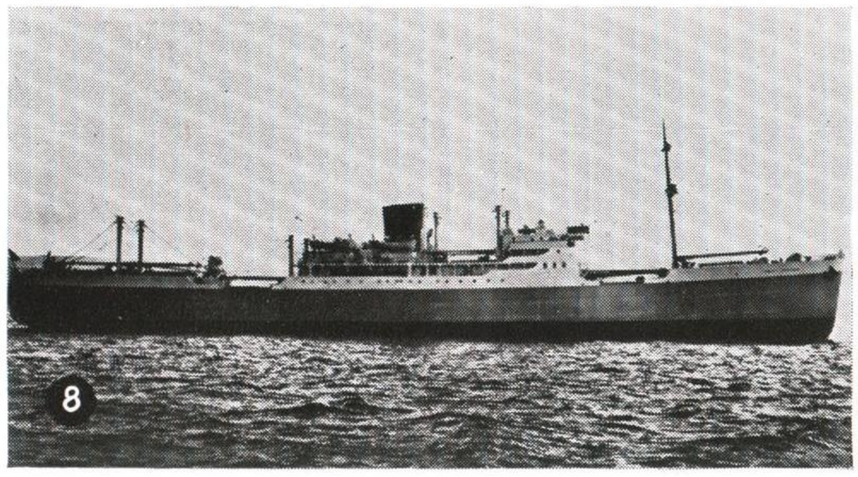
CARGO LINERS . . .

