

British Aerospace Hatfield
Presents the
de Havilland
Centenary Open Day
1982



Price £1

de Havilland

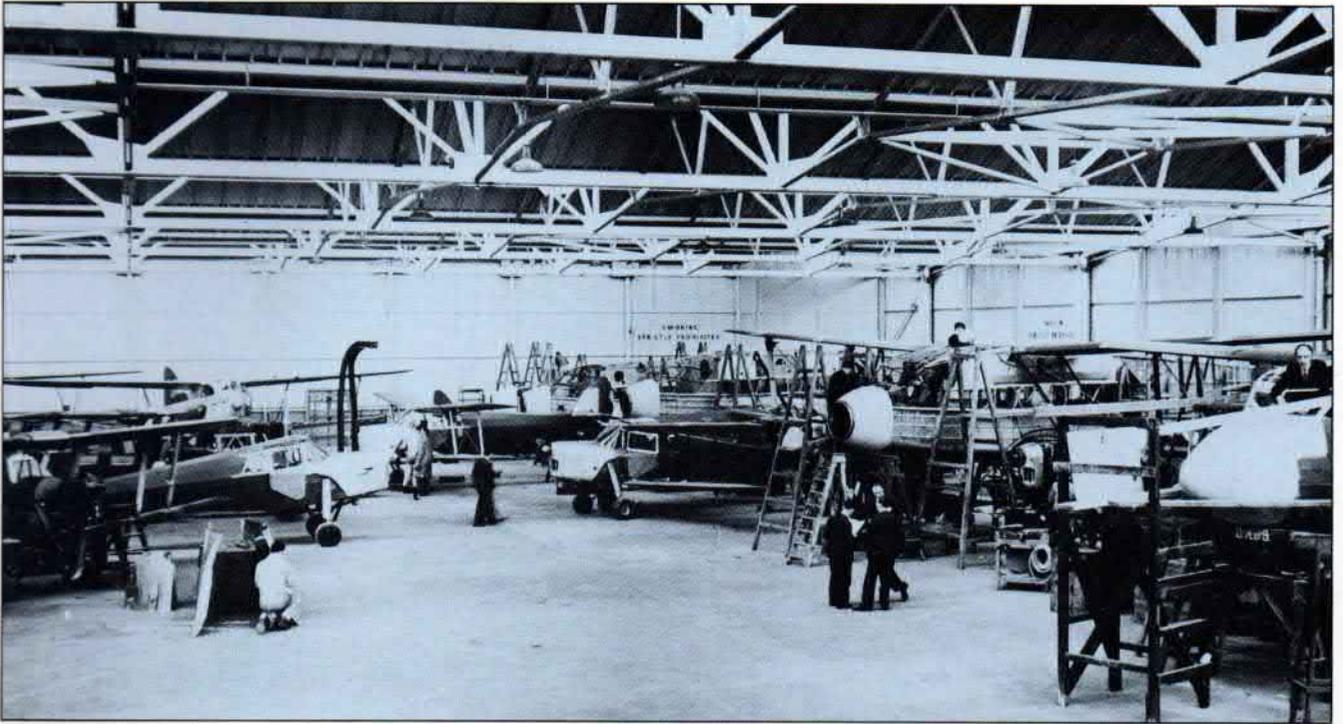
100



YEARS

De Havilland

Hatfield production in the early 1930s . . .



BRITISH AEROSPACE

. . . and 1982



Front cover photograph by Arthur Gibson, Image In Industry Ltd.
Back cover photograph by Reg Bonner, BAe Hatfield Chief Photographer.

Welcoming Message by Mr. M. J. Goldsmith

In this year of the centenary of the birth of Sir Geoffrey de Havilland it is with pleasure that I welcome you to British Aerospace's 1982 Open Day.

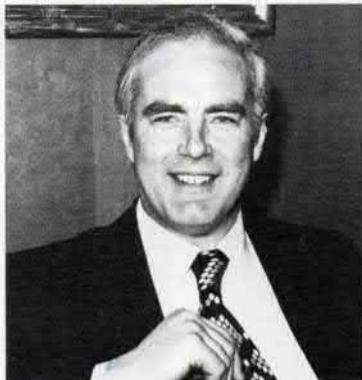
Sir Geoffrey was of course the founder of the de Havilland group of companies. His enthusiasm and foresight have resulted in Hatfield becoming today a principal centre of Britain's modern aerospace industry.

Since our last Open Day the pace of work has continued to increase. We now have several BAe 146s participating in the flight test programme and certification of the type is scheduled for later this year with first deliveries to customers following soon after. The production programme is now rapidly building up at all the sites involved in the project.

The Airbus programmes are also continuing to expand. Earlier this year the new A310, with its Hatfield designed, advanced technology wings, made its maiden flight and initial results from the test programme are very encouraging. Sales of both the A300 and A310 Airbuses are now second only to Boeing in the large airliner market and to meet our increasing production commitments and improve our efficiency we are commissioning a new machine shop and installing the very latest in tape controlled machines.

Whilst you are with us today you will have the opportunity to see how far we at Hatfield have advanced the shape of aviation over the past 50 years, building on the genius of a man born exactly 100 years ago.

I hope you have an enjoyable day.



Michael Goldsmith

Managing Director
Hatfield Chester Division
Aircraft Group

de Havilland

100  **YEARS**

Sir Geoffrey de Havilland,

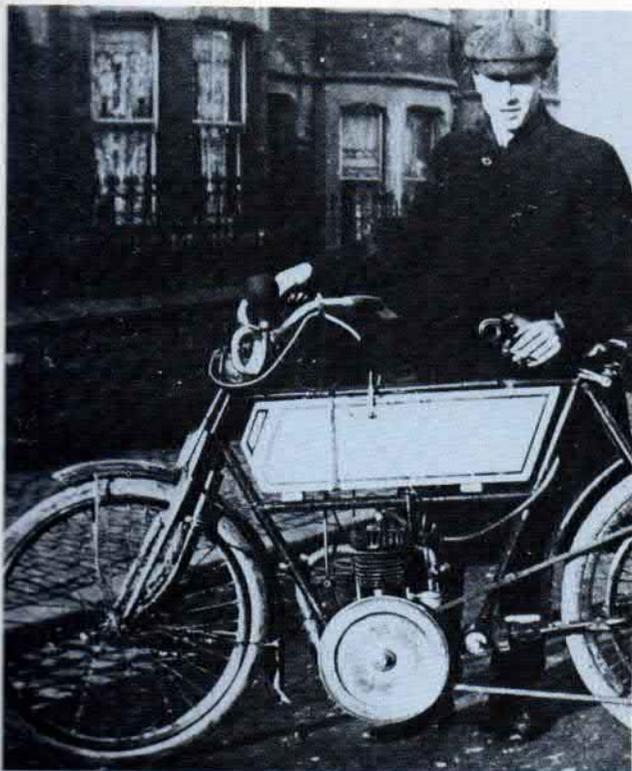
O.M., C.B.E., A.F.C.,
Hon. F.R.Ae.S., Hon. F.I.A.S.

Sir Geoffrey de Havilland devoted his working life to aeronautics from 1908 when, as a young man of 26 years, he left the design side of the motor industry in London in order to build an aeroplane and achieve fully controlled flight. The son of a clergyman, he had been trained at the Crystal Palace Engineering School, which he entered in 1900 and where he designed and built a successful motor-cycle engine. In 1903 he joined Willans and Robinson of Rugby as a pupil working in the drawing office and the shops on steam engines, gas engines and turbines. From there in 1905 he went into the drawing office of the Wolseley Motor Car Company of Birmingham, and a year later he transferred to the design office of the Motor Omnibus Company at Walthamstow, London.

