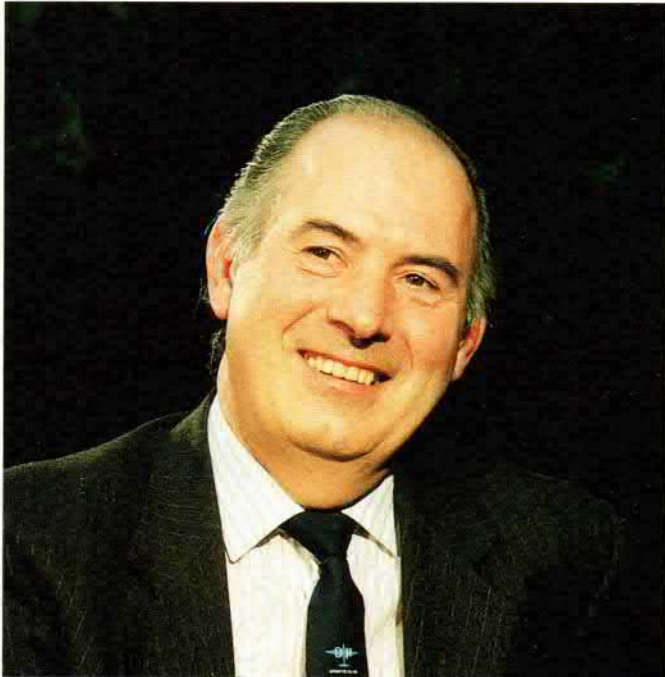




HEATHFIELD 89



BRITISH AEROSPACE
COMMERCIAL AIRCRAFT



Welcome to our 1989 Open Day here at Hatfield. Those of you who came to our last event in 1987 will doubtless notice many changes that have taken place in the meantime. New buildings, new machines, we even have a new name since Hatfield is now a key site in the Airlines Division and the headquarters site for British Aerospace (Commercial Aircraft) Ltd. Our investment programme over the next 5 years is a major activity. The skyline of the site is going to change quite dramatically and the way we carry out our manufacturing process will also alter as we introduce the very latest working practices.

These Open Days are an opportunity for us to show you what we do and give you a bit of an insight into the working of a modern aircraft factory. They also allow us to entertain you with the

flying display, exhibits, and, in our Sports Field, side shows and displays. Today there are a number of charitable fund raising activities on site including the QEII Hospital who are holding their own Fair on our Sports Field. Their assistance with our Open Day is greatly appreciated and I would ask you to give generously to all of these organisations.

I hope that you and your family and colleagues have a thoroughly enjoyable day.

A. J. SAINT
Director and General Manager—
Hatfield

Hatfield from the air ▶



Front cover
Three Tigers belonging to members of the de Havilland Moth Club in formation.

Back cover
Major UK operator, Air UK, with one of their BAe 146-200s. The airline has also ordered Series 100 and Series 300 variants.

Eighty years ago Geoffrey de Havilland made his first flight in an aircraft of his own design and construction. It is almost 60 years since de Havillands first moved to Hatfield and set in train a whole new industry for the area. It is exactly 40 years since the DH106 Comet took off on its maiden flight from Hatfield which means jet airliners have been flying from here longer than any other airfield in the world.

Since the Company moved to Hatfield something like 8½ thousand aircraft—military, civil, piston and jet powered—have been built here. The range of aircraft has been wide too, de Havillands were prolific designers and producers of successful types: The Comet Racer; Tiger Moth; Dragon Rapide; Mosquito; Vampire; Dove; Sea Vixen; Comet airliner, to name but a few.

The format of the UK aircraft industry has changed over the years as a series of mergers took effect. From a diverse range of smaller, individual companies, like de Havillands, one company now dominates, British Aerospace.

Since British Aerospace came into being in 1977 even further changes have been effected. Today the Company is not only in the aerospace industry but also in ordnance (Royal Ordnance), cars and four-wheel drive vehicles (Rover Group) and construction (Ballast Nedam). The Company employs over 130,000 people in the UK and overseas and has an annual turnover of over £5½ billion. British Aerospace is Britain's largest manufacturing group and one of the world's largest aerospace organisations. It is also the UK's largest exporter of manufactured goods.

