BERLIN

AIR LIFT

AN ACCOUNT OF THE BRITISH CONTRIBUTION

1/6 Net

AIRLIFT WINTER. The line-up for loading, Gatow.

PREPARED BY THE AIR MINISTRY AND
THE CENTRAL OFFICE OF INFORMATION

Text by Dudley Barker

HIS MAJESTY'S STATIONERY OFFICE: LONDON

1949

Contents

To be purchased directly from His Majesty's Stationery Office at the following addresses: York House, Kingsway, London, W.C.2; 13a Castle Street, Edinburgh, 2; 39 King Street, Manchester, 2; 2 Edmund Street, Birmingham, 3; 1 St. Andrew's Crescent, Cardiff; Tower Lane, Bristol, 1; 80 Chichester Street, Belfast; or through any bookseller. Price: 1s. 6d. net. Printed in Great Britain by L. T. A. Robinson Ltd., London. Wt. 5051. S.O. Code No. 22-185.* First published June 1949.

DIVISION OF GERMANY as war ended into British, American, Russian, and, later, French Zones of Occupation left Berlin as an "island" in the Russian Zone. The city was divided into four Sectors for purposes of joint Four-Power military government. The Russians controlled the eastern half of Berlin, the three Western Powers the western half.

1. KIT FOR TEN DAYS

In a small pine forest at Wunstorf, near Hanover in Germany, lies an airfield that was built for the light-bomber pilots of the Luftwaffe.

The airfield buildings were comfortably, almost lavishly, provided. The great messing hall overlooked, through tall windows, a pleasant stretch of lawn. In the vaulted basement beneath the hall was a bar—something in the way of a beer-cellar, of good proportions. The living quarters were scattered among the pine trees in a pattern that was both picturesque and a wise dispersal against bombing.

Since 1945 these amenities had been enjoyed by fighter pilots of the British Air Forces of Occupation. The Royal Air Force took with readiness to the comfort of the station, and providently improved its technical efficiency, equipping it with long and solid runways; in the hands of the Luftwaffe the airfield had been mostly grass.

But in the closing days of June 1948 the serenity of Wunstorf was disturbed by the arrival from England of squadrons of Dakota aircraft of the R.A.F. Transport Command, carrying their ground crews with them. At about the same time, two small units of the Royal Engineers and the Royal Army Service Corps moved on to the airfield and set up camp. The weather was filthy—low cloud and rain overhead, mud underfoot. There were periodic gales.

This burst of activity at Wunstorf in June looked like a very minor move on the European chessboard. But the whole vast game had reached a critical moment. Since the previous January the Russians, move after move, had gradually been imposing a surface blockade of the Western Sectors of Berlin, the only square within Germany held by the Western Powers, by right, to the east of the Russian Zone frontier.

On June 24th the last Russian move of the series was made, and the surface blockade of Western Berlin was complete. The only way in or out, for passengers or freight from the Western (non-Russian) Zones, was by air.

Some plans had already been prepared against this happening, to supply by air the British occupying forces in Berlin. But, of course, it was at once evident that something larger would be required, if only for a short time. The West Berliners also, numbering some 2,100,000 people, would have to be supplied by air, a

stupendous undertaking even as a stopgap measure. On Saturday, June 26th, at his headquarters in England, the Air Officer Commanding-in-Chief, R.A.F. Transport Command, received the order to draw up a plan for such an operation. The code name was Carter Paterson. This plan was submitted to a Cabinet meeting on the following Monday morning.

Already, however, the Dakota aircraft were flying to Wunstorf from England, settling into the station from which the fighters were hurriedly moving out.

At 06.00 hours on Monday, June 28th, the first aircraft, laden with flour, took off from Wunstorf and flew to Gatow airfield in Berlin. That day, 13 Dakotas took in 44 tons of food. (A good deal of statistical confusion has arisen about the airlift because the nations concerned use the word "ton" to describe different weights. The American short ton (2,000 lb.), agreed as the standard airlift measure, is used throughout this narrative.)

Nobody imagined, of course, that this operation was to be anything but a short-term affair. One leading newspaper forecast at once an insuperable obstacle. "Coal cannot be flown in." A Berlin correspondent wrote "No one in authority here pretends that the West Berliners' ration can be maintained by this measure more than a week or two beyond the end of July, when present food stocks will be exhausted."

But no one could be blamed for misreading the signs. Nobody on the operational side then thought otherwise. The Dakota crews who flew in from England had been warned to take "enough kit for ten days."

Yet what in fact had just begun was the greatest and largest air supply operation ever attempted, or ever likely to be attempted again.

The impact on history of that show of Anglo-American air power over Europe in the summer of 1948 was probably as significant as that of the R.A.F.'s victory in the English skies in the summer of 1940.

The Berlin airlift became a near-miracle every day. It is almost incredibly difficult, on any one day, to direct a stream of aircraft into and away from a single airfield with a frequency nearly equal to that of Underground trains using one platform of Piccadilly station in the rush hour. It is just as difficult on the morrow. It may well, indeed, be more difficult, as every fluctuation of the weather, every rainstorm, every drift of fog presents new problems.

The airlift had necessarily to start as an improvisation ; there was no truly comparable experience upon which to draw. Even the mightiest of war-time bombing raids did not pose questions as intricate and complicated as this. As time went on, the improvisation developed into organisation.

But there was one quality without which the airlift could not have begun, or continued. That was team work.

There had to be co-operation in every small detail of the lift. But, first of all, there had to be complete co-operation between two nations. This, from the start, was a combined Anglo-American operation.

There was, of course, a good deal of previous experience by which to be guided. In most theatres of the last war the Americans and the British had worked as a team, an association particularly close and amicable between the air forces.

As it had been in war, so it was in this peace-time battle. The Berlin airlift had not long been in operation before the two air forces engaged in it were joined in a single organisation under an American commander, with a British air officer as second-in-command.

And the two forces were entwined, not only at the top, but right down the chain. The R.A.F. flew from the British Zone of Germany, the United States Air Force from both the American and the British Zones. American squadrons were based on stations administered by the British.

Let it be said at once that the Americans, with more and larger aircraft, carried the major part of the tonnage through the air ; that the British, placed nearer to Berlin geographically, undertook the major part of the work on the ground.

This narrative does not attempt to relate the whole story of the Berlin airlift. It sets out to record in detail only the British share of that operation. There is no intention to draw comparisons, for none of the men engaged on the lift did so. They well knew that the operation was possible only as a team effort, and each partner accorded the other the most generous recognition and esteem.

There is a favourite little anecdote among the airlift men.

The Texan pilot of an American Skymaster was approaching Berlin in the general stream of aircraft when he saw a British plane of unfamiliar shape. So he called up the British control tower on his crackling radio and asked : "What's this coming in now, fella ?"

He was told it was the Wayfarer (a British civil type).

"Did you say the Mayflower ?" replied the Texan. "You guys sure are throwing in everything !"

46G/T.S.1964/AIR.

HEADQUARTERS NO.46 GROUP OPERATION ORDER NO.9.

Appendices: 'A' Between Flight Servicing.
'B' Control Section of R.A.F.Oakington.

INFORMATION.

1. Following the breakdown of the surface communications between the British Zone of GERMANY and the British Sector in BERLIN, the latter will be supplied completely by Air.

2. The airlift into BERLIN is to be built up as rapidly as possible to 400 tons per day and maintained at that level until 3rd July, 1948. Therefrom it is to be increased to 750 tons per day by 7th July, 1948.

3. In Phase I up to 3rd July inclusive, Dakotas of 46 and 38 Groups operating under the control and direction of Air Headquarters, British Air Forces of Occupation (Germany) will provide the 400 tons per day lift. In Phase II from 4th July onwards, when Yorks of 47 Group com-

THE OPERATION ORDER was signed at headquarters, 46 Group, R.A.F. Transport Command on June 30th, 1948.

IN BERLIN the attempted Four-Power co-operation ground slowly to a stop on June 16th, 1948. The Russians withdrew from the joint governing body. Since January, Russian restrictions on traffic into West Berlin had been increasing: by June 24th they amounted to a thorough blockade. The boundary of the Russian Sector became a frontier within a city.

PART ONE: THE BRIDGE OF AIR

2. THE PROBLEM

THE British, United States and Russian European Advisory Commission, sitting in London during the war, agreed that there should be tripartite occupation of Berlin; a decision later modified to include the French, and confirmed at Yalta and at Potsdam.

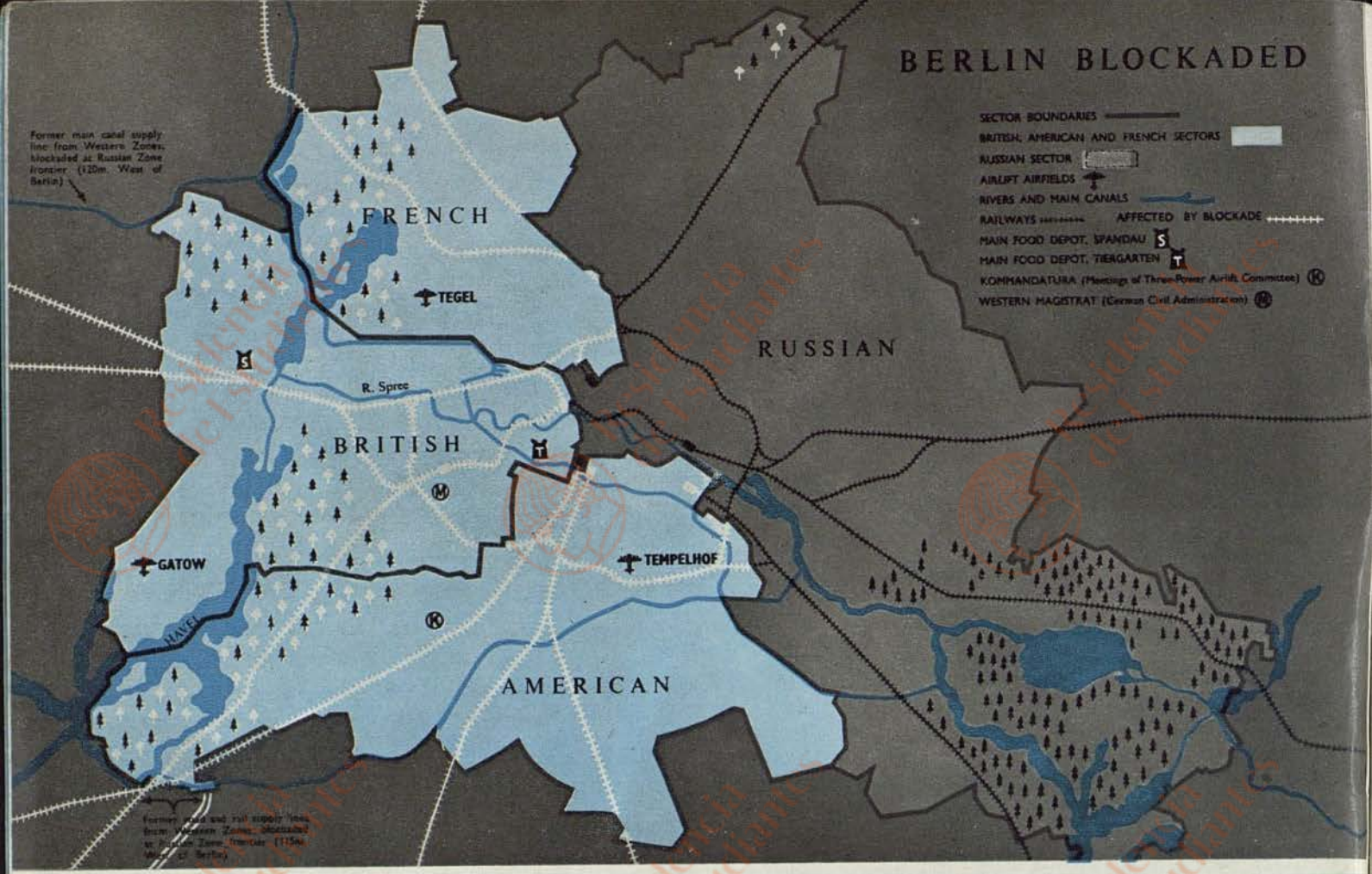
The western half of Berlin, therefore, after the end of the war, was occupied by the Western Powers, whose occupying forces were thus placed well inside the Russian Zone of Germany.

Western Berlin contained a population of some 2,100,000 Germans, plus a few thousand British, American and French troops and civil servants, together with a few semi-official persons such as, for instance, welfare workers and Press correspondents. The city had been devastated by bombing, its public utilities largely wrecked, and its industry virtually stopped.

Between 1945 and 1948 this ruined city had been brought back to a hard but tolerable standard of existence. The public utilities had been, to a degree, restored, an elected administration was functioning, and industry was reviving.

This rehabilitation was founded upon imports from other parts of Germany. The food came largely from the wide agricultural province of Lower Saxony (Niedersachsen), in the British Zone. This is an area, for the most part, of small farming and an almost peasant economy, and it ranges from the sandy plains around Hamburg in the north to the more rolling countryside south of Hanover. (See map on page 5.)

The coal required for public utilities, industrial power, and domestic heating came from the pits of the Ruhr. The necessary electric current was imported chiefly from the Russian Sector of Berlin, and from the Russian Zone outside Berlin, since the only modern power station in the Western sectors, Berlin West, had been stripped by the Russians immediately after the



SURROUNDED by Russian controlled territory, greater Berlin is roughly twice the size of the County of London. The population, 3,300,000, includes an abnormal proportion of women and children. In the Western Sectors, 2,100,000 depend on supplies from the distant (non-Russian) Western Zones of Germany. The blockade prevented supply by rail, road, or canal from anywhere outside Berlin. Inside, movement was not restricted by the Russians but exchange of goods became negligible

war ; and the other power stations of the West were small and elderly.

The raw material for the industry of West Berlin had been imported from several directions, much of it from eastwards of the city ; and many of the finished products had been exported also to east Germany and eastern Europe, a traditional Berlin market.

The total imports of all kinds upon which this restoration of West Berlin had been founded amounted to some 13,500 tons daily—food, coal, raw materials, and so on. They came to Berlin by rail, road and water.

There were also, by agreement of all the Powers concerned, three air routes into Berlin from the west. Each 20 miles wide, these had been delineated as the air highways from Western Germany to West Berlin.

These corridors converged upon Berlin in the shape of an arrowhead, with its point in the Western Sectors. The northern corridor led from Hamburg in a south-easterly direction. The central corridor ran due east from Hanover. Both of these were from the British Zone. The southern and longest corridor stretched from the American Zone, opposite Frankfurt, proceeding north-east to Berlin.

At the apex of the arrow, in West Berlin itself, there were two airfields to handle the traffic. One was Tempelhof, the Berlin airport, in the American sector. The other was Gatow, a former training college of the Luftwaffe, almost equivalent to the R.A.F.'s Cranwell. It lies on the south-westerly edge of greater Berlin, near the Havel, Berlin's beloved lake. From Gatow to the city centre is a distance of some 15 miles.

While surface communications were still open, of course, these air communications were ample for the needs of the Western Powers and for West Berlin. They were traversed each day by a few passenger-carrying aircraft, in the most leisurely fashion. Practically no freight was carried by air, and not much mail.

Then surface communications were closed. Apart from anything that could be smuggled past the Russian control posts around West Berlin, and from what supplies the Russians allowed in (as will be seen later) for their own convenience, the only route by which freight or passengers could reach Berlin from the West was that slender arrow of air corridors, that insubstantial bridge of air.

The problem, then, could be simply stated, though it was of immense difficulty. The economy and the standard of existence of West Berlin had to be reduced to the lowest possible level consistent with the maintenance of public health and employment. The previous

imports had to be reduced to the minimum for survival. And that minimum had to be carried, at whatever cost in money and manpower, by air.

The problem of reducing the daily tonnage of imports was not, in the beginning, quite as difficult as it sounds. For there were already in West Berlin considerable stocks of commodities of one kind or another, particularly of industrial raw materials. These could be drawn upon at a carefully rationed pace, and, it was clear, for some months they would enable the weight of imports to be less than the survival minimum.

In the first place, indeed, the main requirement of the airlift was that it should bring in food. There was no question of attempting to supply the whole 13,500 daily tons of pre-blockade imports, or anything like that figure. The original instruction given to the R.A.F. was to carry to Berlin 440 tons a day so long as only twin-engined Dakota aircraft were on the job ; and to increase this daily import to a weight of 840 tons as larger, four-engined aircraft were added to the operation. This was Operation Carter Paterson, a code-name that was very soon changed to Operation Plainfare. The reason for the change, by the way, is curious, and indicative of the tension in Berlin at that time. The Russians, by means of their controlled Press and radio, seized upon the earlier name, and made much play with the fact that it is the name of a well-known English removals firm. The object of the operation, therefore, they proclaimed, was to remove as much as possible from Berlin preparatory to withdrawal. This propaganda had some effect, so the name was changed.

So operation Plainfare was to bring to Berlin, in the early days, 840 tons of imports daily. The Americans, conducting a similar operation which they named Vittles, were to carry a considerably larger weight.

But as the airlift began to find its strength, a more accurate and more ambitious estimate was made of the weight that could be lifted into Berlin. In July a careful calculation was made of the stocks already available to the Western Powers in that city, and of the further amount that would be required to maintain West Berlin as a supportable economy for the next twelve months. This figure, it was found, would be something rather less than 4,000 tons of imports daily. An airlift of this size would support not only the West Berliners, but also the needs of the Allied troops and administration.

That, then, was the size of the problem. Its solution involved the carriage by air, not of food only, but of many other commodities, some of them most awkward freight for this kind of traffic.

Primarily, in addition to food, there would have to be an airlift of the raw materials of power—coal and liquid fuel. To keep West Berlin's industry running, even at reduced speed, considerable quantities of raw material would have to be flown in ; and, to maintain some sort of trade, the finished industrial products would have to be flown out. Fortunately the industry of West Berlin produces, for the most part, articles of small bulk but high value, such as electrical equipment, which are well suited to carriage by air.

The lift would also have to handle a miscellany of articles necessary for the life of a city : some clothing, medical supplies, mail, and an odd assortment of other objects. Then, of course, it was necessary to meet the needs of the airlift itself.

In the Western Zones of Germany there were plenty of airfields which could be used as dispatching stations.

LIFE WAS HARD in the shattered city. Women were working at unsuitable jobs, the workless and black marketeers cluttered the streets. But conditions were steadily improving. The blockade threatened the Western Sectors with a severe setback.

THE PROBLEM now was to provide food, warmth, and public services for two million—by the only way left open : the air. As winter neared gas and power cuts became longer ; wood pavings became fuel. Food rations were just maintained.

And whatever was necessary to bring them to a high state of technical efficiency could be brought to them with comparative ease by rail or road.

But the situation at the receiving end was very different. It is obvious that the speed of the whole operation would depend upon the rate at which the two airfields in West Berlin could accept and dispatch aircraft. The effectiveness of the whole airbridge would rest upon the strength of its eastern support. Those two airfields, therefore, had to be extended and improved to a considerable degree.

That meant the aircraft had to carry into Berlin an assortment of machinery and raw material with which to carry out this task, bulky and awkward things to carry by air. But this commitment had to be accepted beyond all others ; the success of the whole operation depended upon it.

Another particularly awkward freight was that which can be described as the capital equipment of the task. It is clear that the efficiency of the whole airlift could be greatly increased if the needs of West Berlin could be reduced by improving or adapting the equipment of the city. For instance, the reconstruction of a temporary bridge on the road between Gatow and the city centre would greatly reduce the road-haul of airlift freight once it had arrived ; and would thus reduce the quantity of petrol required to be flown in.

Considerations of this kind applied with particular force to the generation of electric power. If the existing power stations could be switched to the partial consumption of diesel oil, the weight of coal needed would be much reduced. But that meant importing the equipment for making the change—an additional burden for the time being upon the airlift, but a long-term benefit.

Similarly, the whole problem of supplying West Berlin with electricity would be vastly eased if the biggest power station, the Berlin West, could be re-equipped and set to work again. That meant the import of bulky and heavy machinery, but the effort to get it there would be well worth while in the end.

Numerous intricate calculations of this kind, the weighing of a short-term burden against a long-term advantage, were implicit in the organisation and planning of what the airlift should carry. The administration of Berlin had to decide, for instance, whether it would be more economical in airspace to import flour, and the coal necessary to bake it into bread in the bakeries of Berlin, or to import loaves already baked (but containing 30 per cent of their weight in water) and thus save the necessity to bring in the coal. In this case it was found advantageous to bring in the flour and the coal.

