

BROADCASTING
HOUSE

BROADCASTING HOUSE



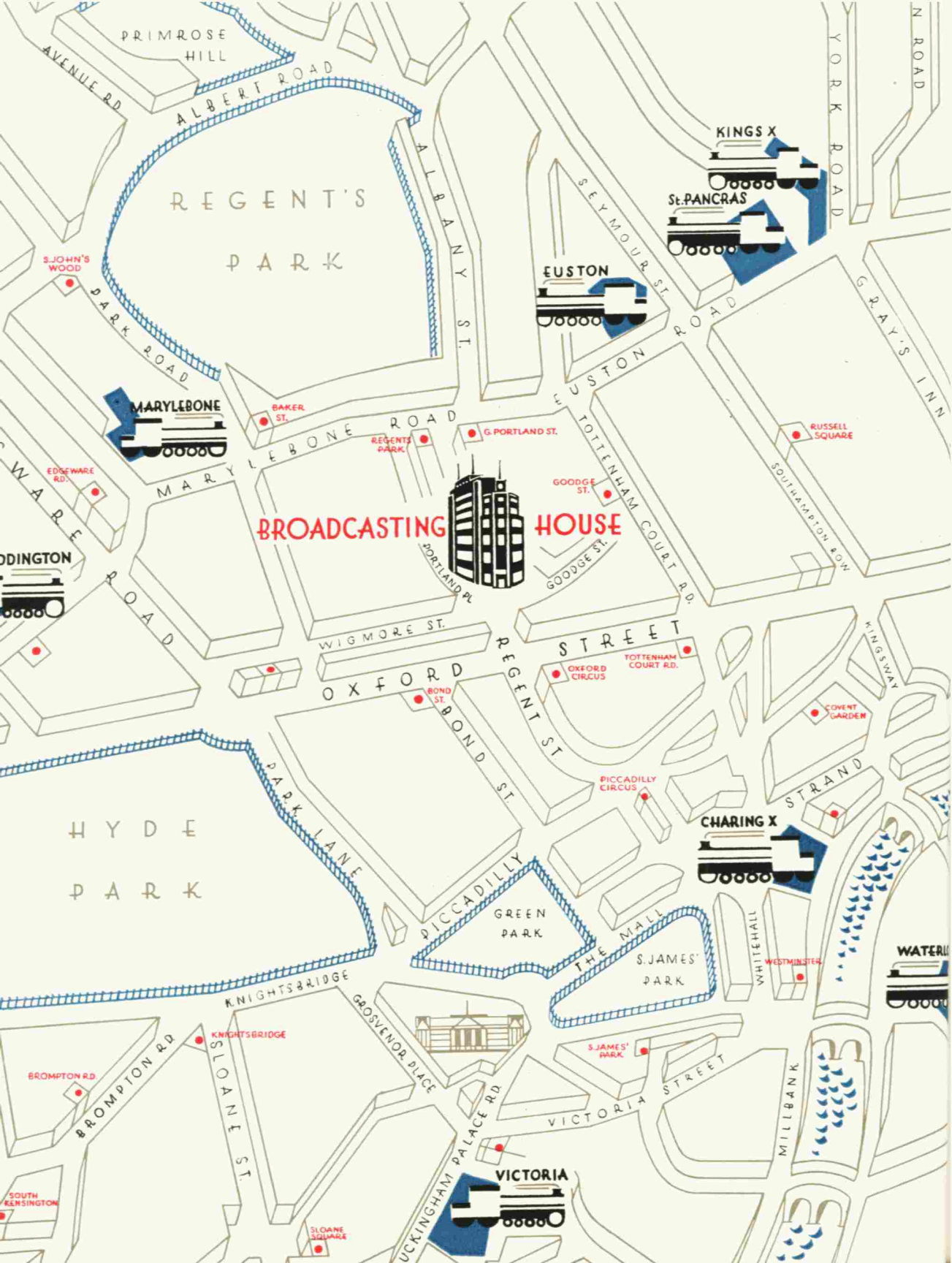
THE BRITISH BROADCASTING CORPORATION

BROADCASTING HOUSE, LONDON, W.1

1932

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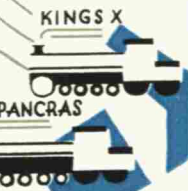
The whole of the broadcasting equipment at Broadcasting House has been designed and installed by the Engineering Branch of the B.B.C.