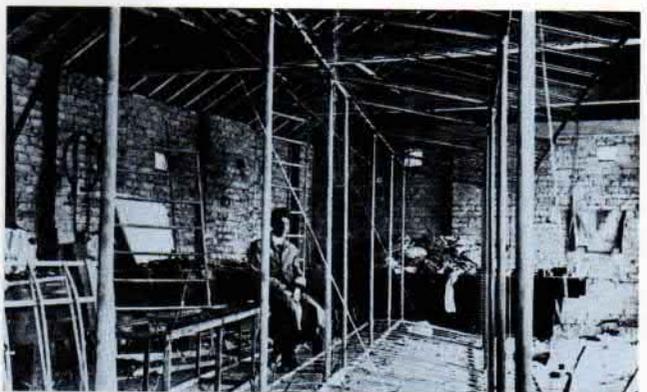
From the earliest news of the Wright Brothers' successful flight at Kitty Hawk in December 1903, de Havilland began to feel an overwhelming desire to fly, and in 1908, helped by a thousand pounds from his grandfather, he set about achieving this ambition. It meant giving up a promising start as a motor engineer.

De Havilland realised that there was no suitable engine available and that he must design one, so for several months he worked alone at a drawing board designing a horizontally opposed water-cooled four-cylinder engine of fifty brake horsepower, which was made to his drawings by the Iris Motor Company of Willesden, London.

At this stage he was joined by a friend, Frank Hearle, and together in a shed in Fulham, London, they built a pusher biplane with two propellers driven through bevelled gears.



An early photograph of Geoffrey de Havilland with a motor cycle of his own design.



Geoffrey in his Fulham workshop with his second flying machine.

Trials of the aircraft were made on the Hampshire Downs in 1909. It is not surprising that an entirely new aircraft, in the hands of a man who had never flown before, soon came to grief. The two men built a modified machine around the original engine, this time employing a single pusher propeller. During the summer of 1910 de Havilland taught himself to fly in this second machine and it proved a successful aeroplane.

With finances running low, however, it became necessary to seek employment. At this time the Army Balloon Factory at Farnborough were considering taking on a designer for aircraft, and de Havilland and Hearle both secured positions. De Havilland worked as designer and test pilot on various designs, including a canard layout, and he originated the B.E. (British Experimental) series of tractor biplanes which were adopted as trainers for the Army.

Early in 1914 an opportunity arose to enter The Aircraft Manufacturing Co. Ltd.

(Airco) as chief designer and test pilot. This company was owned by Mr. G. Holt Thomas and was building Henry Farman biplanes under French licence at Hendon, North London. De Havilland joined with the first object of developing a British design for the company and quickly produced the DH1 two-seat pusher biplane fighter, which flew in January 1915.

Meanwhile war had been declared. As an R.F.C. reservist, de Havilland at once joined up, and flew Bleriot aircraft on submarine reconnaissance. He was promoted to the rank of Captain (and for many years after the war was simply known as 'The Captain' by his workforce). He was subsequently recalled to Airco to continue aircraft design.

It was during this period that de Havilland gathered around him the team which afterwards formed the backbone of the de Havilland Aircraft Company, notably, Mr. F. T. Hearle, Mr. C. C. Walker, Mr. W. E. Nixon and Mr. F. E. N. St. Barbe.



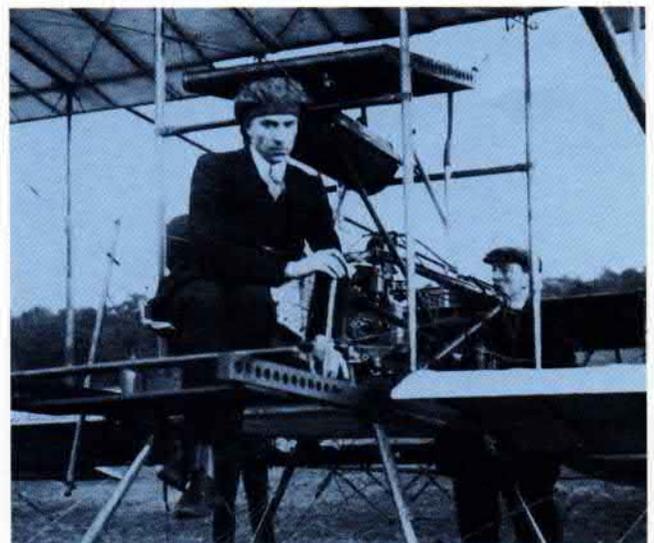
Geoffrey at the controls of his BE2 which he designed whilst working at Farnborough.



Geoffrey wearing the uniform of Captain in the R.F.C., the rank he reached in 1914.



Geoffrey with his wife Louie, who shared his love of flying.



Geoffrey on the 'flight deck' of his second aircraft with Frank Hearle standing by the engine. It was this machine that was purchased by the War Office for £400.

de Havilland

100  **YEARS**

The de Havilland Aircraft Co. Ltd. was formed on September 25th, 1920, as the result of the closing down of Airco's aviation interests. It was formed with a working capital of £1,875 and endured very difficult times until about 1925. It may be said that the story of Geoffrey de Havilland from 1920 is virtually the story of the de Havilland enterprise, of which he was always the leading spirit. That is why it is difficult to write about DH, the company, without writing about DH, the man. The two are interwoven.

It was Geoffrey's conception of a light aeroplane, the Moth, which set the company on its feet and gave a start to the flying club movement in Britain and the world at large.

When war came in 1939, it was de Havilland who proposed the Mosquito, a high-speed unarmed reconnaissance and bombing aircraft of wooden construction.

Towards the end of the war Sir Geoffrey urged the possibilities of a jet-propelled airliner and pioneered this development with the Comet, powered by Ghost engines. When entirely new phenomena in metal fatigue were encountered Sir Geoffrey led his team in the exploration and mastery of the problems, thereby advancing world knowledge on an important aspect of aeronautical engineering.

As a pioneer of flying Sir Geoffrey was contemporary with Sir Thomas Sopwith, Chairman of the Hawker Siddeley Group, with which the de Havilland World Enterprise became merged during 1960.

Sir Geoffrey de Havilland lost two of his three sons in test flying, the youngest, John, in August 1943 in a Mosquito collision, and the eldest, Geoffrey, in September 1946 when exploring with a DH108 research aircraft the problems of flight near to the speed of sound. The second son, Peter, who was also a pilot and an active member of the aircraft sales organisation retired in 1976 and died a year later.

Sir Geoffrey was a quiet, thoughtful, man who shunned the limelight. However he also had a very human and generous

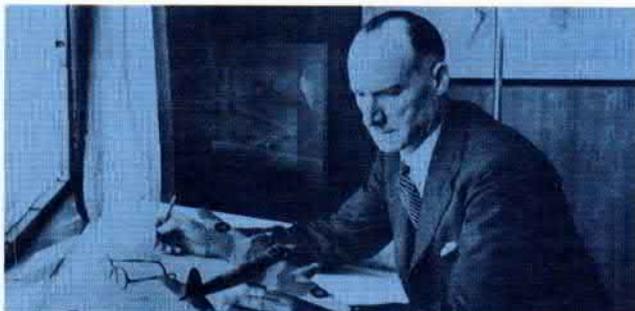
nature and those that knew him enjoyed his company and friendship. He possessed great foresight and ingenuity. Whilst aviation was a major element in his life he also took a great interest in nature and was a noted wildlife photographer. He designed and built his own automatic cameras for capturing the life cycles of butterflies and plants. He was an authority on lepidoptery and this interest was reflected in the names of his most famous aircraft.

Sir Geoffrey was made a Commander of the Order of the British Empire in 1934, was knighted in January 1944, and was awarded the Order of Merit in November 1962. His autobiography was published in 1961.

He died in quiet retirement in 1965.



Geoffrey de Havilland's three sons: Peter, John and Geoffrey. Both John and Geoffrey were to lose their lives in tragic flying accidents.



Geoffrey de Havilland c.1942.



Geoffrey de Havilland (seated centre) with his four founder directors: (left to right) F. E. N. St. Barbe, C. C. Walker, W. E. Nixon, and Frank Hearle.

The story of an enterprise

In 1908, a mere five years after the Wright brothers had achieved man's first powered flight with a heavier than air machine, young Geoffrey de Havilland, a designer for a motor bus company, gave in to a burning desire to fly and forsaking his steady job and with the aid of a £1,000 loan from his grandfather, set out to design and build his own aircraft. The first problem was to obtain a propulsion unit so Geoffrey de Havilland designed, and had built for him, a lightweight aero engine. Renting a workshop in Fulham, Geoffrey, with the aid of both his wife and a colleague, Frank Hearle, started work on an aircraft.