But, on the other hand, it was found to be cheaper in airspace to import as much real coffee as possible, rather than the fuel required to manufacture ersatz coffee in Berlin itself.

This little example of the coffee illustrates perfectly the topsy-turvy costing calculations that were imposed by the airlift. The import cost of a raw material was no longer reckoned against the selling-price of the finished article. That, of course, remained one of the considerations, but only a minor one. The decision to import or to do without had to take into account all kinds of other factors, such as the effect upon employment, the consumption of fuel, the reaction upon public morale. But the prime consideration was airspace.

Thus, by a curious irony, Berliners who for so long had drunk ersatz coffee as a means of economy were now to drink a good deal of real coffee for the same reason. The calculation was no longer made in terms of export-import balances, but in the "cubic ounces" that could be packed into the precious space inside the hull of an aircraft.

MEN AND MACHINES available for the British airlift were limited in numbers, but there was no shortage of skill. The highly trained R.A.F. air crews were soon to be joined by ten crews volunteered by the R.A.A.F., three by the R.N.Z.A.F. and ten by the S.A.A.F., as well as crews from a number of civil charter air companies. The latter included specialists in the ferrying of liquid fuel, with specially adapted aircraft. *Above :* An R.A.F. airlift pilot, with signaller and navigator.

3. THE MEN AND THE TOOLS

WHEN the airlift began it was, necessarily, a temporary expedient to tide over an emergency and to give diplomacy a breathing-space. But as, very rapidly, it became an integral part of the pattern of European life, to continue for nobody knew how long, it had to be converted into a highly organised machine, an instrument that could be relied upon at all times and in all conditions.

This machine had two component parts—the men, and the tools. If either were to fall below the highest possible standard, the whole apparatus would break down. It is worth while, therefore, briefly to survey, from a British viewpoint, the human and material resources which were available for the airlift. These resources were by no means confined to the men and machines that did the actual flying. The work on the ground was just as important, though less spectacular.

First there was the human organisation that decided exactly what commodities would be necessary to maintain the existence of West Berlin, and then gathered those commodities and delivered them to the airfields in the Western Zones from which they would be dispatched. The first principle to be laid down was that all the planning of commodity supplies—the decision as to what was needed—should be done inside Berlin. This was to be on a tripartite basis. The British, American and French Commandants should meet regularly in Berlin to draw up schedules. The Anglo-American joint authority in the zones of occupation, the Bipartite Control Office at Frankfurt, together with the headquarters staff of the British Army of the Rhine and a special British Unit, the Army Air Transport Organisation, were responsible for collecting the necessary goods

from wherever they could be obtained, and for delivering them to one or other of the dispatching air bases in the Western Zones of Germany.

On the airfields in the British Zone, the freight was stored, graded and checked by the Army. On each dispatching airfield the Army placed a specialist unit to deal with this task. It consisted of officers and men of the Royal Army Service Corps, controlling large numbers of German civilian labourers and was christened the Rear Airfield Supply Organisation, which in this age of initials, became known universally as R.A.S.O.

At the British airport, Gatow, in Berlin was set up a similar organisation known as the Forward Airfield Supply Organisation (F.A.S.O.), though this wielded no direct control of the German labour employed, but hired it through contractors.

R.A.S.O. loaded the goods into the aircraft. Inside the aircraft, of course, they were the responsibility of the air-men—of the R.A.F. and of the British civil air companies which were brought in to swell the traffic over the airbridge.

The supply of the goods to the airfields did not entail any abnormal feats of organisation. But the construction of the airbridge itself was a complicated and intricate affair. First the supports had to be provided at either end of the bridge. These were the dispatching and the receiving airfields.

At the dispatching end the Western Powers were well provided. There were German airfields available, though for the most part they were not in a high state of serviceability, and a great deal of constructional work had to be done upon them by the R.A.F. Airfield Construction Wings and Royal Engineers. Eight airfields and one flying-boat base were chosen as the western supports for the airbridge. Six of them, and the flying-boat base, were in the British Zone. In the north were Schleswigland, Lübeck, and Fühlsbuttel (the airport of Hamburg). The flying-boats were based at Finkenwerde, near Hamburg, on the Elbe. To the south, in the Hanover area, were three more airfields, Wunstorf, Celle, and Fassberg. The two others, at Frankfurt and Wiesbaden, were in the American Zone and were an exclusively American affair.

These airfields were not all brought into the operation at once, but were opened up one by one as the traffic over the airbridge increased in density. They were all in use before the end of 1948.

At the other end of the bridge the difficulties were very much greater. In Berlin there was no superfluity of airfields from which to choose. There were only the two, Gatow and Tempelhof.

It was obviously of immense importance that these Berlin airfields should be made capable of the maximum

PLANNING was primarily a task for the Air Ministry, R.A.F. Transport Command, and the British Air Forces of Occupation. But the British Army of the Rhine also had a hundred and one jobs to organise. *Top:* The then A.O.C.-in-C., B.A.F.O. with senior staff officers. *Centre:* The G.O.C.-in-C., B.A.O.R., visiting Lake Havel transport installations. *Below:* Director of Works and Chief Engineer B.A.F.O. planning the work of R.A.F. Airfield Construction Wing units.

activity ; which depends, naturally, upon the size and facilities of the airfields concerned. Gatow had been a grass airfield in German hands. Upon its surface the R.A.F. had already laid a runway of pierced steel planking, but that was far too weak to support for very long any intensive use by four-engined, heavy aircraft. Luckily, the construction of a modern concrete runway had been started in 1947, and when the blockade was imposed was nearing completion.

Even so, Gatow and Tempelhof were insufficient to handle the traffic that the airlift was bound to entail. A third airfield was therefore constructed, while the operation was running, at Tegel in the French sector of Berlin. It was built by the Americans and the French, but it comes into the British side of the story because quite a proportion of the British aircraft on the lift were then diverted from Gatow to Tegel, and the tonnage that could be carried was thereby much increased.

But runway space was not the only requirement of the airfields used to support the bridge. Perhaps even more important were the technical control and navigational equipment that could be installed upon them.

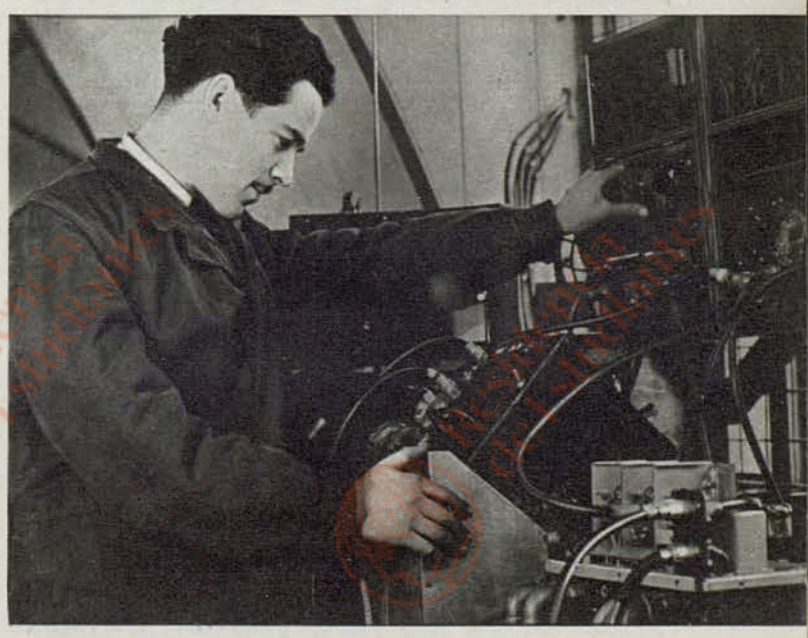
To make best use of the available runways at the Berlin end, it was necessary to land and dispatch aircraft at an extremely high frequency. The aim set Gatow was to land one, and dispatch another, during every three minutes, day and night. That is, an aircraft movement, in or out, every 90 seconds. In bad weather, the three-minute interval was stretched to five.

This remarkable intensity of traffic could be achieved only by the aid of radio and radar. In this respect the R.A.F. was well prepared. It possessed the finest possible equipment of this kind, which was installed at Gatow, and the most skilful men to work it. With a couple of radio beacons and a radio-telephone, the controller on the ground could bring in a stream of aircraft moving towards Gatow like beads slipping at regular intervals along several strings.

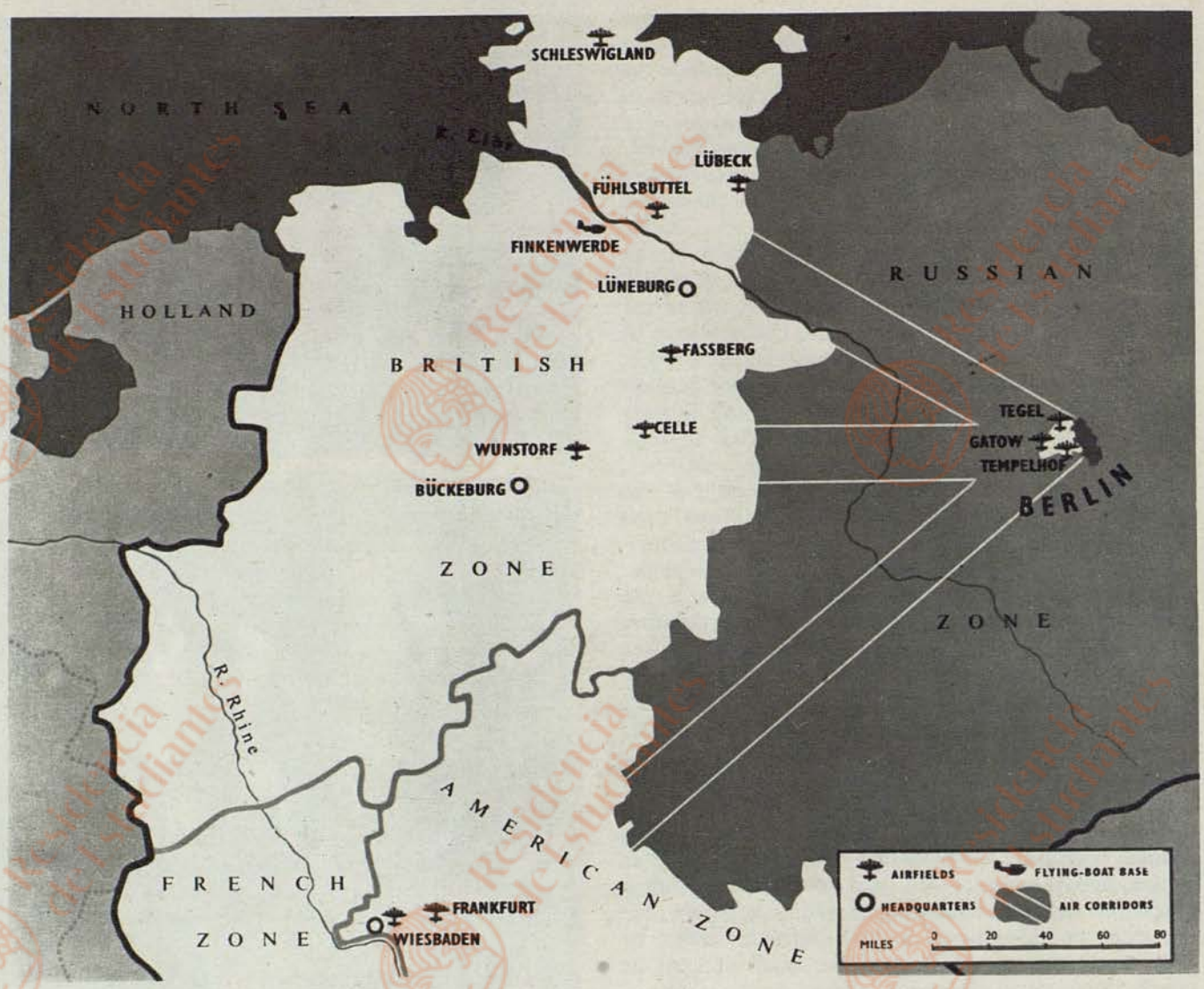
When the weather deteriorated, these aircraft could be taken over one by one, for their close approaches, by a radar controller in a small caravan by the runway, who could watch the movement of each machine on his radar screen, and give the pilot exact instructions on how and where to fly second by second ; could " talk him down " to a runway that, until the last moment, he could not see through the fog.

Without these aids, and the men to operate them, the whole airlift could have been carried out in good weather only.

In addition to the men on the airfields, there had also to be, just as in war time, an operational and administrative headquarters to control the whole operation and to keep careful watch upon its every



EXPERT R.A.F. ground controllers using the finest radio and radar apparatus could be called on, and expert aircraftmen for the maintenance work at home and in Germany. The planners could also rely on individual keenness down to the latest-joined national serviceman, to make the Berlin airlift something to write home about. *Top :* Chief Controller and assistant at Fassberg. *Centre :* Servicing at Gatow. *Below :* Testing Rebecca radar at Honington R.A.F. repair station.



THREE AIR CORRIDORS had long been agreed with the Russians for flying between the Western Zones and Berlin—a normal measure of air traffic regulation. Traffic was slight. With the blockade, the corridors became West Berlin's life-lines. The airlift started from Wunstorf, Wiesbaden and Frankfurt airfields, with Tempelhof and Gatow at the Berlin end. New British dispatching bases were quickly opened, and a new airport was built at Tegel. The British airlift was controlled from the Bückeburg area, where the headquarters of No. 46 Group R.A.F. Transport Command was set up near that of the British Air Forces of Occupation (the Group H.Q. later moved to Lüneburg). When the Combined Air Lift Task Force was formed in October, Wiesbaden became H.Q. of the U.S. General commanding it, as well as of the American airlift.

detail, at every hour of the day and night. Initially, this task was undertaken by the headquarters of the British Air Forces of Occupation, but later a special Transport Group headquarters was formed. This was set up, for the British part of the airlift, in an ancient German palace in the small town of Bückeburg, a few miles to the west of Hanover.

There dwelt the immediate British air commander and his staff. There, in an old room of the palace, was the central operations room, in which a British and an American controller together observed the whole progress of the airlift, and, by direct telephones to every unit engaged upon it, guided and directed its course, and smoothed away difficulties and troubles as they arose. And there, too, were the British scientists, descendants of the war-time "boffins," reducing the airlift to equations and calculating the probabilities of the future with remarkable exactitude.

Not to be forgotten, either, were the soldiers and airmen who worked continuously in all kinds of weather, improving, maintaining and administering the airfields in Germany ; and the men at airfields back in England, to whom each aircraft was flown home, after 100 operational flying-hours, to be overhauled, serviced, and put back on the job in first-class condition.

These, then, were the men and materials that were built into the supports of the airbridge. There remained, of course, the aircraft and air crews to cross it.

To the airlift the R.A.F contributed three types of

land aircraft: the twin-engined Dakota, which could carry a freight of some three and a half tons; the four-engined York, and the four-engined Hastings, each capable of a load approaching nine tons. To this it added, for a time, the large Sunderland flying-boats of Coastal Command.

Soon after the airlift started, the R.A.F. was joined by aircraft and crews of British civil companies, engaged under contract, a reinforcement of immense value, particularly as they could undertake, mainly in Tudors and Lancastrians, the haul of liquid fuel in bulk to Berlin, carried in large tanks specially fitted inside the hull.

The civil aircraft that came upon the lift were of several types. The chief among them, in addition to those already mentioned, were Haltons, Bristol Freighters, Yorks, Hythe flying-boats, and Dakotas.

It should here be added that the American aircraft used on the lift were the large, four-engined Skymasters, each capable of a load of ten tons, and some Fairchild Packets for difficult loads. To this fleet they added the largest aircraft Berlin had ever seen, the Globemaster, but these huge machines were soon withdrawn to the important work of carrying urgent U.S.A.F. airlift stores between America and Germany.

Those were the aircraft. And what of the men? Is it necessary to say more than that they were the men of the R.A.F.*, in the air and on the ground, and the men of the British civil airlines, who are the most skilled airmen in the world. This immense air operation was conducted by the R.A.F. with a degree of skill as high as any it displayed during the war, that same combination of good humour and daring. Some of the crews upon the airlift were war-time veterans. Others had been in training schools (or were still schoolboys) when the war ended. All of them, as well as the airmen and airwomen of the ground staff, displayed the same qualities of thoroughness and devotion to duty.

That other intangible asset with which the British are familiar, a sense of humour, was also apparent. The same sort of jokes and banter as were familiar upon war-time airfields permeated the messes and the stations and were concentrated, as they were in war time, into a series of comic cartoons. Just as Pilot Officer Prune was an integral part of Britain's war-time flying, and his Army cousins, the Two Types, were the best-known characters of Africa and Italy, so there emerged a series of airlift cartoons, with which everyone out there became familiar. They are the work of an R.A.F. officer who signs himself Frosty.

There was one more intangible factor that was an absolute essential of a successful airlift: that of international co-operation. This was something that particularly impressed the Prime Minister when, on March 4th, 1949, the 250th day of the airlift, he began a tour of the airlift airfields in Berlin and West Germany. Mr. Attlee called the airlift itself "one of the wonders of the world." Speaking of the co-operation of the American and British Commonwealth airmen, the Prime Minister added: "There has never been anything like it, and I will tell our people when I return."

There was nothing but healthy rivalry and no pettiness. On any one day, in the streams of aircraft converging upon Gatow, could be found airmen from America, Britain, Australia, South Africa, New Zealand.

For geographical reasons, many of the American aircraft landed at the R.A.F. airfield of Gatow, where British and American controllers sat side by side in the control tower. For similar reasons—the journey to Berlin is shorter from the British than from the American Zone—several of the American squadrons were stationed, soon after the lift got into its swing, on the two airfields of Celle and Fassberg in the British Zone. (The airfields themselves remained British, administered by the R.A.F. with a British station commander and staff; but all the operations from them were conducted by men and aircraft of the U.S.A.F.)

In spite of the obvious difficulties of combining two military forces with different sets of regulations—upon such matters, for example, as discipline—this arrangement worked with perfect harmony. The British learned to eat sweet breakfasts, the Americans took with avidity to afternoon tea. The American troops accepted without protest the British custom, unfamiliar to them, of establishing a separate mess for sergeants. Each Force, waiving formalities, submitted when necessary to the discipline of the other.

The two nationalities shared everything. They lived together, ate together, and mutually enjoyed their leisure and amusements. The only joking protest on record came from an American when a British flight lieutenant, taking part at one of the stations in a radio quiz that was broadcast throughout the United States, succeeded in winning the first prize of 6,100 dollars.

"But all the British put together aren't supposed to have that many dollars!" said the American ruefully.

"Anything you can do . . ."

* A number of Air Force Crosses and Air Force Medals have been awarded directly in connection with the airlift. It is not possible, however, to give a full list of awards. Most of the honours for an essentially pacific operation of this nature would come within the scope of the New Year and Birthday Honours, which are not attributable to specific operations.

4. BUILDING THE BRIDGE

THE building of the airbridge to Berlin began, as has been seen, as an improvisation. For the first few days there was a good deal of disorganisation upon the ground and in the air. The airlift started, and for a while it just grew.

And continually in the background of those early days, it must now be remembered, was the political tension of European happenings, the daily question mark. As some problem arose, something was done to solve it. But there was as yet no long-term plan.

The improvisation began as early as April 1948, when Russian restrictions upon surface travel between Berlin and the Western Zones of Germany began to be felt. Until then the R.A.F. had been flying a communications service between Bückeburg and Berlin. A small Anson aircraft made this flight three times a week. In April the Anson aircraft were replaced by Dakotas, and the frequency of the service increased to three times a day.

The only problem this service was intended to alleviate was the supply of the British occupying forces in Berlin. Even towards the end of June, when the Russian blockade of West Berlin was nearly complete, the supply of the British troops remained, for a few days, the only commitment of the R.A.F. Sixteen Dakotas were sent to Wunstorf for this operation, which was code-named Knicker, and this minor version of the airlift was required to fly into Berlin daily with 65 tons of freight.

At the same time one of the Royal Army Service Corps specialised units was hurriedly moved from England to handle the loading and unloading of the Knicker aircraft. Half the unit was at once flown into Berlin, and the soldiers were told that, because of the urgency of their task, all such regulations as speed limits were waived for them. If they were stopped by the Military Police, they had merely to pronounce the word "Knicker," and they would be unchallenged. (One soldier, entering into the spirit of the thing, obtained from an undisclosed source a garment corresponding to the code-name, and hung it bannerwise from the window of his car.)

