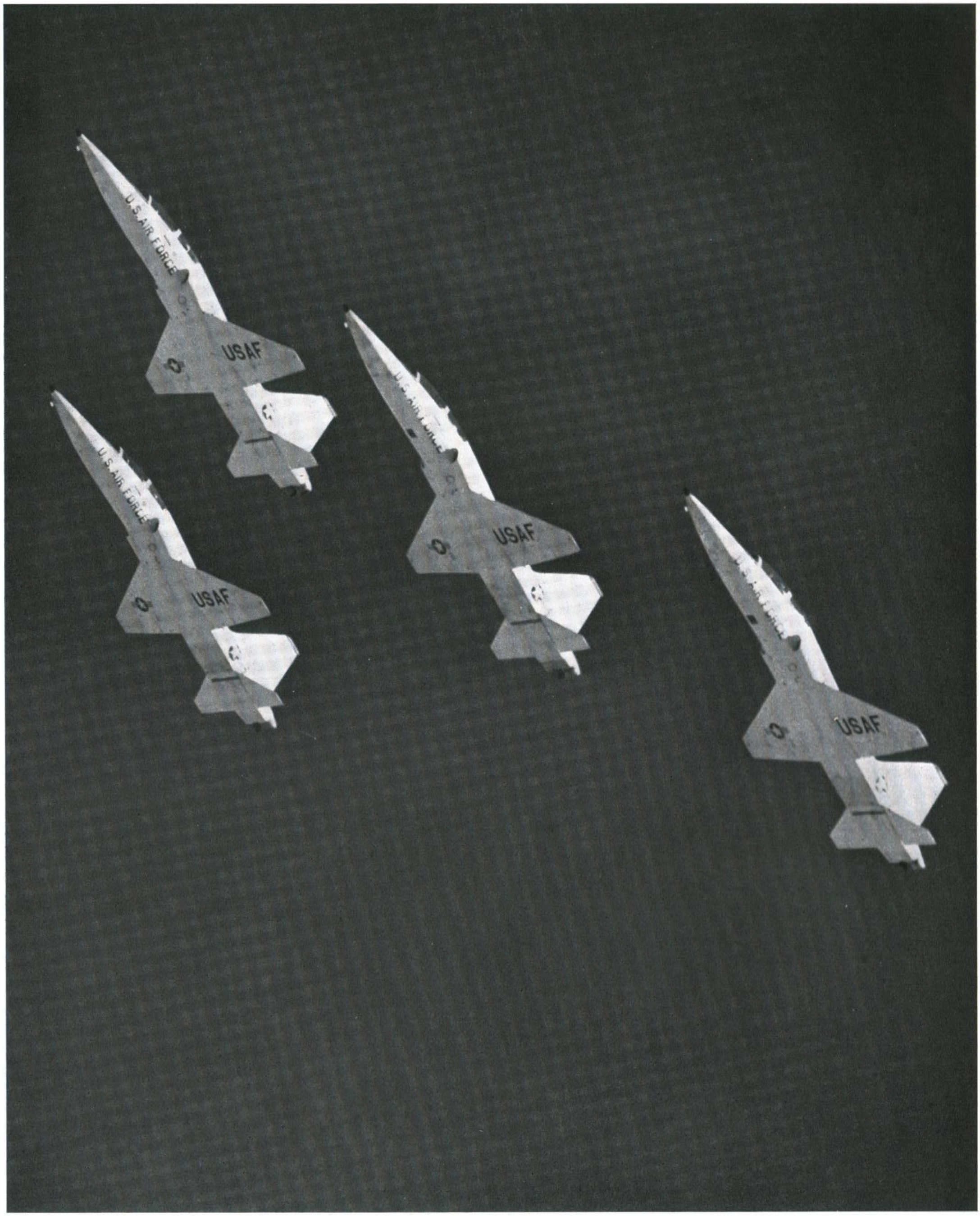
THE ROYAL OBSERVER CORPS

RECOGNITION

Journal

and R.O.C. GAZETTE

Vol. 3 APRIL 1961 No. 4



THOUGH distinctive in shape and probably very familiar to you, did you in fact identify these aircraft at first glance? If you did, you're not the chap we're after. If you didn't, you can do worse than turn back to the lesson on pages 12 and 13 of the January, 1961, Journal, *where you can get in a lot of practice identifying these aircraft. They are, in fact, Northrop T-38A Talon two-seat trainers of the U.S.A.F., here seen climbing into the sky over the Mojave desert in California in the first official formation photograph of these supersonic trainers to be released. Talons are replacing the subsonic T-33 Shooting Stars as standard U.S.A.F. jet trainers.*

APRIL 1961 Vol. 3 No. 4

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CONTENTS

Problems of Airliner Operation at Mach 3

THAT THE UNITED STATES has accumulated just two minutes of flight time at Mach 3 compared with about 50,000 hours on B-47s at the time when commercial jet programmes were launched was a statement attributed recently to an official of the National Aeronautics and Space Administration. This throws into sharp relief the problems of building and operating an airliner designed to fly for prolonged periods at three times the speed of sound.

Recently, Dr. A. E. Russell, leader of the British Aircraft Corporation team engaged on a design study of a supersonic airliner project, and technical director of Bristol Aircraft, made the same point in rather great detail. In his lecture to the Guild of Air Pilots and Air Navigators, he said that many people were puzzled by advocates of the Mach 3 airliner because a "less ambitious speed" seemed to offer a considerably better chance of approaching typical costs in airline operation.

He declared that the aircraft form for Mach 2·2 can have a narrow delta wing whose leading-edge sweep allows sufficient thickness and volume to contain the fuel and main landing gear. The advantage of wing fuel stowage is made possible by a simple device which prevents a free exchange of heat from the surface to the fuel, so that the fuel can perform adequately as the main heat sink for the air-conditioning system. The shape most generally favoured for a Mach 3 airliner appears to be a canard whose delta main wing has moderate sweep and very low thickness. A substantial amount of fuel must be stowed in the fuselage, thus reducing the space available for passengers and freight.

Further uncertainty arose over the extent of flight testing necessary to prove that all aspects of safety would not fall below present airworthiness safety standards. Hitherto, most features adopted for successful civil airliners, including their operating costs, have lagged seven to eight years behind military experience.

Dr. Russell estimated the weight of a Mach 3 airliner carrying the same arbitrary payload as assumed for the Mach 2 airliner at 400,000 lb. against 337,000 lb. for the slower aircraft. Comparing block times, he said that, with both airliners, some 700 miles would be flown in climb and descent at subsonic speeds. The Mach 3 aircraft saves about 30 minutes and 20 minutes over the Mach 2·2 aircraft on a 3,000 nautical mile and 2,000 nautical mile sector respectively.

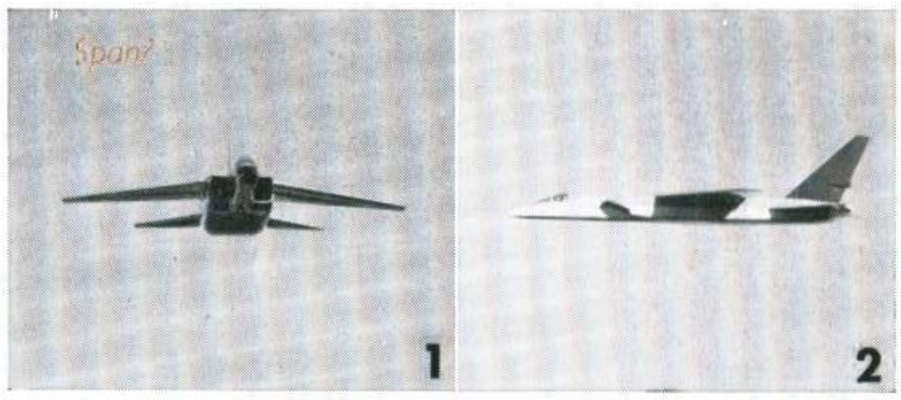
The average cost per pound weight of the faster aircraft would be more because of higher development material and tooling costs, etc. Fifty Mach 2·2 airliners would have to be sold to be an economic proposition for both operator and constructor, while 200 Mach 3 aircraft would have to be sold to achieve the same economic balance.

