



LONDON AIRPORT

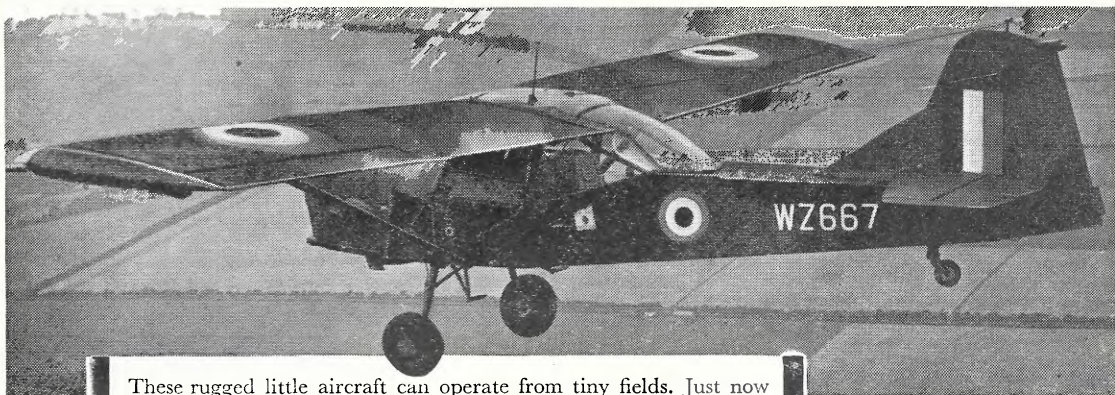
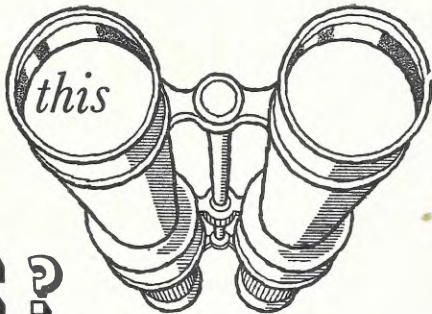


AN *Jan Allan* PRODUCTION

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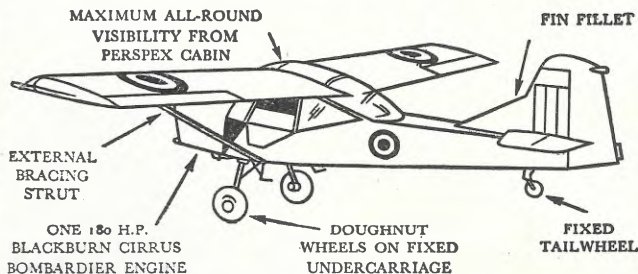
* can you identify *this*

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LONDON AIRPORT



Maurice Allward ∴ Roy McLeavy

LONDON

San Allan Ltd

Introduction

AS the mother country of a great family of overseas nations it was, perhaps, to be expected that Britain would be a focal point of air routes. But few foresaw that Britain would become the great international cross-roads of the air she is to-day.

