

# LONDON AIRPORT

An aerial illustration of a large airport terminal complex with multiple wings and a central tower. Several aircraft are shown on the tarmac and taxiways. The surrounding area is green with white paths, and the sky is blue with white clouds. The title 'LONDON AIRPORT' is written in large, bold, yellow letters at the top.

## HANDBOOK

AND VISITOR'S GUIDE TO LONDON

THREE SHILLINGS AND SIXPENCE

# LONDON AIRPORT HANDBOOK

## HER MAJESTY QUEEN ELIZABETH II



“London Airport has become the modern meeting place, where many tongues are spoken in friendship and goodwill. Here is daily proof that air travel has brought all lands close together, and made all men neighbours”.

*H.M. the Queen, in her speech at the inauguration of London Airport on 16th December, 1955*



*A B.O.A.C. Britannia climbing above the clouds*

## **REVOLUTION IN THE AIR**

**O**VER half the century has passed, and the novelty of air-travel since the days of Alcock and Brown's Atlantic crossing has become a commonplace in the experience of all who travel any distance across the world. For the world of 1957 has shrunk perceptibly now that the combined efforts of aeronautical manufacture, charted air routes and the first-class operation of leading airports have brought into being a totally new concept of travelling by air for business and pleasure.

Speed, comfort and punctuality are now the order of the day. Indeed, the revolution in the air has overtaken the cumbersome, constricted byways of earthbound and ocean-tossing voyaging; so that in military strategy airpower is the first line of defence; and in the spheres of commercial and industrial progress, aviation has become the harbinger of goodwill.

From Hounslow Heath, the once notorious haunt of highwaymen, today as many as five hundred aircraft come and go daily to and from the open heathlands which were in the eighteenth century occupied by wild gypsies and vagabonds.

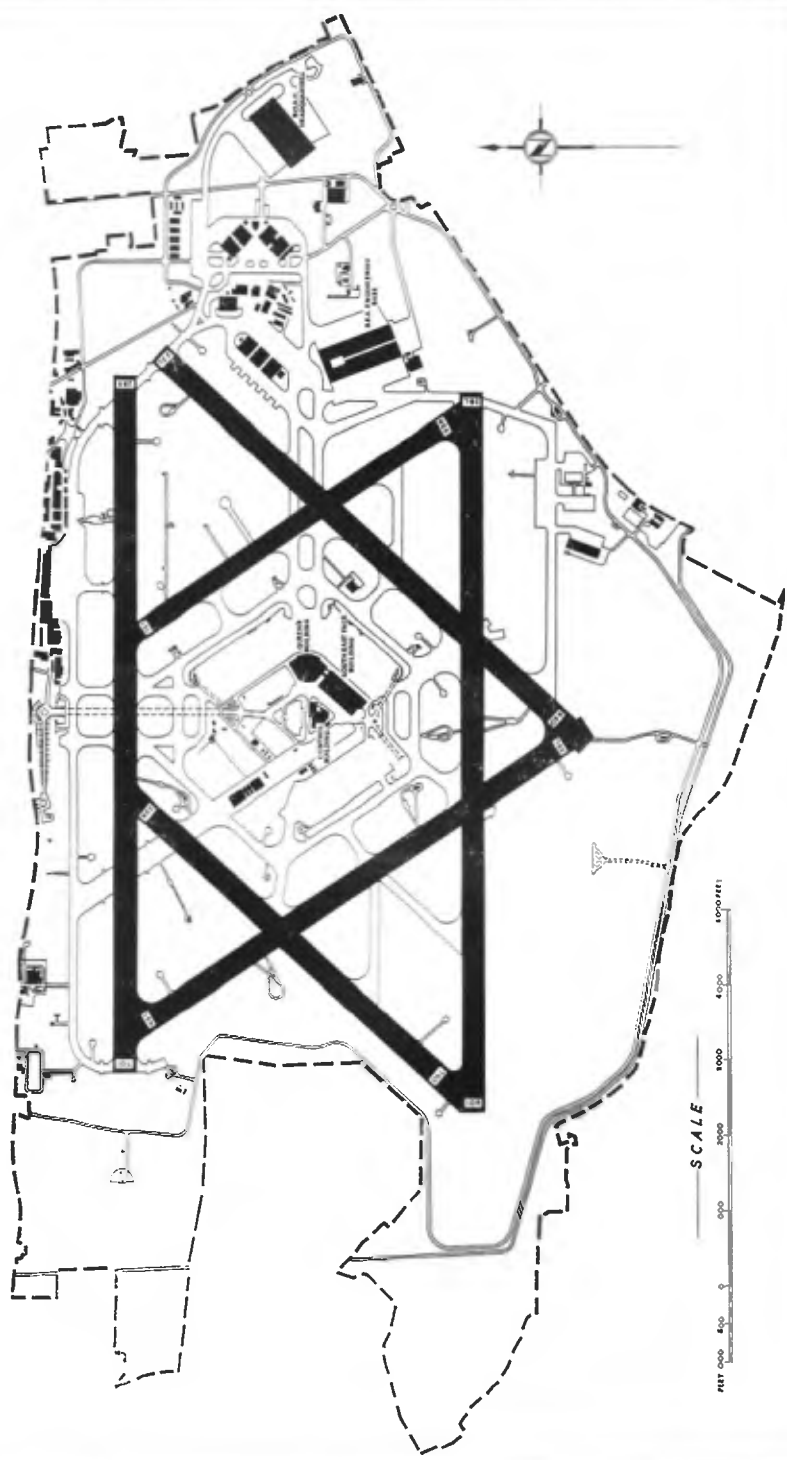
Today, the Main Concourse of London Airport is the meeting place of people of all nations.