Hatfield is now part of British Aerospace (Commercial Aircraft) Ltd. This Company is engaged on a number of civil aircraft programmes including the BAe 125 business jet; the Jetstream J31

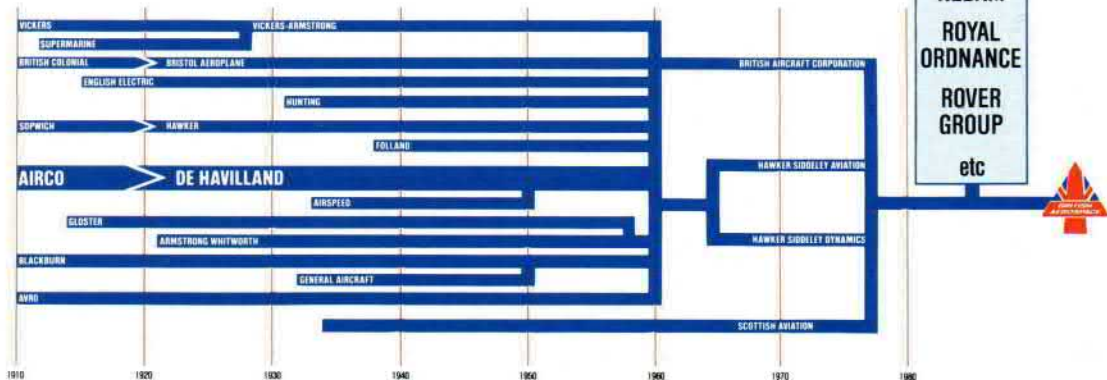
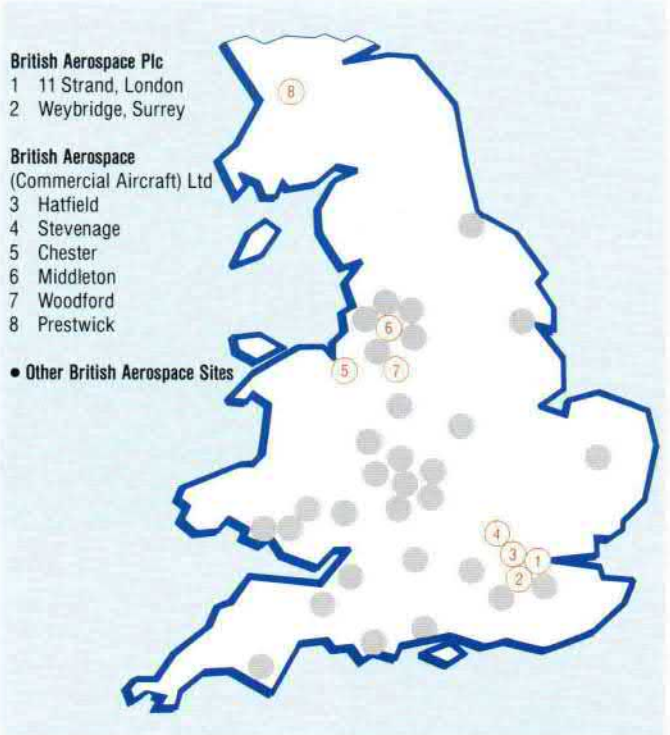


A scale model of the A340 in Hatfield's 15ft wind tunnel.

turboprop commuter; the ATP (Advanced Turbo-Prop) regional airliner; the BAe 146 family of regional jetliners; and, in collaboration with the European Airbus consortium, the A320 single aisle jet airliner; the twin aisle A310 and A300; the high capacity A330 and the four engine, long range A340.

Hatfield, which is also the headquarters for the Commercial Aircraft Company, is involved in three of these programmes and these are detailed on the following pages.

The single largest customer for the BAe 146, TNT, who have committed themselves to five years production of the Freighter variant, use the aircraft for their express night freight service throughout Europe. The 146 enables them to operate into noise sensitive airports which are often closed to other jets at night. ▶



The BAe 146, which made its maiden flight from Hatfield on September 3rd 1981, has now seen service on 6 continents with a wide range of operators from airlines to freight carriers, from the military to VIPs.

