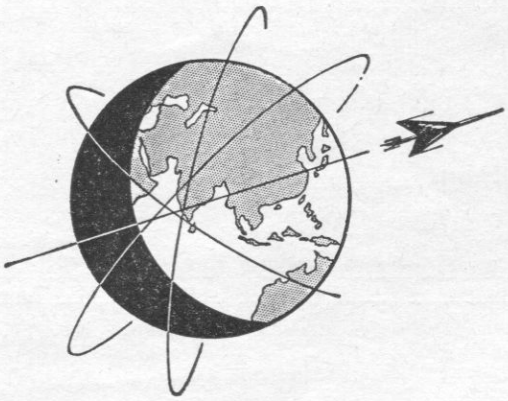


World Air News

A model of the proposed Boeing 737 twin-jet short-range airliner (TOP); *relative size is given by the 727 model* (BOTTOM) *which is to the same scale*

BAC 145 jet trainer

BRITISH AIRCRAFT CORPORATION have received a contract from the Ministry of Aviation for the development of a new pressurised jet trainer for the Royal Air Force, which will be known as the BAC 145, or, in the R.A.F., Jet Provost T Mk. 5. The aircraft (artist's impression, October 1964, page 309) will be designed and built by BAC's Luton Division.

The primary aim in the development of the BAC 145 is to introduce a pressurised cockpit in order to exploit the potential high-altitude performance of the basic airframe/engine combination. This will ensure that protracted exercises above 25,000 ft. can take place in safety and comfort and will widen still further the scope of the training syllabus that can be undertaken by a single aircraft type.

Structurally the BAC 145 follows proved Jet Provost practice and an airframe life of approximately fifteen years is therefore confidently forecast. Power is provided by a 2,500-lb. s.t. Bristol Siddeley Viper 11. The aircraft, which can also be used for weapons training and tactical strike, is expected to fly this year.

Indian A.F. plans

Mr. Chavan, India's Defence Minister, announced recently that India has adopted a five-year plan to expand her air force to forty-five squadrons; present strength is about twenty-five squadrons. Largest requirement in the plan is for 450 MiG-21s. According to Mr. Chavan, the U.S.S.R. has agreed to supply forty-four MiG-21s which, with four delivered previously, will be sufficient to form three squadrons. Another sixty MiGs will be supplied in the form of components for local assembly, and after that the Russians will provide jigs, tools and technical assistance for the manufacture of the MiG-21 under licence in India.

Principal combat types now in service with the Indian Air Force include Hunters, Gnats, Canberras, Mystère IVAs, Hindustan HF-24s, and one or two squadrons of Vampires and Ouragans. Russia is also expected to supply twenty Mil Mi-4 helicopters, and India plans to acquire twenty Sud Alouette IIIs together with a licence for the local assembly of a further eighty.

Boeing 737 philosophy

Some additional details of the projected Boeing 737 twin-jet short-range airliner have been announced. Although no decision has been reached on whether to put the 737 into production, Boeing state that they favour a design of Convair 340 size, with wing-mounted engines, capable of carrying from 65 to 85 passengers. A small wing with advanced high-lift devices is, Boeing believe, mandatory for efficient operation over short ranges. Designs with rear-mounted engines and a T-tail have been studied but are considered too complex and would weigh some 1,500 lb. more than the equivalent aircraft with wing-mounted engines.

DC-9 and "deep stall"

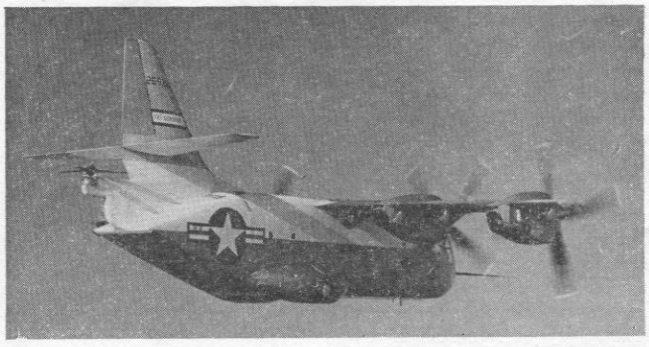
The Douglas Aircraft Co. state that they have developed a solution to the "locked-in deep stall" and have designed their twin-jet DC-9 to avoid this problem which is sometimes associated with aft-engined aircraft having "T" tails. To ensure positive control of the aircraft under extremely high angles of attack, Douglas have increased the size of the DC-9's horizontal tailplane by approximately 20 per cent.

