

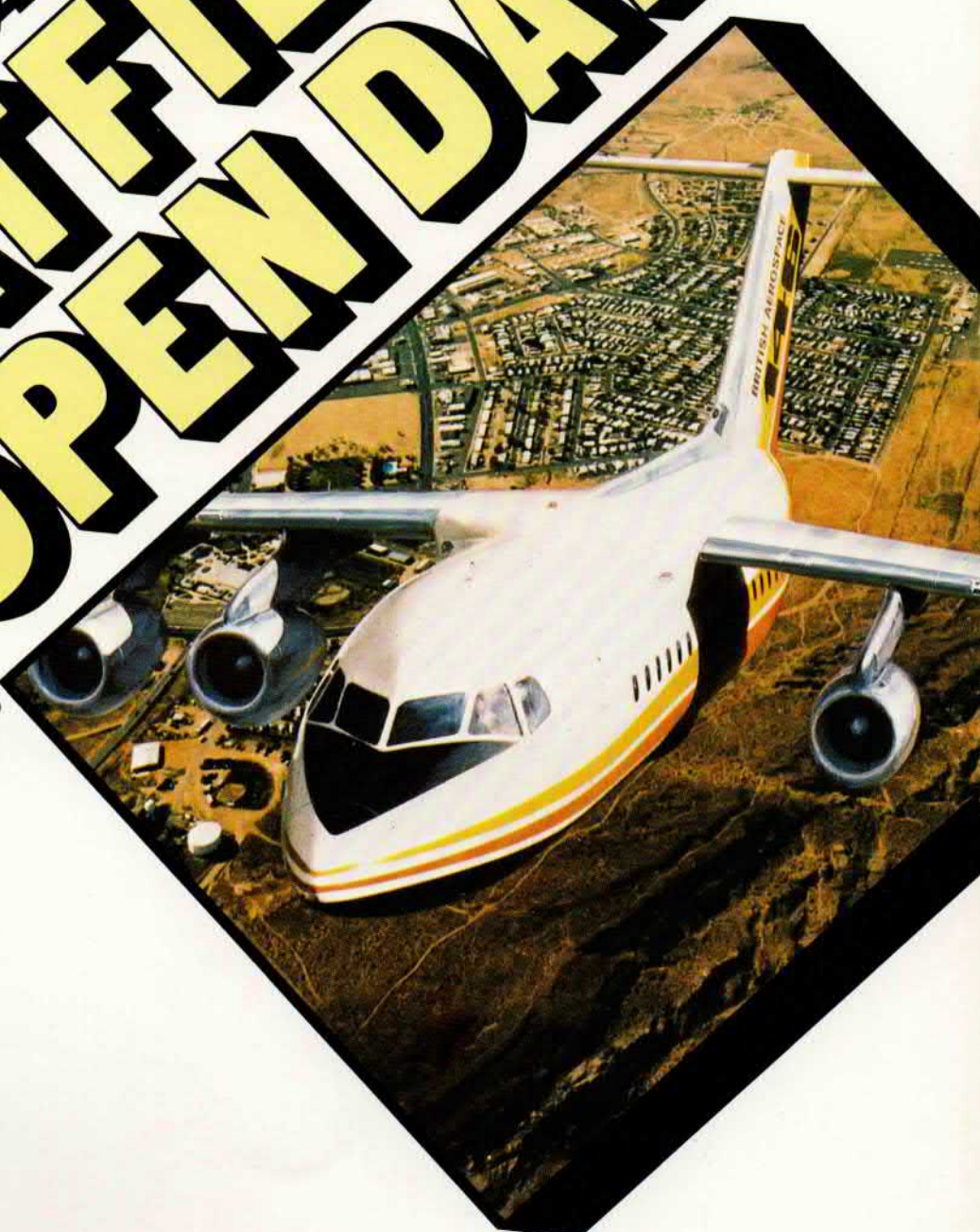


SEPT 1981

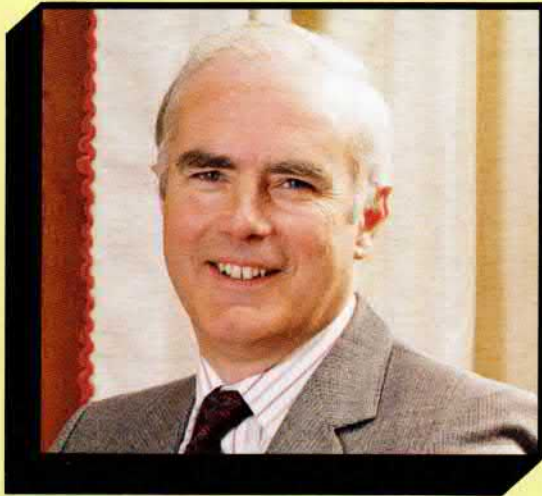
BRITISH AEROSPACE

HATFIELD OPEN DAY

PRICE 30p



WELCOME



Once again it is my pleasure to welcome you to an Open Day at British Aerospace. I hope it will prove an enjoyable occasion for all of us, our neighbours and our families.

The last year has been a busy one at Hatfield with the increasing tempo of the Airbus A300 and A310 programme and, of course, the B.Ae. 146.

The 146 has come a long way; the first aircraft are starting the development flying which will lead to certification of the type for passenger carrying. The production programme is moving ahead, too, with assemblies for many aircraft to be seen in the factory.

There is a high level of interest among airlines and we see a very promising long-term future for the 146. Already we have an order book covering 25 aircraft, including both contracts and options, and we hold letters of intent from airlines to purchase a substantial number more.

I hope you enjoy your day with us and share in some of the excitement of building tomorrow's aircraft.

MICHAEL GOLDSMITH
MANAGING DIRECTOR
HATFIELD-CHESTER DIVISION
AIRCRAFT GROUP

Welcome to Dynamics Group's Hatfield Division on this our second open day which will provide you with the opportunity to see something of the broad scope of British Aerospace work, especially the development of guided missiles and other high technology products.

Now that the Sea Eagle missile has been ordered by Her Majesty's Government, we are moving all our development effort to Hatfield and Sea Eagle, together with our other on-going projects, will ensure a continuity of work for some years.