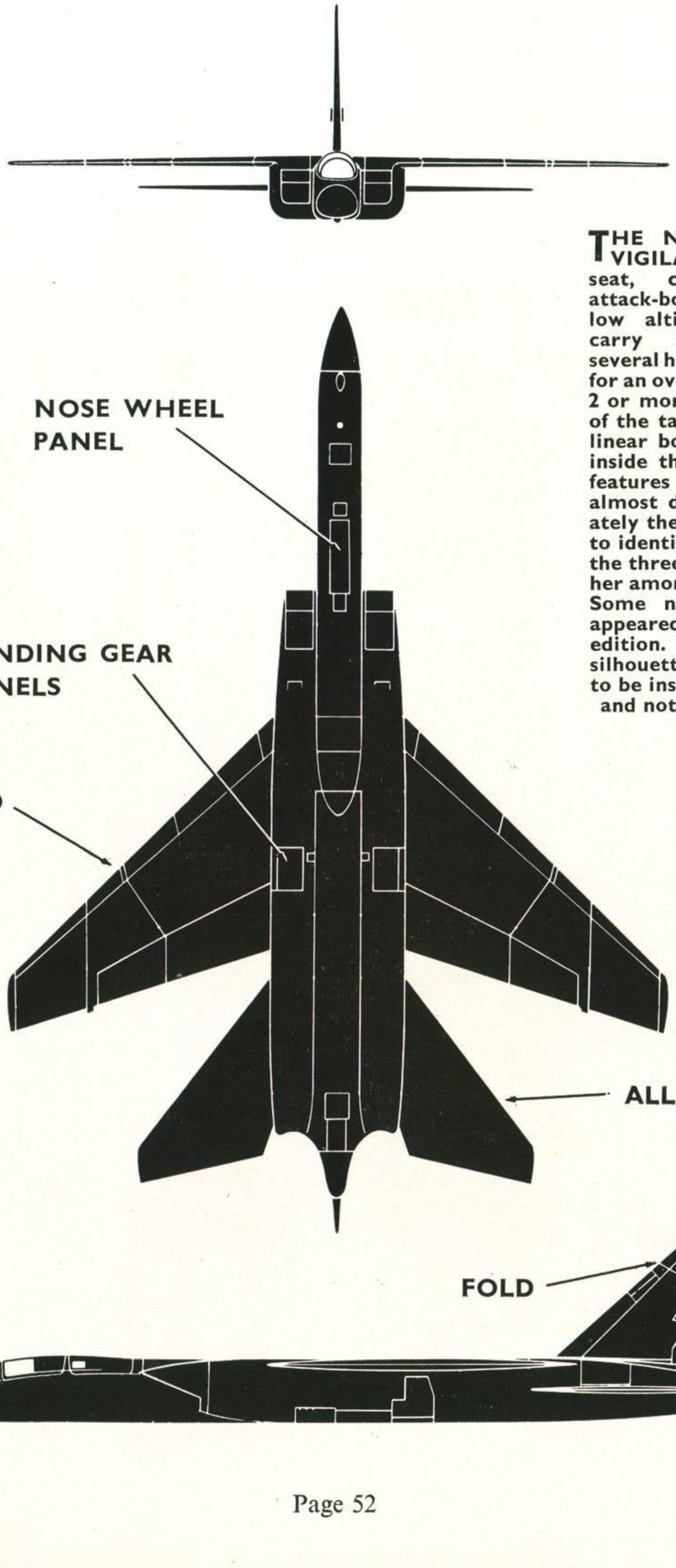
A good deal was said about thermal heating caused by air compression and friction. For the Mach 2·2 aircraft, whose structure would reach a temperature of 120° C., aluminium alloys could be used. Stainless steel or titanium would be needed only in certain limited areas. But the Mach 3 airliner's structure would be heated to a temperature of 275° C. and a complete switch to stainless steel or titanium was necessary. Also, many problems in the aircraft main systems increased in severity as the temperature rose with increasing speed. Air conditioning was one. As has been pointed out, fuel housed in a Mach 2 airliner's wing could be used to dissipate heat extracted by the cabin air conditioning system, but the faster aircraft's fuel tanks, installed in the fuselage, would have to be insulated. Other problems at Mach 3 concerned the cooling of hydraulic systems and electrical components.

Some encouraging things were said about noise; it appeared that with supersonic aircraft life will be a little less disturbed for the outer circles around an airport. On the runway itself, sound pressure levels will only be 2 or 3 decibels higher than Conway-engined aircraft. By the time the 4-mile point after start of roll has been reached, it should be possible while climbing on a gradient of five per cent. to meet the limit suggested for night operation. This is quieter than the present long-range subsonic jet aircraft.

(*The views and opinions expressed in this article are not necessarily held officially.*)

The Vigilante





THE NORTH AMERICAN A3J VIGILANTE is a twin-jet, two-seat, carrier-based, all-weather attack-bomber, intended for high or low altitude operations. It can carry thermo-nuclear weapons several hundred miles and is designed for an over-the-target speed of Mach 2 or more. Bombs are ejected out of the tail through what is called a linear bomb-bay, which is a tunnel inside the rear fuselage. Vigilante features are obviously distinctive, almost defying description—fortunately there is no need to. To learn to identify this weapons system, use the three-view silhouette to identify her amongst the 31 targets opposite. Some notes about the Vigilante appeared in our October 1960 edition. The annotations on the silhouette, incidentally, are intended to be instructive in technical details and not in the identification sense.

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Her Ugliest Aspect
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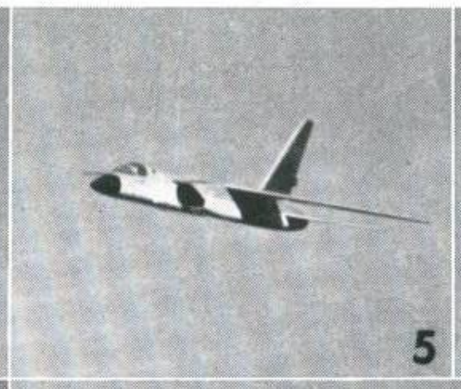
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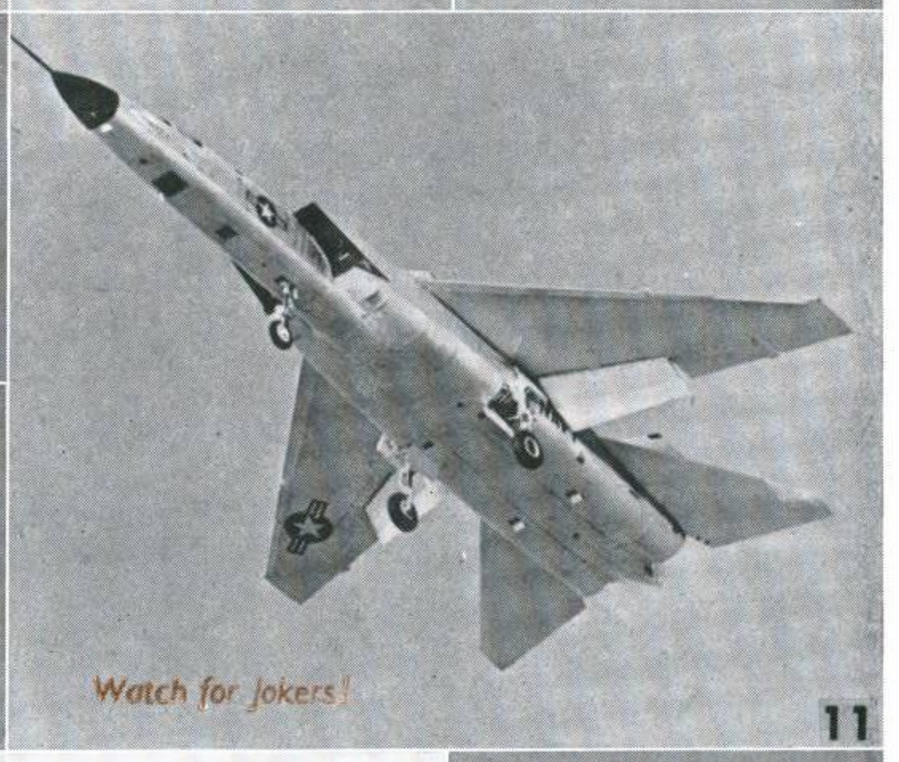
Watch for Jokers!
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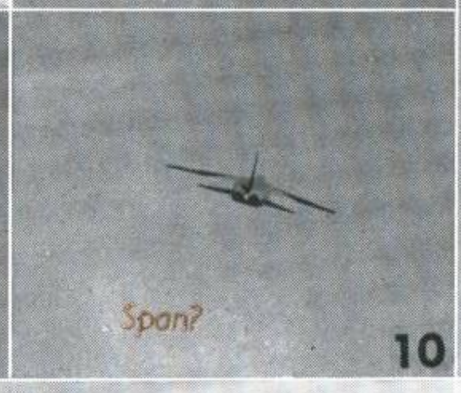
Span?
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Her Best Aspect
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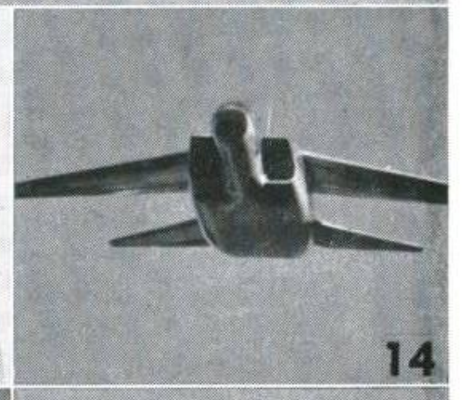
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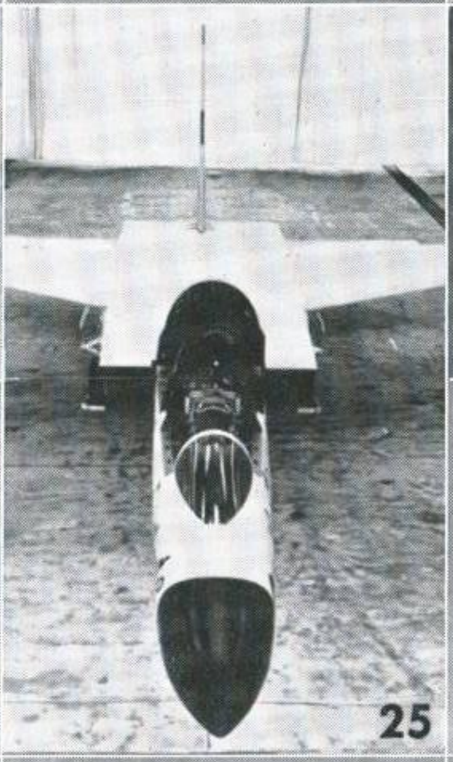
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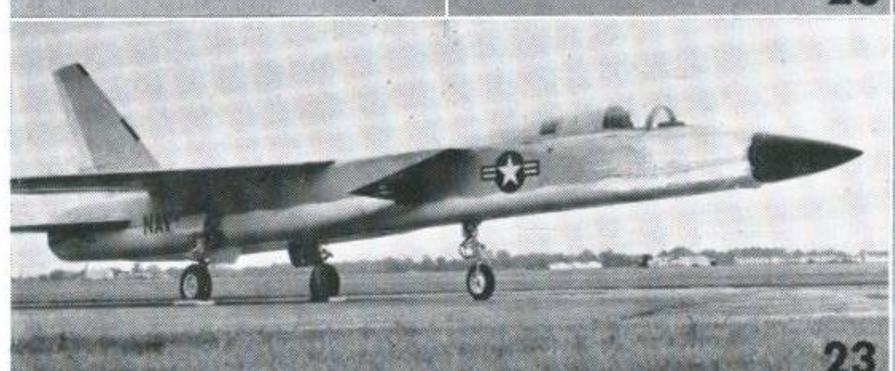
NAVY
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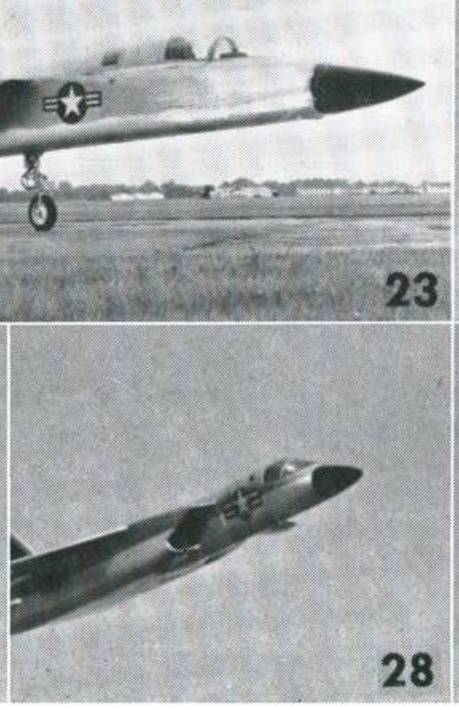
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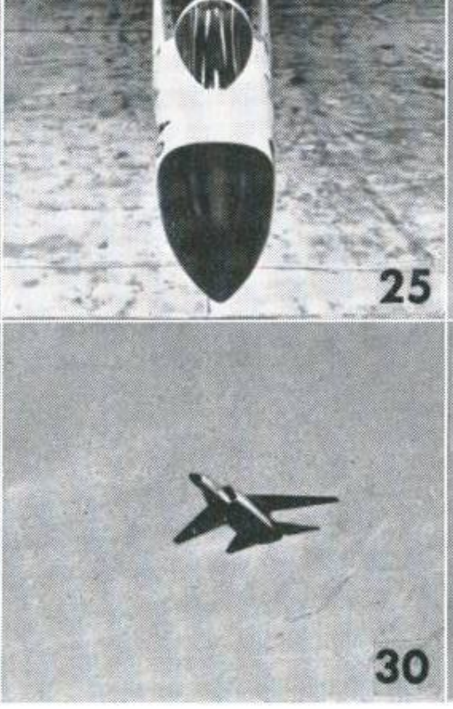
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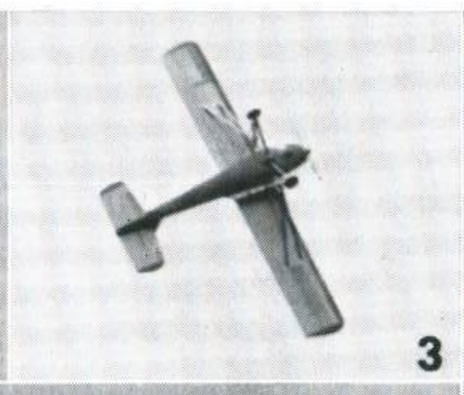
Span?
31