Operation Knicker proceeded smoothly. The stipulated freight and passengers were delivered to Gatow, and nothing untoward or exceptional happened.

But when it became clear that the air supply of

THE AIRFIELDS at each end became the supports of a Bridge of Air spanning forbidden land. Immense works of reconstruction were put in hand, like this 2,000-yard concrete runway at Celle where a standard-gauge railway was built across the site. Most of the airfield work was a British responsibility.

Berlin would have to provide, also, for the whole German population of West Berlin, most of the available aircraft of the R.A.F. Transport Command were concentrated in Germany, the Dakotas, on short, home-based runs first, and the heavier four-engined York aircraft, called back from long-distance runs as far afield as Singapore.

The U.S.A.F. simultaneously began its Operation Vittles from the airfields around Frankfurt in the American Zone of Germany.

Now we must return to that placid airfield among the pine trees at Wunstorf, near Hanover, where were stationed three fighter squadrons of the British Air Forces of Occupation ; where life was being lived at a peace-time pace, and a man had time to take for walks through the woods the little rough-haired dachshund he had purchased as the companion of his leisure.

On June 24th the station commander held a conference to disclose to his staff that Wunstorf was to be invaded by Transport Command squadrons. The fighter squadrons, of course, would have to be disposed elsewhere.

Next day the first eight Dakotas arrived from England. Shortly afterwards three of them, carrying no freight, took off on a reconnaissance to learn the corridor routes to Gatow.

More aircraft and crews streamed into Wunstorf. An officer began to cast around to find a couple of hundred spare beds. All the living-rooms of the station were double-bunked. When they were full, and more and more airmen were still arriving, the attics were converted into huge dormitories.

AIRFIELD CONSTRUCTION specialists of the R.A.F., assisted by the R.E., surveyed the new bases, directed German labour, operated the indispensable bulldozers and graders.

RESOURCEFUL MOVE. The Havel lake in the British sector made the use of flying-boats possible—till winter ice threatened. *Above :* Coastal Command crew and senior officer disembark from the first Sunderland to arrive, in July 1948.

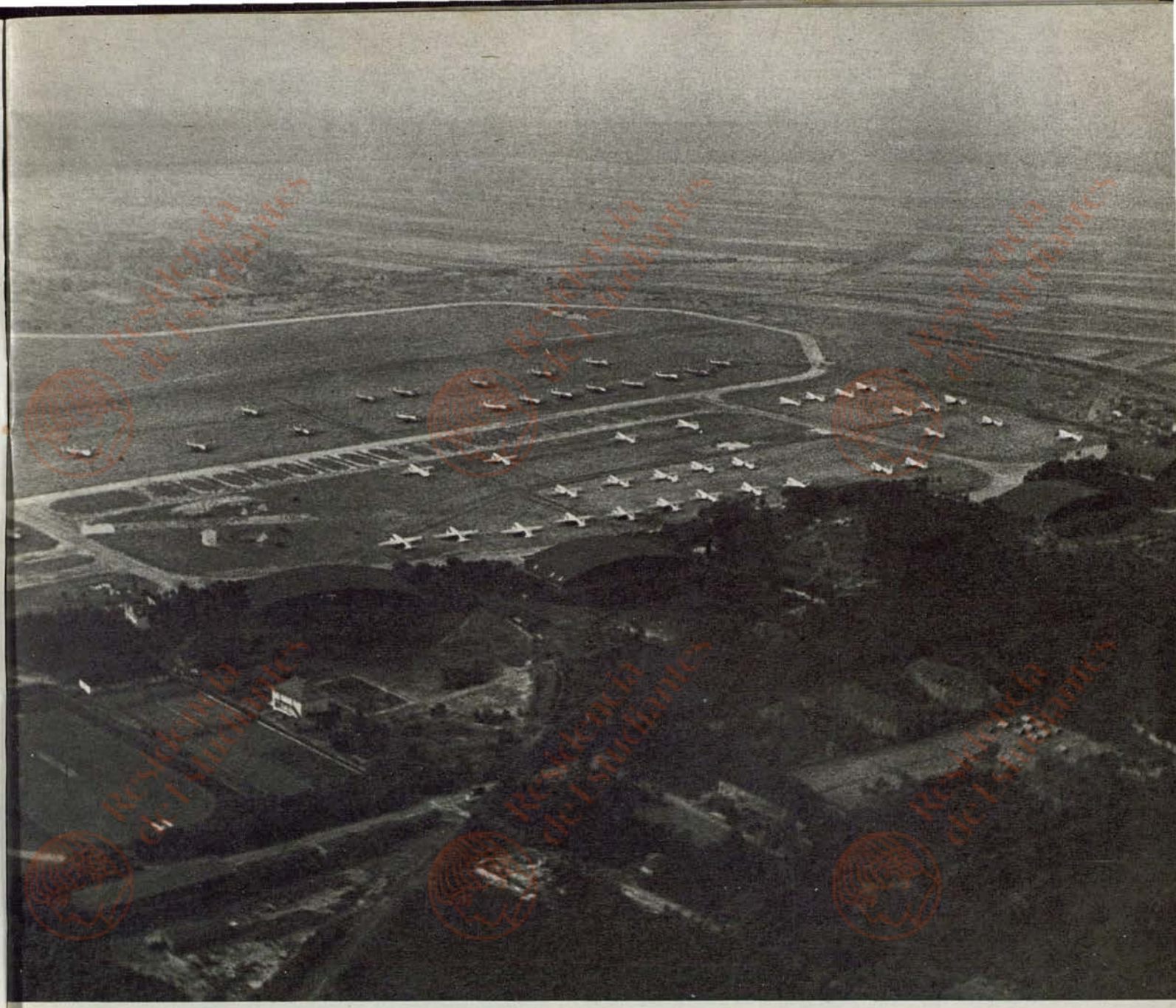
Then the Army's loading unit turned up, erected a tented camp upon the airfield's edge, and started to arrange for German civilian labour. All this was happening in weather that, for June, was a disgrace—high winds, rain, mud.

Large quantities of flour and meat were the next commodities to be injected into this Wunstorf airfield that was already bursting at the seams. These foods were collected and delivered by the Control Commission's civilian food team for Lower Saxony, and were taken into the care of the Army. Within the first 24 hours the Army had assembled 200 tons of freight, ready for the aircraft.

On June 28th the lift to Berlin began. From then until June 30th the Dakotas flew 20 sorties from Wunstorf to Gatow, and carried some 75 tons, mostly of food, for the British Berlin troops.

These operations were conducted in a carefree, almost a haphazard manner. One small room, equipped with one small " Perspex " board, had been set aside for the operations room. From here, as one of the men afterwards put it, " Pilots full of doughnuts and tea went forth to seek any aircraft which happened to be fuelled, serviced and loaded. Hot was the competition, and great was the joy when one was found. Soon the summer skies were full of a monstrous gaggle of aircraft heading in the general direction of Berlin." It was all something of a lark, and anyway it would not last long.

But as the pilots full of doughnuts and tea were heading merrily towards Berlin, air commanders in England and in Germany were calling conferences to complete the



WHERE IT STARTED. Wunstorf, the first British base, was throughout our busiest station. In July 1948 the Dakotas (the nearer three rows in this picture) were being moved to Fassberg to make room for R.A.F. Yorks (seen facing them).

plan for a massive ferry service to Berlin, which would not be anything of a lark at all, but a strenuous, slogging and mathematical routine.

Within three days the whole plan had been drawn up and submitted to the Cabinet. The operation order for the air supply of West Berlin was signed at 7 p.m. on June 30th. On July 1st the Dakotas from Wunstorf carried to Gatow 311 tons of food for the German civilians, and 94 tons for the British troops. The job had really started.

And let it be said at once that it had started, not only for the air crews, but for those toiling, often underestimated, absolutely essential and uncomplaining men, the ground-servicing crews. They had flown in with their airmen from England and set to work at once—in pouring rain and with only short intervals for sleep—to keep the aircraft in flying condition come what might ; just as they, or their elder brothers, had kept the bombers and fighters in the air during the war.

From now on, reinforcements came in fast. On July 2nd, only two days after the signing of the operation order, the first of the four-engined Yorks flew in to Wunstorf. On July 3rd it was suggested that the large Sunderland flying-boats of R.A.F. Coastal Command could be a useful reinforcement. A Coastal Command officer flew at once to Hamburg, to select a dispatching base on the river Elbe. Next day, July 4th, the flying-boats arrived in Germany. The day after that, July 5th, they began the lift, carrying in large stores of food, and alighting on the Havel lake. Their

ANGLO-AMERICAN teamwork. U.S. squadrons operated from two British bases. Our Air Minister, Mr. Arthur Henderson, visiting the American air crews stationed at Fassberg (British) airfield with the U.S. General commanding the combined airlift.

prompt arrival was of immense cheer to the Berliners.

The flying-boats were not operating in any great comfort. At their base, a short distance down river from the centre of Hamburg, they were anchoring in an exposed stretch of water with a number of wrecked ships (the result of R.A.F. bombing) dotted along its edge. Their operations were controlled from a row of marquees hastily pitched upon a riverside quay. At the Berlin end their moorings were improvised from those of a local British yacht club.

The flying-boats kept up their work until, in mid-December, there was danger of ice upon the Havel lake. Then, of course, they had to be withdrawn.

Meanwhile the reinforcement by land planes continued.

By July 16th the new concrete runway at Gatow was finished, and the York fleet could be used to full capacity.

Towards the end of July arrangements were being made to supplement the strength of the R.A.F. with aircraft and crews of several of Britain's charter air companies. The civil companies entered into contract with the Government through the agency of British European Airways and the Ministry of Civil Aviation. As we have noted, the civil airmen and aircraft were of particular value to the airlift because of the special experience and equipment which some of them had for carrying large quantities of liquid fuel—petrol and oils of various kinds—that could be pumped in and discharged through pipelines. The need for liquid fuel was growing acute in Berlin, and this commitment was undertaken entirely by these British civil companies.

The carriage of liquid fuels was, however, by no means the sum of the work carried out by civilian

THE BRITISH ARMY'S airlift supply commitments involved much railway, road and depot construction work, and the housing, feeding, training and direction of thousands of Germans. *Above:* Unloading food at the newly built siding at Fassberg airfield.

aircraft. In four-engined and twin-engined machines they hauled general freight, just as the R.A.F. was doing. The first civilian flights were made on July 28th, and the merchant airmen were on the airlift in increasing numbers from thence onward.

As these landplane reinforcements flowed in, they could not possibly be contained by the single airfield at Wunstorf, even though Airfield Construction Wing men were adding to the runways there at high speed, and the flying capacity of the airfield was being thereby increased.

The additional airfields had meanwhile been chosen, and the Royal Engineers, with the German railway organisation, were swiftly constructing special rail and road approaches and unloading facilities.

The first change in the disposition of the aircraft was designed to clear Wunstorf for use by the four-engined planes, with their much heavier loads on every sortie. Consequently, the R.A.F. Dakotas, the smaller machines, were moved in mid-July to Fassberg, a few miles to the north-east. They began to work from their new station on July 19th, and started to carry sacks of coal.

This was the beginning of the British coal lift to Berlin.

At the end of that month the Yorks were joined, at Wunstorf, by the first British civil aircraft. These were oil-carrying Lancastrian tankers. Other four-engined civil aircraft were also added to the Wunstorf fleet, while a number of civil Dakotas joined their R.A.F. brethren at Fassberg.

The next big influx to the British airfields came between August 4th and 20th. As the weight of the lift increased, it became clear that the more big aircraft that could be placed upon it, with the shortest possible distance to fly, the greater would grow its efficiency. The Americans, around Frankfurt, were beginning to accumulate more Skymasters than they could handle from their two airfields. They had called the Skymasters to Germany from remote parts of the world ; some of the squadrons had come from Japan, others from Hawaii and Alaska.

The obvious solution was to fly many of these Skymasters from the British Zone. They were moved, therefore, to Fassberg, under British operational control ; and they were placed on the coal lift.

Fassberg, in its turn, began to get overcrowded. So at the end of August the civilian Dakotas, and early in September the R.A.F Dakotas, moved on again. They went to an airfield outside the ancient Baltic city of Lübeck, with its medieval gateways, and merchants' houses facing the sombre river.

By mid-September all the aircraft remaining at Fassberg were American. Three months later, as still more American squadrons came into the British Zone, they were established at an airfield close by, at Celle. This airfield, though administered and commanded by the R.A.F., was to bear, throughout the airlift, only American aircraft and crews. Remarkable feats of airfield construction were performed by the R.A.F. for the use of the Americans at both Fassberg and Celle.

Long before this, however, the Dakotas up at Lübeck were also getting too crowded. They had been joined by a number of civilian aircraft of other types. At the beginning of October, therefore, all the civilian aircraft were moved to Fuhlsbuttel, the former airport of Hamburg, leaving only the R.A.F. Dakotas at Lübeck.

Fuhlsbuttel became an entirely civilian airfield, including its operational staff (though it operated, of course, under the general orders of the R.A.F. at Bückeburg). The smaller civilian aircraft were gradually withdrawn in favour of larger types. For a time Fuhlsbuttel was operating mostly Haltons, Halifaxes, Bristol Freighters, and Wayfarers ; then these latter were also withdrawn, leaving Haltons as the main aircraft of the civil air fleet. The only other civil aircraft, apart from Hythe flying-boats which joined the Sunderlands on the river Elbe, were the fuel-carrying tankers (Lancastrians and Tudors), which continued to work from Wunstorf in the south.

The last big change before the end of 1948 was the opening of the most northern of all the airfields, at Schleswigland. The R.A.F. squadrons that went in there were flying a post-war heavy type of aircraft, the Hastings. When they began in November, they were flying operationally for the first time.

Long before these dispositions of aircraft and airfields had been completed the whole character of the airlift had changed.

The aircraft that had been flying only in the hours of daylight, and in summer weather, were to fly, in autumn and winter, throughout the 24 hours and at shorter intervals. The air fleet was to be enlarged. The airlift, till now a light-hearted operation, would have to be schooled in the stern curriculum of science. The days of improvisation had witnessed a surprising success, but now they were over.

DUTCH CARTOON from *De Stem van Nederland*. It echoed the food-dropping by the R.A.F. in 1945 when thousands in Holland were cut off by the tidal wave (*vloedgolf*) of battle.

CONTROL of aircraft movement faced new complexities as this unprecedented operation got into its swing. Aircraft converged on Berlin from eight scattered bases, night and day ; timed so as to effect landings and return take-offs every two or three minutes. The Chief Controller (an R.A.F. squadron leader) directing the outward and inward traffic at Wunstorf.

5. THE BRIDGE HOLDS FIRM

THROUGH the summer and early autumn of 1948 the Berlin airlift had receded a little from the front pages of the newspapers. To the relief of all the Western world, it had succeeded in keeping West Berlin supplied with food and fuel, and the tension of those June days had somewhat relaxed.

But as autumn wore on, and winter drew near, anxious eyes turned back to the airlift, and gloomy voices began to predict that, miraculous as it had been so far, it could not survive the bad weather and the darkened skies of a European winter.

As the forces engaged upon the lift were then organised and deployed, those gloomy prophecies were probably correct. But the Anglo-American air forces were well aware of this danger, and were preparing already to meet it.

One of the things the two air forces did was to draw even closer together. So far, the efforts had been only loosely co-ordinated.

So in October the British and American forces employed were joined in a single organisation, called the Combined Air Lift Task Force. At its head was placed an American general ; appointed second-in-command was the British air commodore commanding the Group of R.A.F. Transport Command that was flying the R.A.F. airlift. These two worked under the joint direction of the Air Officer Commanding-in-Chief, British Air Forces of Occupation, and the Commanding

General of the United States Air Forces in Europe. Headquarters of the Combined Task Force were set up at Wiesbaden, near Frankfurt, in the American Zone of Germany.

So far as the R.A.F. was concerned, of course, the airlift operation was part of the responsibility of the A.O.C.-in-C. British Air Forces of Occupation, though the Service aircraft engaged upon it were those of Transport Command. The Occupation Force, in addition, contributed a number of specialist officers and men to the airlift.

This reform of organisation was symbolic of the reforms which were being put into effect on the air-bridge itself, as fast as physical conditions would allow. Over a period of months, the traffic over the bridge was rationalised, controlled, drilled into a strict routine.

Flying was extended gradually from "daylight only" to the scheduled "24 hours a day." A one-way traffic system was imposed—inwards to Berlin along the northern corridor for British-based aircraft, along the southern for American-based; and nearly all flights returning outwards along the central corridor.

The frequency of the flights was increased by putting into force a set of rigid traffic rules. They were designed to get as near as possible to the ideal—a steady, regular, unbroken stream of aircraft into and out from Berlin night and day. That, however, could have been achieved only if the aircraft on the lift had all been of the same type, travelling at the same speed, using the same navigational methods, and carrying similar loads.

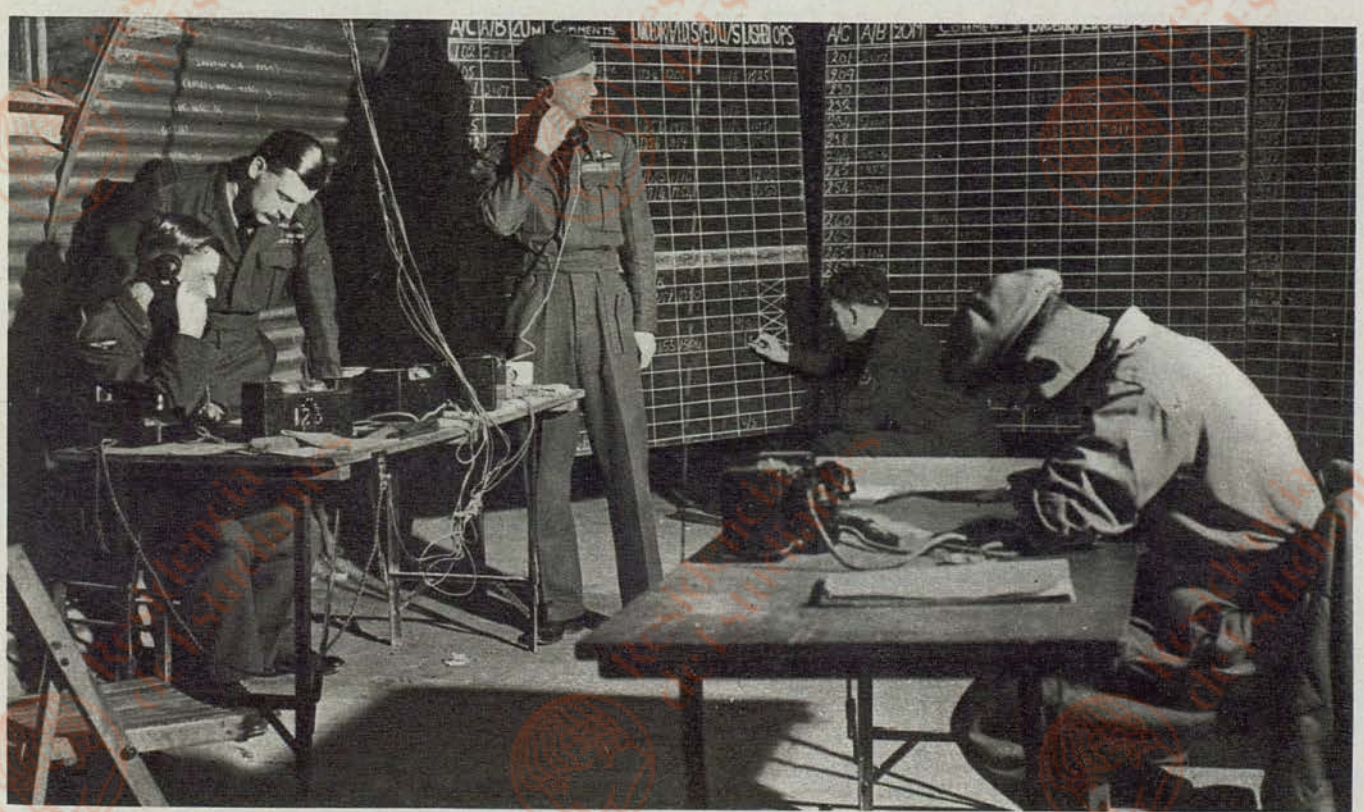
But in the British Zone they were not. Some of the aircraft were much faster than others, some carried heavier loads, which took longer, therefore, to unload on the ground. British and American air crews were not only using different methods of navigation, but these could not be standardised because their aircraft were fitted with different types of radio equipment.