Besides making a vital contribution to the nation's defence, we at Hatfield are playing an important part in ensuring the continuance and development of advanced technology on which our future prosperity and well being, both locally and nationally, depends.

There is plenty of interest to see - have an enjoyable day.

LAURIE EVANS
MANAGING DIRECTOR
HATFIELD DIVISION
DYNAMICS GROUP

PROGRAMME OF EVENTS

MORNINGS - AIRCRAFT GROUP

9.00	Gates open to Aircraft Group site: Factory areas open to the public and a host of attractions including static aircraft, children's fun castle, steam railway, film show, Aviation picture gallery, police display and exhibitions by the Companies Design, Catering and Fire Departments and Sports Club sections	See Aircraft group site plan for locations of events.
9.30	Tug-of-War competition for the 146 trophy	
11.00-12.30	Flying display	
12.30	Dragon Rapide rides	
12.30-1.15	The Rust, Roest band and majorettes from Hatfield's twin town Zierikzee	
3.00	Aircraft Group site closes	
6.00	Car Park closes	

AFTERNOON - DYNAMICS GROUP

12.00	Hatfield Concert Band	Bandstand
1.00	Dynamics Hatfield Club - keep fit demonstration	Arena
1.15	Historic vehicle rally	Arena
1.45	Concert by the Band of HM Royal Marines	Bandstand
2.00	Parachute display by the Red Devils	Arena
2.30	Display by the Queen's Colour Squadron, Royal Air Force	Arena
3.00	Zierikzee Band and Majorettes	Arena
3.30	Concert by the Band of HM Royal Marines	Bandstand
3.35	Guess the height of the helicopter competition	Arena
3.40	Historic vehicle rally presentations	Arena
4.00	Field gun deployment display	Arena
4.40	Presentations to winners of the guess the height of the helicopter competition	Arena

4.45 FINALE Queen's Colour Squadron, Royal Air Force Beating retreat by the Band of HM Royal Marines

A host of other attractions throughout the day will include:

- Display of Dynamics Group missiles, spacecraft and other equipment
- Drawing office, Machine shop and other factory areas open
- Historic vehicle rally and static display
- Squash and tennis competitions
- Display by Sections of Dynamics Hatfield Club, to include amateur radio, Trident Underwater Club, Propellers Motor Club, photography, netball, rifle and pistol sections
- Field gun display
- Royal Anglian Regiment display
- Childrens train rides • Funfair.

Parachuting can be a hazardous activity. Although the Red Devils are the most highly qualified and capable team in this country there is always the possibility of the unforeseen hazard. Spectators watch at their own risk.

CURRENT PROJECTS

BRITISH AEROSPACE **146**



Hatfield (Aircraft Group) is the birthplace of the BAe 146 Britain's newest airliner, and the first aircraft is now commencing the extensive flight test programme. Deliveries to customers will begin in the autumn of 1982. The BAe 146 Feederjet is designed to carry between 80 and 100 passengers over the world's short-haul routes which have been traditionally served by turbo-prop aircraft. The four Avco Lycoming fan engines contribute to the high fuel efficiency and low noise of the 146 and make the aircraft such an attractive proposition for the market places of the 80's and 90's.

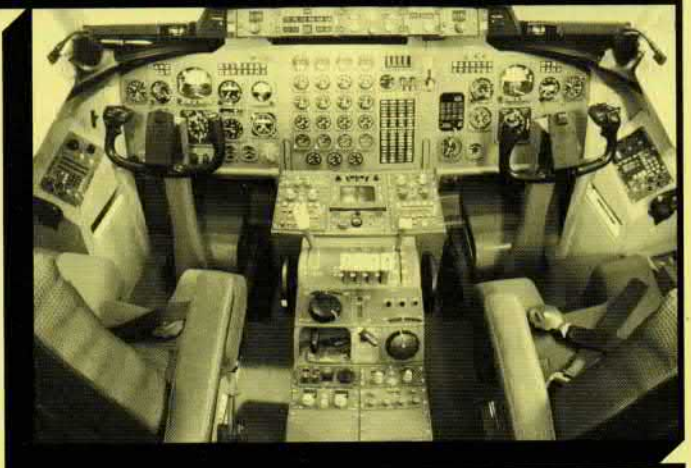
Although final assembly of the 146 is carried out at Hatfield major assemblies are produced at other British Aerospace plants with Avco Aerostructures in the USA building the wings and SAAB in Sweden producing tailplanes and control surfaces.

Orders and options for 25 aircraft have already been received with a further 10 aircraft covered by a letter of intent to buy.

Above: 146.

Right: 146 Flight deck.

Bottom Right: 146 taxiing at Hatfield.



125·700



Britain's most successful civil jet aircraft, the HS 125, is built at this Division's Chester factory with Design, Product Support and Marketing centred at Hatfield.

Since first flight in 1962 over 530 of this 8-10 seat business jet have been sold. Approximately 80% of all 125's have been for export with 60% going to the highly competitive North American market.

Much of the success of the 125 is due to a continuous programme of product improvement which has led to the latest series 700 version of the aircraft. The 125-700 is powered by two Garrett Air-Research TFE 731 turbo-fan engines which give this version a 50% increase in range, greatly reduced fuel consumption and low noise level. Sales of the 125 are today valued at well over £500m.

Above: HS 125.

Right: HS 125 flight deck.

Bottom Right: HS 125 cabin interior.





Wings for the A300 and A310 wide bodied airliners are designed and manufactured by the Hatfield-Chester Division of British Aerospace. Wing design and machining of large spars and ribs takes place at Hatfield whilst assembly of the wing is carried out at Chester.

Since January 1979 British Aerospace has been a full partner with a 20% share in the Airbus Industrie consortium, which builds the A300 and A310. Hatfield involvement in the project dates back to the 1960's when the concept of a large European airliner was first considered.

The A300 first flew in 1972 and the smaller A310 will fly next year. Together the A300 and A310 have attracted 40 customers and sales of nearly 470 aircraft.

Above: Lufthansa A300.

Right: Manufacture of wings for the Airbus A300 and A310 at Chester.

Bottom Right: Manufacture of spars for the Airbus A300 and A310 wings at Hatfield.