In 1909 they took their completed machine to Seven Barrows in Hampshire but on Geoffrey's first attempt to fly the wing failed and the machine crashed, luckily without serious injury to the pilot. Nothing daunted, the team set about designing and building a new aircraft around the salvaged engine and on September 10th, 1910, at Seven Barrows, Geoffrey de Havilland made a successful first flight of 1/4 of a mile.

In 1911 both Geoffrey de Havilland and Frank Hearle were taken on by H.M. Balloon Factory (later R.A.E.) at Farnborough along with their successful flying machine which the War Office purchased for £400. During the remaining years of peace Geoffrey worked on a number of aircraft designs such as the FE2B, before leaving Farnborough to take up the post of Chief Designer at the Aircraft Manufacturing Company (Airco). It was with Airco that the first design to bear the famous initials 'DH' came off the drawing board. The DH1 of 1914 was a two seat pusher reconnaissance biplane. The number sequence that the DH1 started is continued today with the 146, only the preceding initials have altered with changing company ownership.

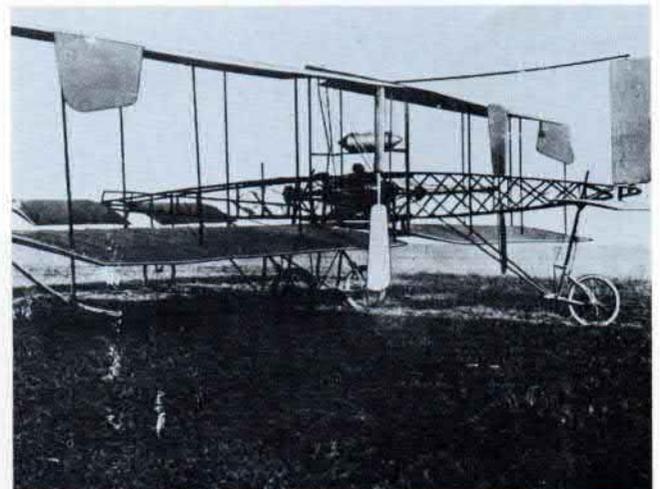
During the First World War a number of DH aircraft designs went into production including the famous DH4 Day Bomber, so successful that it was put into mass

production in the United States. It is a fact not often appreciated that over 1/3 of all allied aircraft during World War I, and 95% of all aircraft built in the U.S.A. during that period, were of DH design.

After the war surplus DH4s and DH6s were modified for passenger use and in 1919 the world's first scheduled air service, from London to Paris, was inaugurated by a DH4 with one reporter and a cargo of newspapers, cream and grouse on board.

In 1919 Geoffrey de Havilland commenced work on the DH18, his first transport aircraft but due to the depression and the non-appearance of the air transport boom that everyone had expected, Airco were unable to maintain their aviation activities and decided to close them down. Geoffrey was determined to continue working in aviation and so in 1920 he set up his own company, the de Havilland Aircraft Co.

Renting a field and some huts at Stag Lane he built around him a small but enthusiastic and energetic team. The original hut which Geoffrey used as his head office still exists today serving as the DH Museum at Hatfield.



Geoffrey de Havilland's first aircraft. It crashed when Geoffrey attempted to fly it in 1909.

de Havilland

100  **YEARS**

During those early years de Havillands worked at a large number of aircraft designs with varying degrees of success. The DH29, DH34 and DH54 for example were all large, single engined, almost clumsy looking passenger aircraft, some of which entered airline service during the early 20s.

At the same time 'DH' designed a number of touring aircraft with mixed results. The government of the day was trying to promote private flying but with the emphasis on low fuel consumption. The result was that a range of fairly impractical designs came out of the factories of a number of aircraft companies. Geoffrey then decided not to follow suit but build a light aircraft that was, above all else, practical. The DH51 of 1924 was the Company's first attempt and was somewhat larger than contemporary designs and was powered by war surplus engines. One of the five built still survives and is now maintained and flown by the Shuttleworth Trust. Realising that he was on the right lines with the DH51 type of design, DH produced a scaled-down version

powered by an engine specifically designed by Major Frank Halford. The aircraft was designated the DH60 and, acknowledging Geoffrey de Havilland's expertise in lepidoptery, named the 'Moth'. With Geoffrey at the controls the aircraft made its maiden flight in 1925 and shortly proved the foundation of the Company's success. G-EBLV, one of the batch of pre-production DH60s is still airworthy and kept at Hatfield.

The DH60's success was recognised around the world. At last there was a light touring aircraft that could be owned and flown by the private individual. Examples were purchased by governments and individuals in a range of countries including Australia, Rhodesia, Chile and Argentina.

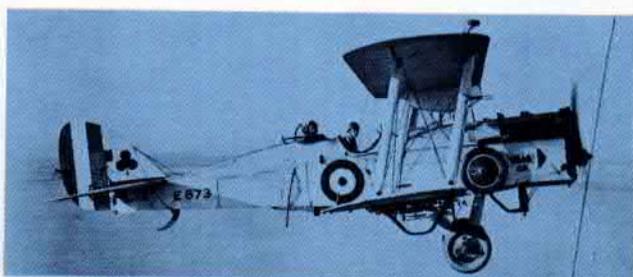
To encourage the use of Moths by private operators DHs rented out Moth 'garages' at their Stag Lane site. Folding wings added to the aircraft's attraction as an easy to manage, easy to transport machine.



DH1



DH5



DH9A

DH34

DH1: The first aircraft to bear the 'DH' prefix.

DH5: Single seat fighter of 1916.

DH9A: Improved version of the DH4. Mass produced at the rate of one every 40 minutes.

DH34: 10 passenger airliner of 1922.



Building on his success, Geoffrey designed succeeding Moth aircraft. By 1926 with the production of Moths at nearly one a day, the Gipsy Moth took shape on the Stag Lane drawing boards.

The Gipsy Moth was famous for its record-breaking flights in the hands of such aviation personalities as Alan Butler (Chairman of the Company), Amy Johnson, who blazed the trail to Australia, Francis Chichester, Bert Hinkler, Jim Mollison, and many others.

With an ex-works price of £650 the popularity of the Moth exceeded all expectations and examples were to be seen flying in all corners of the globe. Production at Stag Lane now approached three a day. The Company's success meant it was able to open subsidiaries in Canada and Australia (the Canadian company still retaining its de Havilland name today).

A stream of other successful Moth designs followed each built on the experience

gained from its predecessor; Hawk Moth, Puss Moth, Fox Moth, Hornet Moth, Leopard Moth and, perhaps the most famous of all, the Tiger Moth. The Tiger became the epitome of light biplanes. Over 8,000 were built in the U.K. and under licence overseas. It became the R.A.F.'s classic *ab-initio* trainer. Today several hundred around the world are still airworthy.

All this activity and an ever encroaching London forced de Havillands to look around for more commodious accommodation. Three farms with their many acres of open fields near the small historic town of Hatfield were purchased in 1930 and initially de Havillands moved the R.A.F. Reserve Flying School, which they operated, from the air congestion of Stag Lane to the quiet at Hatfield. Over the next two or three years the new site was developed and aircraft production transferred leaving the Company's Engine and Propeller Divisions only at Stag Lane. Today these original buildings at Hatfield still stand.

DH42 Dormouse: Fighter – reconnaissance biplane.

DH53 Humming Bird: Built for 1923 Air Ministry Competition.

DH54 Highclere: 14 passenger transport. Only one built.



DH42A



DH53

DH54



de Havilland

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YEARS

De Havillands activities in other areas of air transport had not been ignored in the boom of the Moth. The use of the four-seat Fox Moth for short range scheduled services led de Havillands to design a twin-engined passenger biplane. The DH84 Dragon of 1932 demonstrated remarkable operating economics. Many of its characteristics as the 'feedliner' of the 1930s are reflected today in the 146.