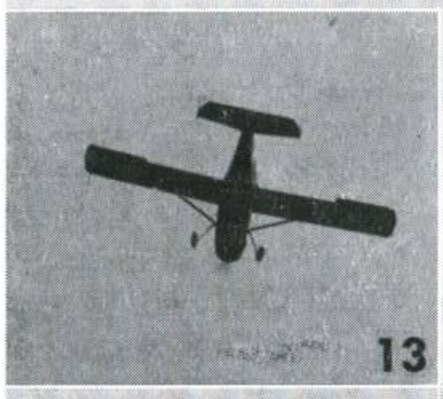
Solutions on the cover

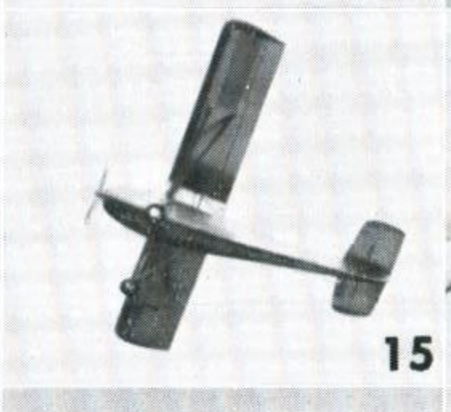
Brigadyr

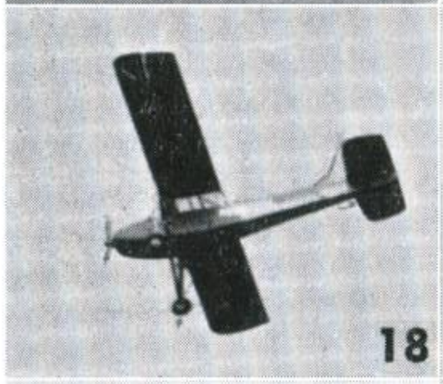
A Czech 4-seat light transport, sportplane or cropsprayer which also has a military version for duties including liaison, air ambulance, decontamination, parachute-jumping and photo-recce. Distinctive in shape? Yes, but you need to learn to identify it just the same. In addition to the key-view at the top of the page we also tell you that target No. 9 is a Brigadyr. Use these two views together to find out how many other Brigadyrs appear in this lesson.

Full Lesson Instructions are on Page 55 and the solutions appear on the cover.









In Passing . . .

Lesson Instructions

To obtain the maximum benefit from the identification lessons in the *Journal*, you should carry out carefully the following procedure.

1. Read all the text associated with the lesson. This may contain special lesson instructions and background information on the aircraft, ship or tank concerned.
2. Prepare a list of the target numbers. This is important as you need not tackle the targets in numerical order.
3. Identify the target pictures by comparing them with the key-views, starting with the easy ones first so as to gain experience and using targets you have already identified to help you solve the more difficult ones.
4. When certain of the identity of a target, write down its name immediately against the appropriate number on your prepared list. This is a most important part of the procedure.
5. Lessons should not be hurried or given a time limit. So far as beginners are concerned, it is more important to identify accurately rather than quickly; speedy identification will come with experience.
6. Don't try to memorise.

"I told you those jet-pipes are no good for nesting in!"

You'll be surprised to know that there are still Boeing B-17s flying and doing useful work so many years after the war. These veteran Flying Fortresses have undertaken a variety of odd jobs. Among other things, one B-17 was made into a missionary plane and others have become transports to supply mining camps in the high Andes and to spray forests in Canada. Since 1947 three B-17s have been making aerial maps in Philadelphia. To date these three veterans have mapped more than 2,000,000 square miles of the world and are still working hard year in and year out.

BOOKS

"The Observers Book of Aircraft," by WILLIAM GREEN. 288 pp. (*illus.*). Published by Frederick Warne & Co., Ltd. at 5*s*.

This 1961 edition of "The Observers Book of Aircraft" is memorable in that it is the tenth of these fine books to appear and the standard is as high as ever. The book does not claim to be a comprehensive anthology but confines itself to a hundred and fifty aircraft which are currently being developed or are operational. This includes last year's aeronautical débutantes and aircraft featured in previous editions which have been extensively modified to improve performance or widen their operational use, as for example, with the Neptune. The result is a comprehensive coverage of all up-and-coming aircraft and what is more the book appears to suffer rather less than usual from the occupational hazards of all such books—the length of the printing schedule. All in all, a well produced book well worth the money.

"Jane's All the World's Aircraft, 1960–61," compiled and edited by JOHN W. R. TAYLOR. 574 pp. (*illus.*). Published by Jane's All the World's Aircraft Ltd., at 105*s*.

The annual event of the publication of "Jane's" has additional significance this year with the take-over as Editor by John Taylor; as one expected, he is as encyclopaedic and as accurate as his predecessors, and yet has leavened the traditional make-up by minor but valuable additions to specifications, given more space to sailplanes and gliders, and above all included no fewer than 702 new illustrations out of a grand total of 1,176!

Without wishing to belittle so magnificent a volume, one might suggest that there is still room for improvement in section titles. The descriptions of heavier-than-air aircraft corrected to September 30th, 1960—the major part of the book, of course—are titled "All the World's Aeroplanes," but indexed as "Aircraft," and do in fact include helicopters, hovercraft, ornithopters and (as already indicated) sailplanes and gliders. The overall title should, it is submitted, be "All the World's Aircraft and Aero Engines," with the aircraft subdivided into sections: A, Heavier-than-Air (including target drones and the like, but excluding those under B); B, Space Vehicles and Guided Weapons; and C, Lighter-than-Air.

G.D.H.L.

"D.H.: An Outline of de Havilland History," by C. MARTIN SHARP. 419 pp. (*illus.*). Published by Faber & Faber, Ltd., at 42*s*.

This is far more exciting and evocative than the general run of company histories. Not only has Mr. Sharp a wonderful narrative to unfold, but with his special knowledge of the people, places and machines involved he has contrived a most fitting salute to fifty years of leadership in the air, harking back to Geoffrey de Havilland's pioneer flights in 1910.

Mr. Sharp modestly refers to his work as a record of the "bare facts," and hopes that others will "bring them to life." His readers will surely agree with your reviewer that though this may be in essence a slice of industrial history, the human interest is warm and rings true.