THE HATFIELD HERITAGE

1925 DH60 Moth, an aircraft which proved ideal for flying clubs and the private owner. The Moth sold in large numbers all over the world and it made many long-distance record flights. By 1929 Moths, costing £650 complete, were coming off the line at the rate of nearly one a day. Maximum weight (DH60G) 1,650lb; span 30 feet.



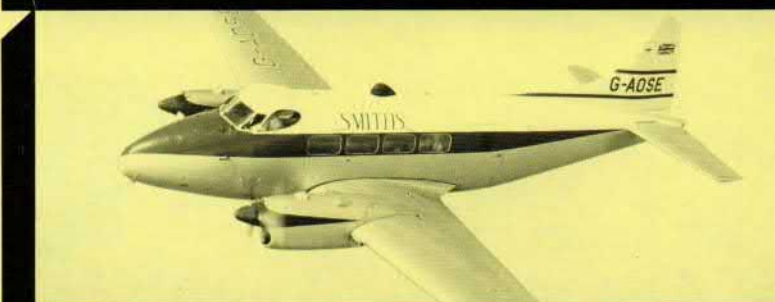
1934 The DH89 Dragon Rapide, an improved version of the Dragon, proved to be one of the most successful light transport aircraft of the era and some Rapides are still flying today. With seats for up to eight passengers and powered by two 200hp Gipsy Six engines, the Rapide has been widely used for airline and charter work and, as the Dominie, it served during the war as a transport and as a trainer. Maximum weight 5,500lb; span 48 feet.



1940 Developed in spite of considerable official opposition, the DH98 Mosquito was, perhaps the most versatile aircraft of the war. Built of wood and with two Rolls-Royce Merlin engines, it was the fastest aircraft until early in 1944. Among its many duties were bombing, day-and-night fighting, photo-reconnaissance, ground strafing, torpedo carrying and deck landing and the carriage of passengers and freight. The Mosquito continued to serve with the RAF until 1955. Maximum weight 23,850lb; span 54 feet 2 inches.



1945 The first de Havilland civil aeroplane to emerge after the war was the DH104, appropriately named the Dove, a light transport aircraft with two Gipsy Queen engines and seats for up to eleven passengers. The Dove sold in large quantities all over the world, including the United States. Used at first mainly as a feeder liner and for charter work, the Dove also became popular as a businessman's aircraft. It remained in production for 21 years. Maximum weight 9,150lb; span 57 feet.



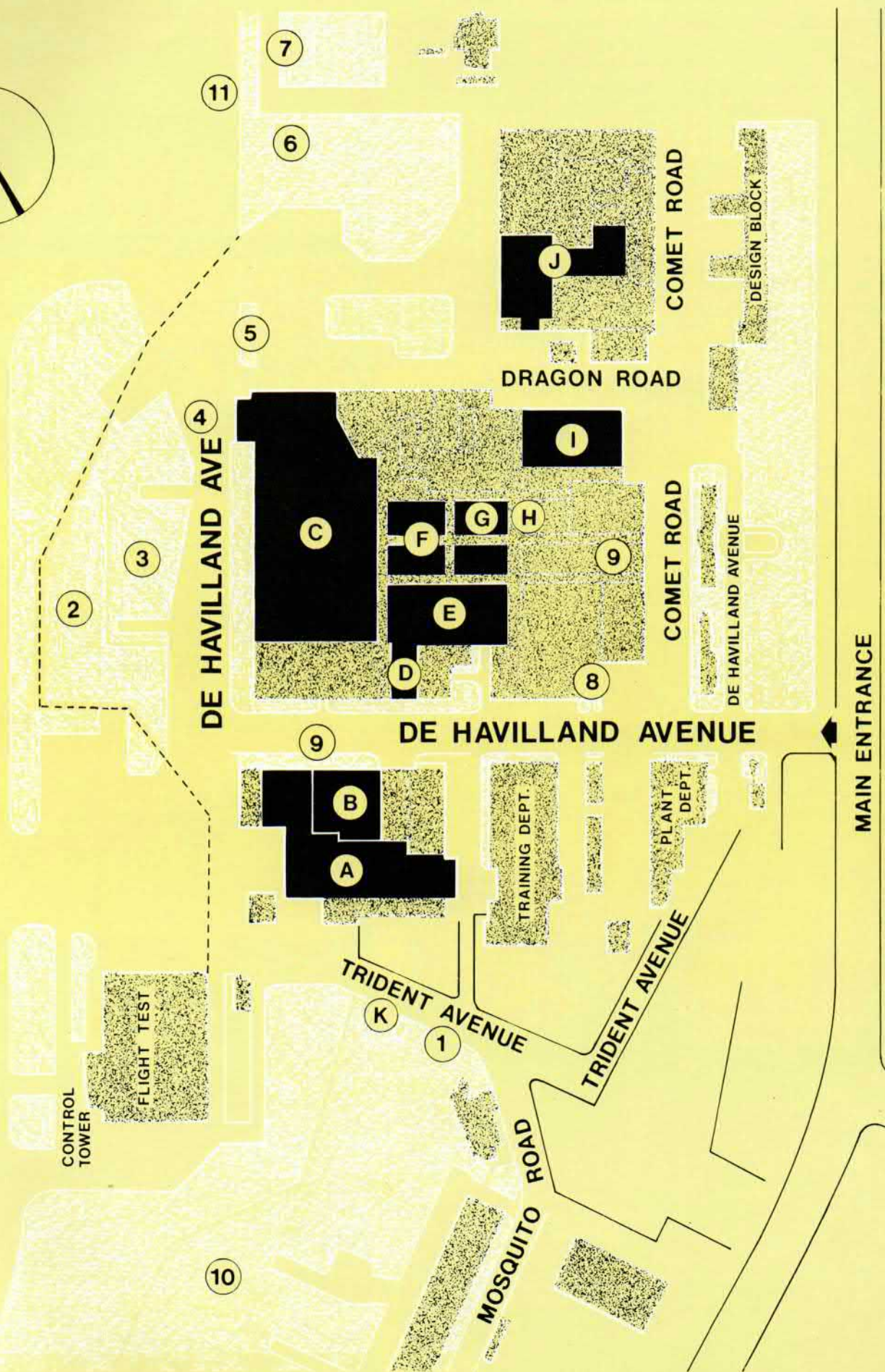
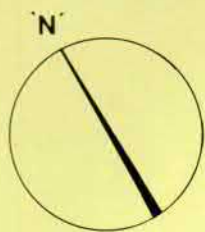
1949 After the war de Havilland, almost alone among aircraft manufacturers, appreciated the commercial possibilities of the jet engine, and the DH106 Comet was the world's first airliner to be so powered. At one step it virtually doubled the speed of air travel and set new standards of comfort. After the accidents of 1954 the structure was modified and in 1958 the Comet 4 opened the first regular jet passenger service to America. Today the Comet lives on as the Nimrod. Maximum weight (Comet 4) 162,000lb; span 114 feet 10 inches.