De Havillands also worked in areas of high performance aircraft. The diminutive DH71 of 1927 (also called the Tiger Moth) was designed as a high speed research aircraft and flying test bed. Better known is perhaps the DH88 Comet Racer. Three DH88s were built to take part in the 1934 MacRobertson Race from England to Australia and, as history recalls, the race was won by Scott and Black flying one of the Comets in a record time of just under 71 hours. The winning Comet G-ACSS, remarkably survived the passage of time and today is being rebuilt to airworthy condition by the Shuttleworth Collection.

Experience gained from these high speed aircraft was put to good use in 1936 when de Havillands decided to compete with the new high performance airliners being produced in the U.S.A. The DH91 Albatross evolved and was remarkable for its purity of form and the fact that it was made of wood. Looking at this aircraft today it is difficult to believe it was a pre-war design.

Regrettably the onset of the Second World War put a temporary halt to de Havilland's activities in the field of civil aircraft. However, at a time when other manufacturers had been building both civil and military aircraft in metal, de Havillands found themselves in a unique position. Drawing on their considerable expertise in manufacturing modern high speed aircraft in wood they were able to design and produce a military aircraft which did not have to utilise valuable and hard pressed metal supplies. What is more de Havillands knew that their wood design could out-perform contemporary metal fighters. Overcoming initial official reluctance to proceed, this new



DH60



DH65



DH75



DH82



DH85

DH60 Cirrus Moth: The first of the Moth series of aircraft which brought the success de Havillands had been seeking.

DH65 Hound: Fastest two seat biplane in the world in 1926.

DH75 Hawk Moth: four seat cabin monoplane for the overseas market.

DH82 Tiger Moth: The 'definitive' light biplane and famous R.A.F. primary trainer.

DH85 Leopard Moth: 1933 development of Puss Moth.

aircraft was designed in great secrecy at Salisbury Hall, just to the South of Hatfield. The aircraft was designated the DH98 and christened the Mosquito. Its performance was staggering. Loaded with a 2,000 and even a 4,000 pound bomb load, but without any defensive armament, it could fly faster than any other aircraft, Allied or Axis, at that time. The story of the Mosquito is now legendary; its ability to withstand extreme punishment, its ease of repair, its versatility in roles such as photo-reconnaissance, fighter bomber, anti-shipping and target towing. Although nearly 8,000 were built only one airworthy example survives to fly regularly at air shows during the summer months in the United Kingdom. Surprisingly the prototype, W4050, also survived, although not airworthy, and is now kept at its birthplace, Salisbury Hall, along with two other later marks.

With the advent of the jet engine, on which de Havillands did much early work, new aircraft forms began to emerge. The DH100 Vampire, which first flew in 1943 powered by Major Halford's DH Goblin turbojet, was to become a distinctive shape in the skies. Too late to enter service in the war the Vampire, a single seat fighter, became the first jet aircraft to enter many overseas airforces' inventories. The Vampire was subsequently developed into the much higher performance Venom.

The high level of activities by de Havillands in the postwar era led to an expansion of the Company's production capacity by the acquisition of the Vickers Armstrong site at Chester. Today this historic link survives in the continuing partnership of the Hatfield-Chester Division of British Aerospace.

De Havillands, almost alone amongst the world's aircraft manufacturers, recognised that the new jet engine had application to civil as well as military aircraft. Utilising valuable research experience gained from the tailless DH108, the Hatfield design team, led by Mr. R. E. Bishop, produced in great secrecy a four engined, swept wing airliner capable of carrying 36 passengers at twice the speed of contemporary aircraft. Resurrecting the name 'Comet', the world's first civil jet

airliner took off from Hatfield on July 27th, 1949, Geoffrey de Havilland's 67th birthday.

In 1952 the Comet entered service with BOAC to inaugurate the world's first scheduled passenger service. The series of accidents in the early 50s which were intensively investigated resulted in the introduction of new methods of testing high speed, pressurised aircraft which are now employed by aircraft manufacturers worldwide. Putting this hard-won experience into practice, de Havillands recreated the Comet 4 with longer range and more powerful engines. To the Comet 4 went the honour of making the first scheduled jet passenger service across the Atlantic. Comets subsequently went into worldwide service, until finally withdrawn from operation in 1980. The Nimrod, the R.A.F.'s Maritime Reconnaissance and Airborne Early Warning aircraft, is based on the Comet and bears witness to the soundness of the original design.



DH88 Comet Racer: Specifically designed for 1934 London-Melbourne Race which it won.



DH89 Dragon Rapide: Improved version of DH84.

de Havilland

100



YEARS

Other postwar DH military aircraft included the DH103 Hornet, based on the Mosquito, and the DH110 Sea Vixen. However, work on military aircraft by the Hatfield site was slowly phased out in favour of concentrating on civil designs. The Company's last military aircraft, versions of the Vampire and Sea Vixen, were built at Chester.

The postwar boom in civil aviation led to a range of aircraft types from Hatfield. The Dove, and its larger sister the Heron, entered service with both airlines and private operators around the globe. The success of the Dove as a business aircraft led Hatfield to develop the world's first business jet, the DH (now HS) 125.

For many years before and during the Second World War de Havillands had manufactured their own propellers. In the 1930s they became the first company to manufacture, under licence, variable pitch propellers in the United Kingdom, subsequently achieving fame as the largest

manufacturer of VP propellers in the world. During the war thousands of damaged propellers were repaired and returned to service by the Company.

In 1946 de Havilland's Propeller Division was incorporated into a separate company, the DH Propeller Co., and established on a site on the north-western side of Hatfield Aerodrome.

The degree of accuracy and skill required in producing propellers led the Company to branch into other areas of aerospace activity. New guided missiles such as Firestreak were designed and built, and Britain's only long range ballistic missile, Blue Streak, came out of the Hatfield factory. Eventually, in the 1960s, they started producing space satellites and associated equipment and today they form part of the Dynamics Group of British Aerospace.

Centre spreads
Sir Geoffrey de Havilland's first successful flight, September 10th, 1910. From a painting by Cuneo.
Moth at Height. From a painting by Wootton.
Comet 1 at Height. From a painting by Wootton.
BAe 146. From a painting by John Young.



DH91



DH104



DH98



DH108



DH100



DH110

DH91 Albatross: 22 passenger airliner. Entered service 1939.

DH104 Dove: 5-11 seat transport for airline and executive use. DH's first post-war civil aircraft.

DH98 Mosquito: High-speed multi-role Second World War aircraft. Nicknamed 'Wooden Wonder'.

DH108: Single seat, high-speed research aircraft featuring tailless design.

DH100 Vampire: DH's first jet aircraft. Equipped over a dozen airforces worldwide.

DH110 Sea Vixen: two seat all-weather fighter for naval operations.









As much as being an airframe manufacturer de Havillands were deeply involved in aero engine design and production. Rarely did aircraft companies undertake both of these activities since the skills were very different. In addition design, development and production of an engine was as demanding as launching a new airframe but, as has already been recounted, Geoffrey de Havilland started his flying career by designing an engine and this enthusiasm was to continue. Principally, as a result of Geoffrey's long association with that great engine designer, Major Frank Halford, the DH company produced a range of engines whose performance and reliability surpassed many other types: the famous Gipsy engine which was produced in a large number of versions and many thousands of these were built not only for DH aircraft but also other manufacturers; the Goblin and Ghost jet engines used to power Vampires, Venoms and early Comets; and rocket engines for missiles and assisted take-off purposes. De Havilland's Engine Division was incorporated into the DH Engine Company in 1944. After the war production was progressively moved from Stag Lane to Leavesden where today aero engine production continues under the ownership of Rolls Royce.

In 1960 the government persuaded the British aircraft industry to re-organise itself to compete more effectively with large overseas manufacturers, in particular in North America. De Havillands, at that time working on the DH121, the world's first tri-jet, became part of the Hawker Siddeley Group along with other notable names such as Avro and Blackburn. The other major grouping that came about was the British Aircraft Corporation which comprised of such companies as English Electric and Vickers.

During the 60s and early 70s Hatfield concentrated principally on the production of the Trident, as the DH121 was known. Forming the backbone of BEA's fleet, the Trident pioneered automatic landing in passenger service. Overseas airlines also operated the Trident, the most notable customer being CAAC, the airline of the People's Republic of China.