G.D.H.L.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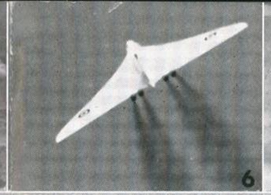
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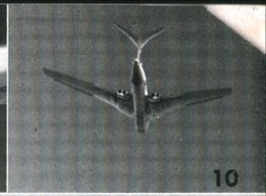
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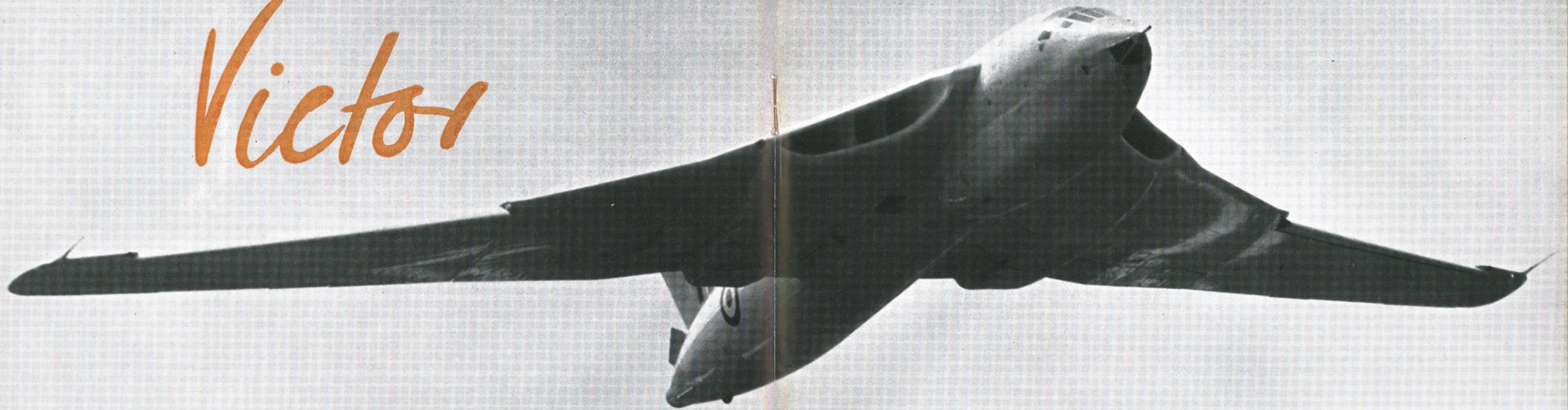
Victor



A striking aeroplane with many distinguishing features, such as the Victor, is not necessarily one on which identifying training can be avoided. There's many a slip . . . between seeing and saying precisely what you are seeing—all for want of experience. Identify the Victors in the two rows of targets at the top and bottom of this page. Our solutions are on the cover.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Page 56


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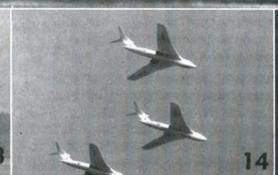
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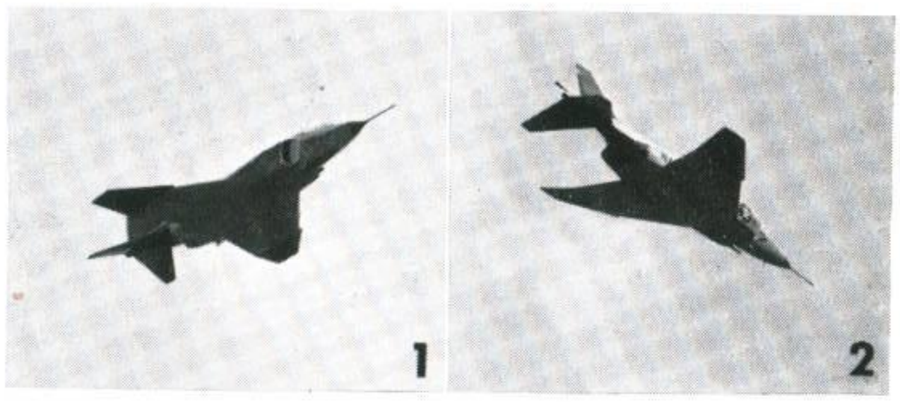
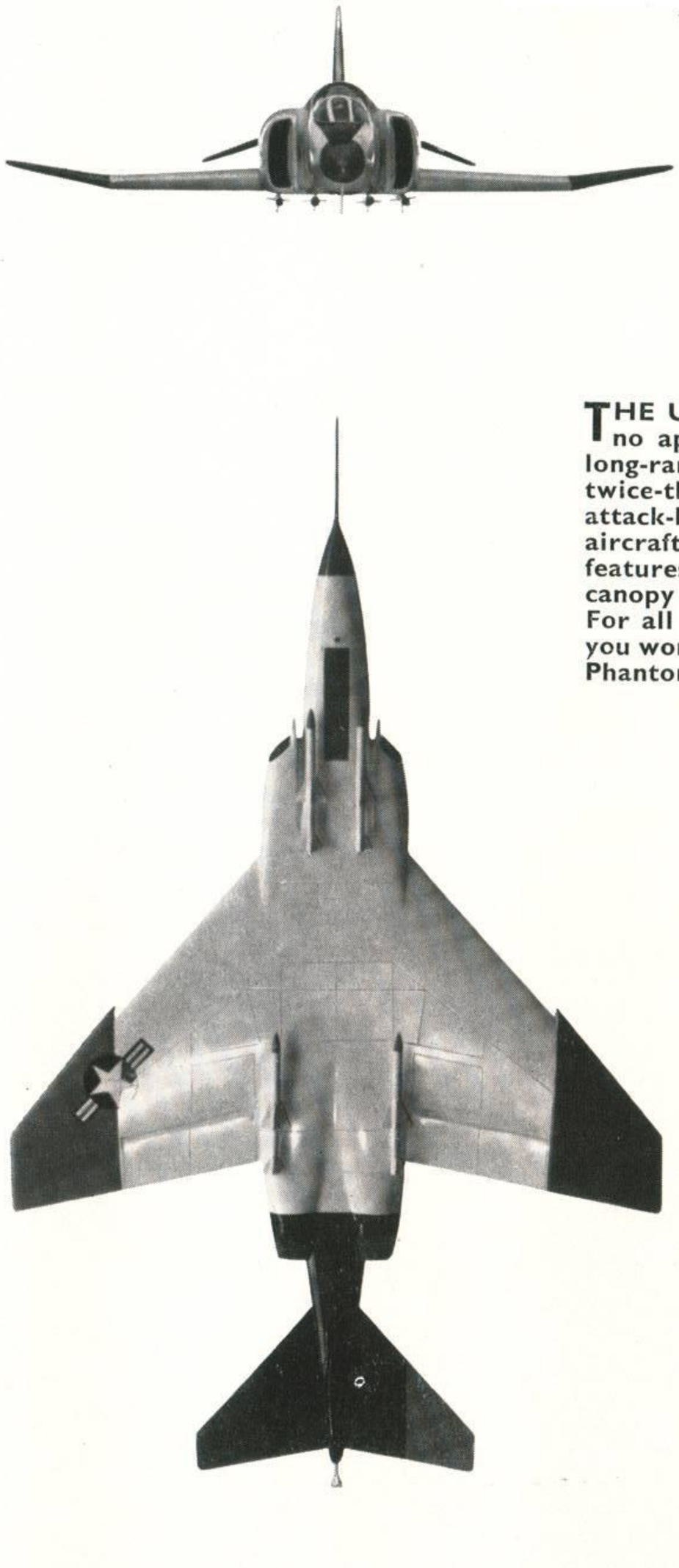
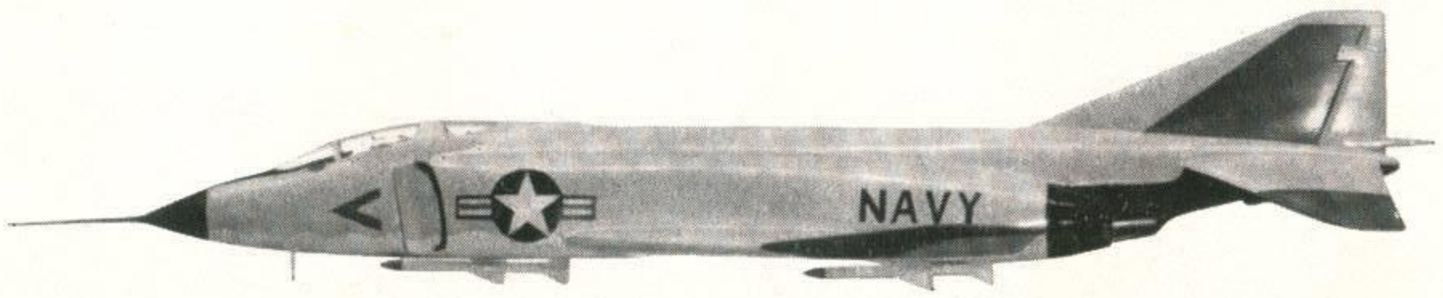
PHANTOM II





THE U.S. NAVY'S current pride and joy is no apparition, she is a twin-jet, two-seat, long-range, all-weather, record-breaking twice-the-speed-of-sound interceptor and attack-bomber. Like many modern military aircraft, she is no beauty. Consider her features: drooping tail; broad, squat fin; flush canopy and, worst of all, upturned wing tips. For all that you must learn to identify her, you won't learn by just looking. Sort out the Phantoms in this ghostly group.