1962 The Trident was produced in three main versions and is in service with British Airways and the CAAC in China. All are powered by three Rolls-Royce Spey engines, the Trident 3, the largest, capable of carrying up to 180 passengers having in addition a Rolls-Royce lightweight boost engine for short take off. The Trident was the first airliner in the world to introduce automatic landing in regular airline service. Maximum weight (Trident 3) 155,000lb; span 98 feet.

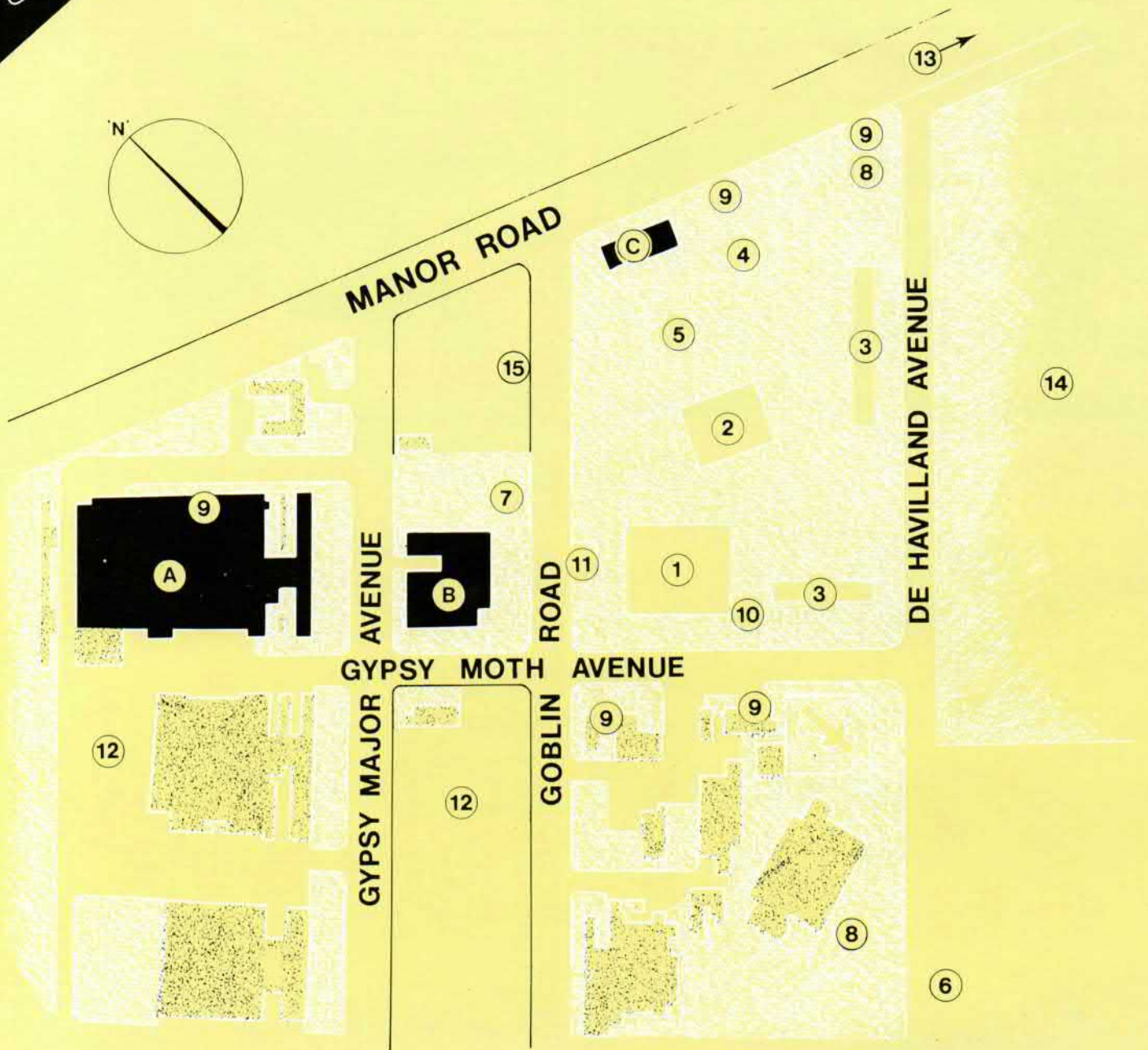


AIRCRAFT GROUP SITE



MAIN ENTRANCE

DYNAMICS GROUP SITE



AIRCRAFT SITE (BARNET-BY-PASS)

OPEN TO THE PUBLIC

- A** MACHINE SHOP
- B** AERO JIG & TOOL
- C** AIRCRAFT FINAL ASSEMBLY AREA & EXHIBITIONS
- D** PAINT SHOP
- E** REDUX & CONTOUR ETCH DEPT.
- F** D.A.D.2
- G** D.A.D. 1
- H** UPHOLST
- I** PRESS & FOUNDRY
- J** MOCK UP SHOP & TECH. SERVICES
- K** MUSEUM

EVENTS AND AMENITIES

- 1** FILM SHOW (IN SALES CENTRE)
- 2** PUBLIC ENCLOSURE
- 3** STATIC AIRCRAFT DISPLAY
- 4** BAND
- 5** TUG O'WAR
- 6** FUN CASTLE
- 7** RAILWAY
- 8** FIRST AID
- 9** TOILETS
- 10** CAR PARK
- 11** BUS STOP (TO DYNAMICS GROUP - STARTING 12.30 P.M. ONWARDS)