REGENT'S
PARK

BROADCASTING HOUSE

HYDE
PARK



BROADCASTING HOUSE

SOME six years ago it became obvious that the B.B.C.'s premises at Savoy Hill were inadequate for its rapidly increasing activities, and early in 1926 the B.B.C. decided to look for new and larger headquarters. It was hoped that these might be secured by adapting some existing building for broadcasting; but it was soon realized that the requirements made adaptation particularly difficult and ruled out many buildings, such as the old Dorchester House, which otherwise might have been suitable. It was not surprising, therefore, that after the consideration of many existing buildings, the B.B.C. reluctantly decided that, in spite of the far higher expense, a new building would have to be provided. In any case it was considered necessary that the building should be in Central London, and the various proposed sites were all within a short radius of Piccadilly Circus. Among them were the Aldwych site now partly occupied by India House, the Adelphi site, part of the Grosvenor House site, and a site in Portman Square. Preliminary plans were actually prepared for the development of several sites.

THE SITE

Early in 1928 the B.B.C. was informed of a site at the corner of Portland Place and Langham Street which was in the hands of a syndicate who were contemplating developing it for the purpose of high-class residential flats. The position of the site appealed to the B.B.C. as fulfilling the requirement of being in the centre of London, and particularly as being only a few minutes distant from Oxford Circus, which in many ways is as convenient of access as Piccadilly Circus or any other traffic junction in Central London. The fact that the site was also a few yards from the Queen's Hall gave it a certain sentimental appropriateness for broadcasting. The syndicate owning the site offered to build a new headquarters to suit the B.B.C.'s requirements, and to grant the B.B.C. a long-term lease, with an option to purchase which has since been exercised.

The development of the site itself, which occupies an area of about twenty thousand super. feet, was governed by the peculiarity of its shape and certain restrictions on height arising from the existence of 'ancient lights' on two of the three open faces of the building. The site was shaped like a flat-iron, with a blunted apex pointing south, and the base, or northern end, joined on to existing buildings. The western front, facing Portland Place, was not subject to any restriction of height other than that of the London Building Act. The eastern front, facing Langham Street, had to be designed so as not to violate the rights of light attached to the buildings in that street. There were similar rights on the short southern front of the building, but these were satisfactorily adjusted by concessions from the owners. The main result of the restrictions has been the cutting away of the roof from the fourth floor upwards so as to keep it within the limiting angle.

The site also raised certain questions of style, in that a modernity of design appropriate to a new science like broadcasting had to be reconciled, in the exterior of the building, with the quiet distinction of the neighbouring buildings in the Adam and Regency styles.

THE BUILDING

Thus the architect (Lieut.-Col. G. Val Myer, F.R.I.B.A., with whom was associated Mr. M. T. Tudsbery, M.Inst.C.E., the B.B.C.'s Civil Engineer) was faced with a difficult problem, which was complicated by the B.B.C.'s insistence on the necessity of ensuring that the many studios which the building was to contain should be entirely insulated from sounds coming from within or without the building, a further complication being the necessity of ventilating the studios in a manner which would not interfere with the insulation. The other main requirement was the provision of a large number of offices lighted by daylight and easily adjustable internally to the changing requirements of the staff. As the result of an exhaustive examination of the various possible ways of combining these essentials within the limitations imposed by the shape and size of the site, the solution of the problem was found in the ingenious expedient of dispensing altogether with the light-well or quadrangle commonly found in the centre of a building of this

shape, and arranging the offices in the form of an outer shell round an inner core containing the studios, for which artificial light was no disadvantage. In this way the offices would be made to act as an insulating area between the studios and the streets, and the problem of noise from outside the building would thus be automatically solved. There remained the problem of internal insulation, and particularly the danger of noise being carried from one studio to another, either by the steel stanchions normally used in modern building or by the ventilating ducts. To meet this difficulty, vertical steel stanchions were eliminated from the main walls of the central core, or 'Tower', which was planned as a separate building within the outer shell and constructed almost entirely of brick, with an outer wall of great thickness to ensure the necessary insulation and stability. As a further precaution it was arranged that the studio groups should, where possible, be separated by floors of rooms like the Music Library, the Stationery Store, etc., which neither create noise nor are disturbed by it.