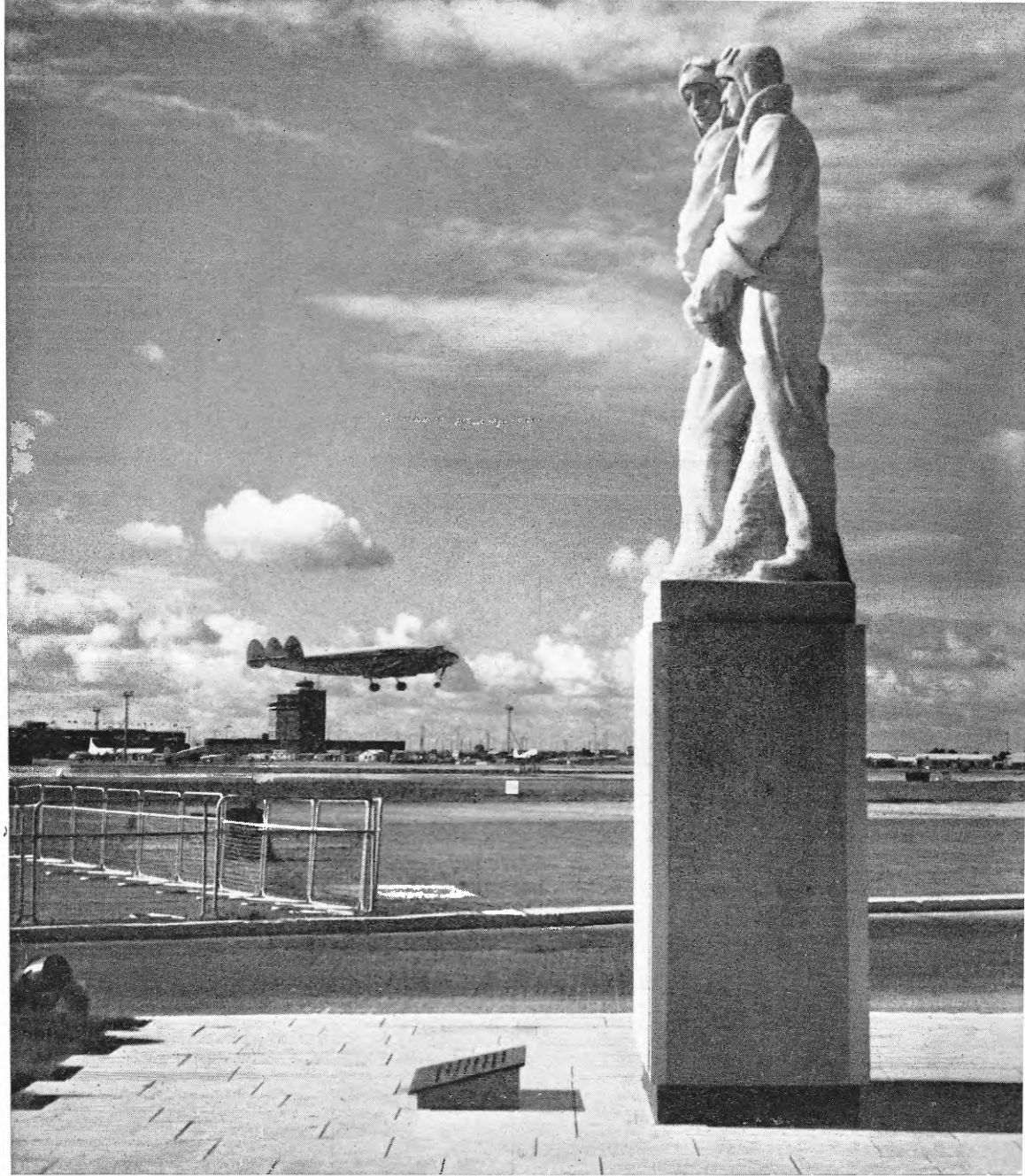
London Airport is the hub on which the air routes converge; thirty-six airlines from twenty-eight countries now operate regular services there. For most of the hundreds of thousands of people arriving in Britain by air, London Airport is the gateway through which they enter and which gives them their all-important first impression of our country. For thousands of other people, the airport is an international gateway to the world at large, providing a last impression for them to take on their journey.

As for the sightseers—ordinary men, women and children—who descend on the airport by coach, car and cycle every fine weekend, few can suppress a thrill as they enter the long tunnel leading to “LAP Central.”

The imposing vista of red brick, glass and fluttering flags that greets one when emerging from the tunnel forms the subject of this book. It tells you not only how the airport works, but what you can see while you are there.

Of most interest is, of course, the ceaseless hustle on the concrete aprons in front of the passenger buildings. Twenty-two of the airliners most likely to be seen here are described in detail. To help the enthusiast identify the various aircraft, the international markings of civil aircraft are listed, along with the fleets of some of the airlines using the airport.

We hope the mixture adds to your enjoyment.



The striking memorial to Alcock and Brown. When they made the first non-stop Atlantic crossing on June 14, 1919, few could have imagined that within a quarter of a century the North Atlantic would be the world's busiest air route. More than 3,000 crossings are made every month.



Springboard to the shrinking world

IN an age when most sizeable achievements are hailed as the Finest, Biggest or Greatest, London Airport commands as full and imposing a share of superlatives as any. Largest of international airports, it is also the busiest in terms of intercontinental airline traffic. Functionally and artistically its buildings are among the finest; its massive, two-foot-thick concrete runways among the longest; and it claims more "firsts" among its comprehensive array of gadgetry to control air and ground traffic than any other terminal.

"L.A.P.", as it is familiarly known, is Britain's springboard to the air age world—a world which speeding transport planes are shrinking so fast that distances are no longer measured in miles but in minutes. In these sleek silver carriers the glitter of Paris is but 65 minutes away, Rome three hours, Istanbul nine. And in one mighty leap the biggest and fastest of these planes will whisk you across the broad expanse of the North Atlantic to New York between breakfast and tea.

Already the term "intercontinental flight" is being outmoded, for the higher speeds of the advancing jet era bear promise of a world unified on a neighbourly capital-to-capital basis, with

even the most distant metropolis less than twenty-four hours away.

Nearly 60 million people of every flag, colour and faith fly on scheduled airline services every year; more people are nowadays visiting more places, more swiftly than ever before.

The air age has become the greatest sociological mixing force ever known. Reflecting its power is L.A.P.'s huge passenger hall, where the unfamiliar in languages, clothes and customs brings the visitor into fleeting contact with every continent — for every continent is now on London's doorstep.

Paradoxically, L.A.P., though one of the greatest of all civil airports, was born not of peace but war, and owes its origin to the R.A.F.'s need in 1943 for a large transport base near London. It was appreciated that the capital would need a new civil airport when peace returned, and so consideration was given to this by the Air Ministry when they chose the present site at Heathrow. Bounded by the Bath Road to the north and the Staines Road to the south, and only 14 miles west of Charing Cross, the site has proved as ideal as any could be so close to central London.