### **PLANNING AN INTERNATIONAL AIRPORT**

The development of the site of London Airport has taken several diffident and wayward steps. Yet the structures that have gradually taken shape under the influence of its pioneer planners are the result of many years of study and experiment.

*The greatest foreseeable air traffic in a world of sharply accelerating development in aviation.* In such terms as these was the vital necessity of a new airport conceived

# LONDON AIRPORT





*The Control Tower*

in 1946, by the Advisory Panel set up in 1945. Having recommended the old site of an R.A.F. Transport Station, established since 1943, the Panel took into consideration its apparent advantages: its relative nearness to London, 14 miles from Charing Cross, its comparative freedom from fog and the nature of the site, 5 square miles of gravel plain.

To use the space available to the best possible advantage was the next problem facing the planners. After considering various runway patterns they finally chose the geometrical parallel grid which was considered best suited operationally to the topography of the site.

Mr. Frank Gibberd, C.B.E., F.R.I.B.A., M.T.P.I., was commissioned by the Minister of Civil Aviation to design the central buildings in 1950, and they are still in the process of growing. Yet they already form one of the greatest centres of international air traffic in the world.

The six concrete runways, each measuring up to a mile and three-quarters long and a hundred yards wide, strong enough to deal with the largest aircraft, form the pattern of a six-pointed star.

Enclosed by this great series of parallels is a diamond-shaped area of 150 acres containing the new buildings

through which passengers arrive and depart. This is known as the *Central Terminal Area*.

Over the one-storey temporary buildings by the Bath Road, one finds London Airport North which was the only passenger accommodation until 1955, when the big Terminal Area was opened.

Whilst ministerial and architectural experts worked on the new plans the continuity of increasing air traffic had to be maintained, and these temporary buildings served efficiently, if not glamorously, the needs of thousands of travellers until the completion of the new buildings.

## A CITY BY NIGHT

Approaching the Central Terminal Area—by day or by night—the traveller enters the grey, floodlit underground tunnel that connects the newly developed area with the external world. The tunnel has two lanes for motor traffic and two for cyclists and pedestrians. The tunnel stretches for 700 yards under a runway and taxiways and finally emerges at the other end at the heart of London Airport.



*All movement of aircraft on the ground is controlled by a supervisor, who from his station in the Control Tower commands an extensive view over the apron, runways and taxi-tracks*

The impact of standing in the open air at the end of the long tunnel, and facing the new Main Buildings is one which you might have by aeroplane, swooping down at low level and skimming the Terminal roofs: such is the immediate feeling one has on taking in the impression, of which one had no suspicion a moment ago. First, there is the T-shaped *Control Building* with its 127 foot tower looming above, and then the 600 foot long symmetrical face of the *Passenger Reception*

*Building*, surrounded by densely parked motor vehicles.