Analytical investigations and extensive wind-tunnel tests have confirmed that the new tail design produces excellent stall recovery characteristics, even under the most severe conditions, without the use of auxiliary control devices. These tests will be corroborated during flight tests, which are to begin shortly.

Fellowship production

Production arrangements for the Fokker F.28 Fellowship twin-jet short-haul airliner have now been settled: Fokker's will be responsible for 57 per cent of the work; the West German group (Hamburger Flugzeugbau and Vereinigte Flugtechnische Werke) 24 per cent; and Short

Two views of the LTV-Hiller-Ryan XC-142A tilt-wing V/STOL transport (62-5922) *which made its first flight, with the wing tilted* 10 *deg. up, on 29th September at Dallas, Texas; hovering trials are now in progress*



Brothers and Harland 19 per cent. Assembly of the first prototype will begin late next year and this machine is scheduled to fly on 1st June 1966. First flight of the first production F.28 will occur in December 1967.

EoN 465 glider

Elliotts of Newbury are producing a new glider, the EoN 465, to compete in the World Gliding Championships at R.A.F. South Cerney (29th May to 13th June). Based on the earlier 463, the new glider will have its ailerons hinged at their upper side, providing a smooth upper wing surface and reducing drag. To improve performance at higher speeds, the 465 will have a more slender fuselage, all-moving tailplane and a faired-in rear skid.

Sikorsky CH-53A

The Sikorsky CH-53A, claimed to be the free world's largest and fastest transport helicopter, flew for the first time on 14th October. Powered by two General Electric T-64-6 turboshaft engines of 2,850 s.h.p. each, the CH-53A is capable of speeds of more than 200 m.p.h. and can carry payloads of up to 9 tons. It has a crew of three and can carry thirty-eight fully-equipped troops. For medical evacuation duties, the CH-53A will carry twenty-four patients and four medical attendants.

Japanese flying-boat

It is reported from Tokyo that Shin Meiwa have been given the "go-ahead" to design and build a large four-turboprop anti-submarine flying-boat for the Japanese Maritime Self-Defence Force, following the completion of successful tests with their UF-XS (rebuilt Albatross, see June issue, page 176).

The new flying-boat will have an all-up weight of about 32 tons and empty weight of 20 tons; span will be about 110 ft. and length 104 ft. The machine will be powered by four 2,850-s.h.p. General Electric T64s, and two T58 shaft-turbines will supply compressed air for a boundary-layer control system for STOL performance. Estimated maximum speed is 310 kts., cruising speed 150 kts., stalling speed 40 kts., and range up to 2,400 naut. miles.

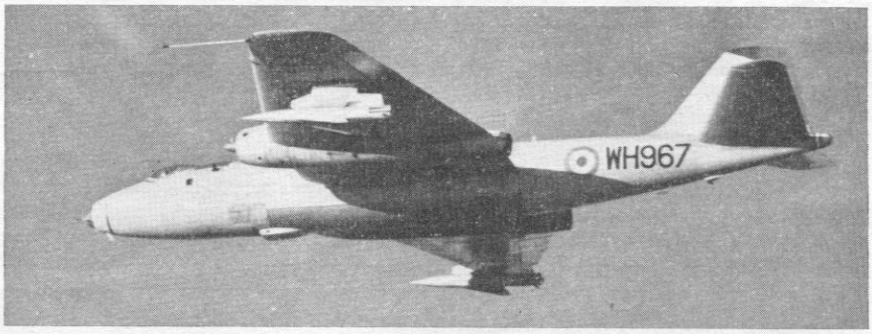
R.A.A.F. plans

The Australian Prime Minister, Sir Robert Menzies, has announced that £A116 million is to be spent on new aircraft for the R.A.A.F. during 1965-1968. The transport force is to be expanded by the acquisition of twelve Lockheed C-130E Hercules (see December 1964 issue, page 390) and will then consist of two Hercules squadrons (C-130As and 'Es) and one Caribou squadron.