Copter's-eye view of the central area. In the foreground is the 127 feet high control tower and behind it the passenger building. To the left is the Queen's Building.

Construction started in May, 1944, following the classical R.A.F. pattern of three runways arranged in a triangle. But the war ended before its completion, and so it was decided that Heathrow should be handed over to the civil authorities for immediate development as the main London air terminal.

Operations from the new airport began on January 1st, 1946, when a Lancastrian of British South American Airways, now incorporated with B.O.A.C., took-off on a long-distance proving flight to South America. A short while after two American airlines then flying into the wartime trans-Atlantic airfield at Hurn asked to use the new airport because of the difficulties in transporting their passengers from the Bournemouth area to the capital. In July, 1946, B.O.A.C. (until then also at Hurn) followed suit. Newly-revived continental operators began using the terminal and by 1950 it had blossomed into the busiest airport in Europe.

Acute shortage of accommodation in the early days led to immigration, Customs and other departments being housed in caravans and marquees. But behind the scenes all the time an

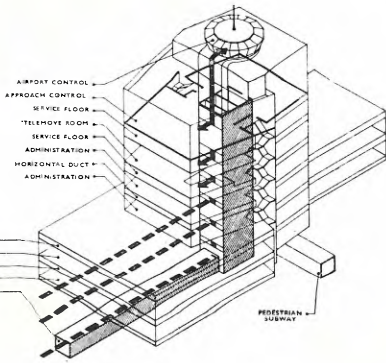
advisory panel was hard at work evolving plans for new permanent buildings, new runways and advanced new facilities. From their recommendations, which were first generally made known in 1947, has sprung the great international terminal we know to-day.

On the R.A.F.'s original triangular layout of three runways a second triangle has been superimposed, forming what is approximately a huge "Star of David" pattern, and providing a pair of long parallel runways in each of three directions. The great advantage of this arrangement is that two airliners can land and take-off into wind simultaneously on separate runways.

But the airport of to-day is more than just a piece of land decorated with ribbons of concrete. In the interests of both safety and efficiency it supervises all incoming aircraft from 100 or more miles away until they come to a halt by the passenger buildings. For the same reason it guides them from take-off until they make the great air lanes. To avoid the possibility of collision on the runways, taxiways or aprons, the vehicles for servicing and re-fuelling are controlled just as closely. Arriving and departing passengers

TOWER OF (Air Age) LONDON

Dominating the central area, the control tower is the nerve centre of the whole airport. Its distinctive angular shape minimises the interference which the large flat surfaces of a rectangular building would cause to radio approach and landing aids. The purpose of the tower is to raise the traffic controllers to a height where an unobstructed view may be had of the runways. Controllers in the circular penthouse supervise movement on taxiways and runways. Immediately below is the approach control room which looks after aircraft approaching and leaving the airport and those on the duty runways. The lower floors house the MTCA headquarters, a medical centre and amenities for all Ministry staff in the central area. A central services core extends to the full height of the structure and contains the lifts, ventilation trunking and cable ducts. *Below:* The penthouse interior.



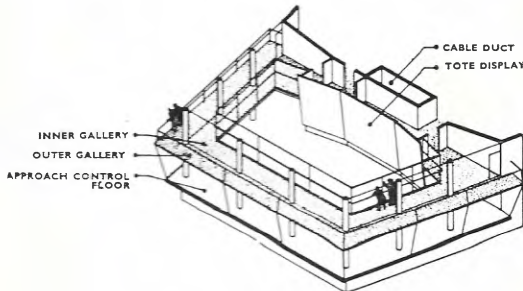
have to be supervised also, to ensure their smooth and orderly progress through immigration and Customs formalities.

To handle the 100,000 aircraft, 2 million passengers, and 50,000 tons of freight which pass through London Airport each year is the full-time job of some 22,000 people.

While not all of these are engaged upon the running of the terminal itself, but on associated tasks such as the maintenance of the aircraft, the figure gives a clear idea of the enormous volume of work that goes on there. The airport is a city within itself, requiring personnel to run its own bus services, hospital, police force, shops, restaurants, post office and fire engines, in addition to those concerned directly with the business of air travel, such as air traffic control, Customs and immigration, baggage and freight, and many other activities.

The permanent buildings are sited in the

At the back of the approach control room is a large "tote"-style information panel. External and internal balconies permit technicians and officials to visit the room without interfering with work. *Right:* Approach room radar controllers at work.



central area of the airport, which was deemed the most suitable passenger area since it involved the least taxi-ing. Here too, is the impressive red brick Control Building, the tower of which rises 127 feet high, and is the nerve centre of the whole airport.

Up top, in the compact glass-walled penthouse, is the Ground Controller who supervises the ground movements over the taxiways and runways. The windows of his circular eyrie slope outwards to eliminate reflected light from the sky, and are double glazed, firstly







The central area marshalling apron with its 60 feet high floodlighting towers. On this apron airliners load and discharge their passengers.

to minimize the effect of external noise, and secondly to provide an air space through which de-misting air can be circulated. On a clear day the view embraces West London, Windsor Castle, Harrow and the Surrey hills.