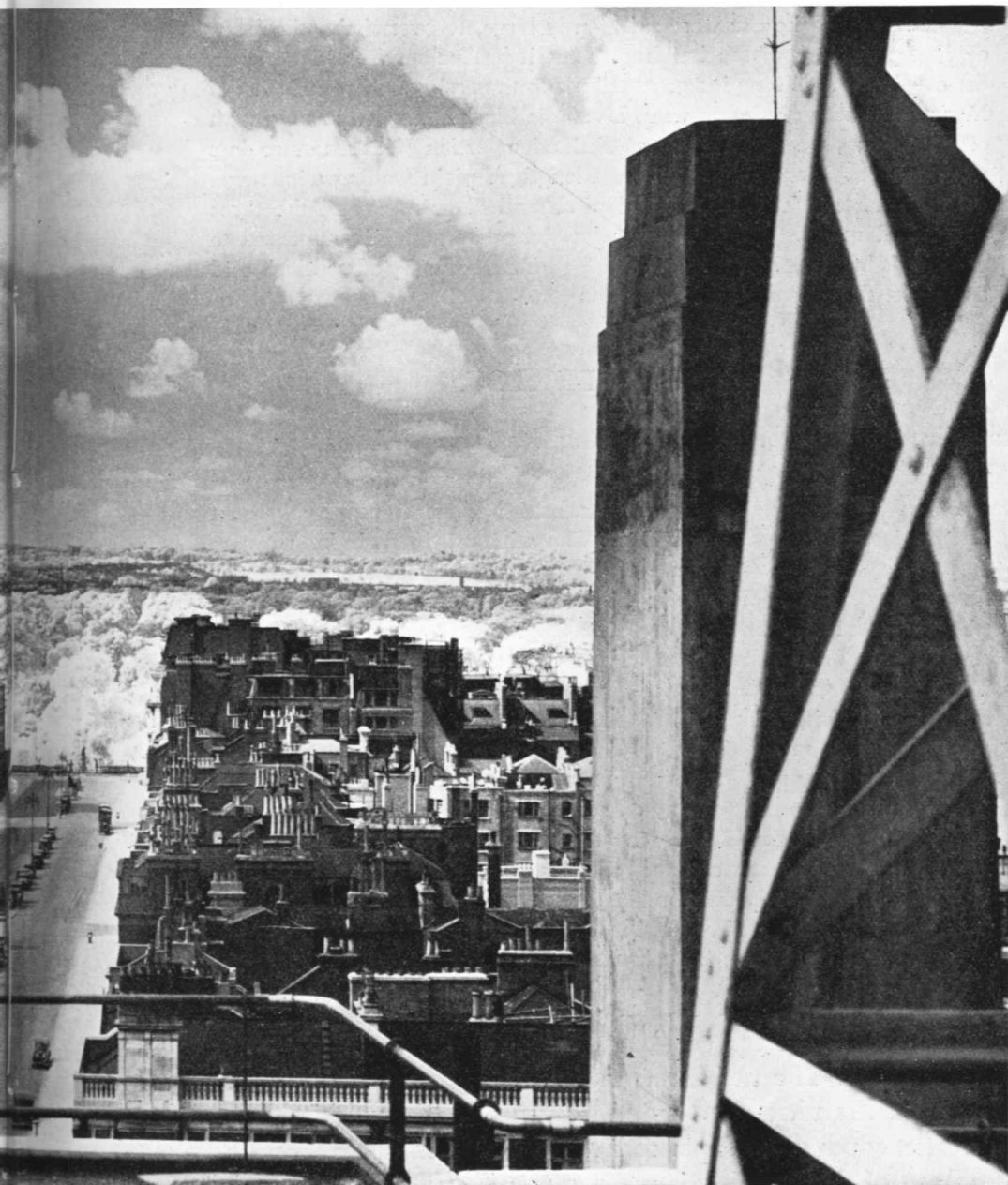
In describing the plan of the building and the difficulties which were encountered in the general disposition of its parts, it may be of interest to quote the opinion¹ of Professor C. H. Reilly, of the Architectural Department of Liverpool University:

The programme in this case was obviously a unique and inspiring one; a problem, indeed, to fire the imagination of the architect and all concerned. The main purpose of the building was to provide a group of insulated concert halls and studios, from which music and messages of every kind would be sent out world-wide, and that, not as an effort of private enterprise, as in some other countries, but as representing the nation. That, at any rate, is how that part of the programme would appeal to the architect, seeking, as he must always do, to give the noblest possible expression to his client's building. Subsidiary to this central function of the new building, but actually occupying a great deal more floor space, was ordinary office accommodation for the six hundred-odd persons in one way or another organizing this new and exciting public service. Such office space, of course, like nearly everything else, is capable of fine architectural expression, but it will be admitted at once that it does not offer a new or unusual programme. It is, indeed, the programme which most of the buildings in the central areas of all large towns are designed to answer. This office accommodation, therefore, should not

¹In an article in *The Listener*, July 13, 1932.



2. The view from the roof looking north towards Hampstead. The photograph has been taken by an 'infra-red' camera, which gives clearness of detail at great distances. It also has the effect of showing green objects, like the trees in Regent's Park in the foreground, as dazzling white.



2. The view from the roof looking north towards Hampstead. The photograph has been taken by an 'infra-red' camera, which gives clearness of detail at great distances. It also has the effect of showing green objects, like the trees in Regent's Park in the foreground, as dazzling white.

be permitted, if the site were sufficiently large, to overwhelm the more distinctive portion of the building. That it has not entirely done so in the new B.B.C. building is a great tribute to the architect, Colonel G. Val Myer. In spite of having to wrap his studio block completely round with offices, so that, externally, the most distinctive portion of his structure does not show at all, except for the short length of plain walling with seven small roundels in it at the top of the Portland Place front and the three small steel receiving aerials on the roof, he has certainly managed to give to his building a different air to that of the ordinary office block, and to suggest that it serves some new purpose.

THE EXTERIOR

Describing the exterior of the building, Professor Reilly says:

The architect has taken the big curved front to Portland Place and modelled it in a series of flat vertical planes rising sheer from the pavement but balanced about a central axis. The windows in their long ranges emphasize admirably the curve of the front. Probably out of sympathy for the surrounding buildings, he has not turned them into long continuous sheets of glass in the modern way, but has given each the ordinary vertical shape. He has even filled them with bars, in these days of plate glass, to obtain a contrasting texture with his plain stone surfaces. These great stone cliffs of his, rising, as it were, one behind the other from a base modulated by a range of larger windows, a band of wave ornament, and a central strongly marked balcony, but with no crowning cornice, give an aspiring look to the building well in keeping with its central function. Such ornament as there is, the decorative coat of arms and the interesting frieze of birds and rays of light on the balcony front, designed by the architect, and the impressive reliefs by Mr. Eric Gill at the base of the two bays flanking the Portland Place front, are, like the building itself, restrained and forceful.

A distinctive feature of the elevation is the group of aerial masts which undoubtedly help the building to express its function in an obvious manner. The two masts on the highest part of the roof carry the aerial of the ultra-short-wave transmitter with which the B.B.C. is at present conducting experiments. The third mast on the lower roof at the front of the building is a spare one. Small receiving aerials are slung in various places on the roof, their positions being altered experimentally from time to time.

There are four flagstuffs on the building, two on the western side at the eighth floor level, and two spare ones on the eastern at the fourth floor level, where the roof begins to recede. The flagstaff at the north-west corner flies the Union Jack, that at the south-west the B.B.C.'s own flag. This flag, in accordance with heraldic practice, is what may be described as a rectangular version of the shield in the B.B.C.'s coat of arms. On an azure field representing the ether, the Earth is floating among the seven planets, broadcasting being represented by a golden ring encircling the globe.