Nightfall islands the area surrounded by necklaces of many coloured ground lights that extend to the rim of the black velvet horizon. The whole area vibrates with the excitement of a constant stream of arriving and departing aircraft. Wide arcs of light sweep from the Main Buildings of the Airport, making the whole islanded area glow with 24-hours a day wakefulness.

## NERVE CENTRE OF THE AIRPORT

**T**HE Control Tower, rising to 127 feet from the heart of the Central Terminal Area, commenced operating on 3rd April, 1955. It is arranged in a T-shaped plan with the tower as its fulcrum. As the busiest civil airport in Europe, London requires an air service control unit able to handle 50 or more movements an hour at peak periods. Aircraft flying to and from London Airport and all movement on the runways, taxiways and aprons is controlled from the tower. Nine floors comprise Air Traffic Control and Administrative Offices. Topping the whole are *Aerodrome Control* and *Ground Movement Control* which are housed in a penthouse walled and roofed in glass. A panoramic view of the entire airport and the sky above is available to the controllers; whilst immediately below, *Approach Control* is located in a lofty room which is cantilevered out beyond the face of the Tower and enclosed by sloping glass on three sides. The shape of the tower was decided upon in order to cause the minimum interference of large flat surfaces with radio approach and landing aids. In plan, the building consists of two intersecting trapeziums with staircases between them and a central service core. The wider trapezium faces east and contains the control rooms with windows on three sides. The narrower trapezium faces west and houses the smaller rooms of administrative offices.

Who—from eight years to eighty—can fail to be fascinated by the continuous web of inter-connected airlines, radar control and the multitudinous network of wires and switches that bring the delicate chain of happenings into a perfectly organised system ?

Movements of aircraft and vehicles on the airport—except on runways in use—are governed by the Ground Controller in the topmost glass-roofed storey of the tower. Complex taxiways leading from runways and maintenance areas give the Ground Controller a task calling for more than the issue of simple instructions over the radio-telephone. At periods of peak traffic runways and taxiways must be kept clear in all visibilities. Looking at a microcosmic model of the lighting system of runways and taxiways, the Controller selects the route for pilot or vehicle driver to follow and switches on appropriate lights. Simultaneously, the selected route lights up on the table model.

### GROUND CONTROL

Routes are marked at night by green lights flush with the ground in the centre of the taxiway, and in daylight by illuminated route indicators at the side of the taxiway. By switching on the stop bar of red lights across the runway, the Ground Controller can stop any aircraft or vehicle at night; by day a red traffic light on the route indicator is signalled. The "mimic" display tells the Controller which lights he has switched on, at a glance. Thus, a visual check is kept on surface traffic movements in all but the worst weather.

In bad visibility the Controller watches these movements on a millimetric radar set called an Airfield Surface Movement Indicator, giving him a total picture of traffic on runways and taxiways. Radio-telephone keeps him in touch at the same time with all vehicles and aircraft under his control.

*General View of the Control Tower and Passenger Building*





*A "batsman" guides a B.A.O.C. Strato Cruiser to its allotted position after landing*

### **RADAR CONTROL**

Pilots can check their position from numbered boards placed at the end of each section of the taxiway and report to Control.

Aircraft taking-off are the responsibility of the *Air Controller*, assisted by the *Radar Controller* who keeps exact check upon aircraft shortly after they are airborne, so that by knowing their exact position the Air Controller may despatch successive aircraft without delay. In good weather he is responsible for aircraft landing.

Approach Control Room on the sixth floor is able to cope with any expansion of traffic or with improved techniques of air traffic control. Some difficulty was found in designing a room in which Radar Controllers require semi-darkness to view screens, while Procedural Controllers must have adequate light. Lighting will be further improved when daylight-viewing radar becomes available.