To help him see the position of aircraft and vehicles on every part of the airfield, however bad the visibility, he is aided by special Q-band radar, the revolving "half-cheese" scanner of which is mounted on the penthouse roof. London Airport is the first in the world to be equipped with this system, which scans the surface of the airport with a very narrow beam, and produces a sharply defined picture of all traffic, moving or stationary—and even pedestrians!—on a 12-inch cathode ray tube.

So clear is this picture, that on one occasion when a visitor parked his car in a remote part of the airport then couldn't trace it, the Ground Controller was able to tell him where it was.

The complexity of the airport layout is such that a simple and thoroughly foolproof method had to be found of directing taxi-ing aircraft across the multiplicity of runways between the parking areas and loading aprons. It was decided the most satisfactory method was a block system,



similar to that used by many railways. When an airliner has touched down and come to rest, the Controller can see at a glance the quickest route to the unloading apron, and by pressing switches he can turn on a row of green lights down the centre of the taxiway the pilot is to follow. In no case is this green centre-line less than fifty feet away from the edge of the runway or taxiway, and the captain can therefore follow this line with confidence, knowing that as long as his plane's undercarriage straddles the lights he will not leave the hard surface.

Paths in use by another aircraft are closed by a bar of red lights across the threshold. A mimic display in the control room portrays by means of miniature lamps sunk beneath the surface which lights are in use on the airfield itself.

In daylight, route indicator boards are used which are fitted with red traffic lights to isolate sections being used by a taxi-ing aircraft from adjacent tracks.

Aircraft approaching or leaving the airport and those on the duty runway are the responsibility of the Approach Control room situated directly beneath.



Baggage passes up on the conveyor belt to await Customs clearance.



From his vantage point on top of the main restaurant, the apron marshal controls activity on the apron.



VHF radio-telephones are used extensively to control the movement of servicing and refuelling vehicles.

Since it is necessary to start guiding an incoming aircraft when it is still many miles away, and since the importance of this room reaches its greatest when visibility is least, direct vision plays little part in these operations. Aircraft approaching by one of the recognised airways are under the direction of the Southern Air Traffic Control Centre, which controls all air traffic over the South of England. From the airway the airliner is directed, if necessary, to one of the two stacking points at Epsom and Watford where aircraft await their turn to land. At these points the captains orbit about the radio "holding" beacons until called in by one of the Airport's Approach Control officers.

Successive aircraft in the stack adopt an altitude of 1,000 ft. higher than the one ahead.

The lower aircraft in the stack is the next to land, and when he leaves all the others move down one place.

From the radio beacon the aircraft is guided to a point in line with the runway, about 6 or 7 miles away, still out of sight, but constantly checked for position by intersecting radio fixes or radar, and then handed over to the talk-down controller.

In poor visibility the final landing approach is made under the GCA system, in which the controller, checking the height and position of the aircraft by radar, gives the pilot direct instructions by radio. Once on the final approach path the pilot can be guided to a point about four hundred yards from his touchdown position. Each GCA approach takes about three minutes; but under normal conditions at peak periods a landing can be made every one-and-a-half minutes.

Another of the magnificent buildings in the central area is the passenger terminal on the southern face, with its imposing, modernistic facade of red brick and glass. Perhaps the most remarkable features of this building is the system of departure "channels," through which the passenger is speedily transferred from the airline bus to his aircraft. Passengers are decanted from their bus in front of one of ten numbered bays or entrances, each of which is pre-allocated to a particular aircraft flight



Feature of the luxurious passenger lounge overlooking the Main Concourse is the array of "flying saucer" skylights.

number. Those passing through Channel 2, say, will enter the lower hall and ascend by the Channel 2 escalator to the vast concourse gallery that runs the whole length of the building at first floor level. Meanwhile their luggage will have been unloaded and transported by moving belt up to the Channel 2 Customs bay on the floor above. After examination it continues on the belt to the apron loading bays.

After passing through Customs and immigration, the passengers arrive at the south east face itself, with its remarkable Airside Gallery, comprising a series of luxurious waiting-rooms—each allocated to a particular passenger channel—behind a massive glassed-in corridor overlooking the apron. As the departure time approaches receptionists escort the passengers out along the Gallery and down the flying bridges to the apron gates, from which they go straight to their aircraft.

All the channels are quickly reversible for incoming services, and the whole unique system has proved remarkably trouble-free.

On the roof of this building are the attractive gardens and terraces of the Public enclosure, with shelters, lawns, and cafes giving the impression of a seaside promenade. From here visitors have a panoramic view of the aprons and the airport as a whole. A fine restaurant overlooks the marshalling apron and friends can greet arrivals from an appropriately named "waving-base" on the roof of the passenger building. Cantilevered out from the restaurant roof is a glazed box from which the marshalling supervisor controls the movement of aircraft on the apron below.