Span 38 feet



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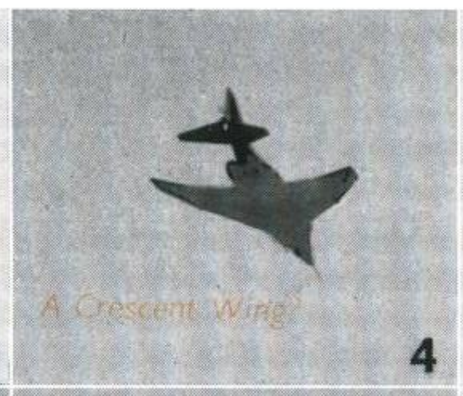

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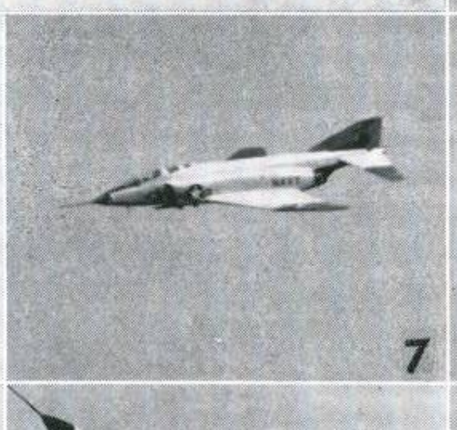

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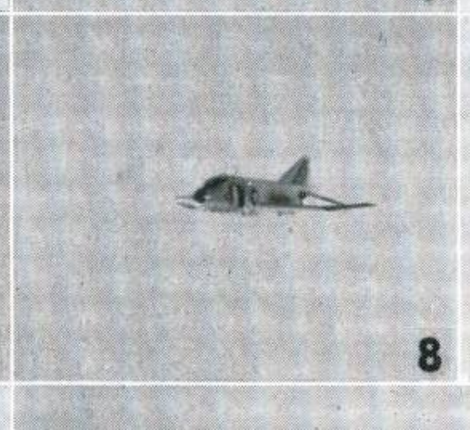

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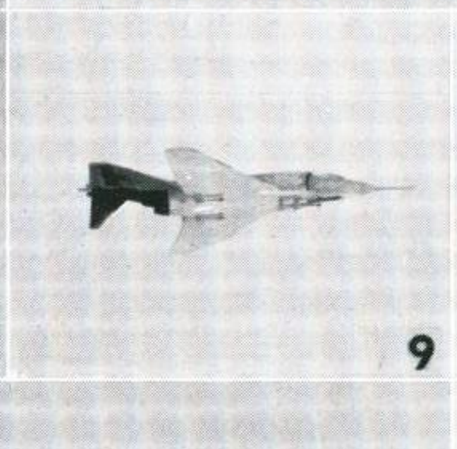

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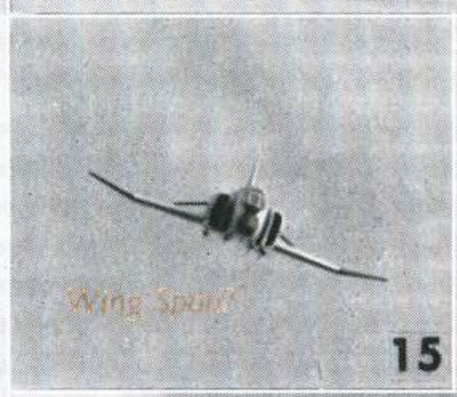

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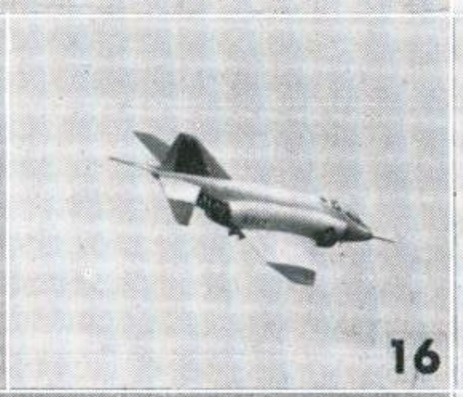

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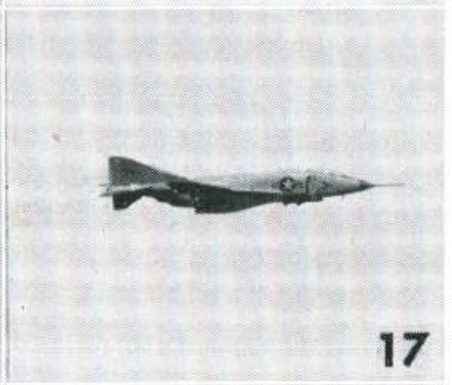

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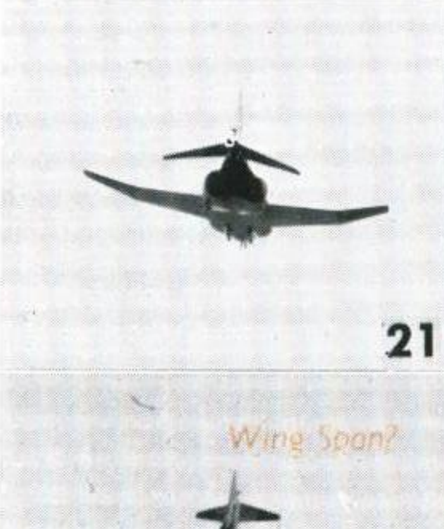

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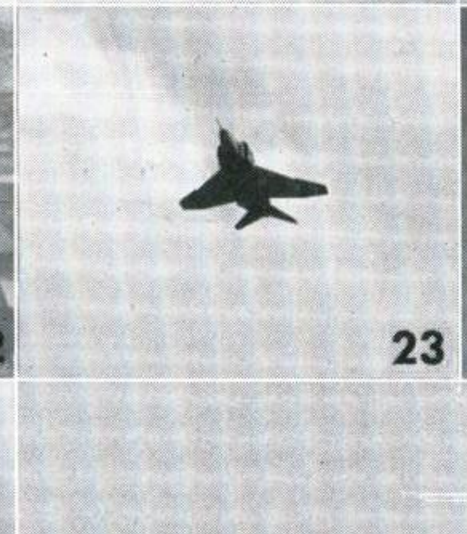

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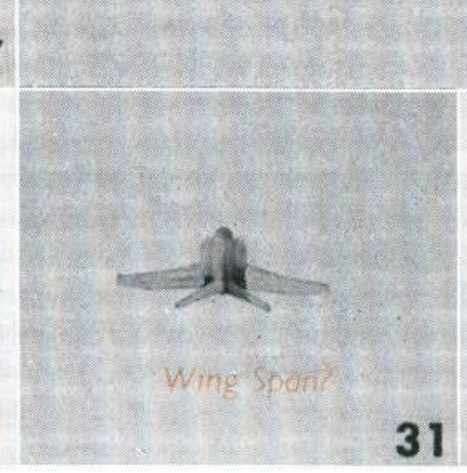

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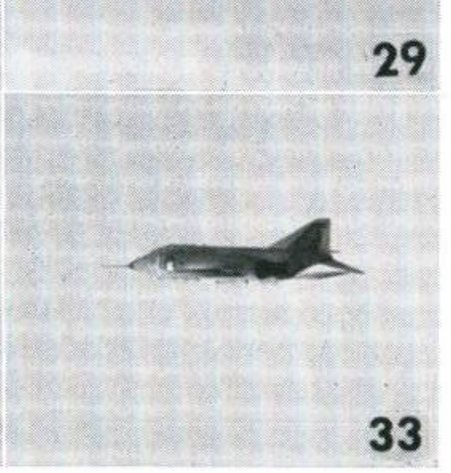