DYNAMICS SITE (MANOR ROAD)

OPEN TO THE PUBLIC

- A** DISPLAY OF PRODUCTS AND FACTORY
- B** LUNCHES AND REFRESHMENTS
- C** SPORTS CLUB

EVENTS AND AMENITIES

- 1** MAIN ARENA
- 2** HISTORIC VEHICLES
- 3** STATIC DISPLAYS
- 4** FUNFAIR
- 5** BEER TENT
- 6** STATIC AIRCRAFT DISPLAYS
- 7** BANDSTAND
- 8** INFORMATION KIOSK

- 9** TOILETS
- 10** FIRST AID
- 11** SECURITY POLICE CONTROL
- 12** EMPLOYEES CAR PARK
- 13** PUBLIC CAR PARK
- 14** AIRFIELD
- 15** BUS STOP

AIR TO SURFACE MISSILES



SEA EAGLE. The Sea Eagle long range anti-ship missile is the newest of our projects at Hatfield and will play an important role in the future defence of the United Kingdom. Currently in development, Sea Eagle is an air launched missile for use against modern enemy warships fitted with the latest air defence and electronic countermeasures systems. It will enter service on Royal Air Force Buccaneers and Royal Navy Sea Harriers in the mid-1980's, and may also later arm RAF Tornado GR1 aircraft.

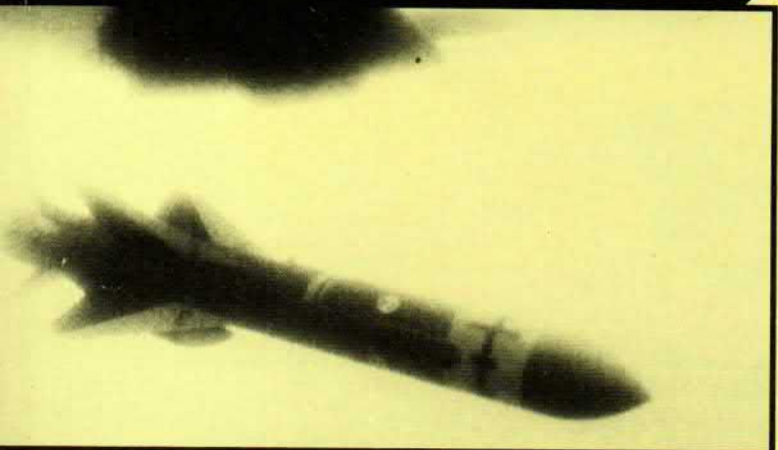
Sea Eagle is designed to be used by day or night in all weather. It is a 'fire and forget' missile, guiding itself to its target from information fed into its on-board computer by the carrying aircraft before launch. The missile is powered by a turbojet engine and flies at a sea-skimming altitude to minimise the chances of detection. Towards the end of the flight, the missile's active radar guidance acquires the target and the missile is guided onto it.

Top left: Sea Eagle on Buccaneer.



Second left: Sea Eagle on Buccaneer.

Third left: Sea Eagle launch.



SEA SKUA. Sea Skua is a lightweight helicopter-launched anti-ship missile which will enter Royal Navy service later this year. We at Hatfield have responsibility for project leadership, but most of the development work is done at Dynamics Group factories at Stevenage and Bristol.

Sea Skua will be carried by Navy Lynx Helicopters and is intended to protect the fleet from missile-carrying fast patrol craft before they can come close enough to fire their own missiles. Each Lynx Helicopter can carry up to four Sea Skuas which can be fired singly or in salvo.

Sea Skua is also a sea-skimming missile and uses semi-active radar guidance - the missile homes on to radar reflections from the target which is 'illuminated' by the helicopter's radar.

Bottom left: Sea Skua launch from Navy Lynx.

DEFENCE SUPPRESSION. We are conducting studies on-weapon systems for the suppression of enemy defences to give protection to strike and close support aircraft. The weapon envisaged is an anti-radar type which would be carried in addition to an aircraft's normal weapon load.

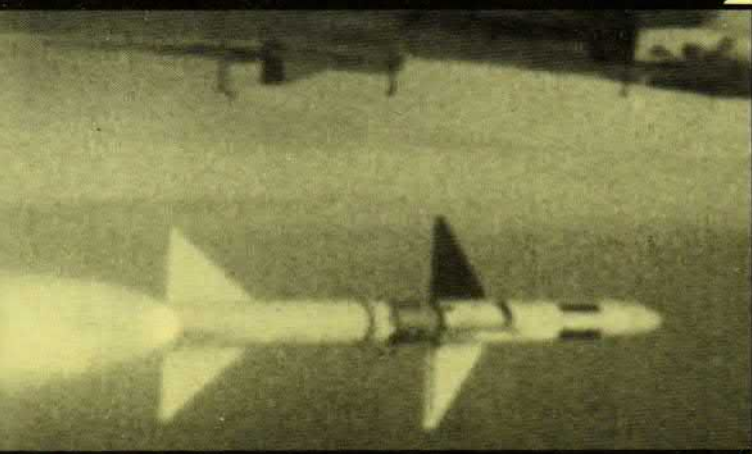


AIR TO AIR MISSILES



SKY FLASH. Sky Flash is a radar-guided medium range all weather air-to-air missile and the most advanced of its type in the world. It is in service on Royal Air Force Phantom aircraft and will arm the Tornado F2 Air Defence Variant when it enters service. Sky Flash is also in production by Dynamics Group for the Swedish Air Force. Based on the Sparrow missile, Sky Flash contains completely new all-British electronics, giving it an exceptional performance which has been well proved in trials. Sky Flash can be launched at supersonic or subsonic speeds against supersonic or subsonic aircraft flying singly or in groups from high down to very low altitudes in severe electronic countermeasures environments. It has a particular capability in 'look down/shoot down' attacks against targets flying at very low altitudes over land, the most difficult situation because of radar 'clutter' from the ground.

Top left: Sky Flash on Tornado ADV.