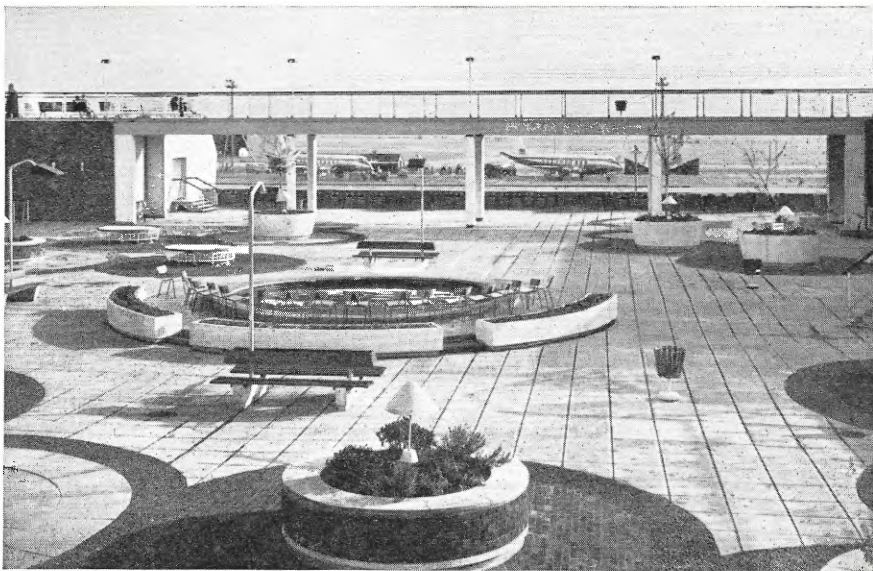
On the London side of the south east face block is the Queen's Building or Eastern Apex, which provides accommodation for airline operation staffs and aircrews as well as further amenities for the general public. These include a news cinema, with a seating capacity for 160, an exhibition hall, a post office, a buffet and a grill room.

The grill room occupies the southern half of the sweeping bow front on the airside elevation of the building. A novel feature is the arrange-

ment of the tables into four tiers to give all diners a clear view of the apron below.

The roof of the Queen's Building has been designed as a further series of spectacular gardens which are planted with attractive flowers, some of them blooming even in winter conditions, shrubs and ornamental trees. There is even a circular pool in the centre of the southern garden with a fountain playing. On the airside there are terraces on five separate levels so that the maximum number of visitors may enjoy the view.

Naturally, care has been taken to keep the operational side of activities in the building quite separate from the public, and the airline staff have different entrances. On the ground floor are flight planning and briefing rooms, airline operations offices, meteorological personnel, and the crew Customs hall.



Roof of the Queen's Building has a series of spectacular roof gardens.

The famous Alcock and Brown memorial, now remote from the central area on the north side marshalling apron, is eventually to face the public entrance to this building in a central position at ground level.

Undoubtedly we shall soon see the foundations of yet another building in the central terminal area—the northern face passenger building, from which will eventually operate all the long distance international services, including those of B.O.A.C., who are still at London Airport North. A section of this building will also handle some of the short haul services over-

flowing from the south-east passenger building.

The rapid growth of the air travel has startled even the sturdiest of optimists and the need for the remaining accommodation planned for the central area is borne out by the incredible rise in passenger traffic. The number of passengers handled has shot up from 523,000 in 1950 to 2,700,000 in 1955. By 1960 this figure is expected to be more than doubled.

Because the central area is surrounded by runways and taxiways, access is by means of a half-mile long tunnel, which itself ranks as one of the terminal's main engineering feats. Since the nature of the gravel sub soil precluded a conventional boring operation, it was built by the "cut and cover" method. A huge trench was dug and into this was built a massive, reinforced concrete shell, more than 2,000 feet long, 86 feet wide and 23 feet high. High enough, in fact, to permit London Transport to run a regular double-deck bus service to the passenger buildings. Subdivisions in the tunnel provide paths for inbound and outbound pedestrians, tracks for cyclists and flanking dual carriageways for motor vehicles. The tunnel is air-conditioned and fluorescent lighting provided.