In 1977 the British aircraft industry was nationalised and Hatfield became part of one of the largest aerospace manufacturing groups in the free world. British Aerospace formed its many factories into operating divisions and, as has already been mentioned, Hatfield became part of the Hatfield-Chester Division of the new company's Aircraft Group. In 1980 a further change came about when British Aerospace became a public limited company. The structure of the organisation remained essentially the same however, and at Hatfield the only obvious sign of the change in ownership over the years has been the name over the front entrance. The spirit and enthusiasm engendered so long ago still lives on.



DH112 Venom: Upgraded version of Vampire.



DH106 Comet: World's first jet airliner. First flight 1949. In 1964 the Comet design was incorporated into the Nimrod.



DH/HS 121 Trident: World's first tri-jet and pioneer of automatic landings in passenger service.

de Havilland

100  **YEARS**

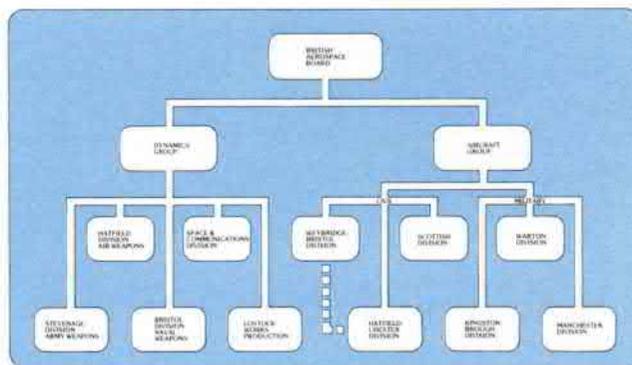
Hatfield Today

When the aircraft industry was nationalised in 1977 Hatfield became part of the Hatfield-Chester Division of the Aircraft Group of British Aerospace. The Dynamics factory at Manor Road became part of the Hatfield (Air Weapons) Division of the Company's Dynamics Group. This restructuring is shown clearly on the diagram on this page.

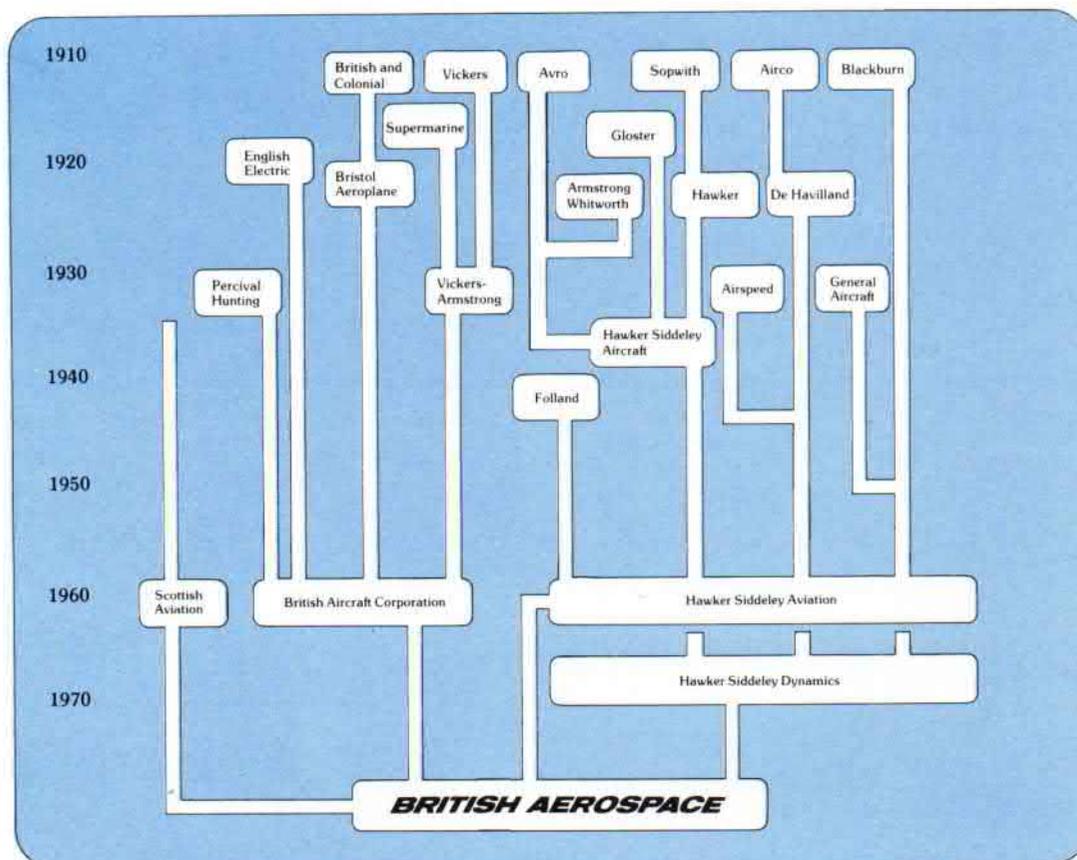
British Aerospace employs a little under 80,000 people in its sites around the country, 4,000 of whom work in the aircraft factory here at Hatfield and a like number at the Chester factory. The Company's products cover the entire range of fixed-wing aircraft, from the diminutive piston engined trainer, the Bulldog, to the supersonic Concorde and from the vertical take-off, jump jet Harrier, to the best selling 300 seat European Airbus. The range of products manufactured by the Dynamics Group include a comprehensive array of missile systems and space hardware. All told British Aerospace has a breadth of expertise greater than any other single aerospace company in the world and its daily sales is approaching some £5m.

This is the background against which Hatfield now operates. The financial and technical strength of British Aerospace means that Hatfield can work on projects that would have been out of the question if it was still a small independent aircraft company. We can draw on the resources of other sites' expertise and aircraft production can be shared to increase the efficiency in the use of capital equipment and minimise the risks inherent in one factory becoming totally dependant on a single project.

Hatfield today is the centre of Britain's civil aircraft interests.



Some of the greatest names in aviation history formed the roots from which British Aerospace developed.



125

Originally designed by the de Havilland Aircraft Company, the 125 made its maiden flight in 1962. It was the first jet aircraft designed specifically for the business market; however, its ruggedness and reliability have encouraged its use for other roles over the years including navigation and crew training, air ambulance, flight inspection and government and VIP transport.

The single largest operator of the 125 is, in fact, the Royal Air Force who operate 20 Series 2s (called Dominies) for navigation training and four Series 400s and two Series 600s for government transport duties. The largest civil operator is McAlpines of Luton who operate or manage on behalf of other owners a fleet of sixteen 125s.

The 125 has been constantly improved over the years in order to keep abreast of technical developments and changing market demands. In spite of its apparent longevity the 125 is selling as well as ever; indeed, the current Series 700 is the best selling of all versions to date. The Series 700 is powered by Garrett turbofans in place of the earlier more noisy and less fuel efficient Rolls Royce Vipers and it incorporates the same increase in fuselage length that was introduced with the Series 600. It can seat eight to 10 people in exceptional comfort and has a hot and cold galley unit, a luggage bay accessible in flight and a full airliner-style toilet compartment.

Today the 125 is the best selling medium-sized business jet in the world and is, in fact, Britain's best selling jet transport of all time with total orders now standing at about 550. 80% of all 125s are exported, principally to the U.S.A.

Design, development and marketing of the 125 is carried out at Hatfield with production being undertaken at Chester. Future versions are under active consideration.

The first two prototypes were assembled at Hatfield from parts supplied by the Chester factory and one of these, G-ARYB, can still be seen in the apprentice training module in the Fitting Shop, serving as a training aid long after its flying career has ended.



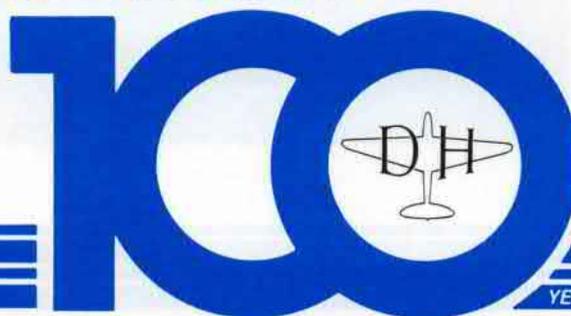
Production of the HS125 is carried out at Chester.