The BAe 146 was originally conceived as an ultra-quiet 70-100 seat airliner with high passenger appeal and able to operate from short or difficult airfields which other jets cannot use. However the programme has been one of ongoing development and, as can be seen by the photographs on this page, the BAe 146 is able to undertake various roles capitalising on its unique performance and design characteristics.



A typical BAe 146 Statesman interior.

Three basic fuselage sizes are available and in the airline role these enable operators to now carry up to 112 passengers. The Series 100 can typically seat 80-90 passengers, the Series 200 up to 100 passengers and the newest Series 300 up to 112 passengers, although many operators prefer to offer additional comfort to their passengers by specifying a 100 seat, 5 abreast 'Business Class' configuration in the Series 300, making full use of the BAe 146's wide (3.42m) cabin.

In its standard passenger carrying role the BAe 146 has two doors for boarding/disembarking, a feature which speeds the turnaround time at intermediate stops.

The BAe 146-QT Freighter is



◀ BAe 146-300 in service with the US regional carrier United Express.



A different kind of 'freight' for TNT. Their BAe 146s can be converted to carry race-horses to and from courses throughout Europe.

now in extensive service throughout Europe with overnight express freight carrier TNT. Featuring a 3.33m wide cargo door the aircraft can carry some 11 tonnes of freight. TNT has committed to take five years' production of the 146-QT, including future Convertible versions, involving some 72 aircraft.

The BAe 146-STA Military variant is being offered to airforces as a military transport/paratrooper. The Sideloading Tactical Airlifter can carry 60 paratroops or a variety of military vehicles. The BAe 146's rough-field performance

and low noise makes it ideal for supplying forward-fields or casualty evacuation.

Hatfield is the design centre for the BAe 146 programme and is also responsible for the manufacture of the nose, final assembly and customer support. Manufacture is shared with other BAe sites around the country, including Woodford, (Manchester), where a second final assembly line is now situated. There are two overseas manufacturing partners, - Textron Aerostructures (wings) and Saab-Scania (tailplane and moving surfaces).



146	
Wing Span:	86ft 5in (26.34m)
Length:	
(146-100)	85ft 11in (26.19m)
(146-200)	93ft 10in (28.6m)
(146-300)	101ft 8in (30.99m)
Typical seating:	
(146-100)	82-93
(146-200)	82-102
(146-300)	100-112
Max take-off weight:	
(146-100)	84,000lbs
(146-200 and -300)	93,000lbs
Engines:	4 x Textron Lycoming ALF502-R-5
Thrust (each):	6,970lbs
Range (with max payload):	
(146-100)	935n.m.
(146-200)	1176n.m.
(146-300)	
(with 100 passengers)	1090n.m.

A BAe 146 in service with Dan-Air is seen here at Innsbruck, a typical environmentally conscious airfield for which the 146 is highly suited.

Not one aircraft but a family of five main types make up this massive collaborative programme in which British Aerospace is a 20% partner.

Airbus Industrie, the consortium established to manage the programme, is barely 20 years old. Yet in that time the organisation has grown to rank second only to Boeing in sales of airliners. Total Airbus sales in fact now exceed 1,000 aircraft.

A300

The first 'member' of the Airbus family which made its maiden flight in 1972. The current version is designated the A300-600 utilising some of the design technology developed for the A310. Sales stand at some 340 aircraft.

A310

First flight in 1982. Shorter than the A300 the A310 has advanced technology wings, probably the most efficient to be found on any aircraft in current airline service. Sales stand at some 200 aircraft.



An artist's impression of the high capacity A330.

A320

This 150 seat, single aisle airliner made its maiden flight in 1987. Although the type has only been in service for one year sales already exceed 460. It is probably the most advanced airliner in the world featuring an electronic (Fly-By-Wire) flight deck with side-stick control and the use of composites in certain primary structures.