East of the central area, across the mass of

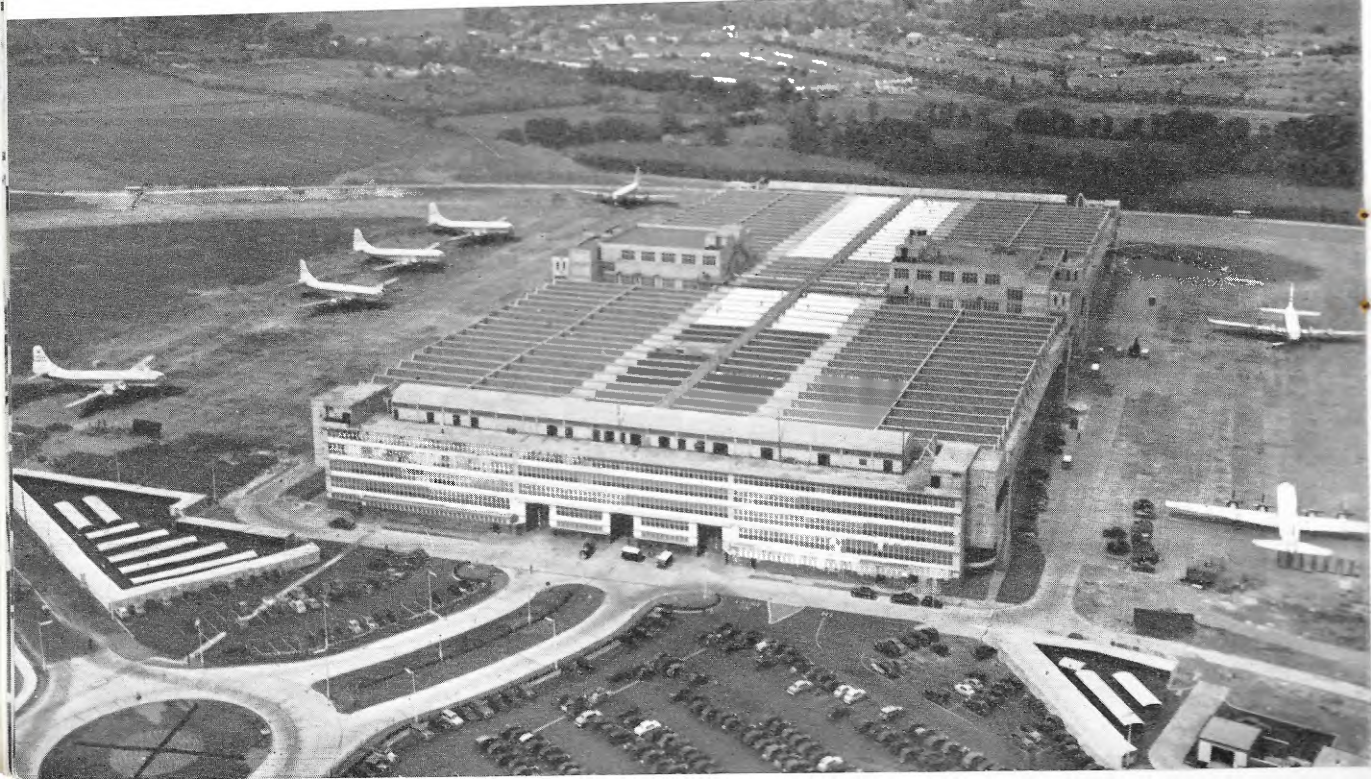
BOAC's headquarter building covers an area of $8\frac{1}{2}$ acres. It includes four hangars, each with an unobstructed entrance of 300 ft. Four stories of office accommodation flank the walls.

runways, are the giant engineering bases of the two British Air Corporations. Each of these massive structures covers $8\frac{1}{2}$ acres and provides hangarage, workshops and stores. In addition to this, B.O.A.C.'s building accommodates the complete headquarters staff of the Corporation, so that, to all intents and purposes, it houses the greater part of B.O.A.C. in England.

The building cost about £3 million, and three Britannias can be accommodated with ease in any one of the four massive hangars it provides. One of the many interesting structural features of this building is the use of two tremendously long cantilevers to give wide uninterrupted door openings of 300 feet. Supporting the cantilevers are two concrete pylons, each carrying a load of more than 4,000 tons and mounted on massive concrete foundations measuring 72 ft. by 36 ft.

B.E.A.'s building is primarily an engineering base, and basically comprises two long hangars arranged back-to-back, along the rear of which are the workshops and stores. Each of these hangars is equipped with an overhead crane for the speedy movement of wings, engines and other heavyweight components from one part of the hangar to the other.

One of the most striking sights in the hangars are B.E.A.'s unique permanent maintenance docks. Each comprises a series of platforms and decks which completely embrace an aircraft requiring overhaul after it has been towed in tail





One of BOAC's new 90-passenger turboprop Britannia airliners. Lined up in front are the Britannia's aircrew and MTCA and BOAC staff who handle the arrival and departure of the big aircraft.

first. Easy access is provided by the decks to all parts requiring attention: engines, ailerons, flaps, tail surfaces and fuselage skin joints. Each dock is a complete workshop in itself, with all the necessary electrical supplies, compressed air and lubrication points installed at the appropriate positions.

The crews flying into London Airport express great enthusiasm for its advanced landing aids. One of these is the Calvert line-and-bar approach lighting sited close to the ends of the main east-west runways, to help pilots to land in poor visibility and at night. The system consists of a straight line of lights 3,000 feet long leading directly to the end of the runway. Every 500 feet there are cross-bars of light at right angles to the central line. The cross-bars become smaller as they approach the runway, so the pattern as seen from the air resembles a funnel with the wide neck reaching towards the approaching aircraft and leading to the beginning of the runway. The cross-bars provide an artificial horizon, assisting the pilot to keep his aircraft level as he comes in to land.

So successful has it proved that IATA have recommended its use at all international airports.