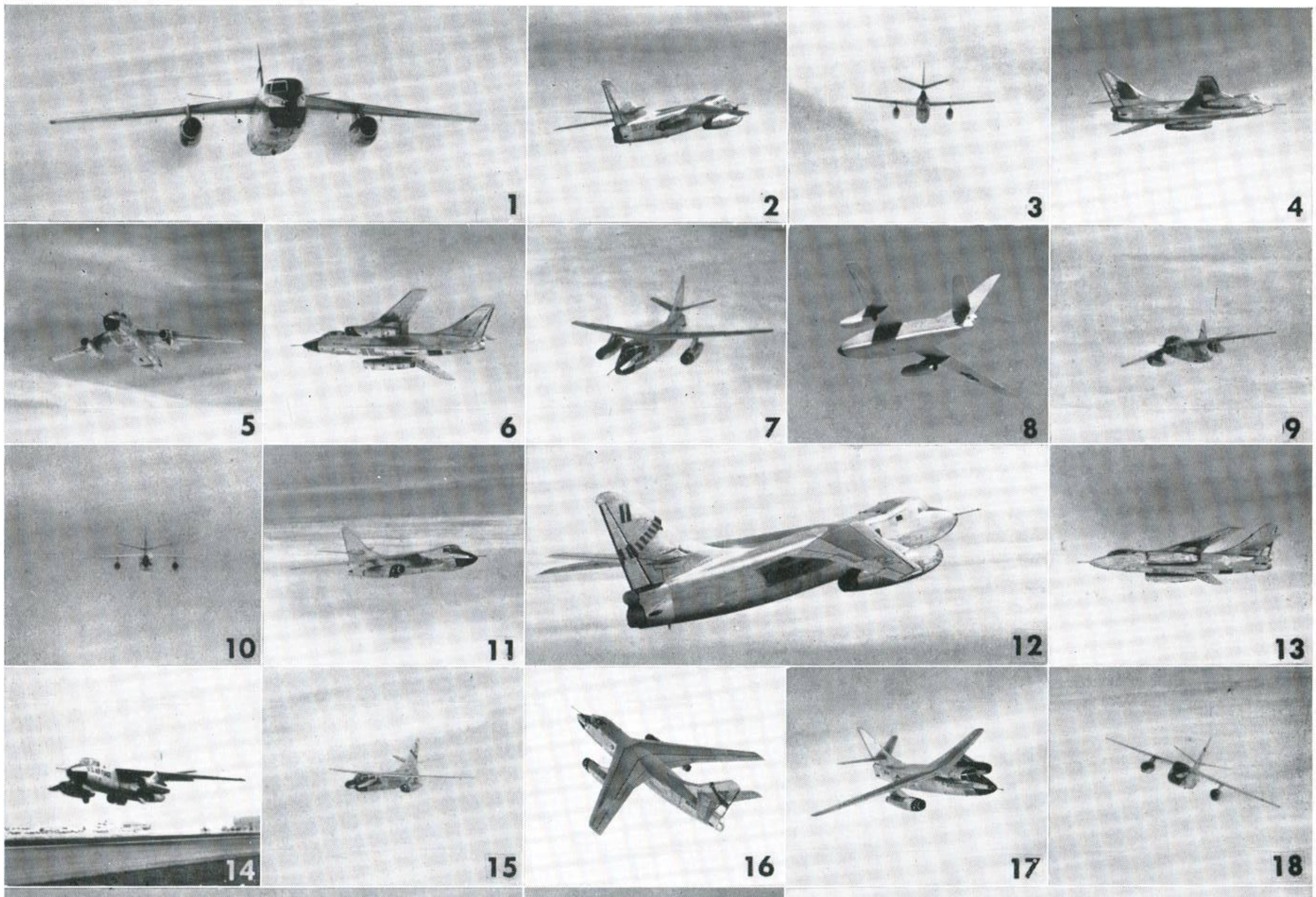
33

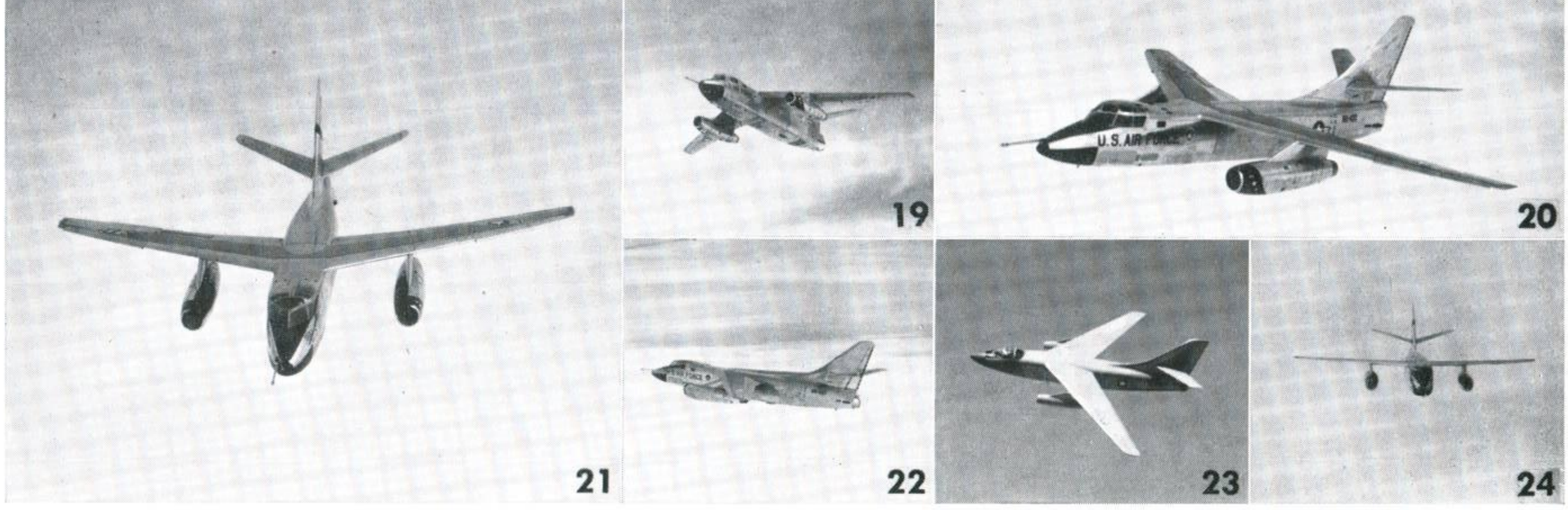
Douglas B-66 Destroyer

A Refresher Course

What's the difference between targets 16 and 23? It's all in the wing shape—Got it? Now be on your guard when spotting Destroyers and Skywarriors. There may be no operational need to distinguish between them but it will make you look closely at these targets if you want a correct solution list. Check yours, when complete, with ours on the cover.

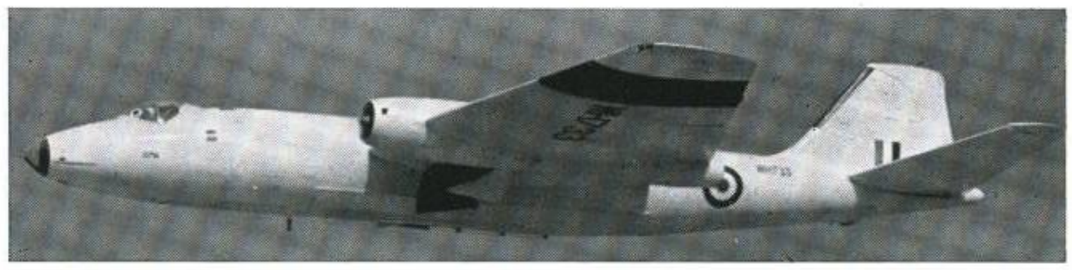
Previous Lessons: May 1956: April 1957: May 1957: November 1958: February 1959.





Briefs

A collection of items of news and interest.



FIAT 7002

The maiden flight of the FIAT 7002 helicopter recently took place. The FIAT 7002 is the first Italian aircraft designed to the so-called "cold jet" formula. (This simply means that the rotor blades are driven by compressed air tip-jets.) The Fiat Company say that the test lasted about 30 minutes and was "fully satisfactory." Some unusual constructional detail and its novel features can be seen from the photograph.

* * *

VTOL Starfighter?

According to various Press reports, a Lockheed F-104 Starfighter fitted with large wing-tip pods designed to carry jet-lift engines has been flying at supersonic speeds. It is not stated whether the jet-lift engines are actually installed and functioning.

Pilotless Canberras

Short Brothers & Harland Ltd. who have already supplied a substantial number of Canberra U. Mk. 10 aircraft, a conversion, by the way, of the standard B. Mk. 2, are building more for operation by the Royal Navy in Malta. They are to be used as targets for missiles fired from ships in the Mediterranean.

* * *

Light-weight Jet

Flight testing recently commenced on a new light-weight Italian jet aircraft, the Procaer Cobra F.400. The Cobra is a jet-trainer and tourer featuring side-by-side seating for two. It has a cruising speed of about 292 m.p.h. and in its military form will be offered as a basic trainer and for communications duties. Production aircraft will have more powerful engines and so will be faster than the prototype.