If these aircraft had all been sent continuously in and out of Berlin at regular intervals, the result would have been disastrous. There would have been grave danger of collisions between aircraft of different speeds. The different unloading times would have thrown the whole programme out of gear within an hour or so every day.

The alternative system adopted in the British Zone, therefore, was to dispatch aircraft of the same cruising speed for, say, the first hour, to be followed by a wave of aircraft of different speed, from another airfield, for the second hour. Each 24 hours was thus split up into a series of time-blocks, during each of which a wave of aircraft of one speed was proceeding into Gatow.

Instead of the ideal of all the beads moving at regular intervals along a single piece of string, as it were, the British commander was obliged to make play with several pieces of string, each with its own set of beads moving along it.

For added safety, he kept his strings at different heights from the ground, so that aircraft of different speeds would not collide with each other in darkness or in fog. Yorks, for instance, flew at one height, all



YORKS TO SEND. A duty squadron leader supervising the flow of aircraft from his station. The blackboards show availability of aircraft. Improvised at the start, the airlift very soon developed its own characteristic operational routine.

the Dakotas at another, Skymasters at yet another, and so on.

The British commander used his different strings of aircraft in rotation throughout the day and night, and each string, of course, was used more than once every 24 hours.

At first the time-blocks were periods of four hours each : Dakotas for four hours, for instance, then the faster Yorks for four hours, and so on. But this set up terrific peaks of work for the loading and maintenance crews on the airfields. So the time-blocks were reduced to periods of one hour, or at most, two. Thus the different groups of aircraft from the British airfields went flying into Gatow hour by hour, each group in its own time-block, and travelling at its own special height.

In practice, of course, the thing became even more complicated than this. As the winter crept in, the weather of northern Germany deteriorated. Snow did not come as early as it might have been expected (snow-clearance equipment was ready for it when it did), but the fliers had to contend over long periods of time with various sorts of bad weather that clamped down upon one airfield or another.

Sometimes it was rain, sometimes a gale, that "clamped", as the R.A.F. say, the airfields. More often it was fog that hung about waiting for a clean harsh wind to scour it from the plains. Sometimes one airfield was clamped while others were free ; then that one would be cleared, while the others fell out of use. That meant juggling with the strings of aircraft. The one that was to have been used was suddenly clamped, and had to be replaced swiftly by another from an airfield still clear. Then perhaps, before the return journey could be accomplished, that airfield in its turn would be clamped, its aircraft would be held up in Berlin—and yet another string of aircraft would have to be brought into operation.

RADIO-TELEPHONISTS monitoring all incoming and outgoing messages. With so much traffic in the air corridors it was someone's business to be aware of each aircraft's position.

That sort of thing happened day by day during the winter. It meant, of course, quick judgments and rapid reshuffles of programmes in the operations rooms. It set telephone bells ringing up and down the line. But after all, as the pilots remarked cheerfully, that is what operations-room staff are for.

Bad weather was, of course, the chief enemy to be fought across the airbridge in winter. And that enemy was beaten. The British Prime Minister had evidence of this when he paid his visit in March 1949. Snow was falling at Gatow when his York aircraft touched down, an hour before midnight. Yet this aircraft had to be fitted into a stream of Skymasters that, in the darkness and the snowstorm, were arriving at six-minute intervals with their loads of freight for Berlin.

During the next two days, when the Prime Minister visited other airlift bases, he flew frequently through thick snowstorms. Yet he saw all the time aircraft streaming back and forth on a schedule timed to within a few seconds.

The victory over the weather could not have been gained—indeed, the whole airbridge would have been impossible—without the use of radio and radar, and a few other kinds of scientific equipment.

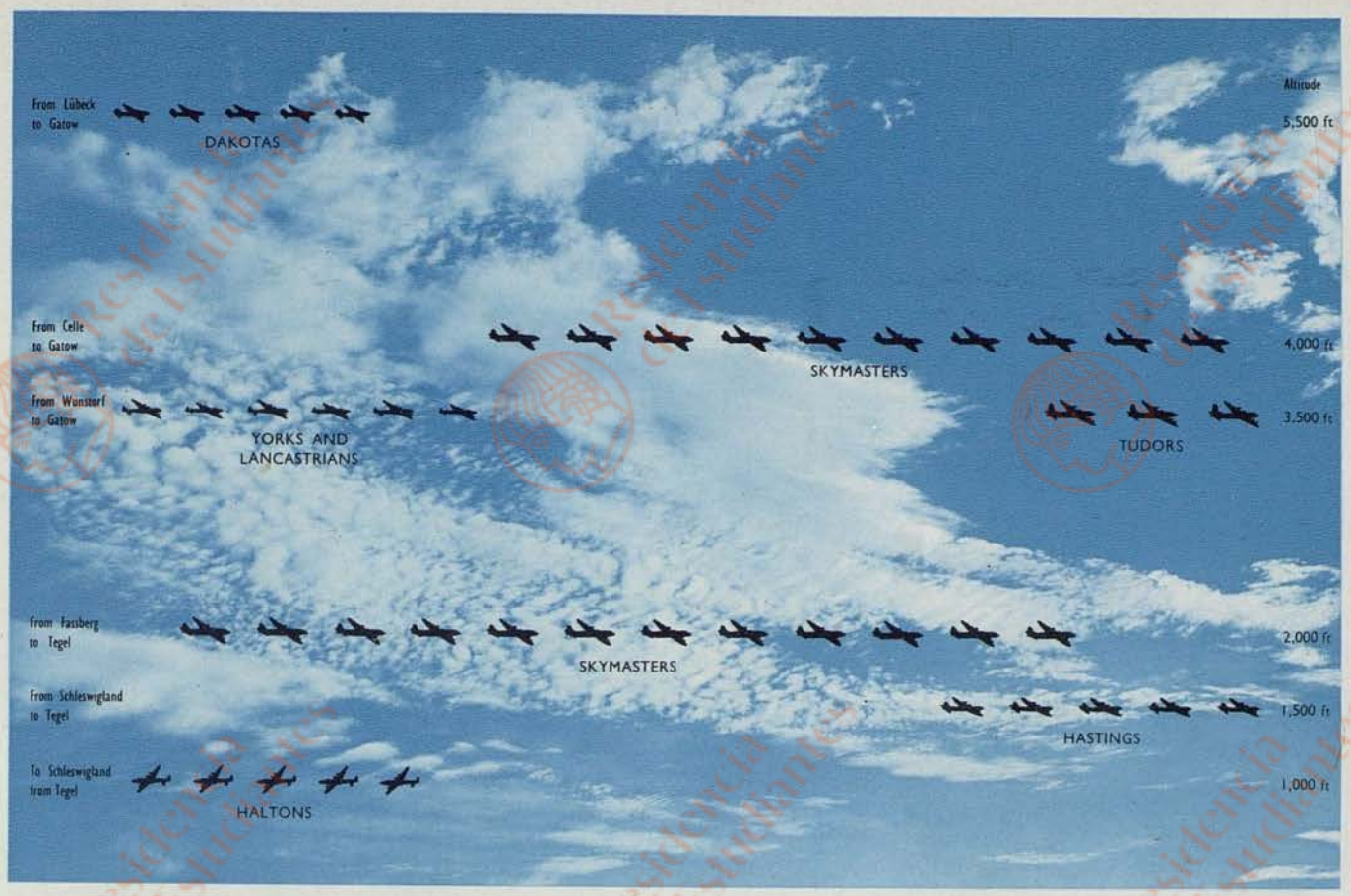
The whole traffic system was pivoted upon a radio beacon, the Frohnau beacon, set up a few miles north of Gatow airfield. Upon this beacon the aircraft flying down the northern corridor made their rendezvous with the Gatow air traffic controller. From that point his radio voice brought each aircraft in the stream in turn to the runway.

In good visibility, the pilot landed his aircraft by using his own eyes, once he had permission from the controller. He came down swiftly from the beacon, and straightway landed ; there was no time to make a circuit of the airfield, as is the customary practice.

If he miscalculated and missed his chance, he had to carry his load back to his home airfield without landing at Berlin. There was no room, in that tight flying schedule, for second tries.

But when the weather was bad, and the pilot could not see, the traffic controller handed him over to the G.C.A. (Ground Controlled Approach) controller, who dwelt with his radar equipment in two caravans out on the airfield, close by the side of the runway.

The G.C.A. controller had to be a man of great experience, of both radar and flying. On his radar screen he could see the image of the aircraft that wished to land, and exactly where it hung in relation to the runway. Giving instructions to the pilot by radio-telephone, the G.C.A. controller gradually coaxed him down through the fog, telling him just when to lower his undercarriage, when to use his flaps, when to lose height, and how to turn in the sky. At the last moment the pilot himself, peering through the murk, could see the lights of the runway, upon which he immediately



HEIGHT SEPARATION and Group System in the north corridor. Aircraft had to arrive at Gatow and Tegel at 3- to 5-minute intervals. But different types fly at different speeds; and aircraft in this corridor came from six airfields. To ensure safety and timing, groups of 12 to 20 aircraft of similar speed flew at fixed heights. Intervals between craft varied from 7½ miles in the slowest groups to 9 in the fastest. In the diagram the lateral spacing of the groups is not significant: there was no fixed interval between groups flying at different heights, and a faster group might overtake a slower one during the run.

touched down. And the G.C.A. controller then took over the next man in the air.

And perhaps, as this fogbound pilot dropped down towards the runway he could not see, he was suddenly helped by the latest lighting aid, developed by the Royal Aircraft Establishment and first used operationally at Gatow. It consists of a series of cross-bar sodium approach lights across a central bar of light which is aligned exactly with the centre of the runway. This system was a most valuable additional weapon in the fight against bad weather over the airbridge. (It was next installed at London Airport.)

So, by the end of the year, this whole wonderful airlift could be surveyed in full working order.

In Berlin itself the military and civilian authorities were assessing the needs of the blockaded city, and in the Zones of the west they were collecting the necessary goods and delivering them to one or other of the six airfields from Schleswigland to Frankfurt.

On the airfields themselves, the goods were marshalled, stored and loaded by special military units several hundred strong and using the labour of thousands of German civilians—the total in the British Zones alone amounting to some 10,000 men. British Army units, and the Germans they planned for or directly controlled, were concerned not only with the movement of the freight but also with all the extensive engineering and constructional work—camps and storage buildings, bridges, water supply and so on—necessary to make that movement possible. It should be noted here that this German labour proved of untold value to the operation, the men working staunchly, and without discontent, often in appalling weather conditions. They were provided with a meal per shift off the ration, with warm winter clothing, and with rest rooms and airfield baths. There are one or two comic incidents to report. There was, for instance, the German traffic policeman who held up a Dakota to let a stream of lorries cross the runway, on the well-known German principle that traffic from the right takes precedence. There was the unfortunate lorry driver who collided with the wing of a taxying Dakota, and protested plaintively that, in his opinion, the aircraft was flying much too low.

To return to our survey. The freight, delivered to the six British airfields, and stowed aboard the aircraft

by the Army, was then carried, by day and night ceaselessly, across the bridge to the R.A.F. airfield of Gatow in Berlin (and some of it, later, to the newly constructed airfield of Tegel in the French sector).

At any moment some Olympian observer, high in the skies above the northern air corridor, would have seen periodic streams of aircraft from one or other of these six airfields, converging upon the entry to the corridor opposite Hamburg, going into it one by one, turning over the Frohnau beacon, turning again over a further beacon in the city centre, then letting down swiftly and surely upon the lights of the Gatow runway. And at the same moment this lofty observer would have seen the returning streams of aircraft lifting, plane by plane, from Berlin, flying out along the central corridor, and turning off at its western exit opposite Hanover to seek one of the six home airfields.

That is a plan view of the British portion of the airlift at any one moment. The thing to remember is that, though bad weather hampered it here and there from time to time, it went on ceaselessly like that, day and night, week after week, month after month.

After the initial impulse in the summer had somewhat weakened, the figures of British flying over the bridge began to decline. There were several reasons for this. One was the weather. In periods of bad weather, when the number of aircraft that Gatow could receive was limited, it was obviously good sense to use only the

NIGHT SHIFT. *Left :* Searchlights at Fassberg guide homing Skymasters on the coal lift. The winking navigation lights on the wing-tips of taxying aircraft appear in this photograph as dotted white lines. *Above :* Directing the night flyers at Celle.

DESPITE WINTER the airlift continued to grow. When the snow came, in March, men and equipment were ready for it.

largest, and to drop the smallest from the programme. The first squadrons to stand down in bad weather, therefore, were always the twin-engined Dakotas, which formed a big proportion of the British fleet; they gave way, on the bridge, to the larger, four-engined aircraft.

It must not be thought that this much discouraged the veterans who were flying the Dakotas. From their northern base at Lübeck they flung themselves into the operation with the greatest enthusiasm at every opportunity. There was one great day when the Dakotas had been set a target of 120 flights to Berlin and back. As this figure was approached, the station began to run out of crews. So the men in the operations room, the Wing-Commander Flying, off-duty controllers and such, began to form themselves into scratch crews. Anybody who looked into the operations room found himself impressed into the air. It has to be confessed that one crew, after take-off, discovered that no member of it was carrying a watch (but the aircraft got to Gatow exactly on time, nevertheless). And in this way the grand total of flights for the day was raised triumphantly to 125.

There is also, to show the spirit of these Dakota crews, the story of the Dakota that, in the very early days from Wunstorf, was accidentally laden with a York load—more than twice the weight it should have carried! Descriptions of this herculean sortie are now apt to vary with the teller, but the pilot's own comment is fortunately preserved. At Gatow, he remarked mildly: "She landed a bit heavy, you know."

Another reason for the decline in flying by the British fleet in the early autumn was a temporary shortage of air crews. Transport Command's resources in this respect were limited, and it had now become necessary to withdraw some of the experienced crews from the airlift, and send them back to England to train fresh crews.

Yet another reason was the fatigue which intensive operation inevitably imposed upon the air crews after a time, though no man was permitted to fly more than two return journeys to Berlin per day, and at regular intervals he was sent home to England for a few days' rest.

All these various factors told on the flying figures during the autumn.

But in December, when the worst flying weather was only to be expected, a curious thing happened. The figures of British flying over the bridge began to rise. The reorganisation and the routine drill were taking effect. They rose slowly but steadily, until by the end of January and during February they were far higher than they had ever been before.

The original impulse of enthusiasm which had built the airbridge had waned in the late summer. There had been a period of rather unsatisfactory sagginess. And then the operation had moved gradually but surely towards its prime. The pattern of all the old war-time stories, in fact, was being repeated. By early in 1949 there was no doubt about it. The job was under control. The bridge was holding firm.

THE AIRLIFT IN ACTION

Imagine this in motion. It shows the number of aircraft in the air at a typical moment of the lift on a fine day. The disposition of aircraft groups or parts of groups—setting out for the north corridor, flying in all three corridors, emerging and turning homewards—is also diagrammatically typical. Note: all aircraft returned via the central corridor except those from Schleswigland and Fuhlsbuttel which flew back up the north corridor—a group of these is shown doing so. Those using the north circuit flew in groups, those on the all-American south circuit flew in continuous stream. The aircraft themselves are drawn far larger than scale, to make the "story" clear. Seen in continuous motion, the effect would be reminiscent of a working model of the circulation of the blood; a reasonable comparison also in view of West Berlin's dependence on those vital streams of aircraft.

6. WHAT THEY CARRIED

WHAT went over the bridge? What was it necessary to lift into West Berlin by air in order that the city might continue, not merely to survive its blockade, but to remain the place of industry for nearly one million workers?

The list of commodities to be recorded is extensive, varied, and sometimes seemingly odd.

The airlift began as a food haul, and food necessarily remained one of the primary components of the load. But by no means the only one. Towards the end of the winter in the early months of 1949, when the airlift was working to the greatest capacity achieved up till then, the commodities carried from the British Zone fell into five main groups, namely:

(1) Food and supplies for the British troops in Berlin. This requirement, a comparatively small haul of some 40 tons a day, had always been the first priority.

(2) Food for the civilian population of West Berlin, amounting to a daily weight of about 1,300 tons.

(3) Coal, mostly of a special kind for such essential purposes as the maintenance of public utilities (electricity supply, sewage disposal, hospitals, etc.), and to stoke the industrial furnaces of the factories; with a small allocation for domestic heating.

(4) Liquid fuel, mostly petrol for motor transport, diesel oil for heavy transport and power plants, and some industrial high-grade fuels.

(5) Special freight. This was of three kinds. The first was newsprint, vitally necessary to keep in circulation the newspapers of West Berlin—upon which the morale of the citizens so much depended. The second kind was German economic freight—raw materials, that is, to enable the West Berlin factories to keep in production. The third group was a miscellany ranging from medical supplies to such essential consumer goods as children's shoes, or the plant and materials required to extend an airfield, to convert a power station to burn oil instead of coal, or to keep a factory going.

The methods of supplying these various commodities by air were kept flexible. In general terms the amounts required of each and the priorities of delivery were known, but these figures were changed around from time to time to suit the altering circumstances of the airlift. The basic principle was to accumulate in Berlin about 30 days' reserve stock of each of the main commodities, and then to keep stocks at about that level. But these rules were not rigid. It might happen, for instance, that the airfields chiefly delivering coal were clamped by weather for a few days, in consequence of which coal stocks in Berlin would fall. In that case the opportunity would be taken to build up stocks of some other commodity, flour perhaps. Then, when the weather changed, a special effort with coal would restore the equilibrium. It was not long before stocks of the necessities of life were in general better than when the airlift started and also better balanced—weak items in the list having been made up.

Each type of freight, of course, presented special difficulties of its own. All were variations of the central problem—how to carry the greatest value (in terms of use, not money) in the smallest space and at the lowest weight.

Such difficulties are most easily illustrated in the haul of food. Here was a freight composed of a great variety of things, some light, some heavy, some compressed, some bulky. The primary aim was to carry in enough food to maintain the daily ration of 2,100,000 West Berliners at an average calorific value of about

Reproduced by courtesy of the *Daily Express*.

[*Continued on page* 34]

THE COAL LIFT was the master stroke. Unheard of and considered impossible, it was done with specially graded coal and at a heavy cost in sack replacement as well as in aviation spirit. Part of a day's load from one airfield ready to go.

TRAFFIC PLAN OF THE COMBINED AIRLIFT

Though flying continued in all weathers and at night, pilots had strictly to avoid trespass outside the twenty-mile-wide corridors. The arrowed lines show the routes, to and from the three Berlin airports, used by aircraft based at the different dispatching airfields. The radio system for flying along the northern and central corridors consisted of medium-frequency radio beacons and Eureka radar beacons for navigational guidance, and, at most of the airfields, Ground Controlled Approach installations for blind landings in bad weather. On the southern corridor the U.S.A.F. used radio range beacons. Aircraft fitted with the appropriate apparatus (including all the British) would have in addition the benefit of the Gee chain—not shown in the plan—established by the R.A.F. during the British Army's advance across Germany. (Gee radar gives the navigator an instantaneous positional "fix": since the war several countries have installed such chains.) To simplify the diagram some beacons in the Berlin area, used to guide aircraft for their final approach according to the direction of the wind, have been omitted.

THE BEACONS. The M/F Beacon sends continuous signals which actuate navigators' radio-compasses giving them a bearing. The Eureka beacon responds to impulses from an aircraft's Rebecca Set; shows the navigator, on a radar screen, his bearing and distance from the beacon. G.C.A. (*below*) displays continuously on a radar screen the height, bearing and distance of all aircraft within 40 miles, enabling the Ground Controller to direct pilots by radio-telephone how to approach and land.

WHAT THEY CARRIED I. *Left:* Simple but dirty; loading coal into a Hastings. *Centre:* With Care; securing a cargo of fresh meat and fats inside a York. *Right:* The main food haul was flour and potatoes, the latter dehydrated to save space and weight.

1,800 calories, increased in November 1948 by an average of 220 calories.

By far the biggest single item of food flown into Berlin was flour. It occupied more than half of the airspace. Flour, cereals and dehydrated potatoes, indeed, for long formed more than 80 per cent.

Dehydrated vegetables are not a particularly attractive diet. But Berliners realised the necessity for them. The weight of potatoes that would have had to be flown each day into Berlin was 900 tons. The dehydrated potatoes weighed 180 tons, representing a saving of more than 80 return journeys each day by the largest aircraft upon the bridge.