The air age has come of age and air transport is now one of the world's major industries. It is also one of the busiest, and at London Airport the activity goes on 24 hours a day, 7 days a week, as the big silver planes land and leave with their precious cargoes of passengers and freight in continuous procession. Year by year an increasing amount of freight is carried and in 1956, 50,000 tons of freight and mail passed through London Airport alone. The air has opened fresh markets and brought trade expansion throughout the world. Cargoes carried into and out



Passengers' meals are prepared in superbly equipped kitchens below the passenger building, one of which is seen above. In the air these are served by capable stewardesses of many nationalities, including PIA's Miss Azra Khan, below.





Entrance to the half-mile tunnel and *left*, one of the two 20 ft. wide carriage-ways flanked by a footpath and cycle track.



Flying with both feet on the ground

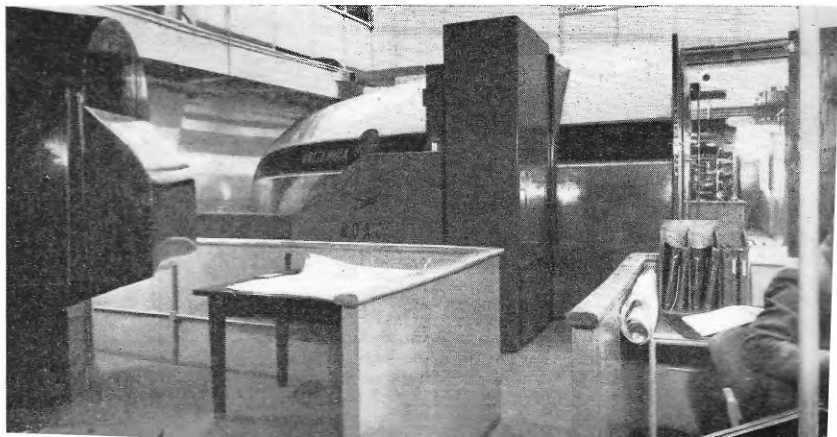
This incredible electronic simulator enables BOAC to train aircrew in all aspects of flying the Britannia—but on the ground. Pilots hear the noise of the engines, wind and touch-down tyre squeal. They feel the controls respond to airspeed, altitude of the aircraft and the position of the wheels and flaps. If they don't manoeuvre correctly the trainer will “crash.” Crews can be instructed at all times regardless of weather and the cost is only one-tenth of that of training in the air. Pictured here are the nose of the “grounded” Britannia, the flight deck and the instructor's panel.

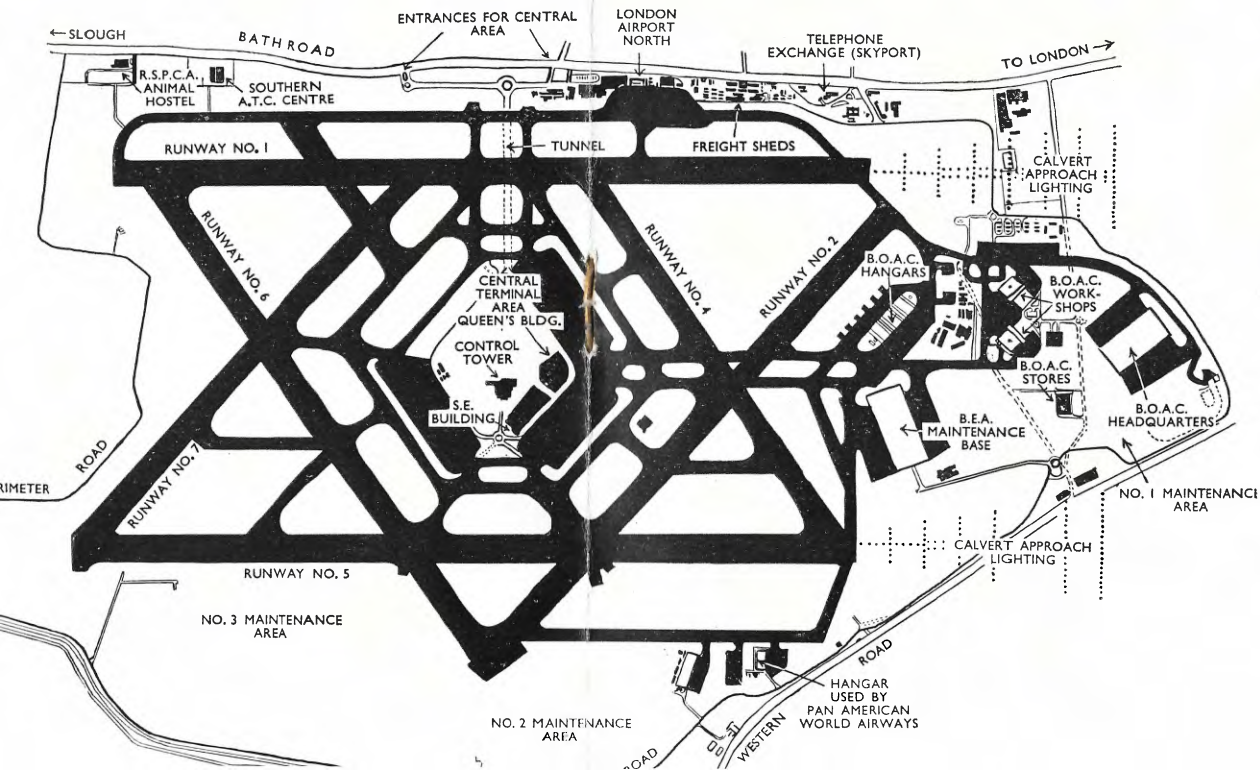
of London have ranged from cameras to computers and from flowers to furniture. The carriage of urgent cargoes is a speciality. It cost a lot of money to fly a six-ton propeller shaft to a ship broken down in a Pakistan port not long ago. But the vessel, which was costing the owner more than £1,000 per day while idle, was quickly repaired at a big saving.