A330

A new 'member' of the family now being developed with a first flight expected in 1992. This is a high capacity, twin-aisle aircraft and, in keeping with Airbus philosophy, will feature advanced design aspects.

A340

A four engine, long range aircraft which, like the A330, is now under development and is expected to make its maiden flight in 1991. The A340 and A330 will share many common features, including a common wing with appropriate modification and strengthening for the additional pair of engines. Customer commitments for the A330 and A340 already stand at over 260 aircraft.

An A300 in service with Brazilian carrier Cruzeiro.

	A300-600	A310	A320	A330	A340
Wing span:	147ft 1in (44.84m)	144ft (43.89m)	111ft 3in (33.91m)	192ft 9in (58.65m)	
Length:	177ft 5in (54.08m)	153ft 1in (46.66m)	123ft 3in (37.57m)	205ft 3in (62.56m)	208ft 10in (63.65m)
Typical seating:	267	218	150	250-440	262-295
Max take off weight:	378,500lbs	346,100lbs	158,700lbs	458,600lbs	549,000lbs
Engines:	2 x GE CF6-80C2 or 2 x PW 4000		2 x CFM56-5 or 2 x IAE V2500	2 x GECF6-80C2	4 x CFM56-5C
Thrust (each):	59000 lb or 56000lb		25,000lb	64,000lb	31,200lb
Range (up to):	4350n.m.	4950n.m.	3150n.m.	4950n.m.	7600n.m.



Originally designed as the de Havilland 125, the aircraft first flew, from Hatfield, on August 13, 1962.

Since then the 125, through a series of ongoing development programmes, has become the best selling mid-size business jet in the world. To date nearly 750 have been sold, 60% to North America, one of the toughest markets for this type of aircraft.

Over the years this rugged and

reliable jet has been used in a variety of roles in addition to corporate communications. These have included airways calibration, crew training, air ambulance, VIP transport and government communications.

The current version, the Series 800, has been radically improved over earlier versions. It has a redesigned wing and rear fuselage, re-styled passenger cabin and an Electronic Flight Instrument

System flight deck with five cathode ray tubes providing data presentation. The Series 800 is also the first business jet to be certificated with an all digital flight system.

Although the 125 is produced at BAe's Chester factory Hatfield is responsible for design, marketing and customer support. British Aerospace is the only manufacturer to build business jets as well as commercial jet airliners.



125-800

Wing Span: 51ft 4.5in (15.66m)

Length: 51ft 2in (15.59m)

Typical seating: 5-10

Max take-off weight: 27,400lbs

Engines: 2 x Garrett
TFE 731-5R-1H

Thrust (each): 4,300lbs

Range
(with 1200lb payload): 3000n.m.

◀ A BAe 125-800 owned by the Australian brewing company, Fosters.



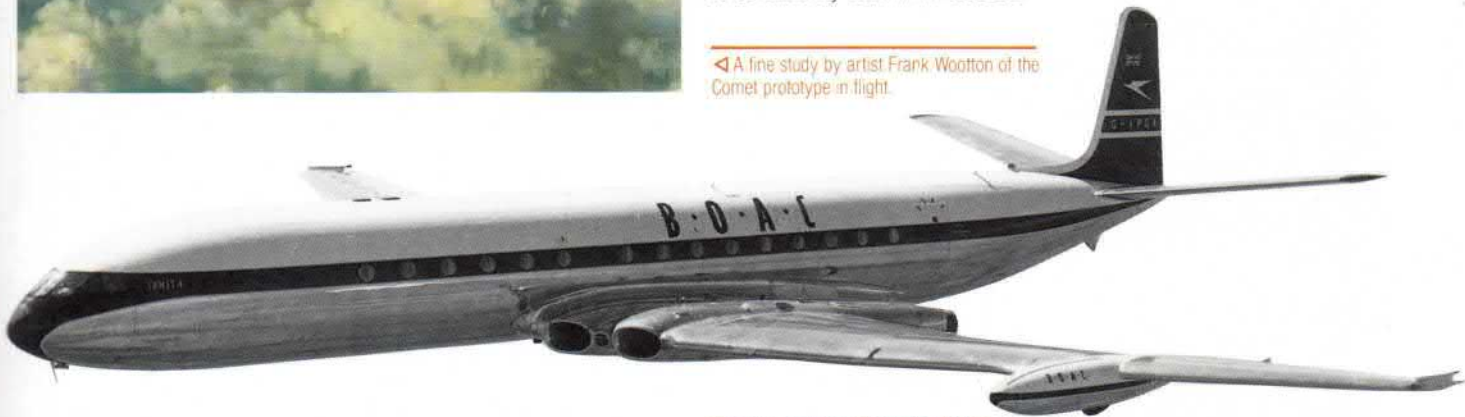
For the future? An artist's impression of a possible supersonic business jet as foreseen by British Aerospace. Such a development would carry 12 passengers at a speed of Mach 1.85 over distances of up to 3,800 nautical miles ▶