Further and most important savings were made by reducing the weight of packaging. For many foodstuffs this was surprisingly high. The tins and wooden boxes in which oatmeal is normally packed, for instance, make up a quarter of the total weight. Such things as these were stripped of their boxes at the dispatching airfields, and either stowed into sacks or into light cardboard containers. It meant some waste by damage en route, but nothing like the waste of aircraft capacity represented by the packing cases.

Over the whole range of foodstuffs, the weight of packages was reduced to only six per cent.

But many awkward food problems still remained. One of the most vexing was salt. This is one of those things that people take for granted—the daily pinch of salt in the vegetable saucepan, the sprinkle of salt upon the dish. It could not, after all, amount to very much.

What in fact it was found to amount to for West Berlin (including industrial purposes) was no less than 38 tons every day. Moreover, salt is a commodity that the human frame cannot do without, as the ancient races of the world with their salt caravans across the desert very well knew. So that weight of salt had somehow to be carried daily to Berlin.

Now salt is one of the most troublesome of all things to carry in an aircraft. No matter how well it is packed, some of it always seems to leak out. It trickles through the floor, works its way into the aircraft's controls, and corrodes them. Salt, for an aeroplane, is poison.

While the flying-boats were still on the airlift the salt problem was not acute. Flying-boats are built to alight upon salt water. Their metal is specially treated and all their controls are overhead. But in midwinter the flying-boats had to be taken off the service.

Fortunately the Halton, one of the British civil aircraft types, carries a pannier beneath its fuselage. Salt could be packed into that pannier without risk, for it lay below the aircraft's controls, and any leakages would merely be dispersed in the air. So the salt commitment was handed over to the Haltons, and they handled it thenceforward.

From the very start the airlift had been intended to carry food. But it was soon to haul coal too—the haul which, it had been so freely stated, was "impossible" by air.

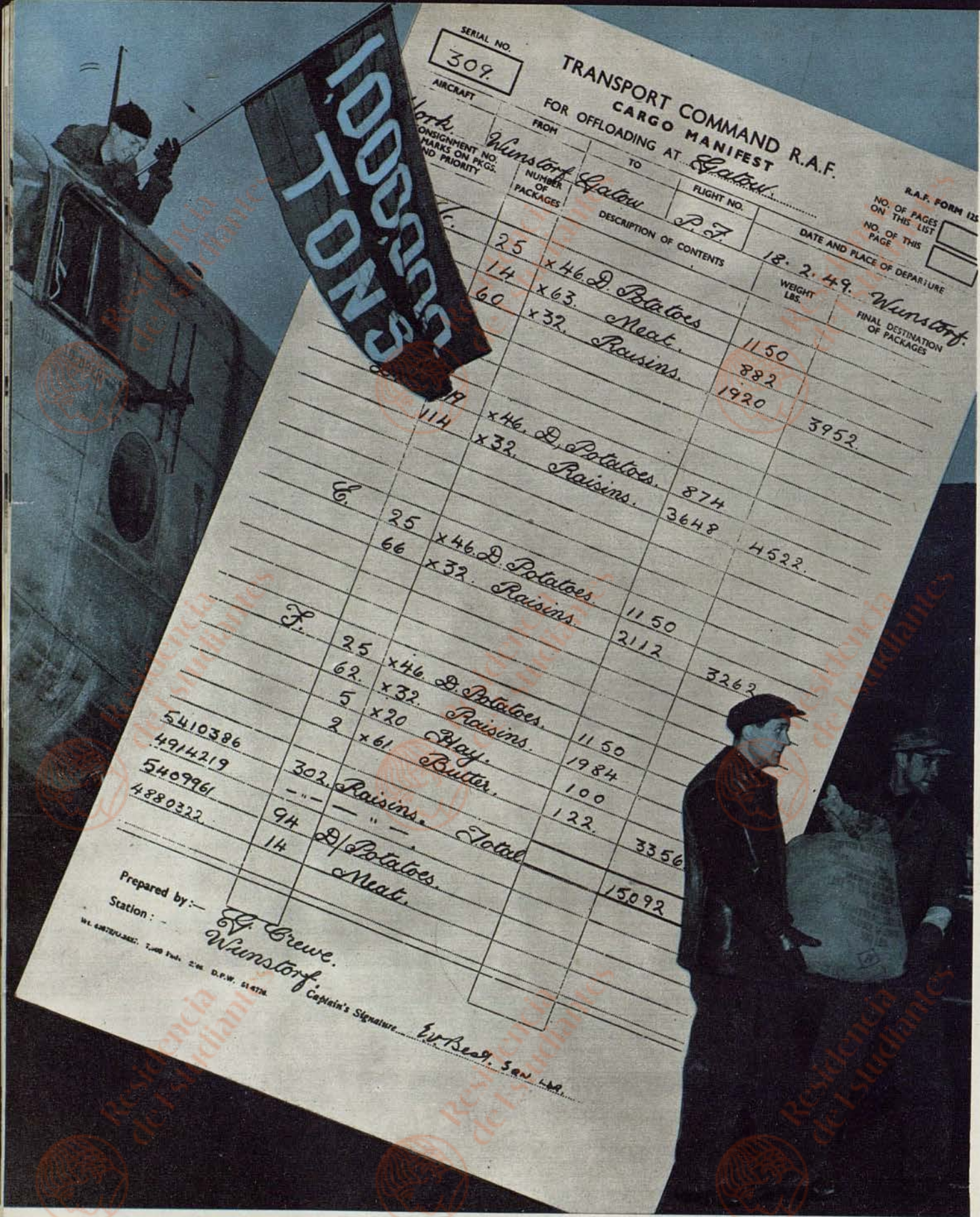
The coal lift from the British Zone began on July 19th, just 21 days after the airlift had started. The first loads were carried by R.A.F. Dakotas; but it soon became evident that larger aircraft would be better employed on this vital but bulky and (in terms of load) most extravagant lift, so the Yorks joined in. As the U.S.A.F. Skymasters came into Fassberg towards the end of the following month, the coal haul from the British end was handed over largely to them; and later also to the new R.A.F. Hastings aircraft.

It was not a pleasant job. Coal is another of those commodities that somehow contrive to seep everywhere. The aircraft soon became grimed with coal-dust—tons of it were swept out of crevices when the aircraft were sent back periodically to England for overhaul. Not only were the interiors of the hulls grimy with coal, but there were stains on the outside too, even upon the wings.

Back and forth between the two British airfields of Fassberg and Gatow flew these aircraft, hauling the coal, until one of the pilots, called up on the radio-telephone to state his load, burst out in reply with a couplet that became famous throughout the lift:

"Here comes a Yankee with a blackened soul
Headin' for Gatow with a load of coal."

WHAT HE CARRIED! One of many pictorial jests by Flt.-Lt. "Frosty" Winterbottom, D.F.C., the airlift's fully qualified cartoonist.



LUCK OF THE DRAW. Lots were drawn for the honour of carrying the airlift's millionth ton on February 18th. The R.A.F. won. A New Zealander piloted; his co-pilot was the Air Officer Commanding-in-Chief, British Air Forces of Occupation.

The coal, from the pits of the Ruhr, was most carefully selected. It was intended for specific purposes in industry and in the maintenance of the public services. Only a negligible amount could be used for heating homes. Various types of the most suitable coal were chosen, therefore, exactly to fit those furnace needs.

It all had to be carried in sacks, and this in itself presented an unexpectedly difficult problem. Sacks are one of the things with which post-war Europe is not well supplied. All sorts of sacks (including Army kit-bags) had to be used, and they were not all the most suitable. With the handling they necessarily received, they wore out at an astonishing speed.

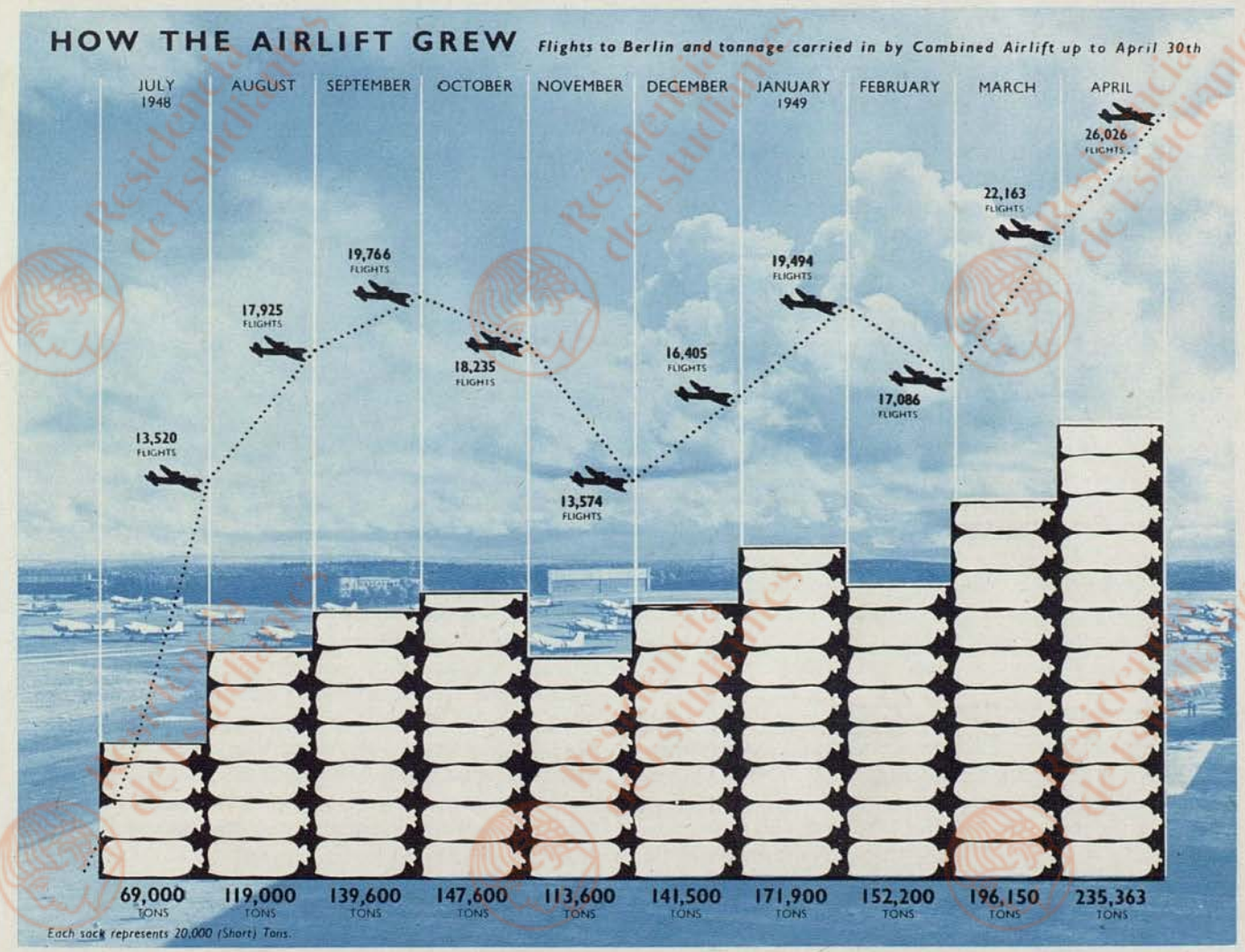
The average sack lasted only for three journeys—the empty sacks were returned, of course, to the dispatching airfields, nine empties being rolled in every tenth. The daily loss, through wear and tear, amounted to 17,000 sacks, although they were all most carefully sorted and repaired, the useless ones being cut up to patch the others.

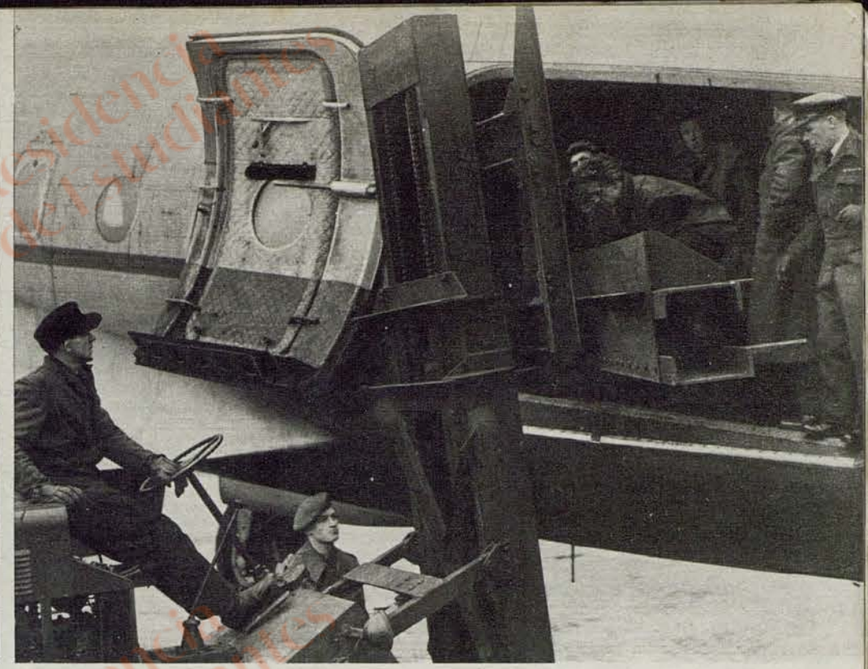
That wastage of sacks meant a replacement of 510,000 a month ; at a monthly cost of £50,000.

The other fuel that was carried into Berlin was liquid —petrol and diesel oil for the most part, with some kerosene and small quantities of a few other fuels. The power from liquid fuel is compressed into a far smaller bulk than that stored in raw coal, but the dangers of carrying it by air are obvious.

In the very early days of the airlift the Americans were flying liquid fuel in drums to Berlin. But this method, of course, wasted a lot of space in the aircraft. The job was handed over to the British when British civil aircraft joined the lift, including those specially adapted for, and with crews specially skilled in, refuelling. Some of those aircraft were proper tankers, with the fuel carried in the wings. But most of them were normal civilian planes adapted by fitting tanks inside the hull, fixed to the floor. Some, indeed, had been passenger liners—the tanker fleet consisted of Lancastrians, Tudors and Halifaxes—and though they had been stripped of their elaborate seating, the luxurious paintwork of their cabins still remained, enclosing now nothing but oil tanks.

This lift of liquid fuel was soon a rising effort, as





WHAT THEY CARRIED 2. *Left :* British civil air companies flew in the liquid fuel. *Centre :* A Bristol Freighter opens its mouth sideways to disgorge a crate of machinery for Berlin. *Right :* Awkward load, a two-ton iron girder for Berlin West power station.

utility furnaces in West Berlin were converted to the partial consumption of diesel oil, to save as much coal as possible—coal consumption of a power station, for instance, could be thus reduced by as much as 25 per cent.

The last category of goods lifted into Berlin, that of the special freight, included some of the queerest objects, and set the airmen and the loaders some of their worst problems. (Recently, the cargo of one aircraft included a Regimental goat, the mascot of the 1st Battalion Royal Welch Fusiliers.) A roll of newsprint—though it was essential to keep the newspapers of Berlin in circulation—is not the handiest of things to carry in an aircraft. Nor is a steam-roller. But a steam-roller had to be carried in for airfield construction work at Gatow. The puzzle was solved by the R.E.M.E., who dismantled the steam-roller, and it was assembled again in Berlin. A fire tender had to be taken in also, as it was essential for safety at Gatow ; and several small German motor cars required for essential purposes.

The R.A.F. alone flew in more than 200 small oil-burning electric generators. The aircraft took in also tons of bitumen, to bind the top-surface of new runways.

Actually, most of these goods were not of the kind supplied by the authorities, but were purchased privately, and flown in with an official licence.

To fly in medical supplies was, of course, a necessity ; ether was the most awkward of this kind, and in the end alcohol was substituted from which the ether could be manufactured in the city. It was necessary also to take in a certain amount of such consumer goods as clothing, a commitment bound to increase the longer the blockade should last. The biggest hauls were of boots and shoes, of piece goods, shirts and suits, some linen, blouses and socks. Outside the clothing range, consumer goods brought in by air included small quantities of cutlery, razor blades, calculating machines, candles, and various household articles—among them the comfortable item of 2,000 rubber hot-water bottles for the sick and the aged.

There was no regular supply of tobacco and cigarettes, but the Americans on one occasion took in a large haul of the latter from surplus Army stocks. The pre-blockade smoking ration was maintained month by month from stocks already in the city. In addition, six million cigars, made from German home-grown tobacco, were flown in during the early months of 1949.

As spring came in, the British dispatching end of the bridge was disposed as follows, reading from north to south :

From Schleswigland the R.A.F. Hastings were carrying coal, and the British civil Halton and Liberator tankers liquid fuel.

The R.A.F. Dakotas at Lübeck were handling for the most part food and economic freight, with a certain amount of coal.

From the civil airfield of Fuhlsbuttel, outside Hamburg, the British civil Haltons and Bristol Freighters (the latter soon to be withdrawn) were lifting food, including that awkward tonnage of salt, and some special freight, particularly the bulky loads. The food haul included fish whenever available.

The American Skymasters, working from the British airfields of Fassberg and Celle, were still toiling at their task of carrying coal ; those at Celle were handling, in addition, a little food.

From Wunstorf the Yorks, R.A.F. and civil, were carting food and coal, together with the supplies to maintain the British troops in Berlin ; and the British civil Lancastrian and Tudor tankers were lifting liquid fuel.

All this has given a general idea, perhaps, of the composition of the airlift freight. Now, how much was carried in ?

The pictorial statistics on pages 36 and 50 give some general figures, but it is worth glancing at certain trends in the airlift effort.

The combined Anglo-American airlift rose from June 1948 to reach an average daily lift of about 4,000 tons by the end of August. It flattened out at around that figure but fell in November. Thereafter it rose steadily except for a drop in February ; and in the early spring it touched peaks of well over 7,000 tons a day. The average, of course, mainly owing to vagaries of the weather, was a good deal below this figure.

The R.A.F.'s contribution was considerably smaller than that of the U.S.A.F., especially after the first few weeks, when the American fleet of larger aircraft was brought up to strength. At July 1, 1948, the R.A.F. lift stood at just over 400 tons daily. This rose steadily throughout July to nearly 1,600 tons daily ; a peak of over 1,700 tons was touched in mid-August. From that date until the beginning of November there was a slow decline to a daily average of about 840 tons, and the average flattened out at rather less than this until the end of the year.

From the beginning of 1949 the R.A.F. daily lift rose steadily to nearly 1,000 tons, and early in February it began to hit peaks of nearly 1,200.

To these figures must be added those for the British civil airlift. This began on July 28th, 1948, and until mid-September averaged about 112 tons daily. Then it rose appreciably, and in November touched a peak of nearly 450 tons daily. There was a decline to about 225 on a daily average in mid-December. With the coming of the New Year the British civil lift rose steadily parallel to that of the R.A.F., reaching a peak of 620 tons late in January, and settling to a daily average around 350 tons in February.

On February 18th there was an event which suddenly turned the eyes of the world back to the airlift. An R.A.F. York aircraft, piloted by a former bomber pilot, landed at Gatow with the airlift's millionth ton. One million tons of supplies had been carried across the air-bridge in seven and a half months.

From that York aircraft stepped the commander of the British Air Forces of Occupation. " It will not take us so long," he said, " to reach the second million."

Upon that same day the British Foreign Secretary sent a message of warm congratulation from the Government to the British Military Governor in Germany.

" We are grateful for the work and energy that have been put into this effort," he declared. " The task that faced you was immense, but you rose to the occasion. You saved two million souls from being forced to submit through the weapon of blockade. At the same time this great airlift has been an earnest of the resolution of the Western Powers to insist upon their rights under the terms of occupation. . . . The whole operation reflects the greatest credit upon all."

April 16th saw another airlift milestone : in the 24 hours ending at midday, the three Berlin airfields had handled 1,398 aircraft landings, and 12,940 tons had been delivered. This was a special "experimental" effort ; the following day's figures were 859 landings, 7,572 tons.

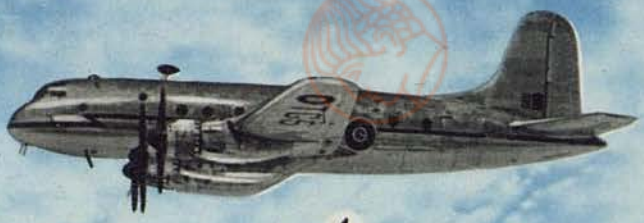
A PAGE FOR SPOTTERS

Aircraft of the main types used on the airlift.