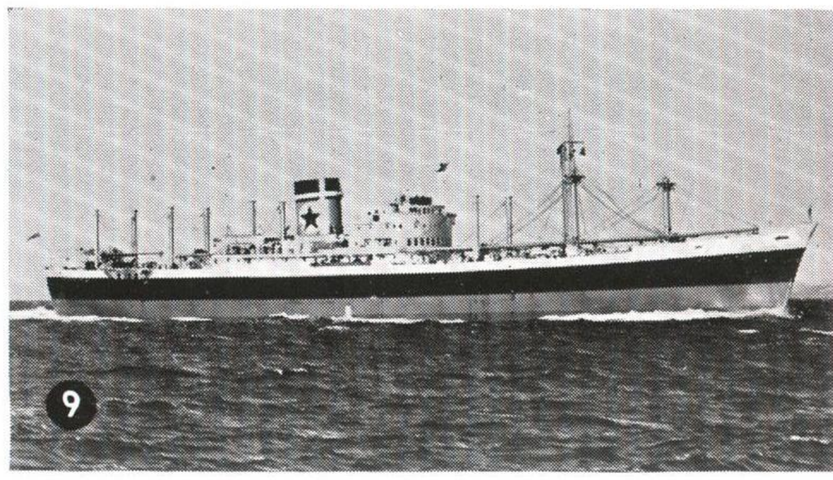

1

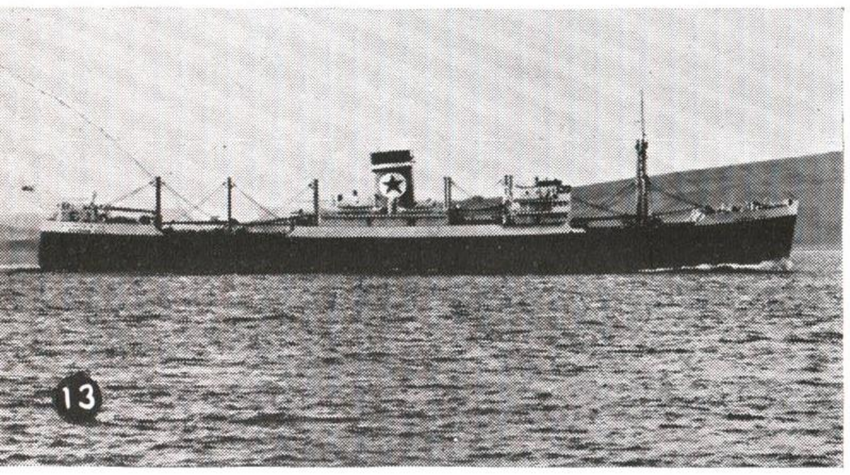

2

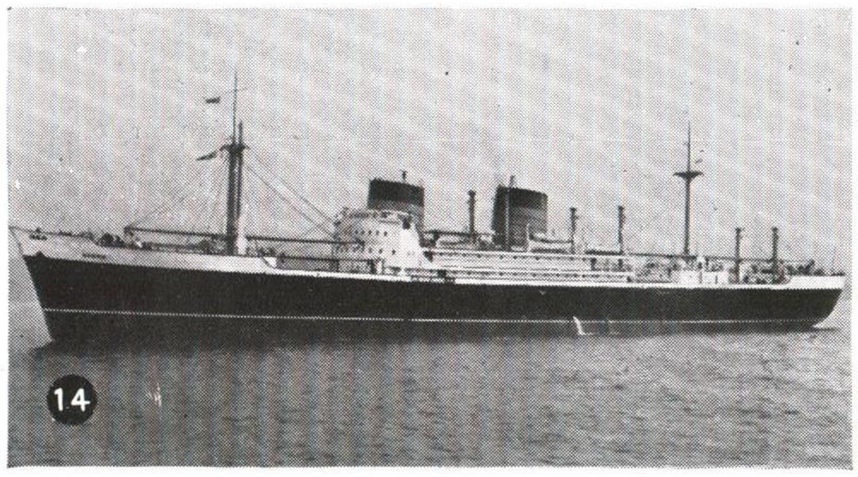

7

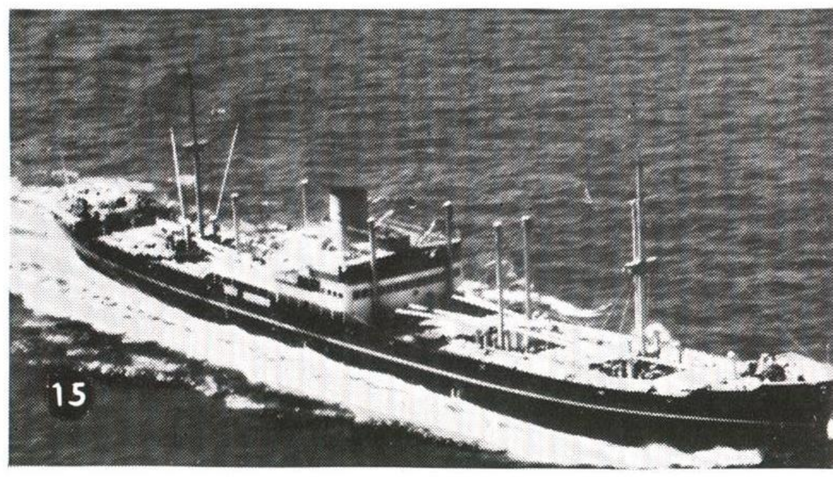

5

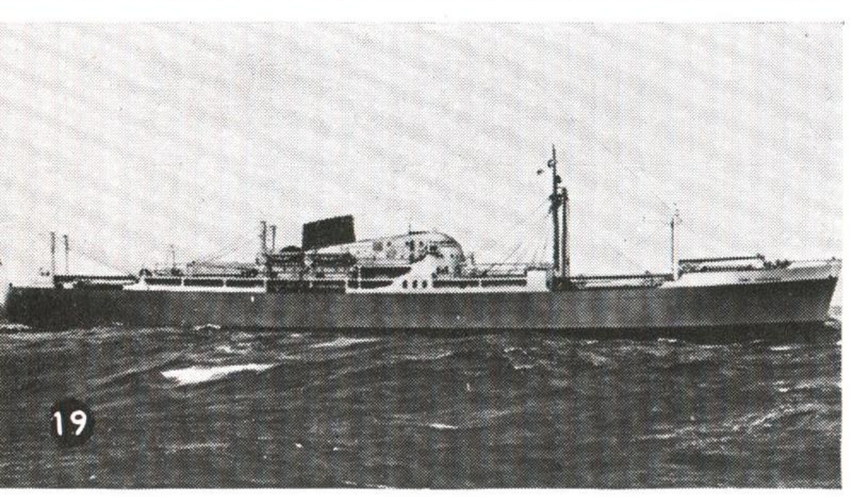

8

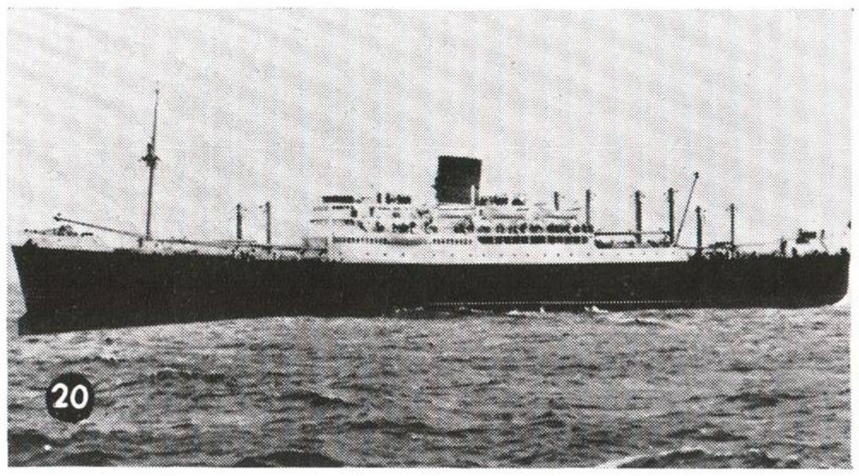

9