The three teams situated on the top floors of the Tower in the Control Building—Approach Control, Aerodrome Control, and Ground Control—work in close co-operation in order to regulate the movements of every 'plane from the moment it leaves its stand, laden with passengers and freight, to the moment it passes out of the Airport's Control.

### **ARRIVAL AT LONDON AIRPORT**

Aircraft arriving at London Airport are routed to the range station at Epsom, and from there are fed under radar surveillance and direction into the Airport—a system giving a landing-rate of 15-20 aircraft per hour. Peak period arrivals may well be in excess of that rate, and to deal with this the "twin-stack-feed" system has been introduced, by routing aircraft through the **Watford radio range**, increasing the rate initially to a minimum of 30 per hour. From these points flight paths of aircraft are synchronised under radar direction so that they are positioned on the final approach with the least permissible separation between them.

### **COMING DOWN TO LAND**

Two aircraft approaching a common point from widely separated positions give the Radar Controller the job of arranging their paths and the times at which they leave the "stacks" so that when each approaches the runway there is sufficient distance between them to ensure safety. The first aircraft must have cleared the runway; and yet the distance must not be too great between them, as this would decrease the landing rate and cause further delays along the line. Complicated



computers would perhaps answer the problem of split-second timing—taking into consideration the factors of speed and wind-change—but so far no such equipment has been developed. The solution has been found in the skill and experience of the Radar Controller.

An aircraft approaching the Airport at the end of its flight comes under the supervision of London Airport Approach Control and takes its place in the moving and continuous queue of incoming aircraft. It is then directed by radar to a point where it will begin its final approach to the runway.

### FLIGHT PROGRESS RECORD

Every incoming 'plane is preceded by a signal transmitted from the aircraft's station of departure which gives information about the type of aircraft to be expected, place of origin and ETA (estimated time of arrival). Recorded on a "flight progress strip," this information is placed in front of an officer who is in close touch with the Airways Controller of *Southern Air Control Centre*, which will have controlled the flight for anything up to 150 miles before handing over to London Airport Approach Control. One copy of the "flight progress strip" is then sent up to the glass-domed room of the Tower from which Aerodrome Control operates. A second copy of the strip is placed on the *Flight Progress Board*.

### CONSTANT FLOW OF AIRCRAFT

Southern Air Control Centre has a steady, constant flow of aircraft being guided down in stages and keeping an interval of not less than three miles between one 'plane and that following it. As the pilot is led towards the line of approach to the runway he is also kept fully informed as to weather conditions, runway-space and any other necessary information.

The radar control of the first stage of approach is governed by *No. 1 Radar Director*, who follows the aircraft on the radar screen, giving the pilot his initial courses to steer, before handing him on to *No. 2 Radar Director*. He can then turn to the next aircraft in the queue.

### AN ELECTRONIC GUIDE

Just about the point where passengers fasten their safety belts, the *No. 2 Director* takes over, in order to give the pilot his course to steer to put the aircraft in position to begin its approach to the runway, using the *Instrument Landing System*. This guides the pilot electronically, by an instrument in the cockpit, down the glide path to a position where he can obtain visual guidance to the runway threshold from the *Calvert Approach Lighting System*. This latter is a British invention, adopted by the *International Civil Aviation Organisation*, and now in use the world over.

*A receptionist meets a Stratocruiser on arrival and shows travellers the way to the Passenger Building*





*A final formality before the journey begins*

The plane will now be in the last stages of its descent on to the runway, recorded by radar to check the pilot's approach and to ensure that a safe distance is kept between successive landing aircraft.

On the final approach, as soon as the pilot can see the runway he informs Approach Control, then to be handed over to Aerodrome Control which is responsible for all aircraft landing or taking off.

The Ground Controller, seated at a raised desk in the tower-top glass dome, has complete panoramic

visual command of the entire Airport.

When the aircraft has landed he leads the pilot across the complicated system of taxiways, by the method already described, until the aircraft reaches the apron which is its final 'home'.

So ends the last flight stage of the journey, a routine performance of modern air transport, yet beautifully simple, comfortable, even relaxing; achieved daily by the skilful co-ordination of complex technical operations.



*Passenger's luggage being weighed in the Passenger Building*