On 27th July 1949 the Comet, the world's first civil jet airliner, made its maiden flight from this very airfield. This year we are celebrating the 40th anniversary of this historic event with the appearance of the A. and A.E.E.'s Comet 4C at our Open Day.

The DH 106 Comet 1, capable of seating up to 36 passengers, entered service with BOAC on 2nd May 1952 halving flight times on international routes. In 1958 a BOAC Comet 4, a larger and modified version of the Comet 1, operated the first transatlantic jet service. The Comet 4 and derivatives of it were also to see service with many overseas airlines in Africa, the Middle East, Central and South America. The last commercial Comet flight with fare paying passengers was undertaken by Dan Air in 1980 but

◀ A line study by artist Frank Wootton of the Comet prototype in flight.



The first production Comet 4 for BOAC.

Comet	1	4C
Wing Span:	115ft	114.8ft
Length:	93.1ft	118ft
Maximum All-up weight:	105,000lbs	162,000lbs
Cruising Speed:	450 mph	503 mph
Max. range (with full pay-load):	1,500 mls	2,650 mls
Maximum seating:	36	101
Engines (x 4):	Ghost 50 Mk. 1	Avon 525Bs
Thrust:	4,450lb	10,500lb

the basic design lives on in the RAF's Nimrod maritime reconnaissance aircraft which is scheduled to stay in service until the next century.

All 113 Comets were built at either Hatfield or the Company's Chester factory.



The Comet prototype under construction in the late 1940's.

Over the years the Hatfield Open Day has acquired a reputation for being a highly entertaining, and hopefully informative, day out as the ever increasing crowds testify.

Although the event is now being held on a biennial basis we nevertheless hope that we can continue to maintain the high standards we set ourselves and provide a wide variety of interests for all members of the family.

Any event of this nature however could not be undertaken without the support of a large number of other organisations (and individuals) whose presence at the Open Day is a vital ingredient. Some of these key participants this year are detailed below, but as you will see during your visit to us today this list is far from exhaustive!



Rover CCV

Queen Elizabeth II Hospital

This major local hospital, situated in Welwyn Garden City, is holding its annual Fair in conjunction with our Open Day, so that visitors may take the opportunity of enjoying both events at the one location. The Fair is situated in the Company's Sports Field and aims to raise funds for hospital improvements and patient care. Your generous support would be gratefully appreciated. A percentage of the receipts from the sales of this programme are also being donated to the hospital.

de Havilland Moth Club

Giving Hatfield their full support every Open Day are members of the de Havilland Moth Club. Gracing the flight line with an evocative range of beautifully



A rare colour photograph of a Mosquito B4

Mosquito Aircraft Museum

Occupying the site at Salisbury Hall, London Colney, where de Havillands originally designed and built the Mosquito, this Museum is dedicated to the collection of all de Havilland aircraft, engines and memorabilia. Amongst its extensive aircraft collection is the original prototype Mosquito (hence the name of the Museum) as well

DH 100 Vampire FMK1. ▽

preserved old DH types, they form a strong bond with the Company's heritage.

Founded in 1976 the de HMC now has well over 1800 members spread over 20 countries. They respond to the call to celebrate de Havilland Anniversaries whenever (and wherever) possible. From amongst their number (they own or operate some 500 de Havilland aircraft between them) they have even formed a display team, the Airtour Diamond Nine, with nine Tiger Moths.