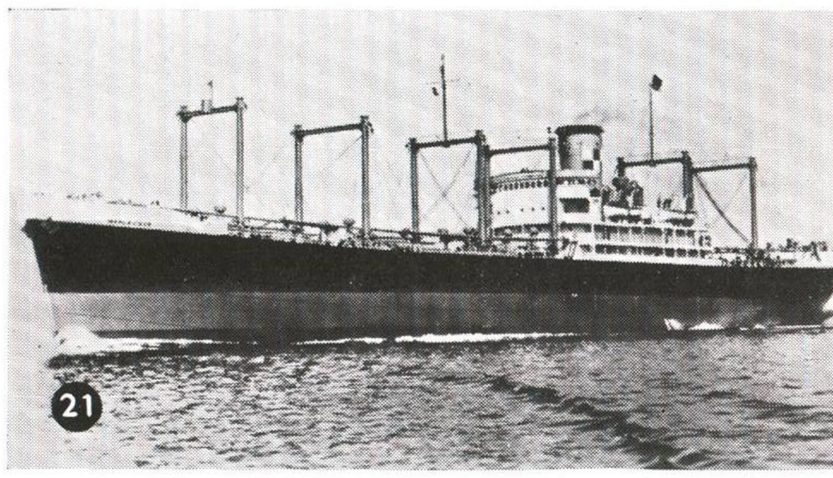

13

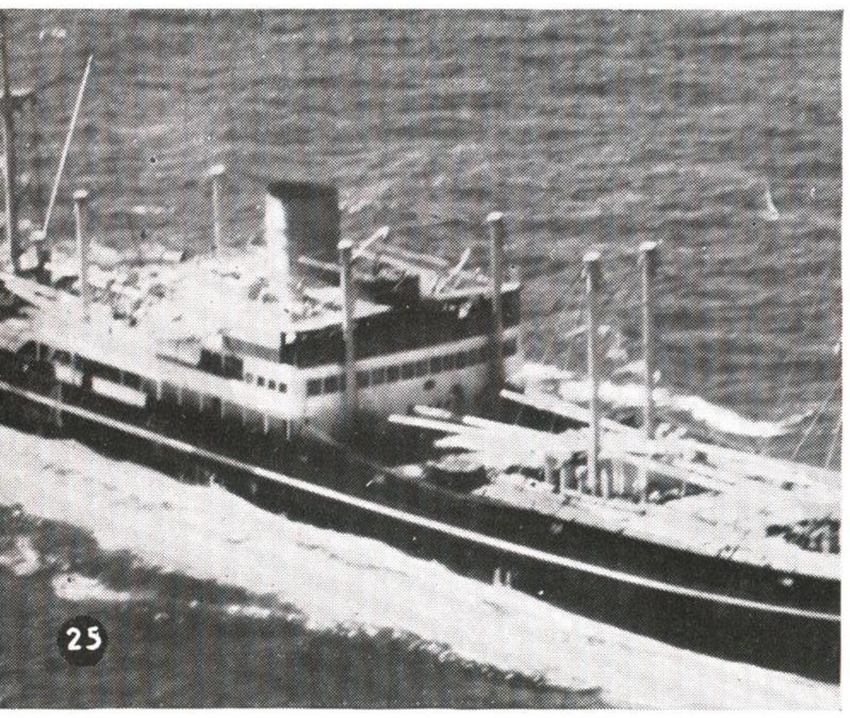

14

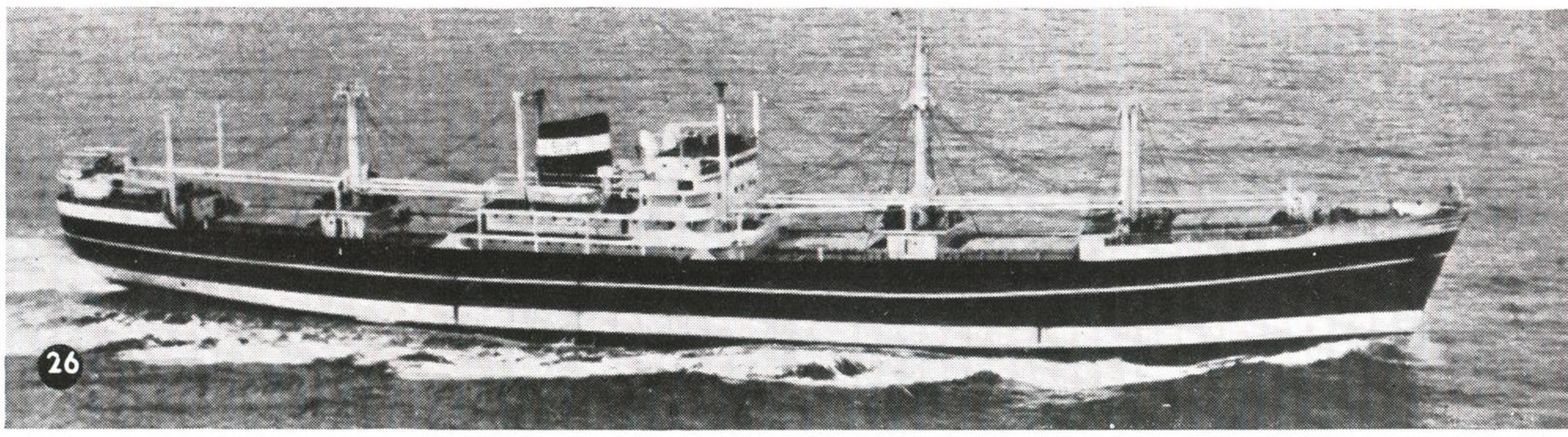

15

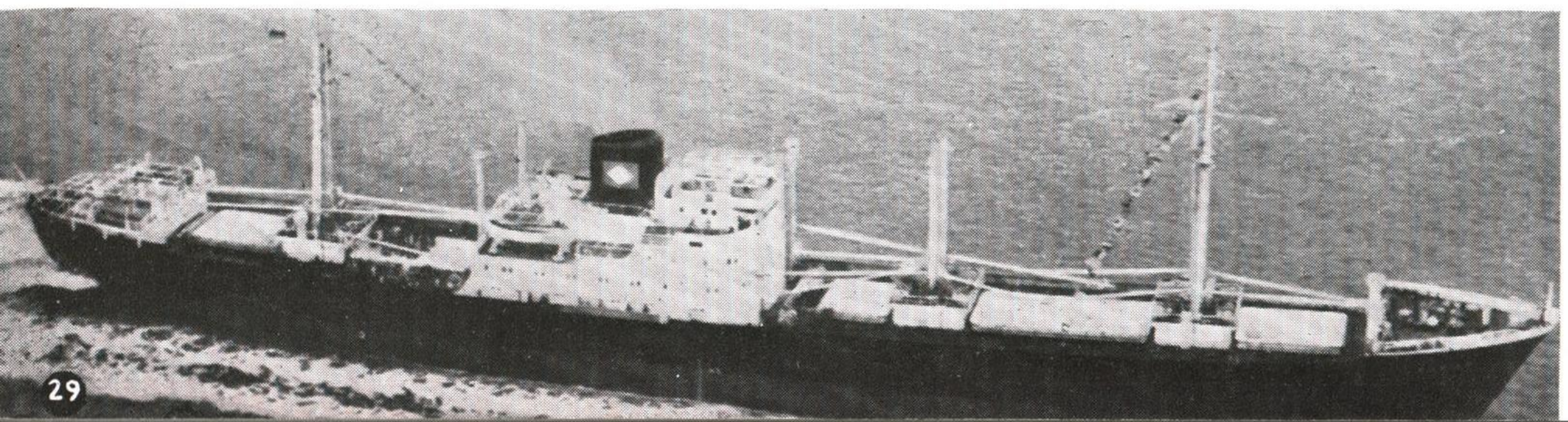

19

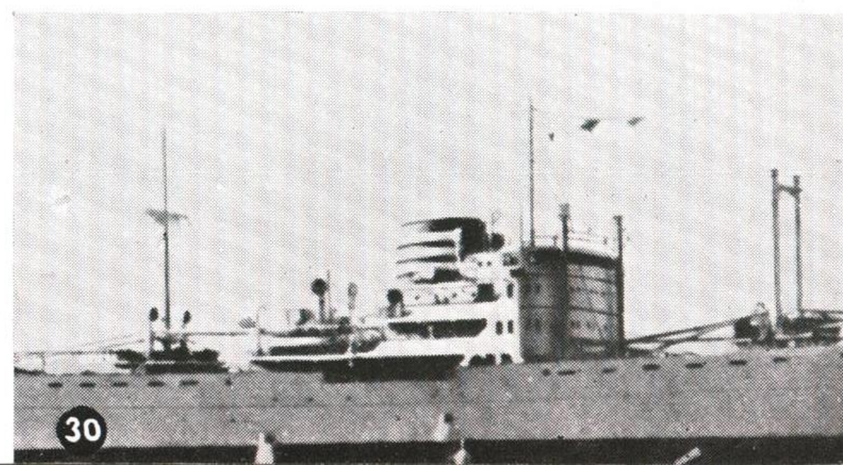

20

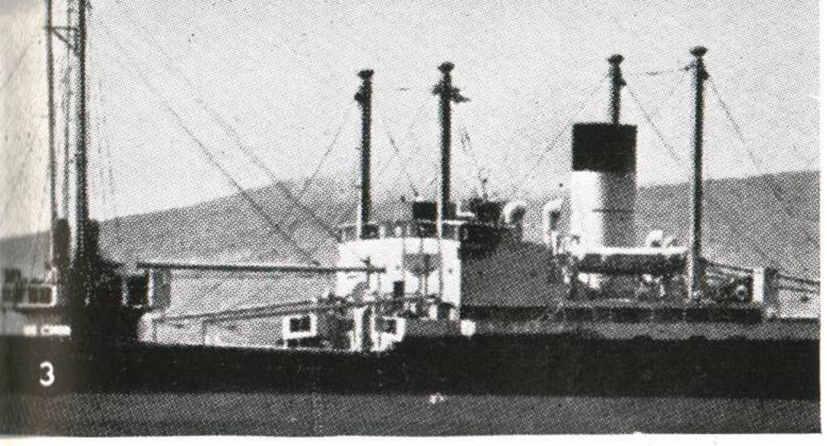

21