The great surface area of the western face is relieved partly by vertical breaks in the massing of the windows, and partly by a carved balcony on the third floor, the B.B.C. coat of arms between the third and fourth floors, and groups of sculpture at appropriate places on the level of the first floor. The carving of the B.B.C. coat of arms, and of the 'birds of the air' and 'wave' symbols on the balcony, were executed in accordance with designs made by the architect. The four external groups of sculpture were entrusted to Mr. Eric Gill, the distinguished sculptor and letter-carver. Mr. Gill accepted the B.B.C.'s suggestion that the literary subject of the carvings should be Shakespeare's Ariel, who, as the invisible spirit of the air, might well serve as a personification of broadcasting. The two panels on the west front show 'Ariel between Wisdom and Gaiety', and 'Ariel hearing celestial music'; and a panel over the entrance on the east side represents 'Ariel piping to children'. The most important group, that intended for the niche above the main entrance, shows Prospero, Ariel's master, sending him out into the world.

Directly above this group, at the seventh floor level, is a rectangular clock which is chimeless in the ordinary sense, but with the aid of a special amplifier and loudspeaker is able to reproduce the chimes of Big Ben at their natural strength at such times as they are being broadcast in the ordinary way. It is probable, however, that in practice the chimes will only be used once a day at a definite hour.

The scheme for the exterior of Broadcasting House includes floral decoration in the form of window-boxes lining the balconies at the eighth floor on the west front, and the third and fifth floors on the south front. These will be kept filled with plants such as daffodils,

geraniums, and chrysanthemums in season. Conical bay-trees, which will be renewed once a year, form a background to the flowers on the balcony at the eighth floor level on the west front and at the fifth floor level on the south.

THE ENTRANCE HALL

The main entrance has, appropriately, been placed at the centre of the rounded façade towards Upper Regent Street. On entering, the visitor finds himself in a fine, spacious, semicircular hall, with lifts and doorways opposite. His eye is at once caught by Eric Gill's statue of the Sower, a man broadcasting seed, and the Latin inscription (see Plate No. 81) over the central arch. On the left is the counter of the B.B.C. Bookshop; on the right the reception desk. The walls and pillars are faced with Hopton-Wood stone, a beautiful pinky-grey English limestone, rather like granite in texture, but made up of innumerable fossil shells. Its surface qualities, which have made it a favourite among modern sculptors, are shown to advantage by the massive square pillars devoid of all ornament. The hall is lighted in a modern way by reflected light from the ceiling. In the words of Professor Reilly:

The semicircle is defined by a range of strong piers with space behind, on one side, for a counter. This space is where the site, with its odd potato-like outline, overlaps the semicircle and shows that, in the interior here, the architect very ably has turned his difficulties to account. The outside, of course, had to follow the outline of the potato. With land of enormous value per square foot, architecture has, as things are to-day, to take a humble place. However, in the interior of this Entrance Hall, where the architect was able, by this device of a semicircle of piers, to free himself, the architecture is strong, simple and modern in the sense that it does not rely on traditional motives for its appeal.

Immediately behind this Entrance Hall is the great central core of the building, following the outline of the site and surrounded from top to bottom by a thick wall. This is the central studio block, and, once the artists have passed into it from the Entrance Hall, they cross no administrative portion of the building. Their cloak rooms, rest rooms, refreshment rooms and lavatories and, of course, all their studios and concert halls, are within it, artificially lit and ventilated. . . . When the artists have finished their work, they pass out the same way. If however, instead of



going through the central doors for the artists, one goes to the right or to the left, or takes the corresponding stairs or lifts, one enters at any floor the long office corridor which completely encircles the studio block. This corridor serves the layer, one room thick, of offices which everywhere occupies the external face of the building. Being, from the tightness of the site, necessarily rather narrow and, consequently, low, it also serves to carry in its ceiling the trunks bringing fresh, cleaned, warmed or cooled air, as may be desired, to the studios.

THE COUNCIL CHAMBER

On the first floor, directly above the Entrance Hall and of the same semicircular shape, is the Council Chamber, a dignified room intended for meetings of bodies such as the B.B.C.'s Advisory Councils, and enabling, for instance, representative international committees to meet in London under the B.B.C.'s own roof. The room, which has been designed by the architect, is panelled throughout in light brown Tasmanian oak. The sixty-foot sweep of the straight back wall and the long curve of the front are relieved by panelling, radiator grills, and lighting pillars surmounted by wrought-oak urns, which illuminate the entire room by reflected light. The furniture includes long tables of Queensland walnut curved to the shape of the room.