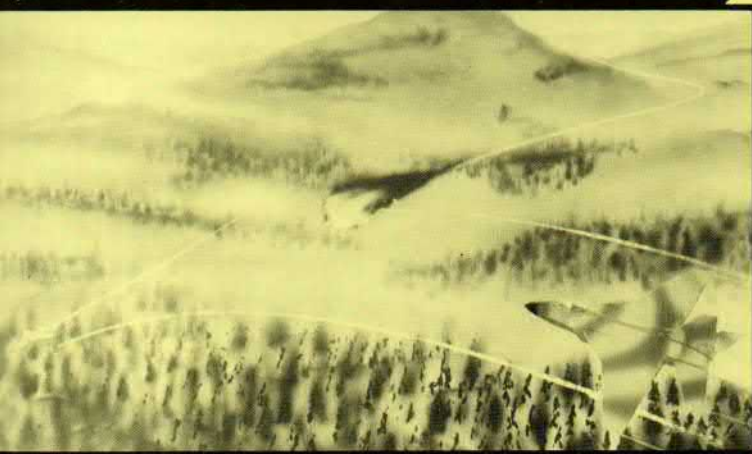
Second left: Sky Flash launch.

ASRAAM. We are at present working on a pre-feasibility study of an Advanced Short Range Air-to-Air Missile (ASRAAM) with Bodenseewerk Gerätechnik of West Germany under the terms of a Memorandum of Understanding signed by the United States, the United Kingdom, France and the Federal Republic of Germany in August 1980. Under the agreement, the US is developing the Advanced Medium Range Air-to-Air Missile (AMRAAM) and a British/German consortium is to develop ASRAAM.

ASRAAM is intended to be a 'fire and forget' missile with an all-aspect attack capability. It will enable target engagements to be carried out at large off-boresight angles and will have an excellent target discrimination capability.

Both AMRAAM and ASRAAM are intended to be dual-produced on either side of the Atlantic and introduced into the Armed Forces of the signatory states. France has the option of becoming a full participant if the missiles meet French requirements.

Third left: ASRAAM Concept.



SRAAM. Several years of development have been carried out at Hatfield on Short Range Air-to-Air Missiles, including successful firings of test vehicles against air targets. The missile test vehicles are fired from tube launchers and use infra-red homing. Thrust vector control enables the missiles to achieve the high 'g' manoeuvres necessary in dogfight situations. Missiles of this type could be made available as an operational system in a relatively short time.

Bottom left: Test vehicle launch.



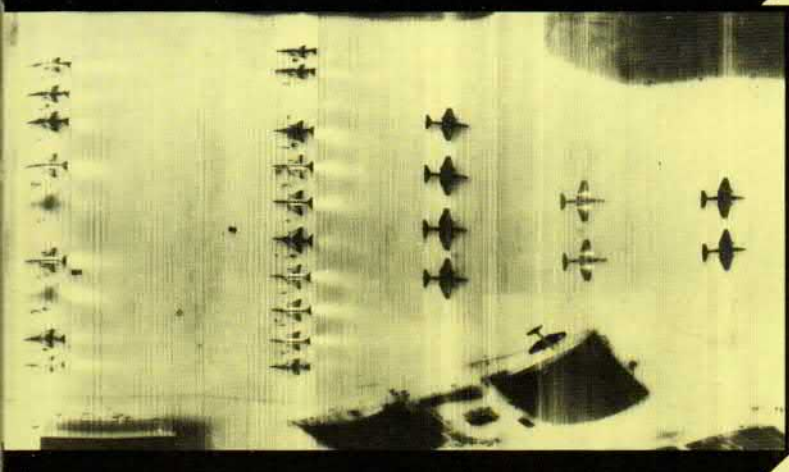
INFRA-RED EQUIPMENT



All bodies radiate thermal energy in the infra-red wave-band as a function of their absolute temperature and emissivity. Infra-red aerial reconnaissance provides intelligence not obtainable by optical cameras or radar. Night operation is possible without artificial illumination, and camouflage, smoke and foliage do not conceal heat. Most military and covert activity or presence produces detectable radiation.

We have developed an airborne infra-red surveillance system called Linescan. It detects the minute variations in the infra-red radiation from the terrain overflow, building up a comprehensive thermal picture which can be displayed in real time or recorded for later analysis. Linescan units are made for use on drones, light aircraft, helicopters and also for high performance aircraft.

Top left: Linescan 214 in an aircraft cabin enables immediate display of infra-red imagery of the terrain below.



Second left: Linescan imagery, showing a combat airfield with aircraft at various states of readiness. Lighter areas are hotter. Aircraft can be seen fuelled and with engines running.

MECHANICAL EQUIPMENT
AND SYSTEMS

M.E.S.D.

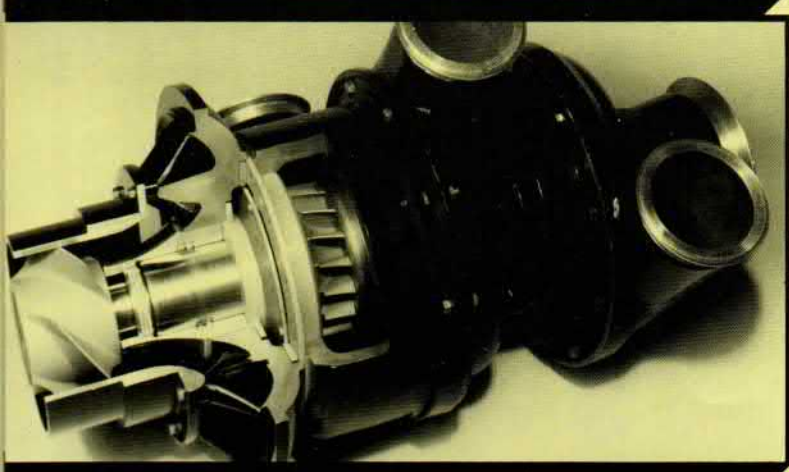


PROPELLERS. We have been manufacturing propellers since 1935 and still supply and refurbish them for a variety of types of aircraft and hovercraft. We are currently working on the development of advanced multi-blade aircraft propellers for the new generation of high efficiency fuel-saving aircraft.

AIR CONDITIONING. Over the years we have developed and supplied air conditioning components and systems for many different types of aircraft, including the engine bleed air control and cabin pressure control systems for the BAe 146. Recent developments include systems to provide environmental control for armoured vehicles, aircraft when on the ground and a variety of similar applications.