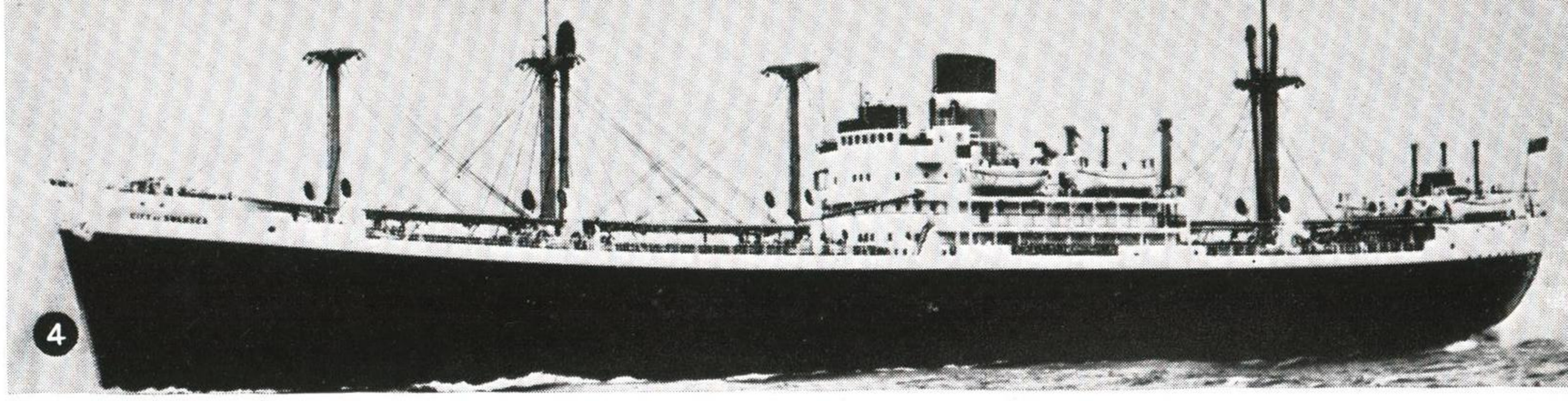

25

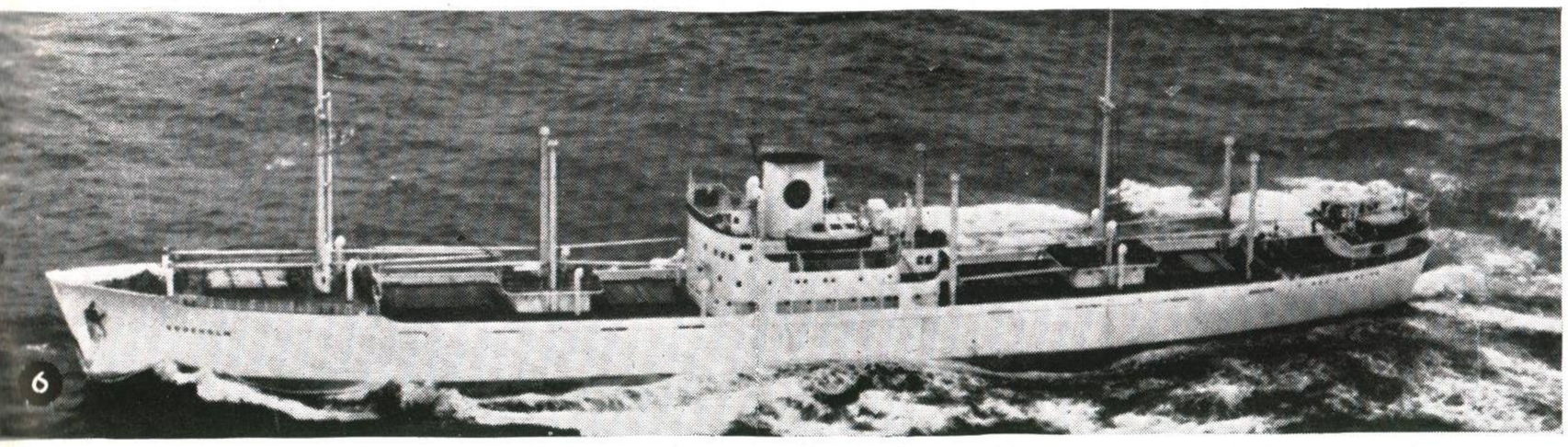

26

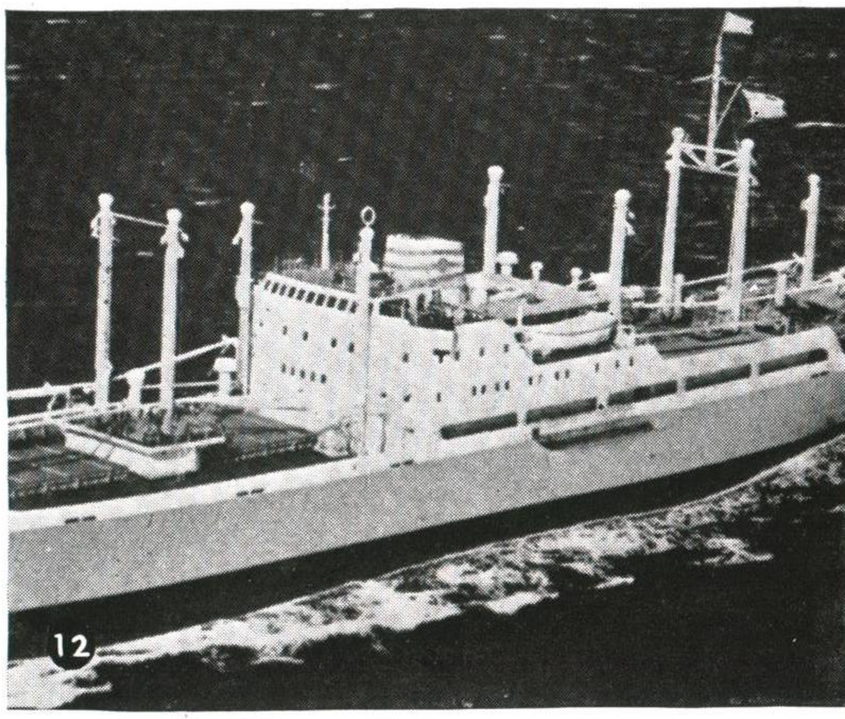

29

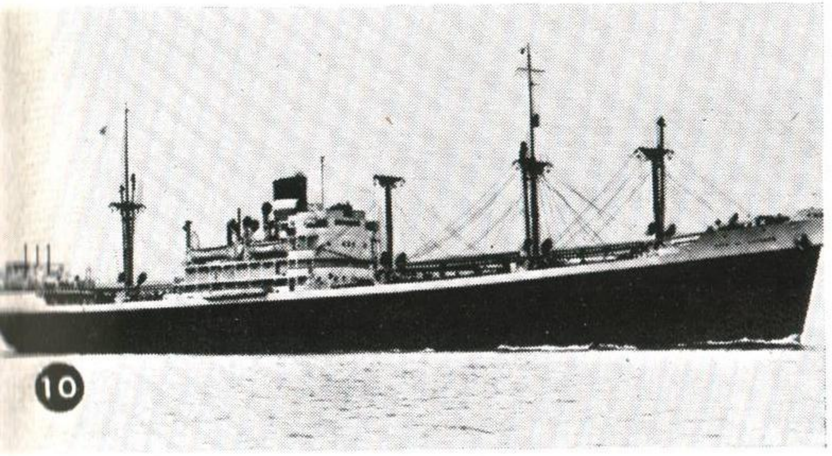

30

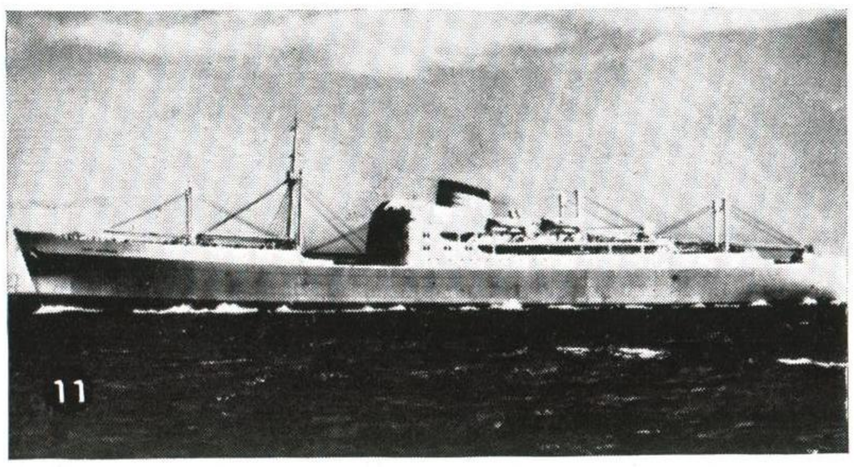

3


4

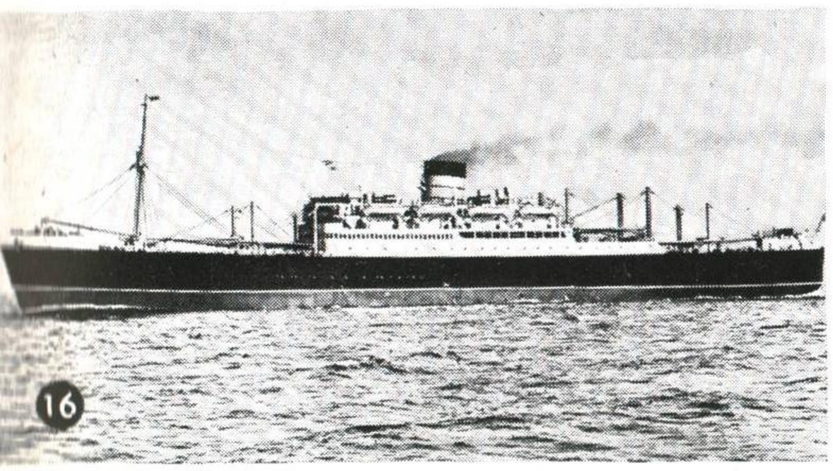

6