A typical luxury interior.



de Havilland



YEARS

146

The BAe 146 is Britain's first new civil aircraft project for nearly 20 years. Conceived and designed at Hatfield this ultra-quiet 70-100 seat airliner will bring new standards of comfort to the short-haul routes around the world currently served by twin-turboprops and aging jets.

The BAe 146 was designed at the outset to offer airlines an economical and reliable aircraft able to operate with a minimum of ground equipment and services on the secondary routes. Although capable of flying up to 1,000 miles non-stop, the 146 is specifically aimed at the short sector services where small airports are located at perhaps only 100 or 150 miles apart. The four Avco ALF-502 engines burn very little fuel and have a remarkably low noise level, a feature that many airlines operating into towns or cities have to consider in these days of environmental awareness.

Production of the 146 is shared amongst a number of British Aerospace sites in order to draw on available production capacity. In addition Avco Aerostructures in the U.S.A. and Saab Scania in Sweden are both participating in the project as risk sharing partners. This helps spread the financial load and helps open up new markets for the aircraft. Hatfield, where all design, marketing and development is carried out, also undertakes final assembly in addition to manufacturing the aircraft's nose.

The 146 takes off for its maiden flight, September 3rd, 1981.



The first 146, registered G-SSSH to underline its low noise characteristics, was rolled out on May 20th, 1981, and made its maiden flight on September 3rd of the same year. Second and third aircraft quickly followed, joining the flight test programme which calls for over 1,000 hours of flying to be carried out before the certificate of airworthiness can be issued.

The first three 146s are all series 100s, the smaller version of the type seating up to a maximum of 90 passengers. The fourth 146 to fly is a series 200, some 8ft longer and able to seat up to 109 people.

First orders were achieved last year from two U.S.A. airlines for a total of 22 aircraft. A total potential market of some 1,200 aircraft of this type is seen by the 1990s and the 146 is expected to take at least a 1/3 share of this.

The 146 will contribute to Hatfield's prosperity for many years to come.



The 146's roomy interior.



de Havilland

100



YEARS

Airbus

Hatfield has been involved with the European Airbus project since its inception in the 1960s. Indeed Hatfield, along with other European partners, was responsible for defining the original specification and assisting in the overall basic design. From those early beginnings the Airbus programme has developed into a family of airliners specifically designed to meet differing market requirements.

A300

The need for a high capacity short-medium range airliner of greatly improved efficiency was becoming apparent in the 1960s and though U.S. companies were planning to provide a solution, their designs involved three-engined aircraft to meet the specific needs of U.S. continental traffic. The A300 European Airbus was born out of a consortium called Airbus Industrie set up by the major European partners. In the event the British government decided not to back

the project, so in the late 1960s Hatfield was left in the programme as a major sub-contractor to design and build the massive wings. Subsequently Britain rejoined as a full partner and today is a 20% shareholder in the Airbus consortium. The A300 seats over 250 passengers, has a typical range of more than 2,000 statute miles in the B2 version and 3,000 statute miles in the B4 version.

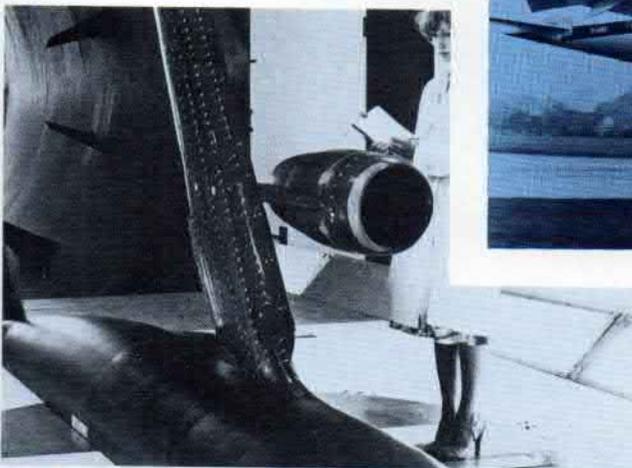
The Airbus sales success is by now well known. It first entered service with Air France in 1974 and total orders worldwide now stand at some 325 with some 33 different airlines.

A new variant of the A300 called the A300-600 with greater capacity is being introduced.

Hatfield's involvement remains in the overall design of the wing and manufacture of various wing components, final assembly of the wing boxes being carried out at Chester.



Final assembly of the large Airbus wings is carried out at Hatfield's sister factory at Chester.



Half model of the A310 in Hatfield's 15ft low-speed wind tunnel.



A300 Airbus in Lufthansa livery.

A310

The latest member of the Airbus family made its maiden flight in April this year. Smaller than its sister the A300, the A310 can seat between 180 and 220 passengers carrying them over routes of up to nearly 3,500 miles. Once again the advanced technology wings have been designed at Hatfield and manufacture of wing spars and ribs is carried out in the Hatfield Machine Shops.

The A310 is due to enter service in the spring of 1983 and total sales now stand at some 180.

The tremendous success of the Airbus programme, which is now second only to Boeing in the wide body market, has resulted in the production rate being accelerated through the current five sets a month towards a planned programme of eight a month by 1984. This increased rate means that Hatfield is having to enlarge its machining capacity and a new Machine Shop

incorporating a range of advanced Numerically Controlled machines, is in the process of being commissioned.

Looking to the future, Airbus Industrie is studying a number of new designs, in particular an aircraft, designated the A320, to meet the growing requirements for a new ultra-efficient airliner to seat 150 passengers. This would replace the large number of aging trijets currently in service and for the expected expansion of the world market in this sector.



The A310 takes off on its maiden flight, Toulouse, April 3rd, 1982.



Airbuses, with their British built wings, on the final assembly line at Toulouse.

de Havilland

100  YEARS

The de Havilland Moth Club

At Stag Lane Aerodrome, the afternoon of Sunday, February 22nd, 1925, was cold with a freshening south-easterly wind and total cloud cover. Just after lunch, Geoffrey de Havilland, chief designer and test pilot to the Company that bore his name, taxied out and took off in the prototype DH60. The first Moth had been born.

By August of that year the type had become established, and the first flying clubs were forming around Moths supplied under a scheme of subsidy administered by the Air Ministry and Royal Aero Club. The first two Moths were accepted by the London Aeroplane Club based at the de Havilland works aerodrome at Edgware.

No attempt ever to form a de Havilland 'Type' Club appears to have been made, although the vast majority of privately owned aeroplanes in the UK before World

War Two were de Havilland Moths. Following that great conflict, during which most requisitioned wooden DH60 Moths perished, thousands of Tiger Moth trainers were built, many of which were sold onto the civil market from the late 1940s to become agricultural sprayers, club trainers or privately owned machines. In those days, it was possible to buy a surplus Tiger Moth for £50, and a brand new engine in the maker's crate for a further £5. In 1982, £55 would buy but a single Tiger Moth tyre!

Not until 1975, when the world was celebrating the Jubilee of the first ever Moth, was a serious attempt made to harness the interest and talents of the owners of surviving Moth aircraft. 'The Tiger Moth Owner's Circle' was an idea floated by the private restorer of a Tiger Moth discovered in France. The aim was to put all with a like interest in contact for the mutual exchange of spares and knowledge. Almost as soon as the suggestions were published in the aviation press, owners of Hornet, Puss and Leopard Moths asked to be included, as well as non-



Some of the 20 Moths that gathered at Seven Barrows exactly 70 years after Geoffrey de Havilland had made his first successful flight from that spot.

owners with a penchant for DH products. The result was that 60 members founded 'The de Havilland Moth Club' at the beginning of 1976, and in 1982 the deHMC has a membership of 950 spread through 28 countries.