Membership of the Club is open to all DH enthusiasts. Annual subscription of £12 includes four issues of the Club magazine, 'The Moth', and entry to all events organised by the Club. Details can be had from the de HMC Sales stall on site.

Rover Group

Welcome to the newest member of the British Aerospace fold. Rover Group (Austin Rover and Land-Rover) became a subsidiary company of BAe in 1988. Today they are supporting our Open Day at Hatfield with two concept motor cars.

The MG EX-E was unveiled at the 1985 Frankfurt Motor Show. Styled by computer aided design facilities this 1990s concept sports car uses the V64V engine from the 6R4 rally car.



The Rover CCV was unveiled at the 1986 Turin Motor Show in the style and character of the Rover 800 which was launched shortly afterwards. The concept behind this car was to provide an optimum balance between exciting appearance, package practicality and dynamic function.

Employees of British Aerospace are able to take advantage of a special discount scheme on Austin Rover cars.

as one of the last Mosquitoes to be built. Other exhibits include Dove, Sea Vixen, Sea Venom, Vampire, Chipmunk, C24 Autogiro, DH 125, Hornet Moth, Comet 1 fuselage, etc.

Enquiries and membership requests should be made to the Museum sales stall on site. (The museum is open on Sundays, Bank Holidays and Thursday afternoons, throughout the summer).



△ MG EX-E



Shuttleworth Trust

Helping us to celebrate the de Havilland theme this year are a number of aircraft from the Shuttleworth Collection at Old Warden. Amongst the types that are appearing at the Open Day is the famous DH 88 Comet Racer which in fact is based at Hatfield following its extensive renovation to flying condition. This aircraft was one of the first ever to be assembled at Hatfield following the move by de Havilland's from Stag Lane in the early 1930s.

The Shuttleworth Collection maintains a large number of historic aircraft in flying condition. The Museum is open daily and holds flying days on the last Sunday of the summer months.

Aeroplane and Armament Experimental Establishment

In this year of the 40th anniversary of the first flight of the Comet jet airliner we are indebted to the A and AEE, Boscombe Down, for bringing their Comet 4C, one of only two Comets left flying in the world, to our Open Day.

The Royal Aeronautical Society—Hatfield Branch

This year the Branch is celebrating the 50th Anniversary of its foundation in 1939 when the first

Branch President was Sir Geoffrey de Havilland. The Branch's contribution to this Open Day consists of displays reflecting the progress of aviation, and the personalities associated with the design and manufacture of Hatfield aircraft, over the past half century. Two special commemorative aircraft competitions have been organised, one for those wishing to show their aeronautical knowledge, the other is the "Young Aviator" competition for budding engineers from 7-15 years.

Many other organisations have turned up to help us with exhibits and displays. There is not space to list them all but we would like to particularly mention the British Motor Industry Heritage Trust for bringing five vintage cars; the various car owner clubs for displaying their privately owned vehicles; The Herb Miller (Glen Miller) Band for musical entertainment; the Fire, Police and Ambulance services for their assistance; the voluntary Medical Service of the St. John Ambulance;

The famous DH88 Comet Racer "Grosvenor House" winner of the 1934 England to Australia air race and now returned to flying condition.

the RAF Falcons and the 10 Para TA for their thrilling displays; the Air Training Corps and the 201 Field Battery Royal Artillery, for marshalling and crowd control duties.

To the many others we cannot list we also express our thanks.

Six Tigers belonging to members of the de Havilland Moth Club in loose formation.



HATFIELD IN THE 30s



△ Hatfield in the early 1930s. The only feature in this photograph which still survives is the Aerodrome Restaurant on the right. The squash court on the left has been clad and converted into the Marketing Display Centre. The swimming pool has long since been filled in and the Stonehouse Hotel (left background) was pulled down to make way for the A1(M) tunnel construction.