1

2

3



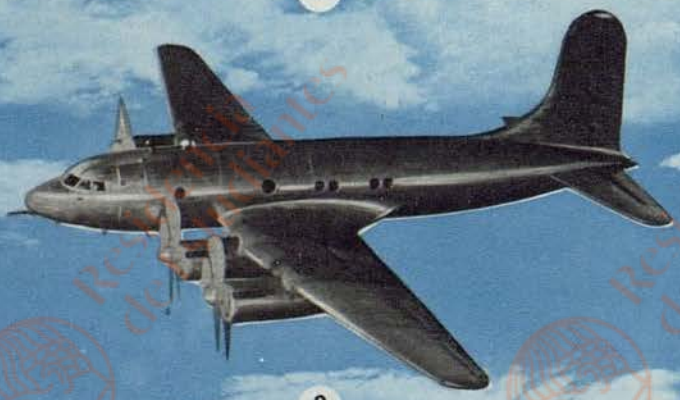
4

5

6

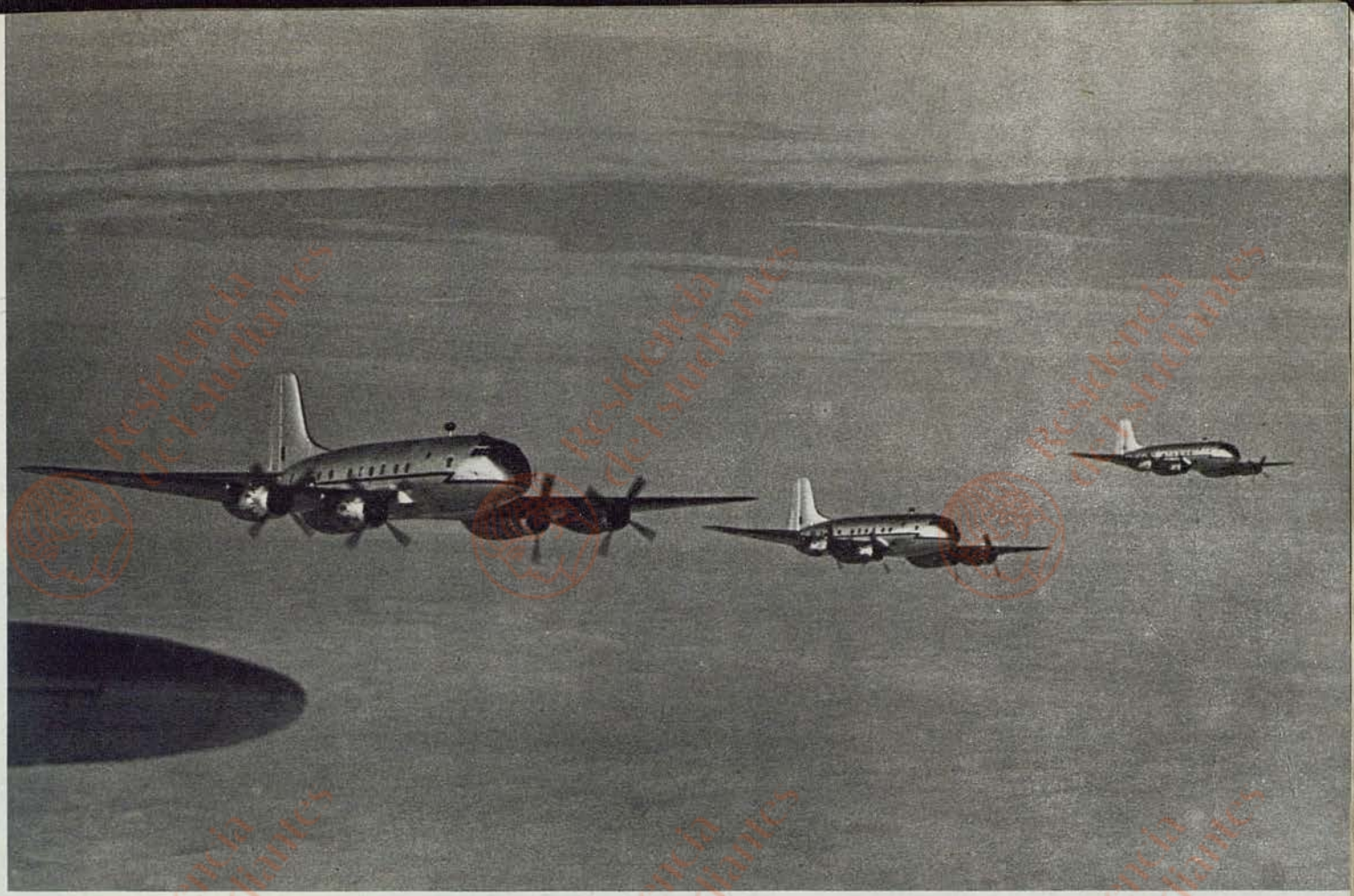
7

8



9

10



FIRST BIG JOB assigned to the R.A.F.'s newest transport aircraft, the Handley Page Hastings, was the Berlin airlift. Fifteen took part in it. A flight of Hastings over the North Sea, on the way out to their base at Schleswigland in November '48.

IDENTIFICATION

1. AVRO YORK. Standard R.A.F. transport developed from the Lancaster bomber. Also used on the airlift by a civil air company. Four Rolls-Royce Merlin engines ; maximum speed 310 m.p.h. ; airlift cruising speed 185 m.p.h. ; airlift pay-load 15,000 to 20,000 lb.

2. DOUGLAS SKYMASTER (C.54). The greater part of the total tonnage was carried by these, U.S.A.F. transport aircraft. Four Pratt and Whitney engines ; maximum speed 274 m.p.h. ; airlift cruising speed 170 m.p.h. ; airlift pay-load 19,500 lb. [*Flight* photo.]

3. DOUGLAS DAKOTA (C.47). The aerial factotum of World War II ; used by R.A.F., U.S.A.F., and civil air companies on the lift. Two Pratt and Whitney Twin-Wasp engines : maximum speed 229 m.p.h. ; airlift cruising speed 150 m.p.h. ; airlift pay-load 6,900 lb.

4. HANDLEY PAGE HASTINGS. The new large transport aircraft of the R.A.F. : it is to replace the York in the Service. Four Bristol Hercules engines ; maximum speed 354 m.p.h. ; airlift cruising speed 185 m.p.h. ; airlift pay-load 18,500 lb.

5. BRISTOL FREIGHTER. Played an important part in the earlier months, mainly in " back-loading " big freight out of Berlin. Designed for awkward loads. Two Bristol Hercules engines, maximum speed 224 m.p.h. ; airlift cruising speed 150 m.p.h. : airlift pay-load 8,064 lb.

6. HANDLEY PAGE HALTON. A civil conversion of the Halifax bomber. Used as freighter and as liquid fuel tanker by the civil firms. Four Bristol Hercules engines, maximum speed 320 m.p.h. ; airlift cruising speed 185 m.p.h. ; airlift pay-load 12,000 to 14,000 lb.

7. AVRO LANCASTRIAN. A transport conversion of the Lancaster bomber. Used as a liquid fuel tanker by civil firms on the lift. Four Rolls-Royce Merlin engines ; maximum speed 315 m.p.h. ; airlift cruising speed 185 m.p.h. ; airlift pay-load 12,000 to 16,000 lb.

8. FAIRCHILD PACKET (C.82). U.S.A.F. used five of these. Designed for bulk freight. Two Pratt and Whitney engines ; maximum speed 248 m.p.h. ; airlift cruising speed 170 m.p.h. ; airlift pay-load 12,000 lb.

9. AVRO TUDOR. Several marks of Tudor aircraft were used as liquid fuel tankers by civil firms on the lift. Four Rolls-Royce Merlin engines ; maximum speed 346 m.p.h., airlift cruising speed 185 m.p.h. ; airlift pay-load 17,000 to 17,670 lb. [*Flight* photo.]

10. SHORT SUNDERLAND. Flown by Coastal Command on the lift till winter 1948. Civil firms used the commercial version—the Hythe. Four Pratt and Whitney Twin-Wasp engines ; maximum speed 213 m.p.h. ; airlift cruising speed 165 m.p.h. ; airlift pay-load 9,800 lb.

NOTE.—A few Vickers Vikings, one or two Consolidated Liberators and a Bristol Wayfarer were also in use at different times.

PACE OF THE SHUTTLE depended on the capacity of the three airports at the receiving end, Gatow, Tempelhof and Tegel, to accept and dispatch the freight-carrying aircraft. *Above :* R.A.F. and U.S.A.F. controllers at Gatow handling aircraft movements at the rate of one every 90 seconds. To minimise strain, teams exchanged jobs after every six hours of duty.

7. THE RECEIVING END

WHEN the airlift began there were, as has been noted, only two airfields in Berlin usable by the Western Powers. In the American sector was the former Berlin airport of Tempelhof, right in the built-up central part of the city—a convenience for the disposal of freight flown to that airfield, but a hazard during bad weather, when some of the airlift traffic often had to be diverted.

In the British sector lay Gatow, the airfield with which this narrative is most concerned. It is set among pine trees in an outer suburb at the south-west corner of Berlin, a short walk from the boundary of the Russian Zone, and less than a couple of miles from the long, narrow Havel lake; a factor of great importance, this, since the waters of the lake connect with a good delivery route along the River Spree and through canals to almost any part of West Berlin. It was a happy circumstance, for instance, that most of the big users of coal in West Berlin were placed alongside or close to this system of waterways.

During the early months of the airlift it was decided to increase the airfield capacity of West Berlin, and the third airfield was built, by the Americans and the French, in the northerly French sector at Tegel. There had once been a project, never carried out, to add to the air supply of Berlin by parachute-drops. An air survey was made to choose the most suitable dropping area, and it was upon this area that, a little later, Tegel airfield was constructed. It was opened for use in November 1948, presenting yet another example of team-work—a French airfield at which unloading was directed by the French Army and on which American and British aircraft landed under operational control of the U.S.A.F.

Tegel was a great boon to the airlift from the British Zone. It took an increasing load, at first of coal and later of liquid fuel, that would otherwise have had to be landed at overcrowded Gatow. It was used extensively, for instance, by the coal-carrying Hastings aircraft from Schleswigland.

But the main story of the Berlin end of the British airlift lay at Gatow. If that be described, and it be remembered that Tegel proved an ever more useful auxiliary base, the whole of our story will have been told.

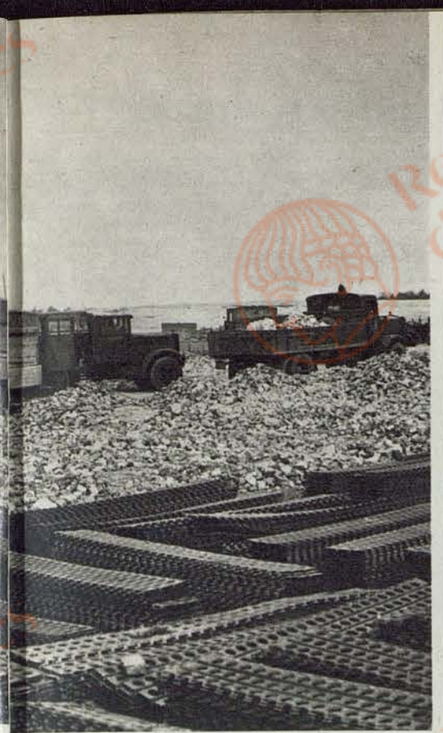
Gatow, when the occupying forces moved into Berlin in 1945, was a grass airfield; many of the Luftwaffe airfields were such. It was well equipped with buildings, which had been little damaged by bombing. There were a large airport building, ten commodious hangars, and a number of barrack blocks scattered among the pine trees to the south.

The chief anxieties of the R.A.F. before the blockade began had been to improve the runways of Gatow. It will be remembered that a runway of pierced steel planking had been laid down in 1945, since only limited flying into Gatow by comparatively light aircraft was expected. Because of sandy soil beneath, however, this steel runway had proved inadequate even for such occasional traffic, and in 1947 a concrete runway was begun, to run almost parallel with the existing one of pierced steel. The new runway was to be 2,000 yards long and 50 yards wide, and three-quarters of its length had been constructed when the blockade was imposed in June 1948.

Work was hastened, and the whole runway came into use within six weeks. But this was by no means the only engineering work needed to transform Gatow into the busiest airport in the world. Gatow was developed until it received about half of all the airlift freight coming into Berlin; the remainder went to Tempelhof and Tegel. Gatow was handling twice as much as Tempelhof, and three times as much as La Guardia, New York, the airport which previously held the world record for traffic. To enable this intensity to be reached it was not sufficient simply to complete the runway, for the aircraft had to be handled on the ground also with the greatest expedition. For this a huge off-loading apron had to be built, of brick rubble surfaced with asphalt. Provision of the rubble presented no difficulty; the ruins of Berlin offered it in plenty—75,000 tons of it, in the end, for the apron alone, and 14,000 tons more for the making of airfield roads. Asphalt for the surface was more difficult. The bulk of it was eventually obtained from little-used and badly damaged Berlin streets, and mixed with five per cent of bitumen flown in over the airbridge. The Royal Engineers did a great job here. In one period of only ten working days they laid down over 18,000 square yards of lorry runways around the unloading apron, before moving on to the task of covering the 112,000

TEMPELHOF, Berlin's capacious pre-war airport, was a ready-made terminal for the Americans. Near the city's centre, it was convenient for dispersal of supplies. But even at Tempelhof the one runway proved inadequate, and two more had to be built.

AT GATOW, the British airport, already improved by the R.A.F., the airlift called for great additions. Acres of new runway, track and apron



were laid down and a pipe-line for discharging oil-fuel into barges. In the foreground above, pierced steel planking for one of the runways.

AT TEGEL, in the French sector, nightwork hastened the construction by the Americans and French of a complete new terminal, to receive part of the ever-increasing traffic from airfields in the British Zone. Tegel was ready in November 1948.

square yards of apron with brick and asphalt. They also greatly increased the capacity of the underground fuel-storage tanks.

Gatow then had two almost parallel runways, one of concrete 2,000 yards long, the other of pierced steel planking; a new perimeter track and a taxying track; a vast tarmac unloading apron; and an adequate system of communication roads.

But even all this was insufficient for the traffic, which amounted sometimes to as many as 900 air movements in a day. A runway needs as much maintenance as a railway track, and this concrete one at Gatow was suffering, in a few weeks, a strain that a runway would normally experience only over several years of use. It began to crack here and there, and a danger arose that it might collapse.

The old steel runway was therefore rapidly extended to a length of 2,000 yards—it proved a big job, owing to the nature of the soil—and it was then possible to close the concrete runway now and again for maintenance and repairs, without interrupting the flow of the airlift.

Simultaneously the airfield was equipped with the most modern high-intensity lighting, and with the sodium cross-bar approach lighting which has already been mentioned as a sure friend in times of fog. The airfield lighting was so arranged that it could all be controlled, dimmed, strengthened or turned off from a single panel in the control tower.

The radio and radar systems with which Gatow was equipped for handling the traffic and bringing it in even during weather almost impossible for flying have already been described.

This, then, was the Berlin terminal of the British airlift, and of much of the American effort as well. This airfield of Gatow was the place where that miracle of frequency was performed, 24 hours a day, day in and day out.

Perhaps the simplest method of describing the traffic into and out from Gatow at the height of the airlift is to imagine an observer who made the journey, from Wunstorf, say, in an R.A.F. York, in the late afternoon when dusk was not far away.

From the busy operations room with its jangling telephones at Wunstorf he followed his crew to a small lorry, which ran them out to their aircraft, one of a line already laden with sacks of flour. The flying instructions which the crew had been given hinged upon one fact—the time their aircraft had to be over the Frohnau radio beacon, just to the north of Gatow. From that datum, with an allowed margin of error of plus or minus 30 seconds, they had worked out the speed at which they must fly, knowing the strength and direction of the wind. The height at which they must fly they already knew; that was constant.

The aircraft took its place in this present wave of Yorks destined for Gatow, each plane leaving precisely three minutes after its predecessor. Once it was airborne, the York turned northwards towards the entrance to the northern air corridor to Berlin—the entrance opposite Hamburg—and there, at the local radio beacon, swung into the procession down the corridor. The journey to Berlin was to take about 55 minutes, a few minutes less than the non-stop train needs to reach London from Brighton.

The territory beneath the corridor was, of course, in Russian occupation. But the crew paid no more attention to this than an occasional idle downwards glance from the cockpit. They had made this journey something like 200 times already; it was a matter of routine.

Twenty miles out from the Frohnau beacon the pilot called up the control tower at Gatow, reported his presence, and stated the load he was carrying; this last to facilitate unloading arrangements. At the beacon he called up again, and was instructed to turn in a south-westerly direction, and to start to lose height. From now on he was in close touch with the two controllers on the ground, one after another; if the weather had been foggy, he would have been handed over, in the last stages, to a third controller, the G.C.A. radar man out in his caravan by the runway, who would have talked him down through the murk.

But this time he came in visually. He turned again over another radio beacon near the centre of Berlin, still losing height, and heading now directly for the Gatow runway. He called up again as he crossed over the Kaiser Wilhelm I memorial, a big tower brightly lit with red lamps, a short distance out of Gatow. "Over the Christmas Tree," he reported on his radio. That had become the standard phrase for that moment on the airlift. In fact, a good deal of jocular "patter" had worked its way into this radio approach, some of which became familiar anecdote of the airlift. There was, for instance, the pilot who called up to report a cargo of many kinds of iron, and was invited by the controller to "Come in, Sid Walker." There was another who, reaching Frohnau beacon (which stands close by a church) on a bright Sunday morning, reported that he was "over the church"; and received his landing instructions in the words, "O.K. Take a pew."

Once over the "Christmas Tree," this York which we are following was practically there. Below it stretched the lighting of Gatow, in the gathering dusk. The aircraft ahead was just rolling to the end of the runway, the one ahead of that was taking up position on the unloading apron, and in the reverse direction down the landing track was taxying the next aircraft to take off for home; while, behind our York, the following aircraft was already over the first beacon, over the second, undercarriage down, dropping gradually through the sky. Behind him yet again came another, and another, inexhaustibly through the evening.

The York touched down, rolled to the end of the runway, taxied rapidly off to the unloading apron, and took up its position in the line. Two lorries, laden with a gang of German labourers, were already

GATOW BECAME THE WORLD'S BUSIEST AIRPORT

MORE THAN HALF OF THE TONNAGE FLOWN ON THE COMBINED AIRLIFT WENT THROUGH GATOW.

Second-to-second action in the control room.

Quiet hub : the Station Commander in the Ops room.

The R.A.S.C. controlled 1,500 lorry movements a day.

Outward mail ready in one of the hangars. (*Flight* photo)

R.A.F. YORKS AND DAKOTAS ON THE TARMAC. THE DISTANT TREES ARE IN THE RUSSIAN ZONE.

One came off the runway every three minutes.

Hour by hour every move checked, recorded.

Royal Engineers serviced the searchlights.

This gang changed a York engine in 8 hours.

THE GATOW RUN

[*Continued from page* 45]

on their way to meet it. The men were pulling out the sacks of flour even as our imaginary observer and his crew strolled over to the Malcolm Club hut, sank into armchairs and began to consume coffee and buns.

They had not much more than half an hour to spend in that haven. The longest permissible time on the ground at Gatow was 50 minutes, during which the aircraft had to be unloaded and reloaded.

Before that limit had been reached, the observer watched the crew climb back into their York, laden now with electric lamps, valves and other equipment manufactured in the factories of Berlin and destined for the world market. The aircraft doors were slammed. The York, taking its turn in the line, lumbered down the row of small blue lamps marking the taxi track.

An empty Tudor tanker had just taken off. A wave of Dakotas from Lübeck was landing. Soon there would be Skymasters from Fassberg, then perhaps a wave from Celle. The York, obeying the instructions of the controller, roared its engines at the end of the runway, and took off for the 55-minute flight home.

Our observer made his way across the tarmac apron, stepping warily in the darkness through the busy traffic of aircraft and lorries; one civil pilot, a man of high skill, had been knocked down and killed by a lorry just after he had left his aircraft on the apron. The observer walked past the line of hangars stacked with freight and mail, and came to the air traffic control building, the operational centre of Gatow.