Ten Dassault Mirage IIIB two-seat conversion trainers are to be purchased, plus seventy-five jet trainers of a type still to be selected; the BAC 145, Macchi MB.326 and Canadair CL-41 are being considered. Other new purchases will include ten Lockheed P-3 Orions to replace the Neptunes in No. 11 Squadron,

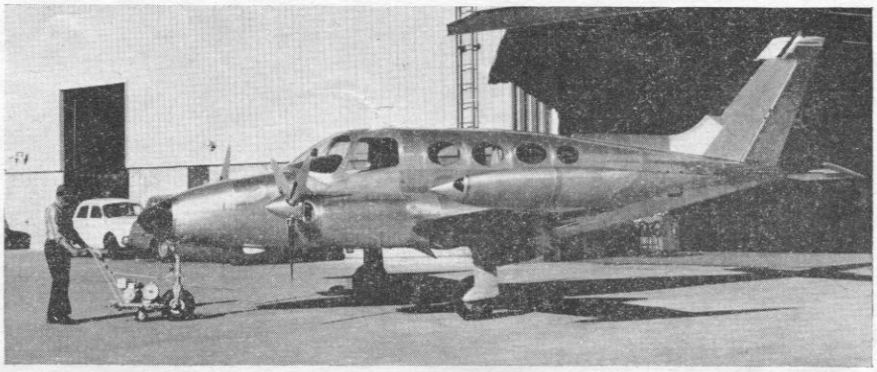
De Havilland Canada have now sold three Turbo-Beavers, two to the Ontario Department of Lands and Forests and one to the Richfield Oil Corporation

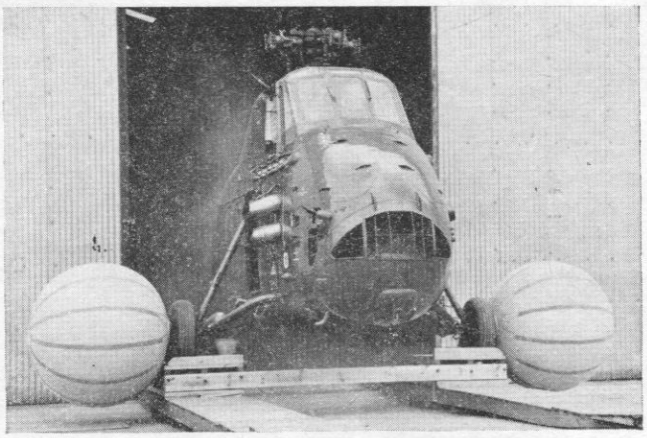
The Sikorsky CH-53A, built for the U.S. Marine Corps, flew on 14th October



ABOVE: *A Canberra B.15 with Nord AS.30 air-to-ground missiles. Installation and handling trials have been carried out by Boulton Paul Aircraft*

BELOW: *The first production Cessna 411 six/eight-seat executive aircraft was rolled out on 16th October; the prototype flew on 18th July 1962*





Now standard on R.N. Wasps (LEFT) *and Wessexes* (RIGHT) *is flotation gear that inflates automatically in an emergency "ditching". Made by F.P.T. Industries Ltd., the bags are of nylon fabric impregnated with neoprene synthetic rubber*

World Air News . . .

fourteen Grumman SP-2 Trackers for the carrier *Melbourne*, and eight jet aircraft (H.S.125s or Dassault Mystère 20s) to replace Dakotas as navigation trainers.