Evoking the spirit of the 1930s—a Tiger Moth comes in to land over a Bentley and an SS. From a painting by Eddie Miller ▶

HATFIELD IN THE 80s

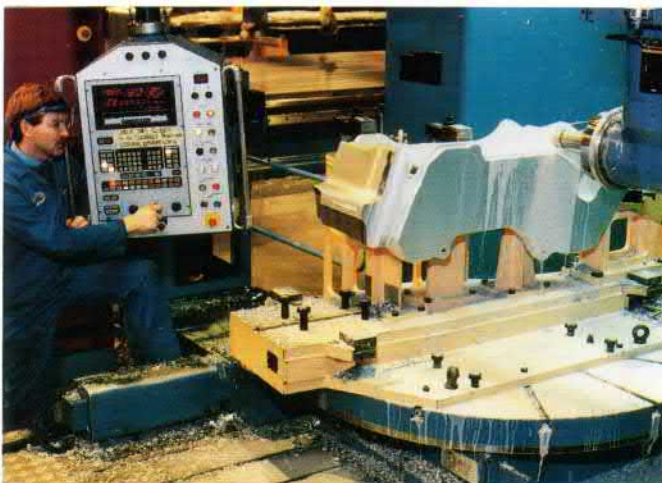


◀ The Final Assembly Hall at Hatfield. Commissioned in 1987 this unique fixed-dock build facility can accommodate four 146s at a time. Assembly in this manner saves a considerable amount of time over the earlier 'production line' method.

Far left

An Airbus Rib 5 (Undercarriage/Wing linking rib) being machined in Hatfield's N/C (Numerically Controlled) Machine Shop.

Hatfield uses computers extensively in the design of modern aircraft. The system is known as CAD (Computer Aided Design). ▽





***BRITISH AEROSPACE
COMMERCIAL AIRCRAFT
HATFIELD***

H A T F I E L D ' 8 9
F L Y I N G P R O G R A M M E
C O M M E N C I N G 1 1 . 1 5 A M

At the time of going to press it was expected that, *subject to availability and weather*, the following aircraft would be appearing in our Flying Display:

Airtour Diamond Nine Display Team

Battle of Britain Memorial Flight

Shackleton

Bulldog

Comet 4

Falcons

Firefly

Sea Venom

Vampire/Venom Duo

LO 100 Glider/Tiger Moth Tug

Skyhawks Trio

Dove

Cirrus Moth

Mosquito

BAe 146

BAe ATP

BAe 125

BAe Harrier

A320

DH88 Comet Racer

DH89B Dominie

Display by the Territorial Army

Dragonfly

It is hoped that the following aircraft will be on static display:

Belfast

BAe 146QT

Up to 60 various DH Moths

Trident 3B

BAe 125

Buccaneer

Devon

Chipmunk

Stearman

Miles Messenger

Sea Vixen

Displays and amenities

- A — Outside Exhibitions
- B — Bandstand
- C — Fire Brigade Exhibition
- D — Snacks, Beverages and Ices
- E — Site Development Display
- F — First Aid
- G — Company Guests and aircrew lunches
- H — Restaurant. (Tickets only)
- J — Lost Child Centre and information
- K — Sports Club
- L — Aircraft Static Display Area
- M — Security Control
- N — Aircrew Reception
- P — Main Car Park
- R — Company Guest Enclosure

Buildings open to the public

- 1 — Aircraft assembly area
- 2 — N/C Machine shop
- 3 — Design Exhibition
- 4 — D.A.D.2
- 5 — E.S.A. Avionics
- 6 — D.A.D.1
- 7 — Upholstery
- 8 — Training module
- 9 — Production engineering and safety
- 10 — Press and foundry
- 11 — Metal form shop
- 12 — Systems test
- 13 — Tech. services
- 14 — Structural Test
- 15 — de Havilland Museum
- 16 — Public Restaurant
- 17 — Surgery
- 18 — Machine Shop
- 19 — Aircraft Mock-ups (Marketing Display Centre)
- 20 — Final Assembly Hall
- 21 — Aero Jig and Tools

IN EMERGENCY

Contact the Security Police Control, any uniformed Security Policeman or the First Aid Post shown on the map. First Aid coverage is kindly provided by the St. John Ambulance Brigade.