He ascended to the operations room on the first floor, from which Gatow was in touch, minute by minute, with all the other stations of the airlift network, and where the exact state of the operation was recorded on huge wallboards. He went one floor higher to the air traffic control room, with its background of radio babble, where British and American controllers, headphones over their ears, sat under shaded lights at a long bench beneath the window surveying the airport, receiving reports from aircraft in the vicinity, and giving to each in turn its orders to take off or arrive.

Then the observer climbed on to the flat roof of the building, and stretched out before him was a sight such as had never been seen before the airlift began, and perhaps was never likely to be seen again once the airlift ended.

From right to left across the middle distance of the picture shone the parallel lines of yellow lights marking the two runways. In the foreground, parallel to the runways, glowed the dim blue line of lights of the taxying track.

On the right of the picture, against a darkly silhouetted background of small, pine-clad hills, was the vivid sodium glare of the approach lights; and, high up on the extreme right, the red marking lamps on the "Christmas Tree."

To the observer's left stretched the solid line of hangars; then a row of huts leading on to the wide

1. Wunstorf: waiting for the word to go.

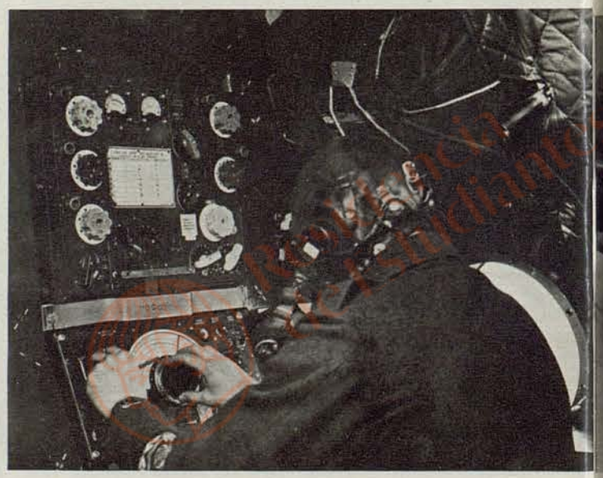
2. Final briefing before the take-off.

3. From Ops building to aircraft by "taxi."

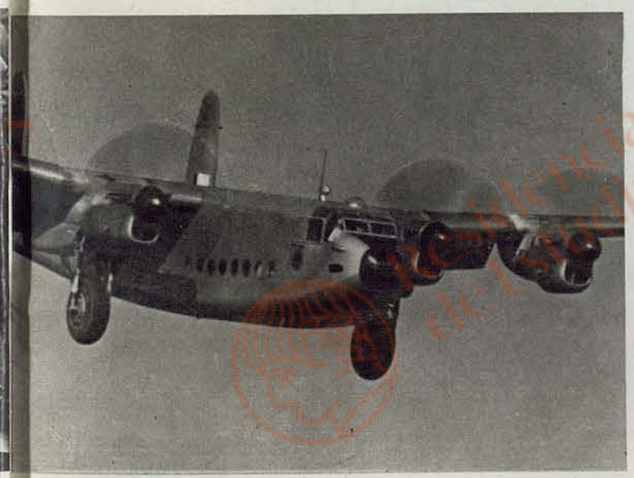
4. Last check over. Pilot and flight engineer.

5. Airborne. The pilot at the controls.

6. In the corridor. Group height, 3,500 ft.



7. Getting the weather information from Gatow.



8. Wheels and flaps down on the landing approach.

9. Thirty minutes rest. And then back again.

unloading apron, lit from a high level. To the rear of the apron stood a circle of lights, marking the liquid fuel depot, up to which a dozen large aircraft could taxi simultaneously (just as cars pull in to a road-side garage), to discharge their fuel through pumps into underground tanks. Beyond that again lay a wide area for the discharge of coal—" R.A.F. Newcastle " it was unofficially dubbed. And on the extreme left of the picture twinkled a few small lights through the pine trees; those were from houses in the Russian Zone.

That was the stage spread out before our observer's eyes. What was remarkable was the action taking place upon it.

An aircraft with its wingtip lights winking had just touched down, and was rolling along the concrete runway from right to left. In the foreground another aircraft was lumbering from left to right along the taxi track, to take off from the steel runway on the journey home.

At precisely the same moment there was an earlier arrival aircraft turning from the left-hand end of the concrete runway to join the line upon the unloading apron. Simultaneously the next aircraft in the stream of arrivals, dropping down over the " Christmas Tree," switched on the downward beam of its landing lights, groping through the night for the end of the runway like a blind man with his stick.

Scarcely was that one touched-down and rolling, than another departure took off with a roar of engines; and yet another arrived over the " Christmas Tree "—winking wingtip lights first visible, and then the bright downward beam of the landing light.

And so on, and so on.

The observer could have stood there for hours, and the action before his eyes would not have faltered—arrival, departure, arrival, departure, *ad infinitum*. Perhaps a mist would have drifted across the scene, slowing down the pace but not halting it, as the G.C.A. radar controller, out there to the left in his caravan in that little smudge of yellow light beside the runway, took charge of the arriving aircraft and shepherded them to the ground.

The night would wear on, the shifts on the ground would change over, but the stream of aircraft would continue.

There would be intervals now and then, of course, between succeeding waves of different types of aircraft, but that was all. They would be flying in and out as dawn broke, and all through the day till dusk, and ceaselessly during the following night. Come fine weather or foul, bright moonlight or lowering clouds, sunshine or gale, clarity or fog.

Only on one day, in the first six months, was there no British airlift flying at all because of weather.

During the whole of those six months, on average, an aircraft landed at Gatow every 5 minutes 9½ seconds, night and day; and there was, of course, exactly the same number of take-offs. Average time between aircraft movements, therefore, was 2 minutes 34¾ seconds.

But now our observer must switch his attention to the left-hand side of the picture, to the wide tarmac apron upon which another pauseless miracle was being performed day and night—the unloading and reloading of the aircraft, and the dispersal to the channels of Berlin of the freight they had borne over the bridge.

SHARING THE LIFT June 28th 1948 to May 11th (noon) 1949

	R.A.F.	CIVIL	U.S.A.F.
FLIGHTS TO BERLIN AND BACK	49,733	13,879	131,378
MILES FLOWN	18,205,284	4,866,093	69,257,475
TONNAGE FLOWN IN (Short Tons)	281,727	87,619	1,214,339
BACKLOADED FREIGHT (Short Tons)	29,532	1,541	28,836
GERMAN PASSENGERS FROM BERLIN	67,373	—	—

Transport of German civilian passengers was exclusively an R.A.F. commitment.

FROM A TOWER overlooking the tarmac aprons, F.A.S.O. sergeants directed the lorry quadrille at Gatow. Twenty aircraft to unload and twenty to reload per hour, with two lorries per aircraft, meant scores of vehicles on the move in a small area ; and plenty of chances to create airlift bottlenecks. Efficient R.A.S.C. lorry and load drill was the answer.

8. RECEIPT AND DISPATCH

SURVEYING the broad tarmac unloading apron of Gatow airfield was a second control tower, a small wooden room heated by an iron stove, perched high upon a square structure of scaffolding and reached by a steep steel ladder.

This tower controlled the traffic, not of aircraft, but of lorries. There they stood down below, in line before a row of wooden huts. Among them darted a sprightly jeep, in touch by radio with the control tower.

This was the brain-centre of the unloading system of Gatow, conducted by the Army's Forward Airfield Supply Organisation (F.A.S.O.), and the couple of thousand German labourers, hired from civilian contractors, whom it commanded.

F.A.S.O.'s job upon the ground was, of course, as vital as that of the R.A.F. in the air. Obviously it would have been pointless to swing the air traffic in and out of Gatow at such a pace, unless the aircraft could be unloaded and reloaded at commensurate speed. As it had been laid down, to this end, that no aircraft should normally remain upon the ground at Gatow for more than 50 minutes (touch-down to take-off), whatever the cargo, the aircraft could stand upon the apron with its doors open for no more than 30 minutes. During this time it had to be unloaded and, usually, reloaded. Unloading times, of course, depended a good deal upon the nature of the freight, and upon the type of aircraft. It would take about ten minutes to unload a Dakota, about seventeen for a Skymaster.

Every minute counted. Directly the lorry controller, from his wooden nest, saw that an aircraft was rolling from the end of the runway on to the apron, he signalled to the line of waiting lorries, and the next on duty began to move towards the plane : one lorry for a Dakota,

GERMAN WORKERS sweated to clear the coal and food freighters on time, fortified by extra rations. Seventeen minutes for unloading one of the larger aircraft, about ten for a Dakota. Aircraft to be loaded and airborne again within fifty minutes.

two for a larger aircraft. Each lorry, driven by a German, was carrying its own German unloading gang.

The operation was so timed that, at the precise moment at which the aircraft came to rest and stilled its propellers, the first lorry was in position to back up against its door. This was a somewhat tricky operation, since a backing lorry could easily damage an aircraft and put it out of service. So a regular " chock drill " was worked out There was rarely the slightest mishap.

The German labourers then swarmed into the aircraft and pulled its load on to the lorry. Once the first vehicle was full, it gave place to the second. If the load were coal, two women sweepers followed to brush out spillings and sweep them together ; and two men with a handtruck went from aircraft to aircraft, gleaning. Even an ounce of coal was precious in Berlin.

Directly the two unloading lorries had driven off, a third was ready to take their place, to fill the aircraft with the " backload."

Then the aircraft's crew pushed aside their empty coffee-cups in the wooden Malcolm Club, walked across the runway to be given their manifest of cargo, and took the aircraft back to its home airfield.

Stated like this, the unloading and loading operation sounds simple. In essence it had to be, of course. Imagine not one aircraft but ten arriving within half an hour ; thirty lorries and gangs moving across the apron in criss-cross pattern ; 100 tons of freight, every ounce of it valuable, to be extracted from awkward hulls, and a smaller amount reloaded. Imagine the same thing being repeated in the next half-hour, and the next, and the next, throughout day and night. Remember the occasional arrival of some particularly difficult load—a bulky piece of machinery, say, lashed to two wooden spars, or heavy sheets of metal that could only just be manœuvred through an aircraft's door.

The organisation, to work at all, had to be perfect. And it was.

Moreover, it did not end with the removal of the cargoes from the aircraft themselves. A first principle was that none of the load should remain anywhere upon Gatow for a moment longer than necessary. It all had to be cleared away into the warehouses and yards of Berlin.

The lorries that unloaded the aircraft could not be spared for this task. They and their trained gangs were not plentiful enough.

They had to transfer their loads, therefore, as quickly as possible on to other vehicles ; and then rejoin the lorry line upon the apron.

With the exceptions of coal and liquid fuel, the goods were carried to one of the big hangars, and there transferred to the vehicles of a German civilian contractor—" Honest Harry," as the R.A.F. dubbed him.

The coal was taken a short distance from the apron to " R.A.F. Newcastle," where it was transferred to big road-trailers, three of which could be hitched behind a single diesel tractor.

The liquid fuel was pumped direct from the aircraft into the big underground tanks.

The remaining problem, of course, was to convey the freight to the warehouses, the yards and the storage tanks of Berlin, without, in the process, using so much fuel (itself imported by air) as to make the operation uneconomical.

It was here that the Havel lake offered an ideal solution. There is no railway from Berlin to Gatow. But the waterways so conveniently near to the airfield extend into most parts of West Berlin.

Moreover it happened that a fleet of more than 40 large barges was trapped, when the blockade was imposed, upon the Havel lake. The Nazis had stolen most of them from the Belgians and the Dutch during the war. They were about to be returned to their owners, but luckily had not been moved in time. This fleet was capable of containing a load of 15,000 tons, at a cost in fuel far less than that of any other form of transport.

If, for example, a load of 3,000 tons of freight had to be moved from Gatow to the various depots in Berlin, it could be hauled by petrol-driven vehicles, by oil burning vehicles, or by barge. The petrol vehicles would require, taking into account the return journey empty, about 15 tons of fuel to make this haul. Diesel

vehicles could have done it with a consumption of some 5 tons of oil. But the whole load could be delivered in barges drawn by a single tug, which would burn, in 24 hours, only one ton of coal.

Most of the heavy haul from Gatow to Berlin was therefore routed by water. A small jetty on the shores of the Havel lake, designed in the first place to serve a passenger ferry, was roofed in and fitted with roller conveyors, and became the food jetty. Each day 500 tons of food, brought from the airfield in lorries, were rolled down this jetty and stowed in barges moored at its foot; the barges then carried the load to various warehouses in Berlin.

Near by was erected an ingenious coal wharf. It was built out over the water so that barges could moor in line alongside it. To this structure came diesel tractors, drawing large trailers laden with coal from "R.A.F. Newcastle." The tractors hauled the trailers up on to the wharf—eight could stand upon it simultaneously—and the coal was then discharged down chutes into the barges waiting below. The working capacity of this coal wharf was 2,500 tons a day.

Even more ingenious was the method of transporting the liquid fuel, flown into Gatow by British civil tanker aircraft, to tanker barges on the Havel lake which were to ferry it to the storage plants in the city.

It will be remembered that the tanker aircraft, on arrival at Gatow, discharged their cargo into underground tanks. During the first months of the blockade the fuel was then pumped out from these into road-tankers, which carried it to the Havel shore, to be piped for a third time into the barges. This procedure was obviously wasteful of fuel and time, so an oil pipeline, capable of delivering either petrol or diesel, was laid beneath the soil to connect the underground tanks on the airfield with the oil-barge loading point on the shore of the Havel. By another stroke of luck, there happened to be in Berlin some lengths of PLUTO, the famous oil pipeline which was laid upon the floor of the English Channel during the war to pump oil supplies from England to the armies on the Continent. These lengths of Pluto were invaluable in connecting Gatow by pipe with the barges on the Havel.

The pipeline was completed and set to work in February 1949. From that time onward all the petrol and diesel oil flown across the airbridge was pumped, through the underground pipeline, to tanks in the Havel barges; and so away to storage. The economy was considerable.

By these means, then, the bulk of supplies brought to Gatow by the airlift—more than half of the total carried by the whole Anglo-American force of aircraft—was conveyed to the centre of Berlin with the minimum expenditure of precious fuel.

But nearly from the start the carriage of freight over the airbridge had been a two-way traffic. The aircraft that brought in essentials for the survival of West Berlin were not allowed to return empty. For there was freight to be lifted out, almost as important as that brought in.

There was the mail, both for the Western occupying forces and the civil population. It was, of course, neither a difficult nor an unusual task to handle that by air, and normal rates were charged.

But even more vital was to become the "backload" of what was called economic freight. West Berlin, it must never be forgotten, is not only the dwelling-place of 2,100,000 persons; it is also their place of work. The factories of Berlin were turning out products with a real value upon the markets of the world, and to keep them working those products had to be brought through the blockade. They could travel only by air.

The goods carried back over the airbridge were of two kinds—freight that would earn money for the blockaded city, and freight urgently needed in Western Germany or the Western economy generally. A sample list of the things carried showed a great variety of articles. The electrical goods included meters, valves, converters, transformer parts, radio and telephone gear, generators and switches. The rest were the products of other light industries: books, for example, or dresses, toys, chemicals, cables or turbine parts. The weight of this economic freight backloaded from Gatow and Tempelhof in a typical week amounted to some 1,500 tons.

Loading of this freight was often awkward and difficult, but the airlift men took on the job willingly, knowing its value to the blockaded workers. Flying back to their home airfields in the West, the pilots called up by radio to announce what they were carrying, reading from their manifests. Often these messages came oddly from an aircraft in flight: lists of commodities which, in normal times, nobody would have expected to travel by air. The message which gave rise to the biggest chuckle was that from a pilot who reported his load

OUTWARD to Western Germany flew several thousand children in need of recuperation. The R.A.F. handled all such traffic.

to be " two thousand pounds of miscellaneous electrical gear, and two hundred pounds of scrambled egg." (The controller at the airfield did not have to be told what this meant, but, for the information of readers unversed in R.A.F. slang, it implied that, along with his freight, the pilot was carrying as passenger an Air Officer of high rank—with the " scrambled egg " of gold braid upon his cap—and of portly build.)

The backload by no means consisted entirely of goods manufactured in the Berlin workshops. A large proportion of it was human.

There was a considerable number of people in West Berlin whom it was desirable, for one reason or another, to bring away. These were all carried in R.A.F. aircraft. The R.A.F. undertook the whole of this human backload.

The first people to be removed from West Berlin were those who did not live there, but happened to be there on business or upon a friendly visit when the blockade was imposed. In this most curious of all blockades, in which anybody, if there were space in an aircraft, could leave or rejoin the place at will, suffering no interference from the blockaders, there was no reason why these trapped people should remain in a predicament. In the early stages of the operation the R.A.F. brought out some 4,000 of them.

Once these wanderers had been restored to their homes the lift was offered to anybody who had permission to go to live in Western Germany, or to emigrate to some other country, or to finish his education in a Western school or college. This scheme was started at the beginning of August 1948. People who used it had to promise not to return to Berlin in less than six months; and for most of them it proved to be rather a longer period.

A fortnight later, since no end to the blockade, before winter set in, could be foreseen, the scheme was extended to sick persons of certain kinds, those who showed early signs of tuberculosis, those who were medically in need of long periods of rest and good food, those who required special treatment that could not be supplied in Berlin itself, and, most important of all, thousands of children who, having suffered war-time privations in Berlin, were still suffering from under-nourishment.

A surprisingly large number of these people was taken on the outward journey across the airbridge, the children travelling free, the adults paying a small charge. All were carried in R.A.F. Dakotas, Yorks, and Sunderland flying-boats. In March 1949 the total had reached over 50,000.

They all found air travel not in the least alarming. The children were given sweets by the pilots, and jollied along generally in the most amicable way. The old and the sick were fussed over and made as comfortable as possible. The only passenger to take fright was a woman of extreme age, who was hoisted into the back of a York one night and had to sit among the mailbags. Not that she minded that in the least; she rather enjoyed it, if anything. Nor was she perturbed by an unusually bumpy flight through the darkness to Wunstorf. But when she had been lowered from the aircraft, and saw the three-ton lorry that was to carry her to Hanover, she positively refused to board it. Not for her, she said, not at her age—it looked far too dangerous.

* * *

This narrative has now attempted to describe the whole of the British share in the airlift to Berlin. It has shown how it was developed, from an impromptu start, to the biggest air supply operation the world is ever likely to see. It has given an idea of the organisation put into the job, of the men who carried it through, and of the size of the problem that was tackled.

There is one sombre footnote to add. An operation of such immensity could not be performed without cost. Not cost in terms of money, though that was considerable.* The cost referred to is that of human life.

Flying is no more dangerous than most forms of transport, but it involves a risk. Flying of such complexity and frequency intensified that risk.

At the time of writing there had been seven fatal flying accidents to British aircraft (four R.A.F. and three civil) on the airlift.

In two of the R.A.F. accidents and one civil, the aircraft crashed in the Russian Zone. The Russian authorities behaved in the most humane way on these occasions: they waived all formalities and allowed R.A.F. medical teams, and also the wife of a mortally injured officer, to hasten to those who had been hurt.

British losses in these accidents were 23 men killed. In the same period, the U.S.A.F. suffered nine accidents, with 20 men killed. And seven German passengers lost their lives.

* The cost of the airlift, to Britain, excluding wear on aircraft, had been £5,850,000 up to March 31st, 1949; at which date it was running at the rate of £200,000 a week.

EVERY SCRAP of coal was gleaned where planes had unloaded.

THIS SHOWCARD, from an exhibition in Bremen to raise donations towards the airlift, aptly illustrates the smaller heading below. The bottle claims to contain genuine Berlin Air ; the slogan can be translated "It's a tonic !" *Right :* In Western Germany a postal surcharge contributed to the cost of the supplies.

PART TWO: THE CITY THAT LIVED ON AIR

9. A SIEGE OF THE MIND

THE blockade of Berlin, which reached its climax at the end of June 1948, was unique.

All the famous sieges of history, from ancient Troy to modern Paris—or, indeed, in more recent times, Tobruk—have conformed to a rough pattern. The besiegers drew up in strength around the city and attempted to obtain physical possession of it by force of arms and the long slow method of starvation.

But the blockade of Berlin was a siege directed not only at the citizens' stomachs, but also at their minds. It was a curious battle of will-power, a struggle not only for physical possession of the city, but for its soul as well.