THE OFFICES

On each of the seven office floors the accommodation includes a panelled committee room for departmental meetings. On the third floor its place is taken by the official Board Room, in which the Governors of the B.B.C. meet. Next to it on the south is the office of the Chairman, while that of the Director-General is in the centre of the south front facing down Upper Regent Street, with a balcony opening on to it. These offices and those of other senior officials are uniformly panelled in light oak, and are provided with furniture selected by the designers of the decoration of the studios. The offices themselves are so arranged that the various branches of the organisation are, as far as possible, accommodated on separate floors; the first floor being devoted to the larger administrative offices, such as the General Office (where most of the typing is done); the Registry (where the

post is sorted and files are kept); and the internal printing and duplicating rooms. The General Office in particular is a big sunny office arranged on modern lines.

THE CONCERT HALL

The Concert Hall is the biggest of all the studios, and perhaps the most important architectural feature of the building; for which reason its design and decoration were retained in the hands of the architect. The hall is as large as the conditions of the site permitted, the floor dimensions being 106 feet by 42 feet, and it occupies three floors in depth, viz. the first, ground, and lower ground floors, giving a height of 31 feet. The hall is wedge-shaped owing to its lines following the external lines of the site. The splay is not sufficient to be realized at first sight, but it has the strange perspective effect of making the hall appear very much longer from the back than from the front, an advantage from the point of view of the audience. It was never anticipated that the hall could be made big enough to seat the full B.B.C. Symphony Orchestra of 114 players, which normally performs in the Queen's Hall. The B.B.C. intended rather to use the hall for the smaller component orchestras, the largest of which, the 'B' Orchestra of 79 players, is not too big for the hall, and is able to play to the full audience of over 500 people. The volume of the hall is 125,000 cubic feet, which in the ordinary way would not be very big in relation to the numbers of the audience and performers, but the ventilating system, described more fully below, works so admirably that the usual effect of hot stale air is entirely absent. In the opinion of Professor Reilly:

This Hall is the finest thing in the building. It is strongly modelled with great bracketed beams to break up the sound. Without reliance on traditional forms, it yet has great scale and power. There is, indeed, something Cyclopean about it which provides a suitably serious air, and at once separates it from the ordinary run of frivolous apartments in which English people are, as a rule, compelled to listen to music. Yet, with all this, it does not lack interest. That is given largely by the lighting, the tapering shape, and the heavy crouching balcony. Altogether, it is such a Hall as Piranesi might have designed had he dreamed of such instead of prisons.

THE STUDIOS

The main feature of the studios from the public point of view is their decoration and fittings, the appearance of them being a matter of interest to listeners as well as important from the point of view of its effect on the artists who use the studios for broadcasting. Recognising this, the B.B.C. decided to obtain the best possible advice on the decoration of the studios, and arranged for the co-operation of several architects who had specialized in modern interior decoration.

Mr. Raymond McGrath, B.Arch., A.R.I.B.A., was asked to act as Decoration Consultant, and to design two of the studios and several of the accessory rooms, as well as advising the B.B.C. on points connected with the work entrusted to the other designers, Mr. Serge Chermayeff, Mr. Wells Coates, B.Sc., Ph.D., Mr. Edward Maufe, F.R.I.B.A., and Mrs. Philip Trotter.

As the decoration of the studios has necessarily been carried out with regard to the acoustic requirements of the B.B.C.'s Engineers, as well as the limitations imposed by the main plan of the building, it is obvious that there has been continual co-operation between the designers of the decorations and the Architect and the Civil Engineer on the one hand, and the Chief Engineer of the B.B.C. and his staff on the other. It may be of interest to mention as an example of the limitations imposed upon the designers, that paint could not be applied to the buff-coloured composition boarding which forms the majority of the studio walls; that this boarding could not always be relegated to positions free from hard wear; that curved surfaces were frequently banned; pictures, where allowed, had sometimes to stand unglazed; fabrics of specific texture were demanded in certain positions and disallowed in others; and high-reflecting surfaces, such as glass, beetle, and polished wood, were welcomed in limited extent, and disallowed at certain points. At this point it may be of interest to note that the decorations of all the studios are shown in their final form, except those of the Children's Hour studio (3A) and the Productions Group on the sixth and seventh floors, which have been given a semi-permanent finish pending the completion of acoustic experiments.