Argentine news

An order has been placed with DINFIA for twenty-four Guarani II turboprop transports (photo in November 1964 issue, page 354) for the Argentine Air Force. DINFIA have, however, decided to stop work on their I.A.52 light transport and I.A.55 "COIN" projects. Aerolineas Argentinas have now acquired a fourth Caravelle VIN, provisionally registered LV-PBJ, to replace LV-HGY which crashed at Pajas Blancas Airport in Cordoba on 3rd July 1963.

Hercules on a carrier

A 60-ton Lockheed KC-130F Hercules has successfully taken off from and landed on the aircraft-carrier U.S.S. *Forrestal*, thus becoming the largest and heaviest aircraft ever to operate from a flight deck at sea. A series of twenty-one unassisted take-offs, twenty-nine "touch-and-go" and twenty-one unarrested full-stop landings with the Hercules was conducted in the Atlantic last November.

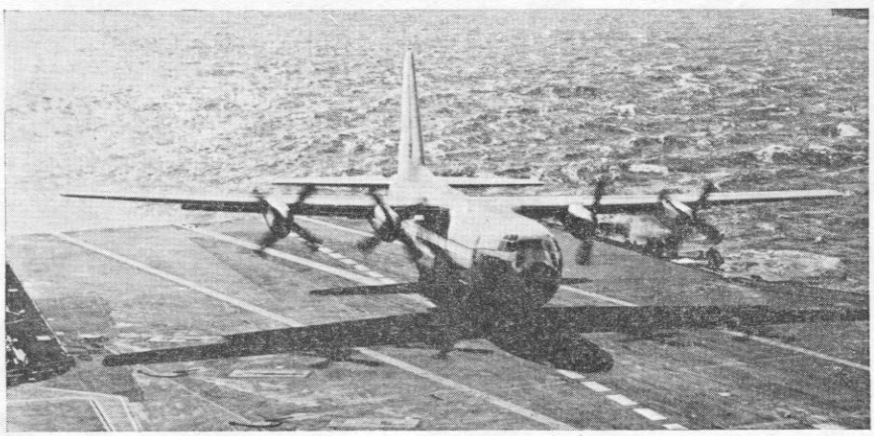
The unassisted take-offs were made at weights of from 85,000 lb. to 120,000 lb. to evaluate the Hercules's capability as a logistic fleet-support aircraft. The actual shipboard landings were made following earlier tests conducted at the U.S. Naval Air Station at Patuxent River, where an anti-skid brake system was installed to decrease the landing roll. Other modifications to the standard KC-130 included the installation of a special sensitive airspeed indicator, to give the pilot critical approach readings, and modification of the nose gear to reduce the landing load.

Operating from such sea bases, the Hercules's range could be extended to global distances by using aircraft-carriers as fuelling bases, as well as serving as a logistic support system for the surface navy vessels.

Hillers for Thailand

The Royal Thai Border Police have taken delivery of six Hiller E4 four-seat helicopters which they ordered in order to be able to intensify their air patrol of the Mekong River along the troubled Thailand -Laos-Cambodia border. Thai police began patrolling the border by helicopter in 1953 with a fleet of twenty-four three-seat Hiller 12Bs. Another E4, procured by Thailand's Ministry of Agriculture, is now at work on crop-spraying.

Largest aircraft ever to operate from an aircraft-carrier, the U.S.S. Forrestal, *is this Lockheed KC-130F Hercules which carries the inscription: "Look Ma, No Hook." Tests were made at* 120,000 *lb. a.u.w.*



Cessna U-17As

Cessna Aircraft are to deliver forty-six U-17As (Model 185 Skywagon utility aircraft) during the next few months for use in overseas countries under the U.S. Military Assistance Programme. To date, Cessna have delivered ninety-five aircraft in conjunction with this programme. The U-17A can be fitted with cameras, agricultural spray tanks and skis or floats.

Transall agreement

An agreement on the C-160 Transall programme has been signed by France and West Germany, and a start has now been made on the production of 110 of these transports for the *Luftwaffe* and fifty for the *Armée de l'Air*. Six pre-production machines have already been built or are under construction, and a seventh is expected to be flying in time for the next Paris Air Show. First deliveries to the *Luftwaffe* will be made in March 1965.