WIND TURBINE GENERATORS. In association with other companies in the UK, we are involved in the development and manufacture of two large wind turbine generators intended for use as an alternative source of electrical power.

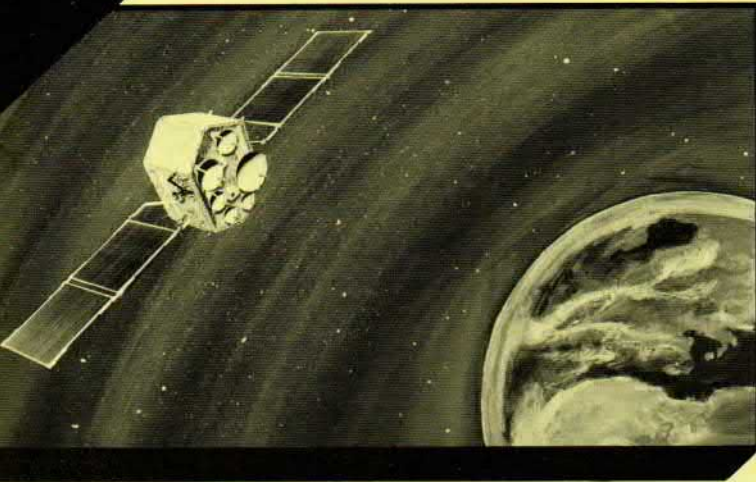
WEIGHING EQUIPMENT. Located at Chiswick is a part of the Hatfield Division which produces a variety of electronic, hydraulic and mechanical systems for vehicle weighing and industrial weighing and process control.



Third left: The BHC Super 4 with 21ft. propellers

Bottom left: Three wheel air bearing cold air unit.

BRITISH AEROSPACE DYNAMICS GROUP



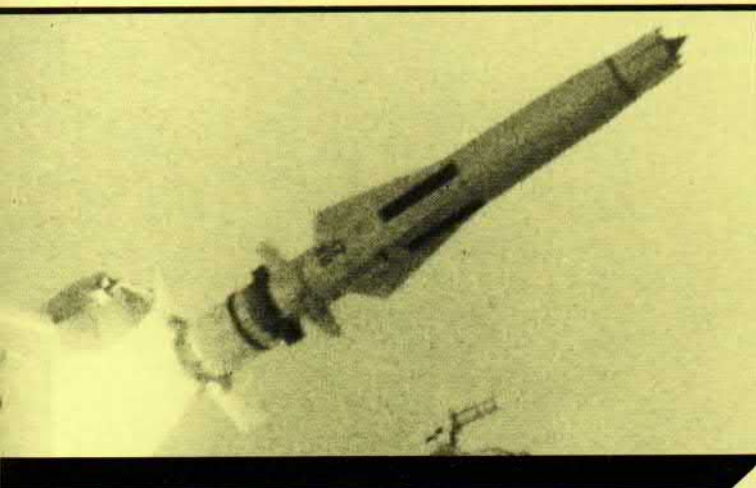
British Aerospace Dynamics Group combines the products and expertise of the former Hawker Siddeley Dynamics and British Aircraft Corporation Guided Weapons Division. The Group employs over 17,500 people at eight major sites throughout the UK and has an annual turnover in excess of £400 million.

The Group designs, develops, supplies and supports a very extensive range of tactical guided missile systems which are making a significant contribution to the defence of the UK and many other nations. The Group also is involved in a number of major space programmes, notably communications and scientific satellites and systems designed for long and reliable operation in space. The Group has acquired particular expertise in other areas including the design and manufacture of infra-red systems, air conditioning systems, gyroscopes, radomes, hybrid and integrated microelectronic components, propellers, weighing equipment, automatic test equipment and many others.

With an increasing emphasis on international co-operation, the Group is working with companies on both sides of the Atlantic on a number of advanced products.

Left: The Orbital Test Satellite (OTS) has been operational past three years.

HATFIELD DIVISION



Hatfield, formerly the headquarters of Hawker Siddeley Dynamics and before that, of de Havilland Propellers, is now the Division responsible for Dynamics Group's air launched weapons.

The work at Hatfield is concerned primarily with the research, design and development of the products described in this booklet.

To produce such products, which are designed to meet the most exacting standards of quality and reliability, demands a workforce backed by the most comprehensive and up to date facilities. These include research, design, development, test and quality assurance departments, a microelectronics production facility and machining and assembly areas for the production of prototype equipment.

Teams experienced in the latest techniques are responsible for design work from a product's initial concept to its final form in production. Working closely with the designers are systems development departments where the initial concepts are developed to the required standard of performance and reliability.

Products are proved for their often harsh working environments by extensive testing under simulated conditions and by detailed fault analysis.

We attach great importance to training and as well as operating very highly regarded apprenticeship schemes carry out training of other staff continuously

Left: Work is carried out at Hatfield on the Sea Dart medium range area defence system.

BRITISH AEROSPACE

British Aerospace unites in one major enterprise the aircraft, guided weapons and space engineering interests of Hawker Siddeley Aviation, Hawker Siddeley Dynamics, British Aircraft Corporation and Scottish Aviation. We are the equal of any other aerospace group in the world in terms of technical resources, manpower, international standing, past and present achievement, and future prospects.

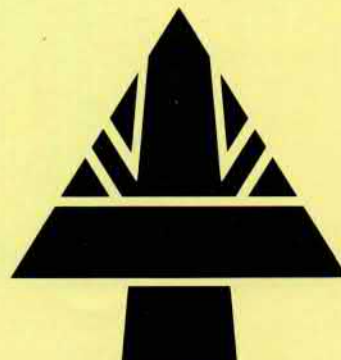
The research, design, manufacturing and test resources of British Aerospace are unsurpassed anywhere in the world. At each major site, we have comprehensive design organisations, supported by advanced computer aids which match the complexity of the design task. In Britain, test laboratories and specialised test rigs (including wind tunnels covering flight regimes from VSTOL to speeds in excess of Mach 6) sustain in-depth programmes of research, development and testing not only on aircraft and missiles, but also on spacecraft and space systems, radar aerials, antennas and radomes, electronic, avionic and infra-red equipment, high precision gyroscopes and many other high-technology products. All test facilities, including our flight test centres, are backed by sophisticated data-gathering, reduction and analysis centres equipped with digital, analogue and hybrid computers. Our production shops are comprehensively equipped with the most modern numerically-controlled machine tools and the specialised equipment needed to develop and apply new structural materials and manufacturing techniques, maintaining their long record of pioneering achievement in these fields. Our extensive clean-room facilities include the largest building in Europe designed specifically for spacecraft construction.