Up to the year 1924 there were only two studios at Savoy Hill,

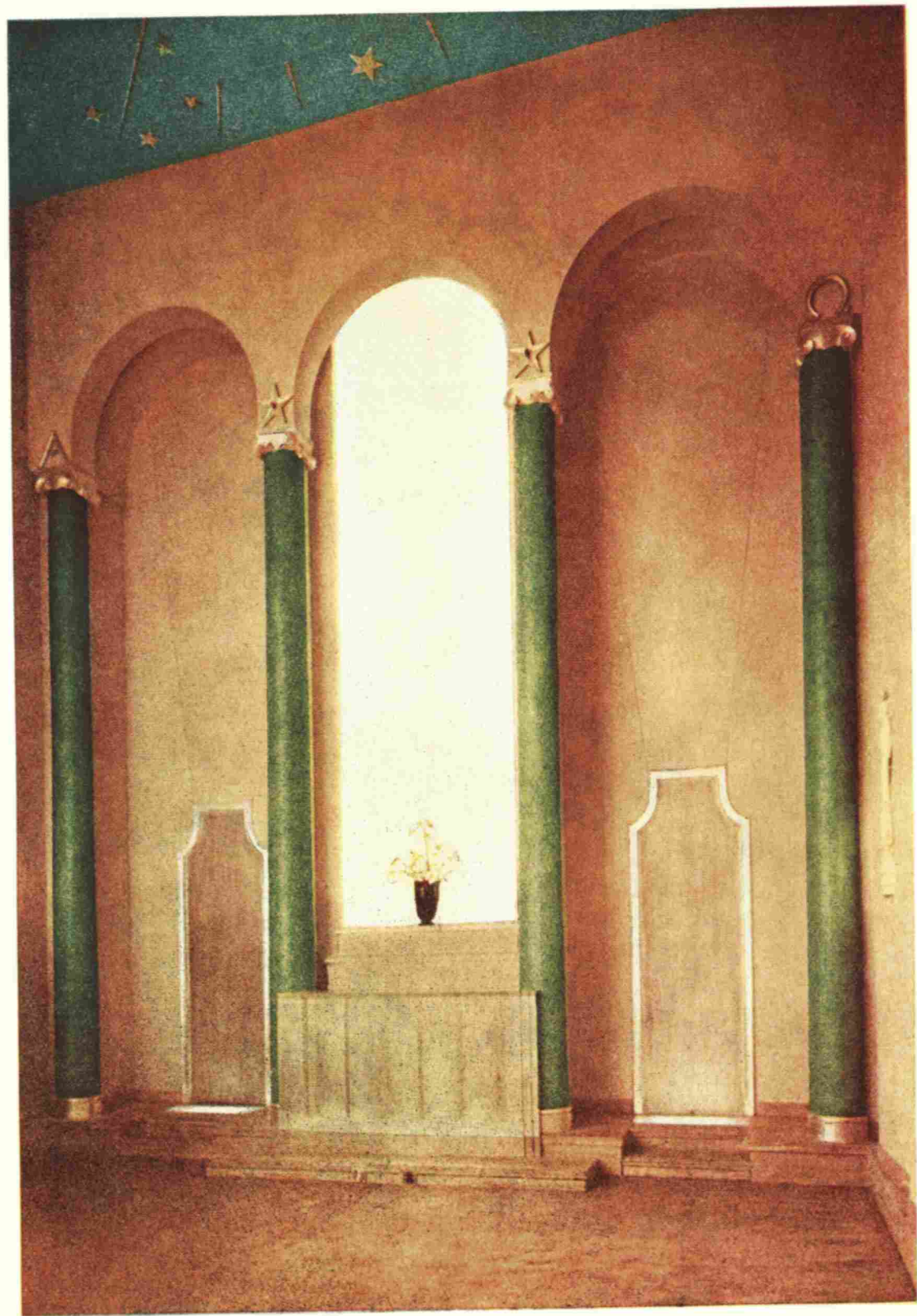
eventually there were nine. Broadcasting House has twenty-two. One of the reasons for so many studios being required is that the time taken to rehearse a programme is usually more than three times that of the performance, while certain types of programme, such as plays, require the simultaneous use of as many as six studios. Another is that past experience has shown that certain types of transmission require widely different studio acoustics, if the best possible results are to be provided. Thus a small studio with little reverberation is the ideal for 'talks', while the large orchestras demand correspondingly large studios of sufficient volume to maintain the correct conditions of reverberation.