Air transport is also attractive to people who ship animals and want them delivered with a minimum of discomfort, and the airlines have made animal care a major study. They carefully look after their feeding and domestic habits, water them regularly and sometimes even provide them with special attendants. For dogs some airlines provide sumptuous portable kennels, complete with deodorisers.

To look after creatures in transit the R.S.P.C.A. have built a special Animal Hostel at London Airport north. In one hectic month this unique animal hostel was used by 47,000 creatures, from panthers and penguins to pumas and pythons.

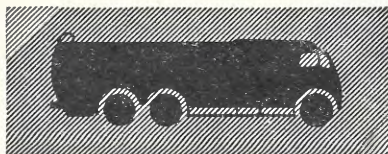
As business booms in all directions, the winged argosies of the air age world are fast developing the terminal at Heathrow into a new Port of London.





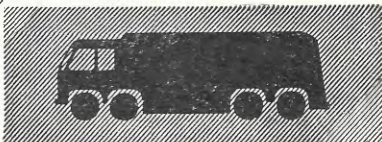
This platform on top of the Queen's Building provides visitors with a view bettered only by that from the control tower.

AIRCRAFT FUELLERS

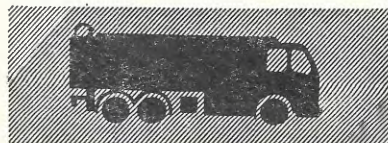


CORNWALL Capacity 3,500 Imperial gallons; max. delivery rate per hose 250 g.p.m. Foden or Leyland chassis. Designed for over and underwing fuelling of large airliners.

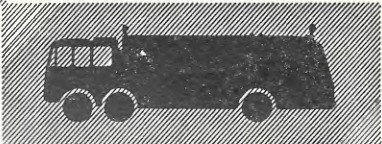
TYNE Capacity 4,000 Imperial gallons; max. delivery rate per hose, 180 g.p.m. Leyland chassis. Among the largest fuellers in the world; used for servicing trans-Atlantic airliners.



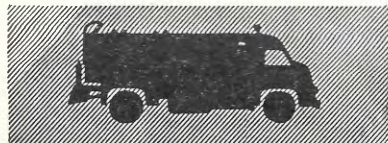
DORSET Capacity 3,000 Imperial gallons; max. delivery rate per hose, 200 g.p.m. Leyland chassis. Designed for underwing fuelling of the D.H. Comets with aviation turbine fuel.



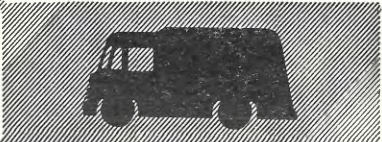
STEER Capacity 2,200 Imperial gallons; max. delivery rate per hose, 150 g.p.m.; Leyland chassis. Used at London Airport only for servicing medium-sized aircraft.



LINCOLN Capacity 1,500 Imperial gallons; max. delivery rate per hose 100 g.p.m. Bedford chassis. Designed for over and underwing fuelling of medium sized airliners.



TWEED Capacity 1,200 Imperial gallons; max. delivery rate per hose, 60/70 g.p.m. Ford chassis. Used for servicing aircraft covering moderate distances on European routes.



T. B. MOBILE Capacity 500 Imperial gallons; max. delivery rate per hose, 30/40 g.p.m. Special 3-wheel chassis. Stationed on the smaller airfields for servicing private and club aircraft.



At all the major airfields in Britain you can see one or more of these different types of fuellers operating Shell and BP Aviation Service. International airlines, charter companies and private owners alike know they can always expect quick, efficient service from the friendly crews of these Service Vehicles.



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AIRCRAFT ANNUAL

1957

Edited by John W. R. Taylor

One of the most popular aircraft books of past years, *Aircraft Today*, which has been acclaimed by the critics, reappears under its new title *Aircraft Annual*. Once again it contains articles of lasting interest to all ages, written by some of the greatest authorities on flying, together with a fine selection of hitherto unpublished photographs and drawings. Edited by John W. R. Taylor, one of Britain's foremost air journalists, *Aircraft Annual* is presented in an attractive four colour jacket. An Annual which is now in great demand.

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