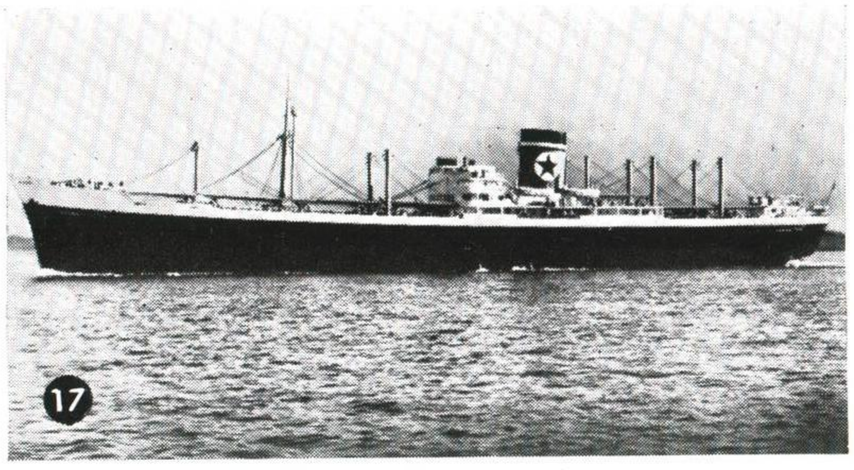

12

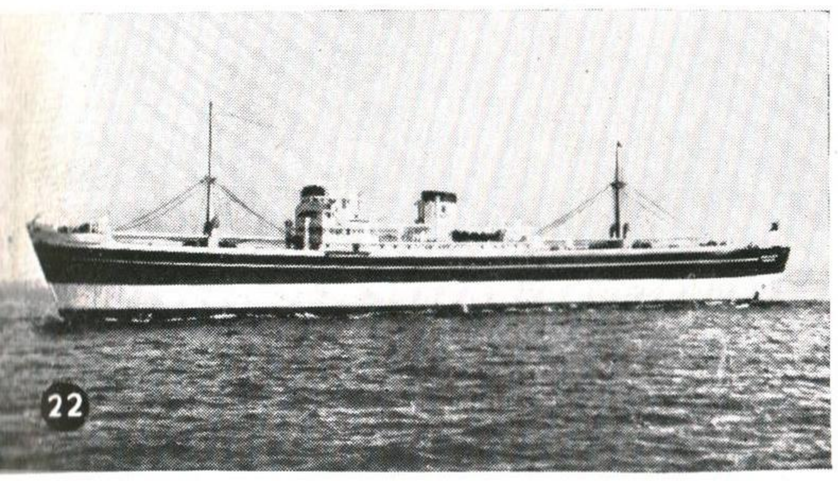

10

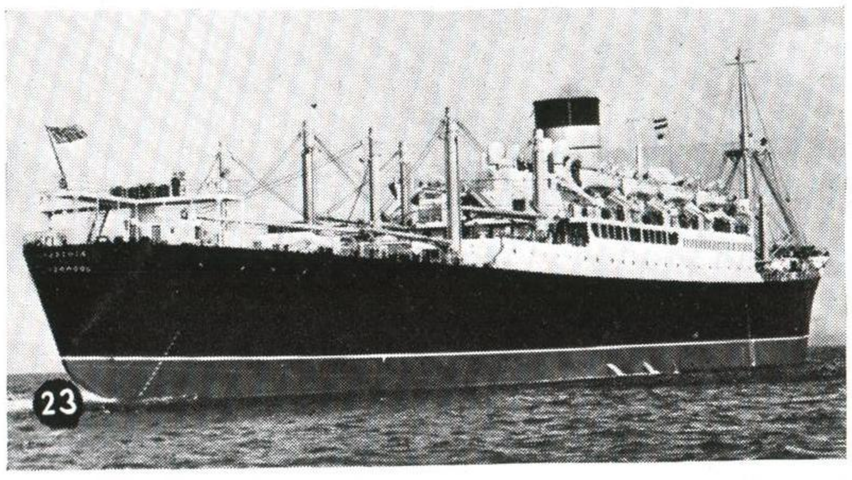

11

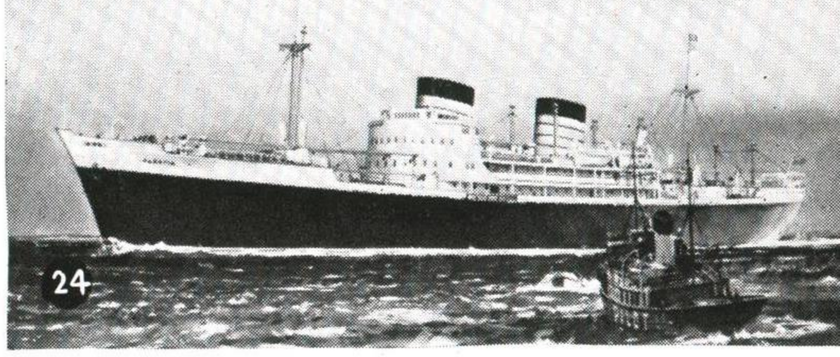

18

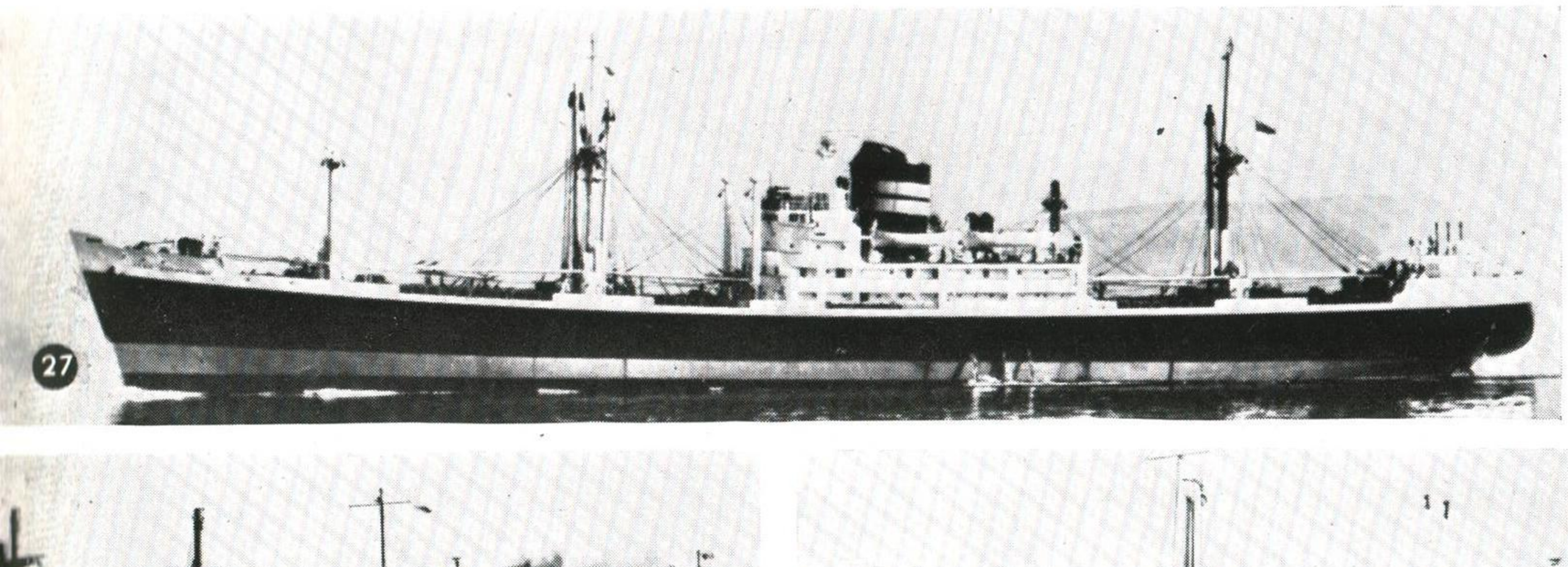

16


17


22

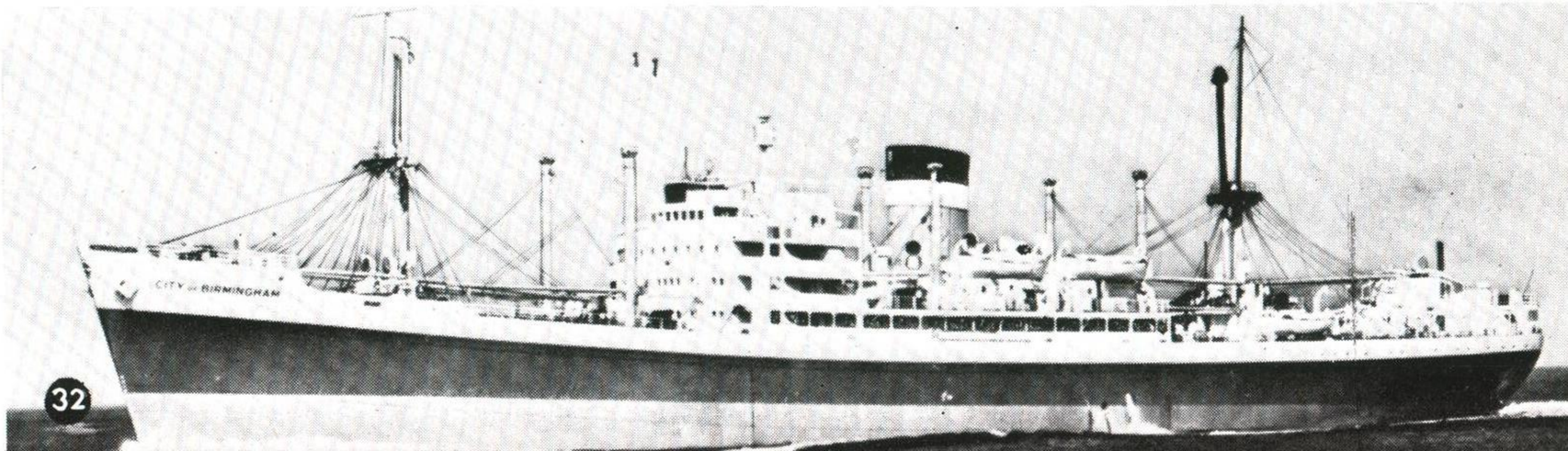

23