In addition to publishing a bi-monthly magazine devoted entirely to matters concerning deHMC's Representative types (from DH51 to DH94) and appropriately named THE MOTH, the Club co-ordinates bulk manufacture of spare parts where none exist, offers technical information and advice to operators and restorers, and is soon to embark upon a programme of 'flying education', where owners gather with their Moths to attend discussions and demonstrations given by highly qualified instructors who cut their teeth on Moths over half a century!

Club members respond to the call to celebrate de Havilland Anniversaries whenever possible. In 1979, 55 aircraft gathered at Hatfield before flying to Strathallan in Scotland, remembering the fiftieth anniversary of the Gipsy engine and the legendary Sealed Engine Test. The following year, in appalling weather, 20 DH machines gathered in a field at Seven Barrows on the Hampshire Downs, from which Geoffrey de Havilland, assisted by Frank Hearle, made his first ever successful flight in 1910. That meeting was 70 years to the day after the first mission, and the Comet airliner which made a low pass in salute provided the perfect contrast. The Tiger Moth herself celebrated 50 years of life in 1981, and worldwide gatherings were organised to pay special tribute. In the U.K., a commemoration of 50 years of Royal Air Force involvement with Tiger Moths was acknowledged by the passage of 40 Moths from R.A.F. Henlow to the Royal Air Force College at Cranwell, where a special banquet was arranged. Six Tiger Moths landed at Grantham en route, on the site of the former R.A.F. station which accepted the first ever Tiger Moths into service after delivery from Stag Lane Aerodrome.

For deHMC both the future and the past are irrevocably linked together. With each passing year, more de Havilland Moths are being returned to flying condition such that the population is actually growing. Thus, the events and celebrations as yet unscheduled, should be fully supported, and the Centenary of the Moth itself should not pass by, neglected. The day will dawn, the Moths will fly.



55 de Havilland aircraft assembled at Hatfield for the 1979 Famous Grouse Rally.

Membership of the de Havilland Moth Club is open to all DH enthusiasts. Annual subscription of £7 includes six issues of the Club magazine THE MOTH and entry to all events organised by the Club. Details from:

The de Havilland Moth Club,
Tangmere,
16 Thatchers Drive,
Maidenhead,
Berkshire,
SL6 3PW.



de Havilland



de Havilland Technical School

The DH Aeronautical Technical School (or Tech School as it was more commonly known) was established in 1928 and was the pool from which the Company drew its future skilled labour, whether they were engineers, designers or craftsmen. Many Hatfield employees today, even some directors, are ex-Tech School 'boys'.

As well as constructing contemporary aircraft as training exercises (DH9J, Gipsy Moths and Tiger Moths) the Tech School also produced aircraft of their own design. These aircraft were given the designation TK (from Tekniese Kollege, the Dutch for 'Technical School' and applied by the designer of the first 'TK' aircraft, a Dutch Student). The most successful were the TK1, a two seat biplane which first flew in 1933 and which came fifth in the 1934 Kings Cup Air Race, and the TK2 which was built in 1935 as a long range racing aircraft and which won the 1937 and 1938

Heston-Cardiff air races.

The Tech School had a number of 'homes' including Salisbury Hall, finally ending up at Astwick Manor, on the fringes of Hatfield airfield, where today apprentices still undergo their basic training.

The last aircraft produced by the Tech School before it lost its identity with the amalgamation of de Havillands into the Hawker Siddeley Group, was a Druine Turbi in the late 50s. The aircraft still resides at Hatfield and is maintained in airworthy condition.

Tech School 'Old Boys' are entitled to join the dHAeTS Association, originally formed in 1951, which has members in many parts of the globe. If you were a student in the Tech School between 1928 and 1963 you are welcome to join the association which holds reunions and publishes a regular newsletter.

TK4, one of the aircraft designed and built by the Tech School. This aircraft was the smallest single seat racer that could be built around a Gipsy Major II.



TK4,

The secretary is:

Mike Rogers,
Drumnessie,
Ivy House Lane,
Berkhamsted,
Hertfordshire,
HP4 2PP.



de Havilland

100
DH
YEARS

Inside cover Mosquitoes bomb Berlin. From a painting by Wootton.





BRITISH AEROSPACE
AIRCRAFT GROUP

Hatfield, Hertfordshire, AL10 9TL, England

Designed by Green Belt Studios Limited, Hertford, England.
Printed by Popper & Company Ltd, Welwyn Garden City, Hertfordshire, England.

BRITISH AEROSPACE HATFIELD

DH Centenary Open Day 3rd July 1982

Programme

- 10.00 a.m. Gates Open
Factory buildings open
Entertainments commence
(Sports field)
Aircraft start to arrive
- 2.00 p.m. Factory buildings close
Flying display commences
(See detailed programme on
Page 2 of this insert)
- 3.45 p.m. Flying display ends
(approx)
- 5.00 p.m. Entertainments close down

Refreshments are available from vendors located around the site. Lunches, by ticket only, are available from the Restaurant by the Main Gate. (Tickets available from the Restaurant from 10.00 a.m. onwards).

Toilets, first aid and lost children's post are all clearly signposted and indicated on the map on Page 3 of this insert.

Entertainments and Exhibits

For your interest and enjoyment a wide range of activities and displays have been organised.

These include :-

- A display of old de Havilland engines
- A selection of de Havilland/British Aerospace propellers
- A display of prepared food by our Catering Department
- An exhibition of old de Havilland paintings by famous artists such as Wootton and Cuneo

Major Halford's 1920's racing car, recently restored by Mr James Cheyne

A 100 piece U.S. College Band

Sales stalls run by the Mosquito Aircraft Museum and DH Moth Club

The 146 interior mock-up and two 146s under construction open to view

A special display in the DH Museum

A British Airways Trident open to the public

An AVCO engine display

A "functioning" aircraft

A display by the Fire Brigade

plus A range of departmental displays

In the Sports field there are a large number of family sideshows and activities including :-

- Children's fun fair
- Tug-of-War
- Stall run by local charities and organisations
- Children's "Space Castle"
- Amateur radio club
- Dray horses
- Children's switchback
- Mini motorbike rides
- Display of vintage cars

During the evening the DH Sports and Social Club will be holding an Open Day Dance at which Miss de Havilland 1982/83 will be selected. Dancing will be to "The Showmen". Tickets, at £1.50 each, are available from the Sports Club.

In the interests of safety visitors are requested not to attempt to enter the aircraft movement area and to follow the instructions of marshals at all times.

Flying Display

We are sure that you will appreciate that the vagaries of the British climate are beyond our control and that, due to their relatively frail nature, many of the aircraft expected today may be unable to arrive if the weather proves to be too inhospitable.

We are expecting a large number of aircraft which were either built by de Havilland/Hatfield or which are powered by DH engines. Most of the Moths which will be arriving during the morning are taking part in the DH Moth Club rally which runs throughout this weekend. They will have positioned at Chester on Friday evening, flying down to Hatfield this morning and many of them will form the bulk of the afternoon's flying display.

Other aircraft which will be taking part in the flying will either arrive during the morning or during the display itself.

One or two aircraft will be on static show only including the DH/Cierva C24 Autogiro and Comet 4.