S.A.A.F. equipment

Licence-production is to begin shortly in South Africa of an initial two hundred jet trainers as a partial replacement for the "several hundred" Harvards that the S.A.A.F. has in service or storage. The choice seems to have been narrowed down between the Macchi M.B.326 and Potez CM.170 Magister, the Italian machine being "tipped" as favourite. It is probable that the South-African-produced aircraft will be offered for export, the Portuguese A.F. being a possible customer.

Despite its "arms embargo" on South Africa, the British Labour Government has decided to allow delivery of the sixteen Hawker Siddeley Buccaneer S.50s ordered under a previous agreement.

"News in Brief" appears on page 16

Midget Racers . . .

Scamp with an Ardem Mk. 4 engine, wooden propeller and open cockpit; the Standard Scamp with an Ardem Mk. 5 racing engine, coarse-pitch metal propeller, closed cockpit and spatted wheels; and the Super Scamp, the most highly developed version, with a 12-volt electrical system, radio installation, hydraulic disc brakes and more luxurious interior trim. The total weight is increased, and to maintain performance the Rolls-Royce A.65 engine can be fitted.

Data from wind tunnel tests have formed the basis of performance and handling estimates, the following figures being quoted for the Standard version:

Maximum speed	136 m.p.h.
Economical cruising speed	113 m.p.h.
Stalling speed, flaps up	58 m.p.h.
Still air range	300 miles
Take-off to 50 ft.	1,550 ft.
Landing from 50 ft.	1,345 ft.

A detailed economic analysis has been prepared, covering all aspects of development costs, and giving a forecast variation of selling price with quantity of production. For a total production of forty units, a complete aircraft would cost £1,350, a kit (including engine and instruments) £850. It is claimed that metal construction is easier for an amateur than wooden provided that processes such as machining, welding and press forming are done for him. Thus the kit of parts includes almost all the necessary ribs, spars and fittings already formed, as well as components like the fuel tank, undercarriage legs and glass-fibre mouldings.

Scamp specification

Span	18 ft. 11 in.
Length	17 ft. 6 in.
Height	6 ft. 6 in.
Wing area	70 sq. ft.
Weight empty	502 lb.
All-up weight	752 lb.

NEWS IN BRIEF

Japan Air Lines have taken delivery of their tenth Douglas DC-8, JA8012 "Akan". The next two will be named "Haruna" and "Asama" (DC-8F).

The 1965 Paris Air Show will be held at Le Bourget from 10th to 21st June; the 19th and 20th are the public days.

Brazil is reported to have ordered five Lockheed C-130E Hercules transports for her air force.

Air France have ordered their twenty-ninth Boeing 707, a 320B, due for delivery in February 1966.

Royal Air Maroc have acquired a Caravelle III, their fourth, and the Danish Company Sterling Airways have ordered a second Super Caravelle. Caravelle sales now total 190.

Spain has ordered fifteen Bell UH-1D Iroquois helicopters, twelve for her Army and three for the Navy.

Cessna are producing a new version of their Skymaster, the Super Skymaster, with retractable undercarriage and a speed of 200 m.p.h.

H.M.S. Albion, one of Britain's two Commando carriers, has recommissioned and will embark No. 848 Squadron (Wessex HC.5s) for service in the Far East.

The Lockheed XH-51A rigid-rotor helicopter has flown at 201 m.p.h., claimed to be the fastest speed of any helicopter in its weight class.

The London School of Flying, Elstree, Herts., has been granted Government approval to conduct courses for training professional pilots.

United Air Lines have ordered three Douglas DC-8F Jet Traders, increasing their DC-8 fleet to fifty. DC-8 sales now total 237.

The Indonesian A.F. has acquired six Antonov An-12s, which will help replace the C-130B Hercules transports lost or grounded for lack of spares. One An-12 has already been lost.

The Czech L-29 jet trainer (see June 1964 issue, page 179) is to be supplied to Indonesia.

Rallye production by Potez-S.E.E.M.S. at Tarbes-Ossun has now reached 465 and is anticipated to exceed 600 eventually.