24


27


28

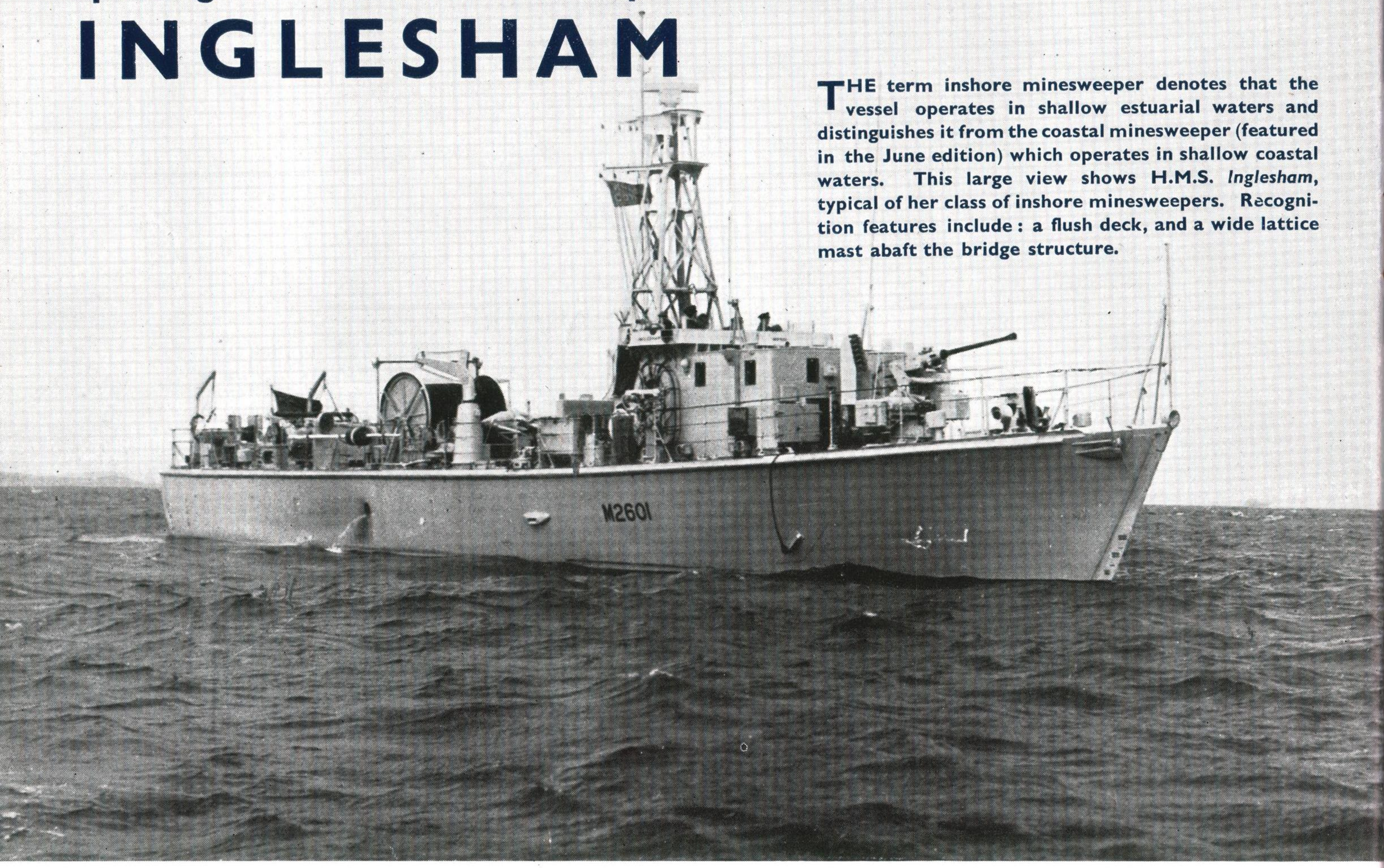

31


32

Spotting the Inshore Minesweeper

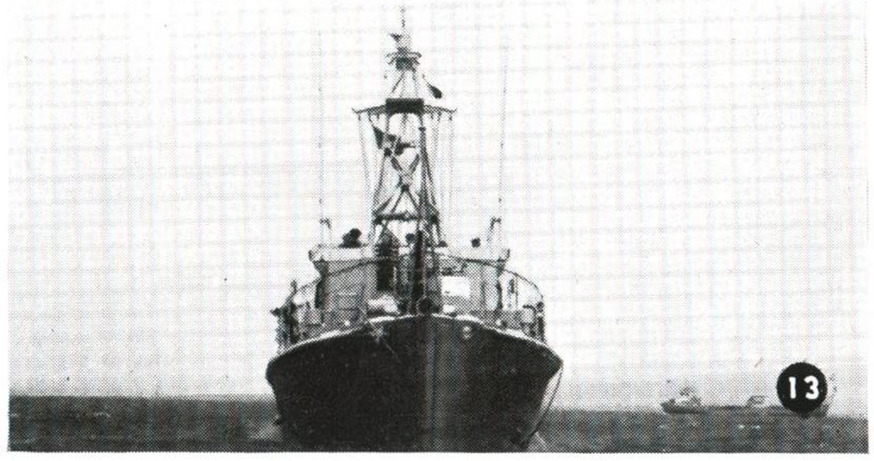
INGLESHAM

THE term inshore minesweeper denotes that the vessel operates in shallow estuarial waters and distinguishes it from the coastal minesweeper (featured in the June edition) which operates in shallow coastal waters. This large view shows H.M.S. *Inglesham*, typical of her class of inshore minesweepers. Recognition features include: a flush deck, and a wide lattice mast abaft the bridge structure.