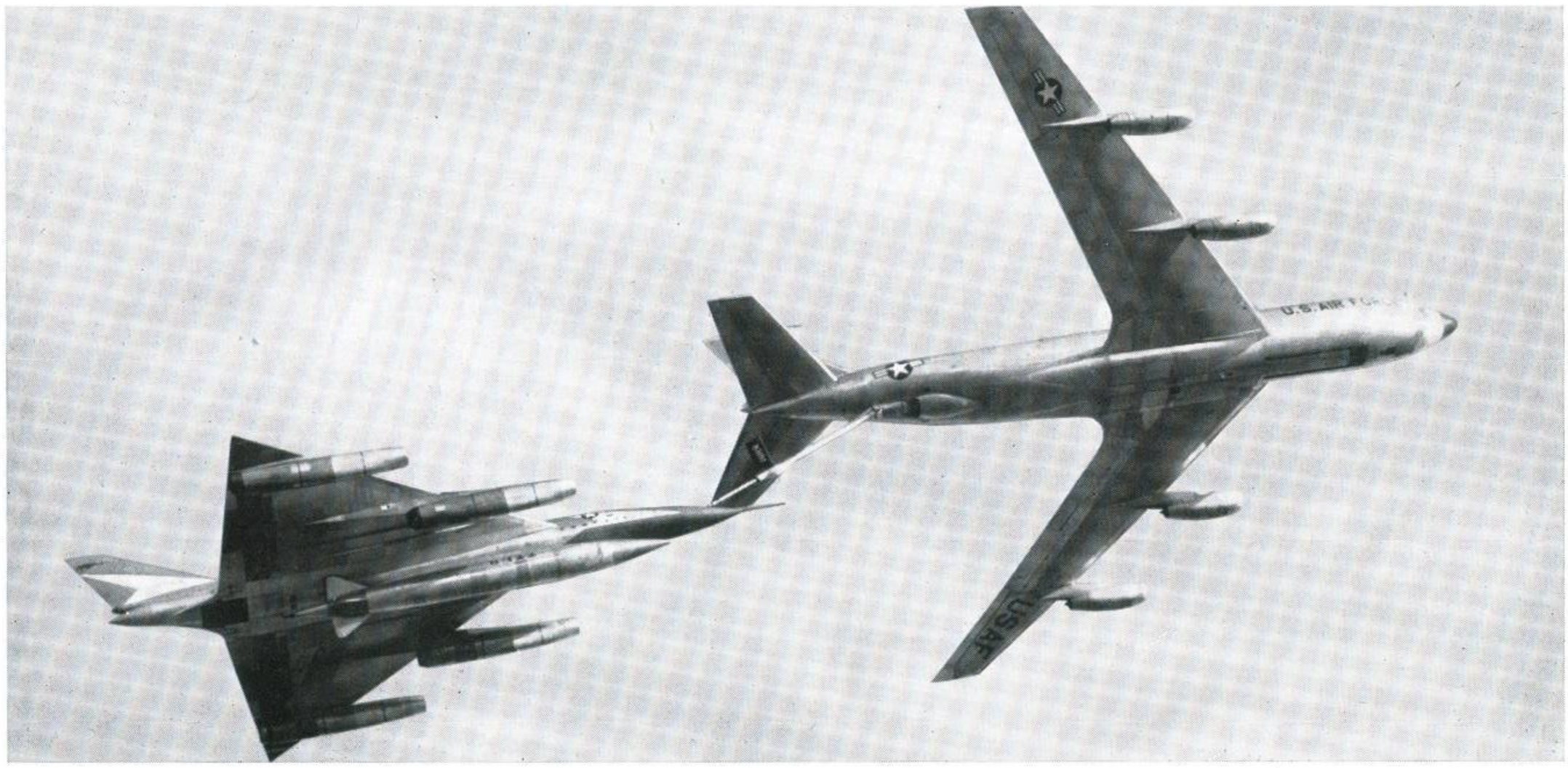
* * *

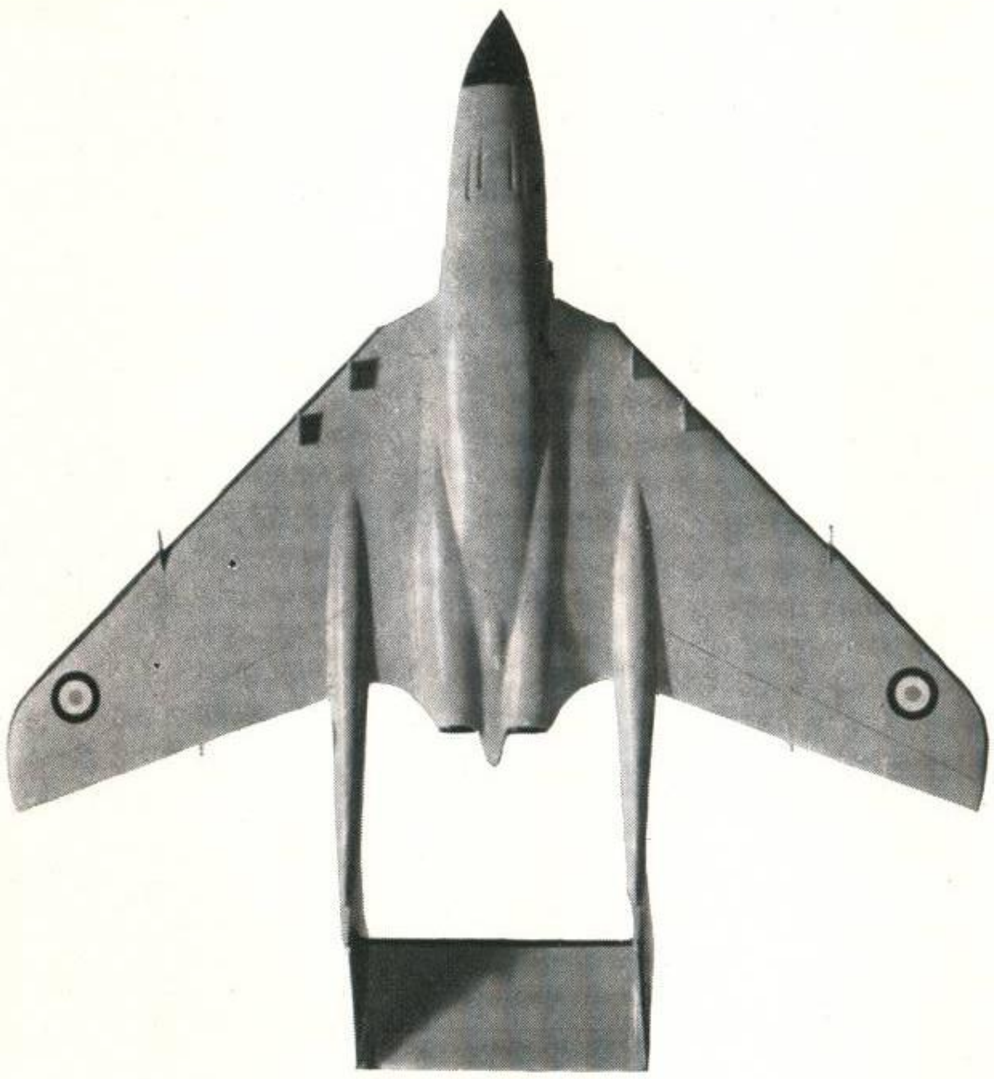
Tynes for Transall

The German Defence Ministry has announced that Rolls-Royce have been awarded a contract to supply Tyne turbo-props for three prototypes of the Transall C.160 military transport. The Transall C.160 is a twin-engine high-wing transport monoplane of which one prototype is being developed by Nord-Aviation in France while two others are being built in Germany. The Transall C.160 is, in fact, a Franco-German project.

* * *

Sucker! A Convair B-58 Hustler supersonic bomber having "one for the road" from a Boeing KC-135 tanker.





Sea Vixen F(AW) Mk. 1

Span 50 feet

Sea Vixen F(AW) Mk. 1

Boom in Sea Planes!

The De Havilland Sea Vixen F(AW) Mk. I is a two-seat, shipborne fighter. Powered by two Rolls-Royce Avon turbojets, the Sea Vixen can dive at supersonic speed, and is equipped with the most cunning of combat and navigational aids. Structural features include an off-set canopy, twin booms—unique in current production fighters. Armament comprises Firestreak missiles, bombs, or rockets—there is, incidentally, a complete absence of guns. In this brush with Sea Vixen and before you cry "Tally Ho!" and run her to earth, read our lesson instructions on the next page. You don't want to be foxed by a Sea Vixen, do you?