Air Force Strengths Assessed

AMONG THE more accurate guides to the nature and size of the military forces (land, sea and air) of the principal powers are the annual estimates published by the Institute for Strategic Studies. The sixth edition, entitled *The Military Balance 1964-65,* is now available and can be obtained from the Institute at 18 Adam Street, London, W.C.2, price 7*s.* 6*d.* (or $1.50) post free.

The countries dealt with are grouped into three sections: Communist powers; Western Alliances (*i.e.,* those which have mutual defence treaties with the U.S.A.); and certain non-aligned countries, namely India, Indonesia, Israel, Malaysia, Sweden, Switzerland, the United Arab Republic and Yugoslavia. The book therefore covers virtually all the world's forces except for those of the Latin American states (but does include Cuba), most of Africa, Spain and Austria.

The Institute estimates that the Soviet Air Force comprises between 10,500 and 11,500 operational aircraft, plus 800 further machines in the Naval Air Force. Of these, nearly two hundred are heavy bombers ("Bears" and "Bisons") and 1,400 medium bombers ("Badgers"), including about four hundred "Badgers" in the Naval Air Force. Strategic bomber strength of the Western Alliance is put at 630 heavy bombers and 780 medium bombers for early 1964, but the latter figure is now declining to 580 with the phasing out of, principally, Boeing B-47s.

Soviet tactical aircraft still number nearly 4,000, including a "significant proportion" of obsolescent Mig-15s, Mig-17s and Il-28s; NATO, states the Institute, has some 5,500 tactical aircraft based on 220 airfields in Europe, 3,500 of these aircraft coming under Allied Forces Central Europe. The Soviet Air Defence Command has "probably over 6,000 fighters", mostly Mig-17 and '19s but including newer types such as the MiG-21 "Fishbed" and Sukhoi's "Fitter" and "Fishpot B".

The Mach 2 MiG-21 is evidently a key type and has also been supplied to Poland, Czechoslovakia, East Germany, Hungary, Rumania, Bulgaria, Cuba, Indonesia, the U.A.R., Yugoslavia, and Finland. It seems an appalling disgrace, therefore, that the R.A.F., except for a half-dozen Lightning squadrons, usually home-based, is still struggling on with Hunters, and that of the fifteen NATO members Britain stands with Iceland, Luxembourg (both without air forces) and Portugal as a country without a supersonic strike/reconnaissance aircraft.

Aircraft strengths of the other Communist countries are estimated as follows: Poland, 1,000 plus 70 naval; Czechoslovakia, 700; East Germany, 400; Hungary, 150; Rumania, 300; Bulgaria, 450 (a surprisingly high figure); Albania, 100; North Korea, 500; and China, 2,300. The Chinese Air Force seems to be in rather a poor way; most of its aircraft are obsolescent MiG-15s, '17s, and Il-28s, plus a few MiG-19s; it is one of the few not to have received MiG-21s; and pilot training is said to be still inhibited, by a lack of aircraft spares, to perhaps 10 hours per pilot per month. Communist China has, in addition, some 500 naval aircraft and could also impress about 350 civil transports.

The air forces of the Western powers are, in general, assessed by squadron rather than number of aircraft. For example, the Belgian Air Force, with 20,000 personnel, is listed as having four F-104G squadrons, one RF-84F and two F-84F squadrons, plus one transport wing with C-119G, DC-6A and C-47 aircraft. Where appropriate, details of naval air arms are given but a serious omission—in our view—is any reference to the separate Army Air Forces or Corps maintained by several countries. The U.S. Army alone has some six thousand fixed-wing aircraft and helicopters which, on a numerical basis, probably constitute the world's fourth largest air force—after the U.S.A.F., Soviet A.F. and U.S. Navy A.F.—and the Army air arms of Britain, France, West Germany and Japan each run into hundreds of aircraft.

The book, which is unillustrated, has 44 pages and includes an index and a number of tables comparing such matters as strategic strengths, major nuclear delivery systems, and defence expenditures.