For example, anyone in West Berlin was invited by the Russians to lift the blockade for himself and his family. At any time, without changing his residence or employment, he had simply to register for his rations in East instead of West Berlin. The Western Powers put no obstacle in his way. He could accept the Russian invitation any time he chose. But, with few exceptions, he did not choose. The population of West Berlin were well aware that the Russian promise to feed the entire city was designed only to lure them to surrender their freedoms. They rejected the suggestion that the Western Powers would be unable to fulfil their obligations because the city could not be supplied by air ; they preferred to put their trust in the promises of the Western Powers.

There were several other oddities of this blockade. Electricity for the Russian radio station, which poured out anti-Western propaganda day and night, was supplied by the Western Powers because it happened to be placed in West Berlin. On the other hand, electricity for Gatow airfield was supplied by the Russians because it happened to lie on the edge of the Russian Zone. Reciprocally, the British Sector was feeding electric power to one of the Russian fighter stations.

At any time either side could have cut off these supplies to each other : alternative sources existed, however, and the fact is that these supplies were no more than exchanges for the convenience of both sides ; the blockade itself was not vitally concerned with such ; it was psychological as much as physical.

The most formidable weapons on either side were hope and despair. The blockaders attempted to win the city by casting it into despair of any alternative. Those who opposed them—the Western Powers—did so by bringing renewed hope to the citizens of West Berlin.

The only hope that did not involve the risk of a

DEHYDRATED POTATOES on sale in a West Berlin street market. Rations were actually increased during the blockade.

COAL RATIONS, by the lb., enough for cooking only. But West Berlin got through the winter with public health maintained.

forcible clash lay in the supply of West Berlin by air. The bridge of air was more than an expert flying operation and a magnificent feat of organisation. It was the promised rainbow in the sky.

To finish off the story of the airlift, therefore, it is necessary to describe with what success or failure this psychological battle was fought. We must see to what extent the hope held out by the airlift overcame the despair of ever finding a happy solution of the international dispute. We must examine, in fact, what happened to the bodies and to the minds of these citizens of West Berlin.

From the start, of course, there were physical results of the airlift which could be accurately measured.

The first essentials of life are food and warmth. Let us take food first, and see how the West Berliners fared on airlift provisions.

It must be remembered that, even before the blockade started, all food in Berlin was strictly rationed ; far more so, in fact, than it has ever been in England. Various scales of rations were allotted to various types of citizens. Heavy workers were getting about 2,500 calories a day, but these workers amounted to only about four per cent of the people. The average over the whole population was around 1,800 daily calories, supplemented by 250 more from off-ration foods.

The Allied Kommandatura, upon which all four Powers were represented, had agreed, just before it broke up, to an increase in the rations to come into force on July 1st, 1948. But before it could be effected in West Berlin, the blockade had begun and the success of the airlift had not as yet been proved. So in West Berlin this agreed increase could not be made. The ration continued as before.

In fact, the situation got worse, for as police checks were tightened around the perimeter the amount of off-ration food appreciably declined and its black-market price soared—anything from twenty to fifty times higher. There is a little farming upon the outskirts of West Berlin, and some vegetable-growing in domestic gardens, but the produce from these sources was inconsiderable.

Experts were therefore called out from the Ministry of Health in London. They took a sample cross-section of Berliners and studied their diet, and the effect it was having upon their health. They then made various recommendations for raising the rations, without correspondingly increasing the burden on the airbridge, and, on November 1st, 1948, by a careful choice of nourishing foods of kinds economical in weight and bulk, the ration for West Berliners was raised by 15 per cent in calorific value. But the tonnage of food to be imported increased by only 8.2 per cent.

Nearly half the West Berliners held what was called the " normal consumer " ration card. It was given to housewives, office workers and light workers. The normal consumer had been getting, till then, rather less than 2½ ounces of fats per week. This ration was now trebled. The sugar allocation was increased, and for the first time since 1945 West Berliners received some cheese. Children between the ages of 9 and 14, who had been getting no milk at all, now got enough dried skim milk to make nearly half a pint daily.

Although the Russians were able to supply their Sector of Berlin by land transport routes, whereas West Berlin had to depend on the air, Western rations then made not such a bad showing compared with Eastern.

They were, for one thing, of a rather higher quality. And on the calorie count, too, West Berlin nearly held its own.

Before the blockade every normal consumer in Berlin was receiving daily rations worth 1,600 calories. From November 1st onwards he received 1,882 calories in

HOSPITALS had priority on rare foods such as dried eggs. During the airlift disease and mortality rates continued to fall.

WOOD STOVE and kettle provided a (weekly ?) bath in this home. The morale of the blockaded Berliners never sagged.

West Berlin ; 1,894 in East Berlin. Moreover, the diet in the Soviet Sector was starchier than in the Western Sectors. But rather more people in the East were entitled to privileged rations than in the West—heavy workers and other special categories—and it was easier in East Berlin to get some off-ration foods. The average ration over the whole population in East Berlin, therefore, was slightly higher than in West, but the difference amounted to less than 100 calories per person per day.

So, on the basis of survival diet, the airlift triumphantly maintained, and indeed improved, the rations of West Berlin.

But no English housewife will need to be told that, although rations may well be adequate for health and working activity, they can at the same time be dull and lacking in variety. This was, of course, true of the food that the airlift brought to the West Berliners.

The airlift meant many changes in the diet upon which they were living. The greatest hardship was probably the replacement of fresh potatoes and other fresh vegetables by dehydrated. It had to be done, because for the same food value it meant a saving of about 40 per cent of the daily weight of foodstuffs to be carried over the airbridge. But it was not a palatable change, nor was it surprising that the Berliners got heartily sick of dehydrates. Vitamin C tablets were distributed to compensate for certain losses that were due to the lack of fresh vegetables.

The same thing applied to meat. To save airspace, nearly all the meat ration had to be met with canned meat, supplemented by dried egg. Later some ingenious methods were found of curing and freezing fish so that it could more easily be airlifted, and gradually more fish came on to the West Berlin market, carried there by the British civil aircraft from Hamburg. Very little fresh milk was available, and what there was went exclusively to certain categories of sick people and to infants. The rest had to manage with dried milk.

But there were compensations, even in the matter of palatability. The quality of the bread was maintained. Much more butter was included in the fat ration. Honey was flown in to eke out the sugar supply, and there was real coffee.

So much for a brief sketch of how West Berliners were fed by the airlift. Now, how well were they kept warm, and how effectively were the nights lightened ?

BEST JOKE of the airlift was this, in *Der Insulaner*, entitled : "The Dehydrated Baby—Soak for 20 minutes in warm water . . ."

10. FUEL, POWER, INDUSTRY, JOBS

THE fuel and power story of the blockade does not record as great a success as that of the supply of food. The difficulties of carrying by air the raw materials of warmth, light and power were, of course, very much greater.

When it began, the fuel situation in West Berlin was not bad. There were fair stocks of coal, standing timber, petrol, diesel oil and other liquid fuels and lubricants, some of which belonged to the Russian authorities and were borrowed for the duration of the blockade "without prior permission of the owners."

At first it was not known whether the airbridge could carry any fuel at all. It was discovered, however, that the aircraft could bring to West Berlin the equivalent of 3½ train-loads of coal each day. Before the blockade, the surface supply had been 5 train-loads daily. It was found that the tanker aircraft of the British civil lines could maintain, and indeed increase, the stocks of liquid fuel.

On that basis the Western Powers in Berlin set about allocating the supplies of fuel and power available. It at once became evident that the Berlin householder was in for a thin time. The winter was mercifully mild, but it was impossible to issue, for domestic purposes, more than a tiny ration of coal.

Apart from this, coal for "space-heating" went, in carefully rationed amounts, only to such places as hospitals and schools, essential industrial workshops, courts and so on.

The rest of the coal was used to maintain the public utilities of electricity, gas, sewage and transport, and a few essential industries such as the baking of bread, newspaper production, radio and maintenance workshops.

Most important of all were the public utilities, and here the Western Powers were at some grievous disadvantages, particularly in electricity supply. Of the eight power stations in their Sectors, only the Berlin West station, the one which the Russians had stripped before Western troops got there, had been a modern plant, the others being used mainly to boost production at peak hours.

By far the greater part of the electricity used in West Berlin before the siege, therefore, had been supplied either from the Russian Sector of Berlin, or from the adjoining Russian Zone. With a few exceptions, this supply was cut off when the blockade began, leaving West Berlin with about one-third of its former electric power.

By flying-in only the most suitable coal, by technical improvements to the existing plant, and by the import over the airbridge of a number of small generators, this output was somewhat increased. But the supply could not be materially improved until the aircraft were able to bring in the machinery necessary to re-equip Berlin West power station, a task upon which the airlift was engaged, but which would inevitably prove a long and difficult one.

The best had to be made, therefore, of the capacity available. Most of it was used to keep the big factories running at some sort of pace. A little went out to the dwellings of West Berlin. It would not give a true picture to say that West Berliners, all through the winter, suffered severe power cuts. They lived in one long power cut, occasionally relieved for a couple of hours, often at a most inconvenient time.

Gas presented similar problems to the West Berlin housewife, who almost invariably did her cooking by it.

At the beginning, coal supplies to the gasworks were cut by half. At night the pressure was cut practically to nothing, and all gas street lighting was turned off.

It meant slowing down production in some factories. But primarily, since 75 per cent of Berlin's gas supply is for domestic use, it meant that the housewife got just enough to cook one hot meal a day.

As the airlift continued, however, to keep up the supply of coal, these rigours could be lessened, and on

INDUSTRY made a remarkable showing on raw materials imported by air. The Siemens factory exported by air 600 telephones a week and great quantities of other electrical goods.

SOLIDARITY of the independent German political parties in face of the blockade was evident when Mr. Attlee visited the airlift forces and West Berlin in March 1949. Seen with the Prime Minister here are the Lord Mayor of Berlin, the Speaker of the City Assembly, and leaders of the Free Democratic, the Social Democratic, and the Christian Democratic parties.

December 1st, 1948, gas supplies were restored to three-quarters of their pre-blockade figure. They were so regulated that the gas was at full pressure during the hours when housewives were preparing breakfast, lunch and supper. There was then sufficient for a family to cook the whole of its food ration.

The one public utility which remained almost untouched by the blockade was the water supply, which comes from deep wells beneath a natural filter of sand and gravel. But the power available for sewage disposal was less than before, and some of the sewage had to be discharged raw into the many waterways of the city.

In spite of all these hardships the public health of West Berlin remained good. Accommodation in the hospitals—15 beds per 1,000 population, which compares favourably with England—proved quite adequate. For there were, in the winter of 1948-9, no serious epidemics. As compared with the winter of, for instance, 1945-6, the incidence of nearly all infectious diseases was considerably lower. Here are a few examples :

	Nov. 1945		Nov. 1948	
	Cases	Deaths	Cases	Deaths
Typhoid ..	1,935	327	62	3
Dysentery ..	1,128	248	43	4
Diphtheria ..	2,132	147	352	5
Scarlet fever ..	300	nil	100	nil
Poliomyelitis ..	4	1	33	1

In the British Sector alone, the death rate, which stood at 14.9 per 1,000 population in the third quarter of 1946, had dropped to 11.4 in the corresponding quarter of 1948. For the same two periods statistics of live births per 1,000 population had altered very little ; 9.8 in 1946, and 9.6 in 1948. Infant mortality dropped from 81 to 62 per 1,000 live births.

West Berlin, in fact, supplied solely by air for an extended period which included winter months, had been adequately fed, partly warmed, and kept in a state of good health.

There was one other factor in the life of West Berlin which it was vastly important to preserve—its industry. The economy had to be saved from collapse, not only because the products of the factories were valuable in themselves, but to keep the people working—enforced idleness being a great demoraliser.

The implications of this were formidable. On the German side, it meant that the industry of the city would have to be run against a background of crazy finance. Factories could not operate, in circumstances such as these, on normal financial lines, but only by incurring a large debt. The necessary money had to come, indirectly, from the city authorities ; ultimately, that is, from all the citizens of West Berlin. In this they were most generously supported by immense loans from the provincial authorities of Western Germany, as well as

POSTERS like this went up at Ruhr district pits, to hearten the German miners who were keeping the coal-lift supplied.

by subscriptions and gifts from smaller organisations, and even from individuals.

On the part of the Western Powers, the implications were that an import-export industry would have to be conducted over the airbridge itself—another crazy arrangement economically, but essential in the circumstances. And it was done. A large part of the airbridge traffic was set aside for the carriage of industrial raw materials and goods, in and out. This was the economic freight that has already been described.

The industries of West Berlin include thousands of tiny concerns known as *handwerke*. Many of these small firms, when the blockade began, had to close down or go upon short time. The larger firms, one of which employs some 23,000 workers, rearranged their processes with the greatest ingenuity, with the double object of reducing power consumption, and keeping on their staffs.

As a result, employment, in industry which depended solely upon the airbridge for its communications with the outside world, remained surprisingly high. When the blockade started, nearly 36,000 workers were thrown out of a job, and 45,000 went on to part-time. But the unemployment curve did not then shoot upwards, as it might well have done. There was a slow increase with a slight recession in November 1948.

By the end of 1948, in the whole of West Berlin, there were 935,238 workers employed. The number registered as unemployed as a direct result of the blockade was 43,143, an astonishingly low figure after six months of blockade, relieved only by air communications. It needs to be qualified, however, by the fact that 67,219 of the employed workers were on short time, and a further 26,000 were wholly unemployed for reasons indirectly concerned with the blockade.

Another disquieting factor was the effect on juvenile employment. Employers could give little thought to engaging juvenile labour or training apprentices while beset with the problems of retaining their existing staff. The normal flow of apprenticeships was interrupted and the necessity for retrenchment caused many employers to cancel vacancies they had announced.

It says a great deal for the morale of West Berlin that there was no corresponding increase in juvenile crime.

By and large, therefore, a combination of the airlift, the staunchness of the Berlin workers and employers, and the generosity of Germans in the Western Zones, kept West Berlin at work. It is no small thing that, after six months, only one out of every 20 workers was wholly unemployed.

THE PEOPLE of West Berlin showed their recognition of the airlift men's work on many occasions. Frau Louise Schroeder, deputy Lord Mayor, makes a presentation to a York air crew from Wunstorf and their Station Commander.

11. THEY DID NOT FAIL

In all material things, then, the Western Powers could claim that the airlift had beaten the blockade. But how had it succeeded in its main purpose, the defeat of the siege of men's minds?

The Berliners themselves answered that question. They sent deputations out to Gatow from the streets shattered by R.A.F. war-time bombing, to salute with presents, speeches, songs and even kisses those same R.A.F. pilots who were now flying to their succour.

They spurned Russian offers of food and employment. Of the 2,100,000 West Berliners, every one of whom was free to register for rations if he so desired in the Eastern sector—nothing more than a change of grocer, nothing more than signing away independence of spirit—very few did so, and some of those were local Communists.

The Russian authorities claimed that 110,000 West Berliners took advantage of their offer, and registered for Eastern rations. The Western Powers found, actually, that they had 70,000 fewer ration books to meet. The discrepancy seems to have arisen from some thousands of persons who registered more than once in the Eastern Sector, a fact which the Russians cheerfully accepted since it helped to swell the numbers for propaganda purposes. But whatever the exact total, some 2,000,000 West Berliners still preferred to face the food blockade, and to live on the airlift rations.

As with food, so it was with jobs. To the unemployed in West Berlin the Russians offered work, on those same terms of registering in the East. Only a minute proportion of the workless accepted that offer ; the rest preferred to draw the small unemployment relief payments in the West.

Berlin under blockade, with its bombed buildings and its mountains of rubble, the greyness of its streets by day and their pitch-blackness by night, was not the easiest of cities in which to cherish, at the cost of real hardship, freedom of the mind. But the West Berliners did so cherish it. As month by month the blockade went on, they did not waver. They put their trust in the bridge across the sky.

People at home in Britain have sometimes thought of the airlift as only a liability, a costly expedient, and have questioned whether it were worth the cost. But in many ways it was an asset of incalculable worth ; and not least in this spirit that it has preserved in West Berlin. If it be thought of as a psychological struggle, as part of the battle of wills over Europe, then one great asset is clearly claimed. It heightened respect for the Western democracies, and revived in millions of doubting minds a belief in the strength of freedom.

As this narrative was being written the airlift was going on and was increasing in capacity. No one could tell whether the blockade of Berlin would be raised suddenly or would continue for two years or more. Only one thing was certain : The airbridge stood firm, and in the spring of 1949 the Western Powers were laying plans for more aircraft, more equipment, a vastly heavier haul across the bridge of air, on the assumption that it might continue for a considerable time to come.

Since then the blockade of Berlin has been lifted (May 12th), and overnight the picture has changed again, and while this book is in the press there may be further changes. The airlift will continue until the situation has been finally cleared up. But, whatever the future may have in store, the achievement of the airlift in sustaining life and hope in Berlin, in the days when access by road, rail and water from the west was impossible, will never be forgotten.

Berlin schools held airlift picture competitions. *Above :* Postal cancellation stamps ("Under the Aegis of the Airbridge") demonstrated confidence.

"WITHOUT TEAMWORK, THE AIRLIFT COULD NOT HAVE BEGUN OR CONTINUED"

U.S. Maj.-Gen. William H. Tunner, commanding C.A.L.T.F. with Air Cdre. J. W. F. Merer, A.O.C. 46 Group R.A.F., his second-in-command.

Air Marshal T. M. Williams, A.O.C.-in-C. B.A.F.O., since Nov. 1948 shared the higher command over Combined Air Lift Task Force with :

U.S. Lieut.-Gen. John K. Cannon, Commanding General, United States Air Forces in Europe.

Air Marshal Sir Arthur P. M. Sanders, A.O.C.-in-C. British Air Forces of Occupation till Nov. 1948. Now Vice-Chief of the Air Staff.

General Sir Brian Robertson, British Military Governor and Commander-in-Chief, Germany ; previously G.O.C.-in-C., British Army of the Rhine.

Maj.-Gen. G. K. Bourne (*right*) succeeded Maj.-Gen. E. C. Herbert (*left*) as Commander, British Troops Berlin, in January 1948.

46 Group R.A.F. York pilot, in the north air corridor.

R.A.A.F., R.N.Z.A.F. and S.A.A.F. pilots flew on the lift.

HOW IT WORKED

WEST Berlin's elected authorities reported the day-to-day requirements of the three sectors to :

The Airlift Co-ordination Committee of the Allied Military Governments, Berlin, which stated requirements to :

The Bipartite Control Office, Allied Zones of Germany, in Frankfurt, which procured the supplies needed at :

The six R.A.F. dispatching airfields (two used by U.S.A.F.) in the British Zone, and the two U.S.A.F. dispatching airfields in the American Zone.

British Army Rear Air Supply Organisation (in co-operation with officers of Control Commission Germany), under G.O.C.-in-C. B.A.O.R., operated storage and loading on the R.A.F. dispatching airfields, with German labour. Rail and road transport to these airfields, and signals network, also organised by the British Army. The U.S. Army operated similarly for U.S.A.F. airfields.

Air crews of the R.A.F. (46 Group[1]), British civil companies[2], and U.S.A.F. flew the lift under Commanding General Combined Air Lift Task Force. U.S.A. (200 aircraft) flew three-quarters, Britain (130 aircraft) a quarter of the tonnage. C.A.L.T.F. was under the joint direction of A.O.C.-in-C. B.A.F.O. and C.G. U.S.A.F.E.

At Berlin, Gatow was operated by R.A.F., Tempelhof and Tegel by U.S.A.F. Unloading and dispersal (by German labour) under British Army Forward Air Supply Organisation at Gatow, by U.S. Army at Tempelhof, and French Army at Tegel.

Construction and maintenance of airfields was carried out by R.A.F. Airfield Construction Wings (assisted by R.E.) on seven airfields ; by U.S.A.F. on four.

1. *Assisted by Royal Australian, Royal New Zealand and S. African Air Force crews.*
2. *Under British European Airways Corporation, and under the general direction of the Foreign Office.*

Civil airlift pilot : one of several ex-R.A.F. war veterans.

U.S.A.F. Skymaster pilot at Rhein-Main base, Frankfurt.

Left to Right : Wing Cdr. Administration ; C.O., U.S.A.F. operational Wing ; O.C., R.A.S.O. ; at Celle.

R.A.S.C. soldier unloading food at Gatow airport.

R.A.F. fitters at Gatow, servicing an engine.

Control room staff officer on the radio-telephone.

Leading aircraftman, R.A.F. Airfield Construction Wing.

British European Airways Station Officer and Control Commission Germany Airport Manager, Fuhlsbuttel.

LONDON: HIS MAJESTY'S STATIONERY OFFICE