Flying Programme Commences 2.00 p.m. (Subject to variation)

✓ R.A.F. Dominie formation arrival

✓ DH51 and DH60 flypast

✗ Dove flypast

✓ ^{D.E.V.} Nimrod flypast

Sea Heron arrival

✓ Vampire display

✓ "Perfect loop" competition
(Tiger Moth, Stampe and Chipmunk)

✓ Blackburn B2 aerobatics

Mosquito display

Fox Moth, Dragonfly and Rapide flypast

Trident flypast

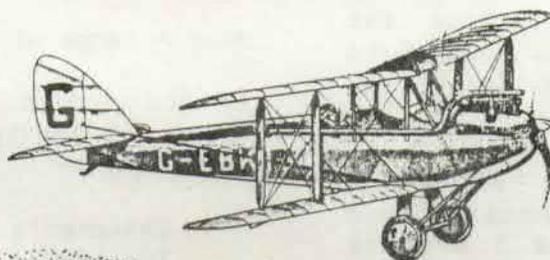
Skeeter display

Mass Moth flypast (up to 15 aircraft)

125.700 display

Mew Gull display

Surprise item

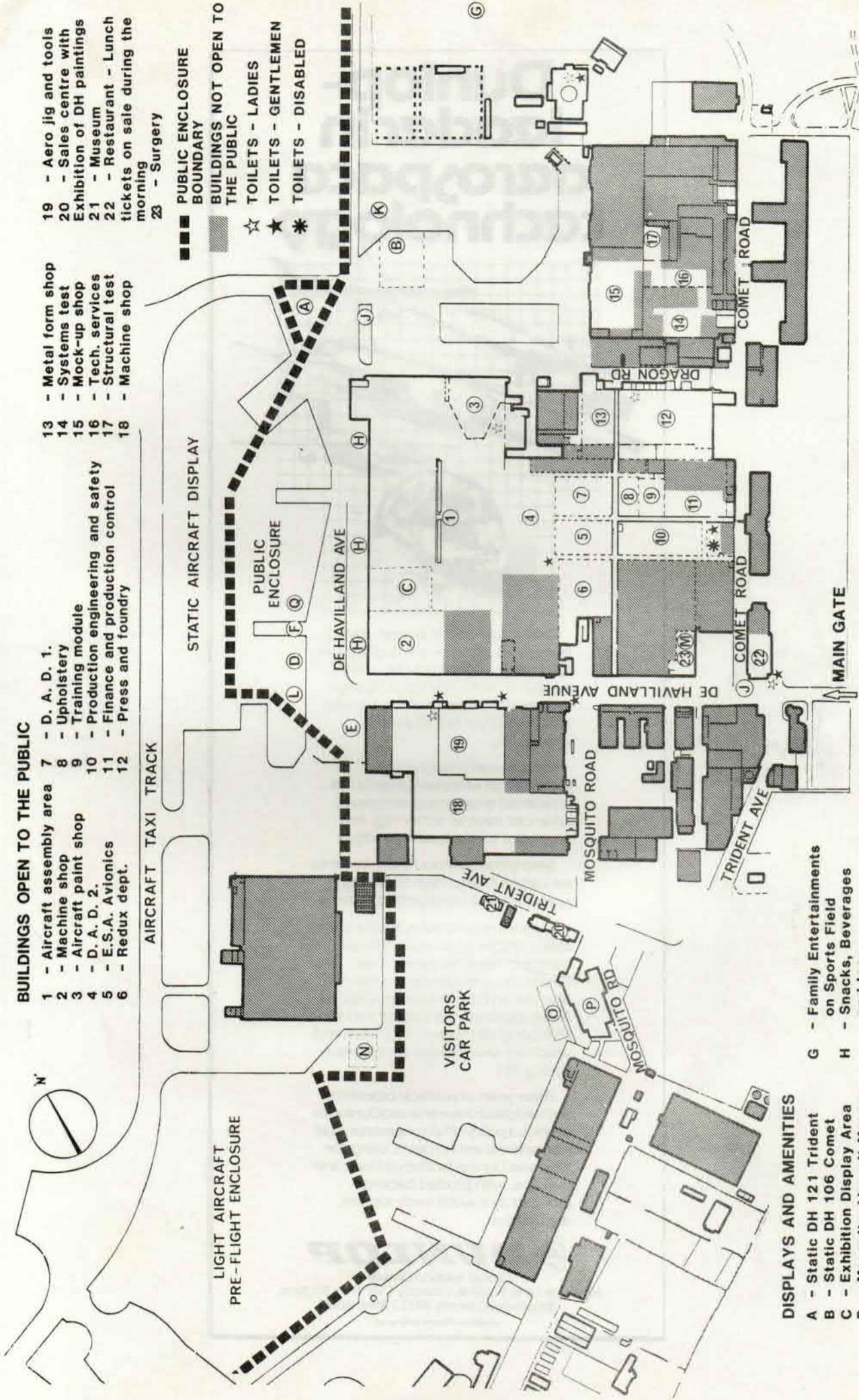


Gipsy Power flypast
(Proctor, Prentice, Monarch,
Auster, Stampe and Chrislea Ace)

Tiger Moth aerobatics

146 display

MAP OF THE FACTORY SITE



BUILDINGS OPEN TO THE PUBLIC

- | | | |
|----------------------------|--|----------------------|
| 1 - Aircraft assembly area | 7 - D. A. D. 1. | 13 - Metal form shop |
| 2 - Machine shop | 8 - Upholstery | 14 - Systems test |
| 3 - Aircraft paint shop | 9 - Training module | 15 - Mock-up shop |
| 4 - D. A. D. 2. | 10 - Production engineering and safety | 16 - Tech. services |
| 5 - E.S.A. Avionics | 11 - Finance and production control | 17 - Structural test |
| 6 - Redux dept. | 12 - Press and foundry | 18 - Machine shop |
-
- | |
|--|
| 19 - Aero jig and tools |
| 20 - Sales centre with Exhibition of DH paintings |
| 21 - Museum |
| 22 - Restaurant - Lunch tickets on sale during the morning |
| 23 - Surgery |

- PUBLIC ENCLOSURE BOUNDARY
- ▨ BUILDINGS NOT OPEN TO THE PUBLIC
- ☆ TOILETS - LADIES
- ★ TOILETS - GENTLEMEN
- * TOILETS - DISABLED

DISPLAYS AND AMENITIES

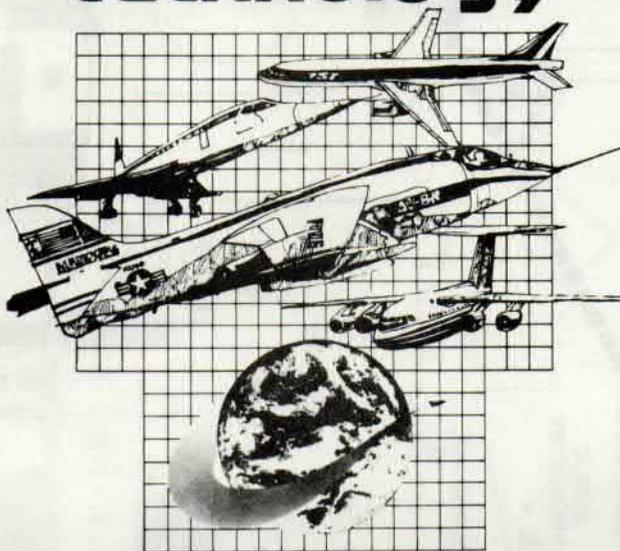
- A - Static DH 121 Trident
- B - Static DH 106 Comet
- C - Exhibition Display Area
- D - Mosquito Aircraft Museum Display
- E - Fire Brigade Exhibition
- F - DH Moth Club

- G - Family Entertainments on Sports Field
- H - Snacks, Beverages and Ices
- J - Lost Child Centre
- K - Security Caravan
- L - First Aid
- M - Aircrew Briefing
- N - Company Guests and aircrew
- O - Restaurant (Advanced booking only)
- P - DH Ae Tech School Assoc.

METRES



Dunlop- leader in aerospace technology



Dating back to the pioneer days of flying in 1910, the name of Dunlop has been closely linked with the world's aviation industry, and the company is recognised internationally as a leader in its specialised field of aviation engineering.

Participation in competitive international aerospace projects has broadened engineering techniques, advanced material technology and developed special system concepts.

Synonymous with such advancements are carbon brakes, high technology tyres and brake management systems.

Dunlop carbon brakes are the only brakes of their type used in civil air transport, fitted exclusively to all Concordes, and specified for the new BAe 146 and the McDonnell-Douglas AV8B, together with tyres to the latest FAA ruling, laid down in TSO C62c, and which are also specified for the latest Boeing 757.

These years of practical experience and dedication have enabled Dunlop to develop a policy of full cooperation in all international aero projects, using the extensive Dunlop facilities at home and overseas, with product backing provided by a world-wide support organisation.

 **DUNLOP**

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Telephone: Coventry 88733 Telex: 31677

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Best wishes
to all
participating in
the de Havilland
Centenary Rally
from



Shell U.K. Oil, Aviation Department,
Shell-Mex House, Strand, London WC2 0DX.

Schwepping is ...



adding
Schhh...you know who.