Aircraft, weapons and other high-technology equipment designed, developed and made by British Aerospace are today in service with or on order for more than half the nations of the world. We are probably active today in more markets than any other single manufacturer, some 60% of our

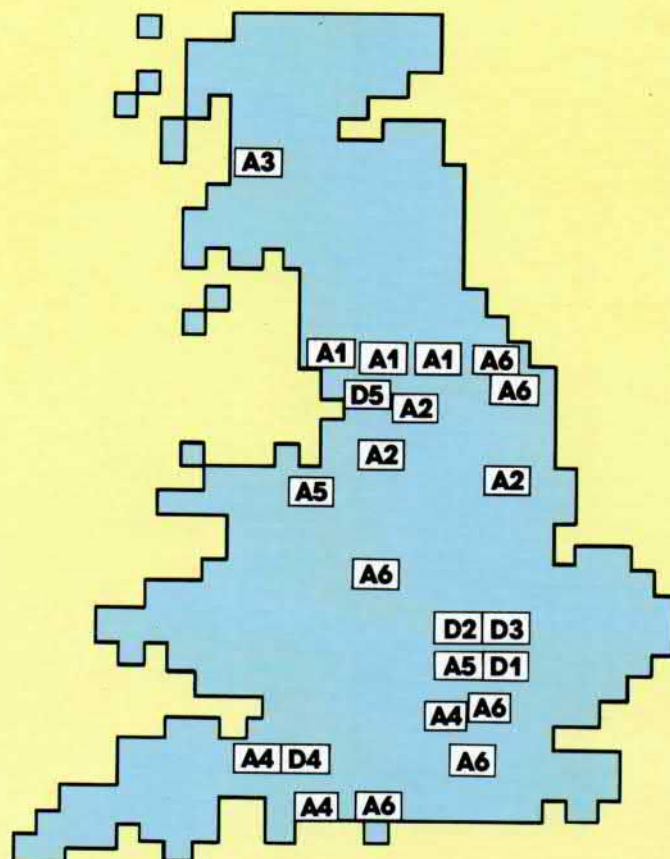
annual business being in export markets. No other "foreign" manufacturer has achieved so much commercial success in the USA, and our current overseas customers range from the "super powers" such as the USA and the People's Republic of China to private companies and "Third World" countries where we are making vital contributions to transport, communications, trade and national defence. The excellence of our technical support and spares service has won international respect, and we are proud of the number of customers who have repeatedly come back to us with repeat orders or new requirements.

The future at British Aerospace - both short-term and long-term - promises to be full and exciting. Our order book contains over £3,000 million of orders, assuring work throughout the 1980s and to the end of the century. Current products are being vigorously developed, and we are also busy on design and development of a number of new projects, both in our own independent right and in collaboration with international partners. New commercial aircraft programmes include the British Aerospace 146 feederjet, Jetstream propjet light transport, and A310 airliner to which we are contributing as a full partner in Airbus Industrie. In the military aircraft field, we are looking beyond ongoing development of aircraft such as the VSTOL Harrier and Sea Harrier, Hawk ground attack trainer, Jaguar tactical strike aircraft and Tornado swing-wing all-weather combat aircraft to new combat aircraft to meet the needs of the UK and Europe.

The Dynamics Group, which produces a larger range of tactical missile systems than any other manufacturer in the Western World, is developing new concepts for air-to-air, air-to-surface, anti-tank, anti-ship and anti-missile defence systems, in some cases working jointly with US and European companies. The Group is also working on a number of scientific communications and scientific satellite projects.



BRITISH AEROSPACE NATION WIDE



AIRCRAFT GROUP

A1 WARTON DIVISION

Principally engaged on two European military aircraft programmes, the Tornado multi-role combat aircraft and the Jaguar strike aircraft.

A2 MANCHESTER DIVISION

Responsible for both the HS 748 civil and military transport and the Nimrod ASW. A new version of the Nimrod, for Airborne Early Warning, is currently being manufactured.

A3 SCOTTISH DIVISION

Responsible for the Jetstream twin turbo-prop airliner and the Bulldog primary trainer. Like most Divisions, Scottish also carries out component manufacture for other British Aerospace programmes.

A4 WEYBRIDGE-BRISTOL DIVISION

This Division is involved in many of British Aerospace's Civil and military projects but has principal responsibility for the BAC One-Eleven, manufacture of which is being established in Romania.

A5 HATFIELD-CHESTER DIVISION

Responsible for three of British Aerospace's major civil programmes. The HS 125 Business Jet, the new BAE 146 Feederline and wings for the European Airbus.

A6 KINGSTON-BROUGH DIVISION

Principally responsible for the Harrier 'jump jet', the world's first operational vertical take-off aircraft, and the Hawk jet trainer which now equips the Red Arrows aerobatic team.

DYNAMICS GROUP

D1 HATFIELD DIVISION

Air launched missiles.
Infra-red equipment.
Mechanical equipment and Systems Weighing equipment.

D2 STEVENAGE DIVISION

Land-launched missiles.
Reinforced and microwave plastics.
Gyros and gyro-based equipment.
Automatic test equipment.

D3 SPACE AND COMMUNICATIONS DIVISION, STEVENAGE

Space satellites and systems. Spacelab pallets.

D4 BRISTOL DIVISION

Naval missiles.
Space satellites, sounding rockets and systems.
Aircraft and vehicle antenna systems.

D5 LOSTOCK

Main production factory.



BRITISH AEROSPACE AIRCRAFT GROUP

British Aerospace
Aircraft Group
Hatfield
Hertfordshire
AL10 9TL

A PART OF BRITISH AEROSPACE PUBLIC LIMITED COMPANY

BRITISH AEROSPACE DYNAMICS GROUP

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