1

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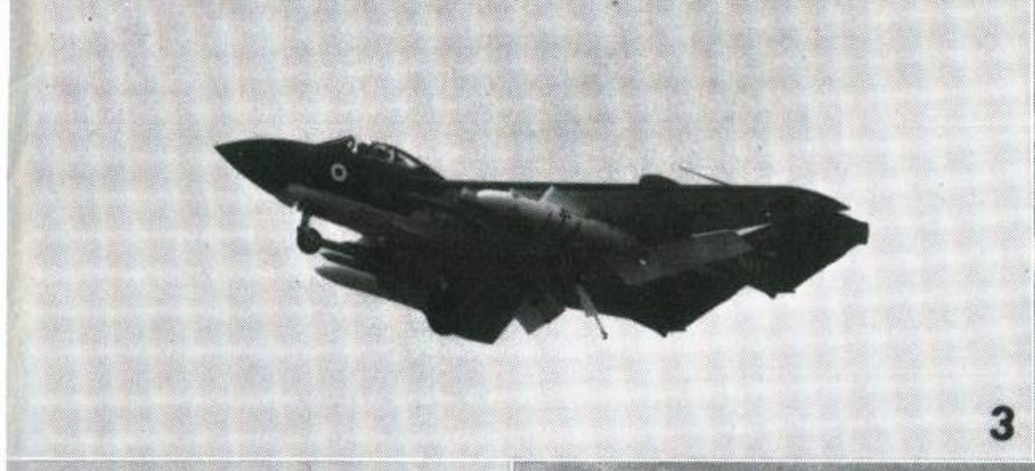
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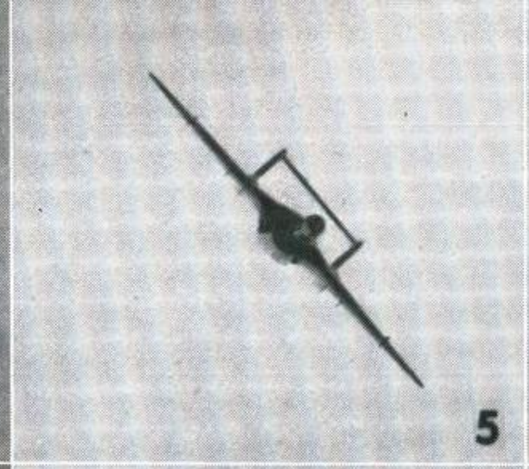
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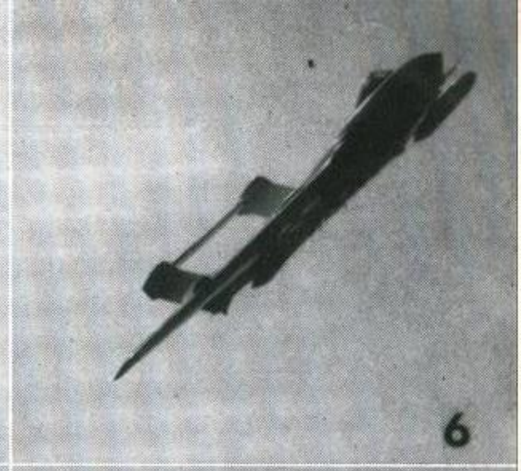
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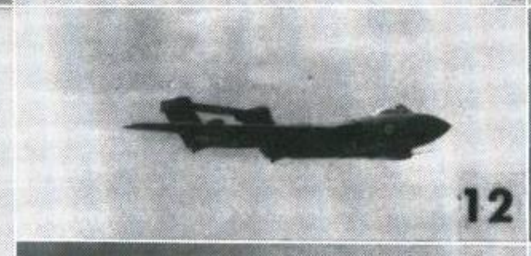
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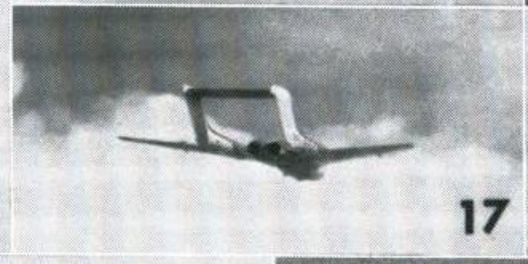
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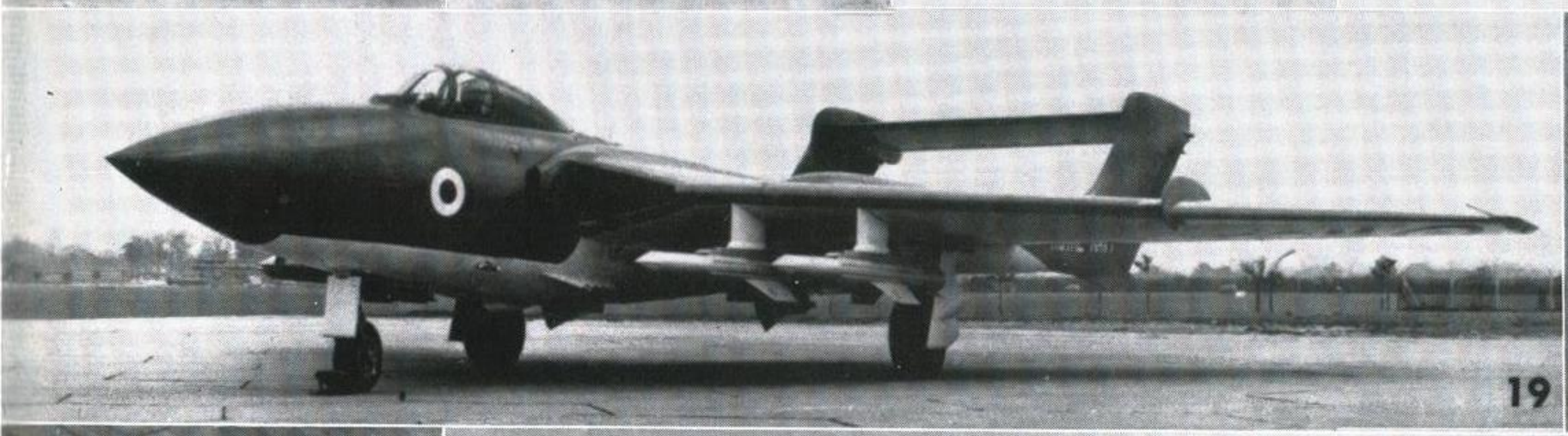
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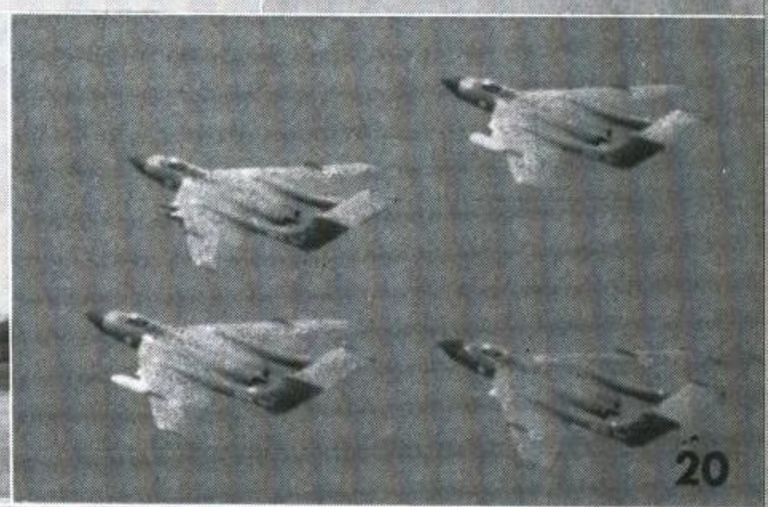
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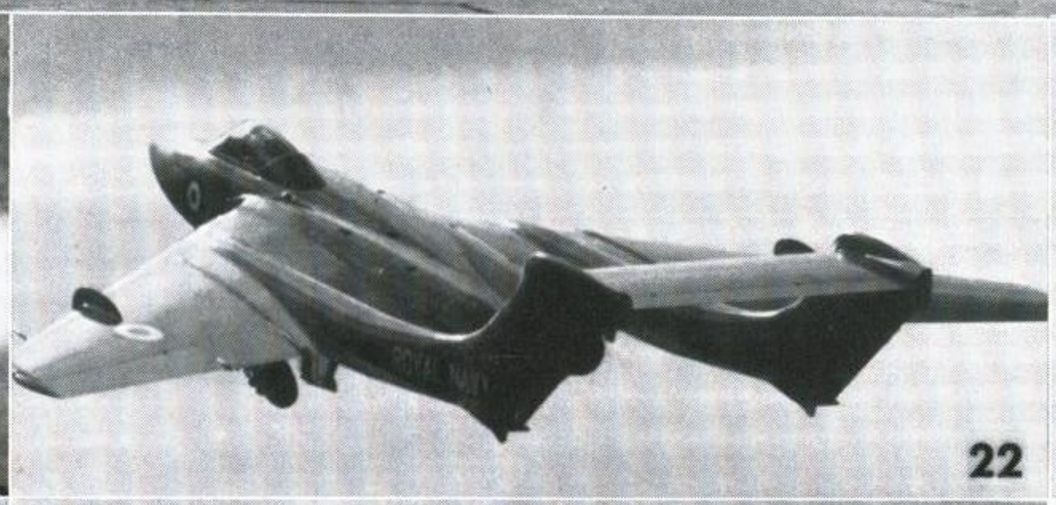
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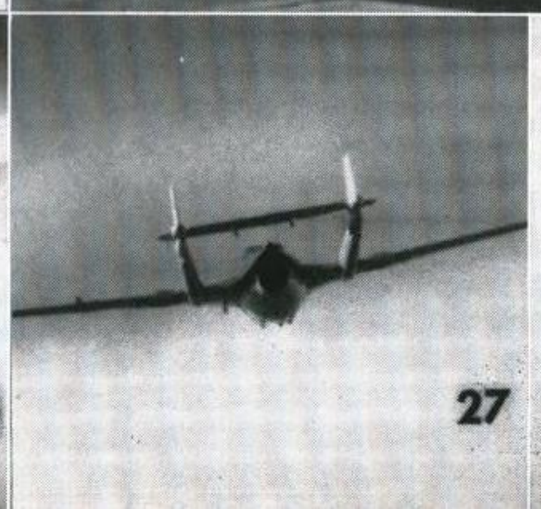
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To obtain the maximum benefit from this lesson, first list the target numbers on a piece of paper. Making free use of the key-views, solve the targets in any order you please—easiest first helps—using experience thus gained to help you identify further targets. Finally, and most important, write down your solutions as you do them.

Cover Photo: A development of the 880, Convair's first 990 is shown taking-off during initial flight trials. Originally known as the 600, it has been designed to meet the needs of particular operators which include American Airlines and Swissair.

Undeclared Jokers—February 1961 Issue

"... for 'tis the sport to have the engineer hoist with his own petard."—Hamlet: Act III, Scene IV.

Cover Photo: The helicopter on the flight deck, given as "Wessex," was in fact a Whirlwind and the aircraft on the port side given as "Sea Vixen" was in fact a Scimitar. Military Transports: No. 9 for "Crate (Il-14)" read "Coach (Il-12)," No. 24 for "C-133 Cargomaster" read "C-130 Hercules." For those who require full detail in the solution, the Crate (Il-14) shown as No. 13 is the Czech-built Avia 14 version; the Sahara No. 14 was the Air France version, the Breguet 763 Provence, and the Beaver No. 26 was the civil Series II with a taller fin and rudder than the standard, Series I, version. Passing Shots: For "Shackleton" read "Neptune."

" Nose-down change of trim, Sir? "

SOLUTIONS TO TESTS AND EXERCISES IN THIS EDITION

Page 52 **A3J VIGILANTE**

All targets are **A3J Vigilantes** except number 13, which is an **F4H Phantom II.**

Page 54 **BRIGADYR**

All targets are **Brigadyrs** except number 13, which is a **Broussard.**

Page 56 **VICTOR**

All targets are **Victors** except number 6, which is a **Vulcan.**

Page 58 **F4H PHANTOM II**

All targets are **F4H Phantom II's** except numbers 12 and 24, which are respectively an **A3J Vigilante** and an **F8U Crusader.**

Page 60 **B-66 DESTROYER**

All targets are **B-66 Destroyers** except numbers 8 and 23, which are both **A3D Skywarriors.**

Page 62 **SEA VIXEN F(AW) Mk. I**

All targets are **Sea Vixen F(AW) Mk. I** except number 27, which is a **Sea Venom F(AW) Mk. 20.**

Book Review

"Civil Aircraft Markings," by J. W. R. Taylor. Published by Ian Allan Ltd. at 2*s.* 6*d.*

Perhaps "Civil Aircraft Registrations and Insignia" would be a more apt title as the most striking aspect of markings, individual colour schemes and airline liveries, is not covered, but then who could expect this for "half-a-dollar"?

To have a handbook, giving the current British Civil Aircraft Register, and the registrations of Commonwealth and foreign airline fleets operating to the British Isles, means that the spotting enthusiast, provided he can note the registration, can immediately verify his type identification as well as obtain the additional information on the owner or airline concerned. And who would doubt the authenticity of the information, when the compiler is the fount of aeronautical information—the Editor of Jane's All the World's Aircraft himself.

D. B. R.

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