12



13



14

15

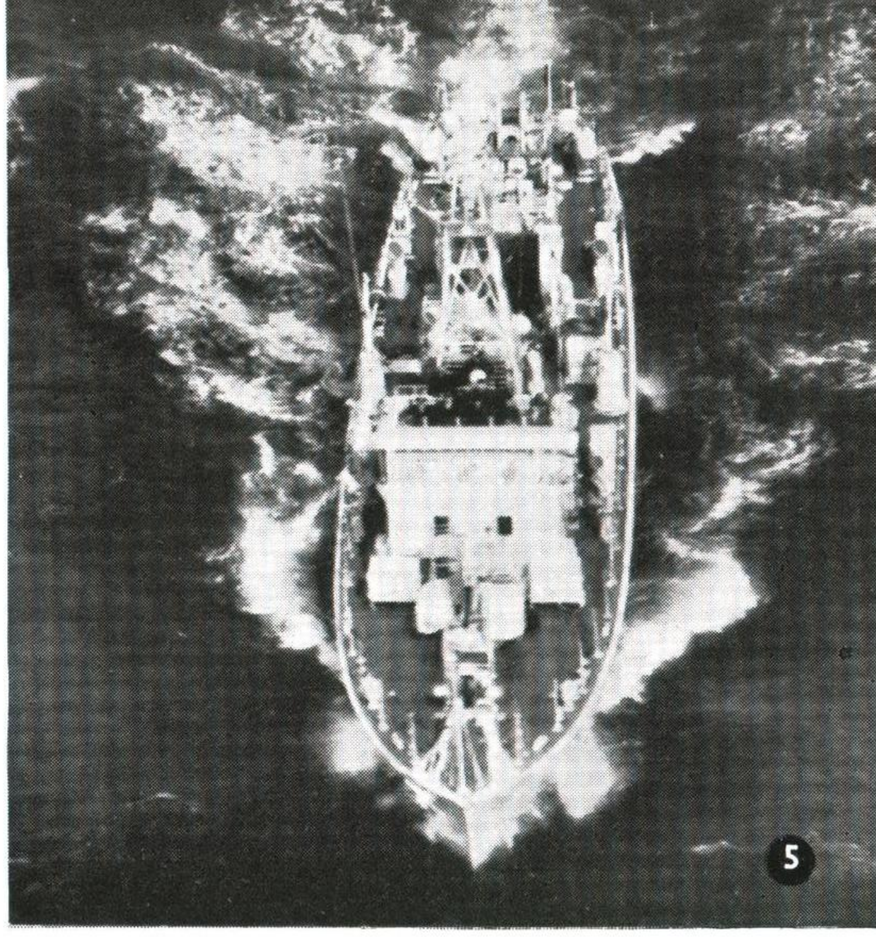
16











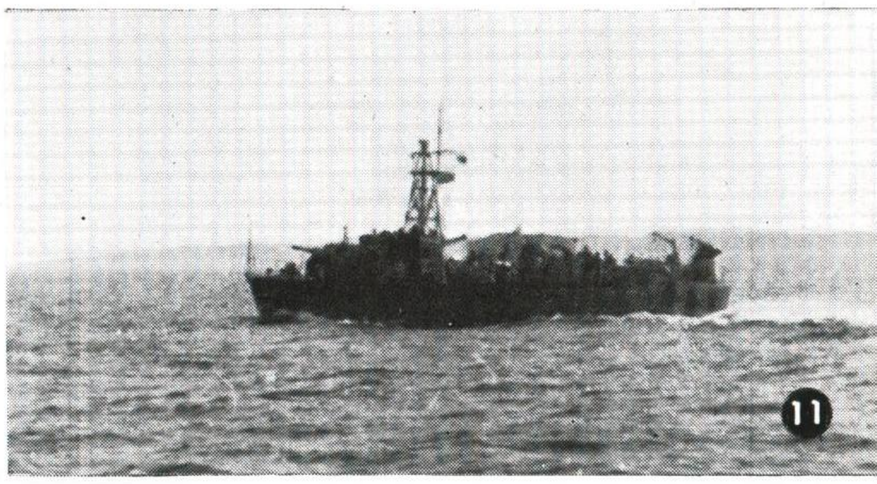








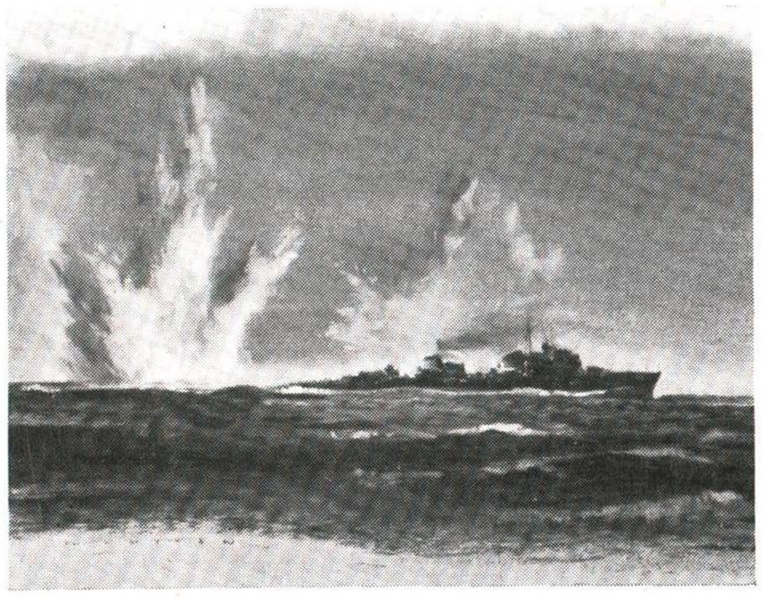




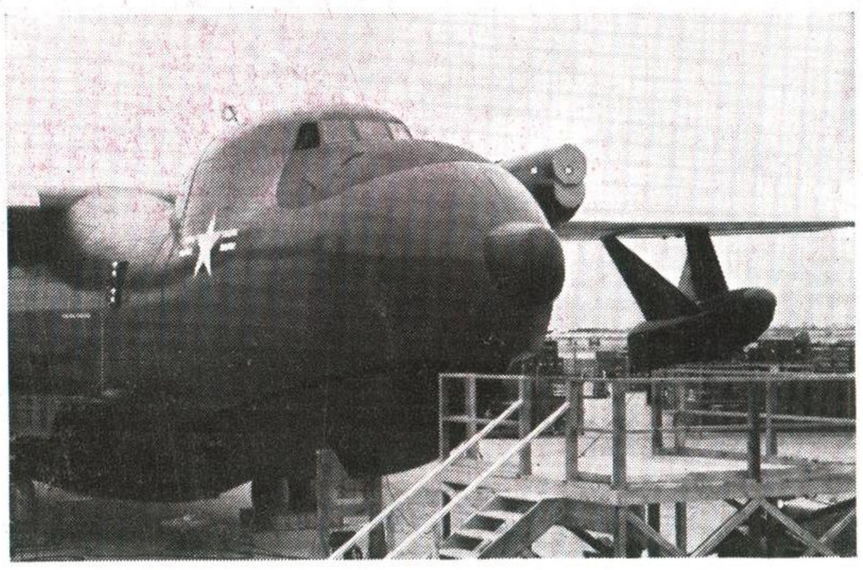
Add other points from the large view and use them to deduce which of the target views are H.M.S. *Inglesham* and which are not. To carry out this exercise:—(1) list the numbers (1 to 18); (2) identify a few easy and more obvious *Ingleshams* to start with; taking care to write down the name "*Inglesham*" each time it is identified; (3) identify the more difficult views; (4) cross-check your answers with other target views before consulting the solutions on the rear cover. Watch out for "jokers"; these need not be identified beyond being able to say "not *Inglesham*". It is much more important to be accurate in identification than speedy in this exercise.







Cover Photo : A fine impression by Mr. Frank Wootton of a Russian "O" Class 1 destroyer. A feature on the Ognevoi Class appeared in the October 1953 *Journal*.







This series of photographs shows the stages of opening the loading door and ramp of the new Convair R3Y-2" Flying Landing Craft." This aircraft is a development of the R3Y-1 Tradewind which was featured in "Briefs" in the June, 1954 edition of the *Journal*.

SOLUTIONS TO TESTS AND EXERCISES IN THIS EDITION :

If you are unable to recognise 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. Figures beside main test solutions denote spans to the nearest foot. N/A means not available.

SILLOGRAPHS

		Span
514.	**Otter** (DHC-3)	58
515.	**DH.110**	51
516.	**Corse** (SO 95)	59
517.	**Mystère 4**	N/A
518.	**Savage** (AJ-1)	71
519.	**Sabre** (F-86A)	37
520.	**Neptune** (MR Mk. 1)	104
521.	**Vulcan** (B Mk. 1)	N/A
522.	**Super Constellation** (WV-2)	123
523.	**Sea Venom** (FAW Mk. 20)	42
524.	**Gannet** (AS Mk. 1)	54
525.	**Firefly** (AS Mk. 6)	41
526.	**Super DC-3** (R4D-8)	90
527.	**Saab J-29**	36
528.	**Guardian** (AF-2S)	61
529.	**Pembroke** (C Mk. 1)	64
530.	**Sunderland** (GR Mk. 5)	113
531.	**Freighter** (Mk. 31)	108

ADVANCED

		Span
628.	**Shackleton** (MR Mk. 1 & 2)	120
629.	**Oxford** (T Mk. 2)	53
630.	**Seamew** (AS Mk. 1)	55
631.	**Meteor** (NF Mk. 11)	43
632.	**Provost** (T Mk. 1)	35
633.	**Aiglet Trainer**	32
634.	**Boxcar** (C-119)	109
635.	**Vampire** (NF Mk. 10)	38
636.	**Beaver** (Mk. 2)	48
637.	**Harvard** (T Mk. 2)	42
638.	**Breguet Vultur**	55
639.	**Canberra** (B Mk. 2)	64
640.	**Neptune** (MR Mk. 1)	104
641.	**Canberra** (B Mk. 2)	64
642.	**Britannia**	140
643.	**Heron** (Series 2)	71
644.	**Pembroke** (C Mk. 1)	64
645.	**Anson** (C Mk. 19)	57

ELEMENTARY

		Span
506.	**Skyray** (F4D-1)	33
507.	**Venom** (NF Mk. 2)	*38
508.	**Savage** (AJ-1)	71
509.	**MiG-15**	33
510.	**Cutlass** (F7U-3)	39
511.	**Stratojet** (B-47B)	116
512.	**Sabre** (F-86D)	37
513.	**Canuck** (CF-100)	52
514.	**RB-36E**	230
515.	**Vampire** (T Mk. 11)	38
516.	**Swift** (F Mk. 4)	32
517.	**Banshee** (F2H-3)	45
518.	**Otter** (DHC-3)	58
519.	**Bird Dog** (XL-19B)	36
520.	**Sikorsky S-55** (HRS)	†40
521.	**Vautour** (SO.4050)	49
522.	**Beaver** (DHC-2)	48
523.	**Expediter** (JRB)	48

* NF Mk. 51 in Sweden as illustrated.
† Fuselage length.

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 for recognition charts, diagrams, etc., should be addressed through the normal official publications 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.

VERY ADVANCED SPOTTING

1.	**Saab J-29**	15.	**Mystère**	29.	**Mystère**
2.	**Swift**	16.	**Saab J-29**	30.	**Swift**
3.	**Mystère**	17.	**Swift**	31.	**F-100**
4.	**F-100**	18.	**Saab J-29**	32.	**Saab J-29**
5.	**Saab J-29**	19.	**Mystère**	33.	**F-100**
6.	**Swift**	20.	**F-100**	34.	**Swift**
7.	**Saab J-29**	21.	**Mystère**	35.	**Saab J-29**
8.	**Mystère**	22.	**Swift**	36.	**Swift**
9.	**F-100**	23.	**Saab J-29**	37.	**F-100**
10.	**Saab J-29**	24.	**F-100**	38.	**Mystère**
11.	**Mystère**	25.	**Mystère**	39.	**F-100**
12.	**F-100**	26.	**Swift**	40.	**Mystère**
13.	**Swift**	27.	**Mystère**	41.	**Swift**
14.	**F-100**	28.	**Swift**	42.	**F-100**

INGLESHAM—All Ingleshams

CARGO LINERS

All **Cargo Liners** except Nos. 16, 20 and 23, which are **Passenger-Cargo Liners.**

SPOT THE PROVENCE!

All are **Breguet 763 Provence** (Deux Ponts) except:—
No. 5 **Beverley** (C Mk. 1)
No. 15 **York** (C Mk. 1)

MYSTÈRE IVA

All **Mystère IVA** except:—
No. 7 **Mystère 2**
No. 10 **Mystère 2**
No. 12 **MiG 15**
No. 18 **Mystère 2**

54,600 7/54

Printed under the Authority of H.M. Stationery Office by Williams, Lea & Co., Ltd., London