It has been found desirable to avoid the placing of artists in a central waiting room, as some delay would be inevitable in collecting them and taking them up to their correct studios. For this reason each suite of studios is provided with its own artists' waiting-room so that the artists can be shown straight into the waiting-room nearest to the studio in which they are going to work.

Each studio is provided with a Listening Room, sound-insulated from the studio, but in most cases with glass windows through which the performers in the studio can be seen. These rooms are treated in such a way that their acoustics are similar to those of listeners' sitting-rooms, and those responsible for the balance and general standard of transmission can hear the performance on loudspeakers under the same conditions as listeners can receive it. Each studio is also provided with a Silence Room (or announcing room), which avoids the necessity of making announcements in front of the artists in the studio.

The twenty-two studios vary in size from 'Talks' studios, no bigger than a small room, to the Concert Hall with its seating for 500 people in addition to a full orchestra. The table on page 23 shows the dimensions, reverberation times, and designations of the various studios, the first letter or number of the designation indicating the floor on which the studio is situated.

The architectural treatment of the studios was the subject of an article in *The Listener*, in which Mr. Howard Robertson, the Principal of the Architectural Association School, made a number of interesting comments on the design. He laid great stress upon the degree in



which the decorative treatments had been in nearly all cases influenced by the need for perfect acoustic conditions. The architects, as has been pointed out above, were obliged to employ materials especially designed for purposes of absorption, or resonance, or reverberation; materials calculated in terms of music, of singing, of speaking.

In each and every studio, large and small, the designer has had to conform to correct tables of requirements acoustically determined—so much wall-board of this sort, so much absorbent material of that sort. Form and colour were his to suggest, but the percentage of each material was fixed. This was a serious limitation; but almost more of a problem was the creation of design which should not only be organic, functional, but pleasing as well. And not only ‘pleasing’ in the conventional sense, for here something more was wanted. Design must stimulate. It must provide an incentive, create the right atmosphere, bring out the capacity of individuals. The musicians of the dance band, of the symphony orchestra, those who talk and play and sing, those who create ‘dramatic effects’, must all feel—as nearly as possible continuously—at their best. Architecture must become an aid to well-being. The designer, with no existing manual to help him, must improvise himself psychoanalyst. In their ability to deal so ably with this human problem lies the principal achievement of those architects who carried out the decorative schemes.

Studio	Principal Use	Reverberation Time	Approx. Dimensions			Volume
			Length	Width	Height	
BA . . .	Vaudeville, Light Musical programmes	1.1 secs.	ft.	ft.	ft.	
BB . . .	Dance Bands, Octets, Chamber Music	0.85 secs.	44	36	19	30,000
Concert Hall	Orchestral and Band performances . .	1.75 secs.	29	18	19	10,000
3A . . .	Children’s Hour, Chamber Music, etc.	0.6 secs.	106	42	31	125,000
3B . . .	Talks	0.35 secs.	35	15	19	10,000
3C . . .	Talks	Dead	15	11	9	1,500
3D . . .	Talks	0.35 secs.	15	11	9	1,500
3E . . .	Religious broadcasts	0.8 secs.	21	18	19	7,000
4A and 4B .	News	Dead	12	7	8	670
6A . . .	Large productions studio	0.85 secs.	36	16	18	10,000
6B and 7B .	Speech in plays and piano music . .	0.6 secs.	19	19	9	3,200
6C and 7C .	Speech in plays	Dead	19	19	9	3,200
6D . . .	Effects	Dead	23	19	19	8,300
7D . . .	Effects (Experimental)	—	13	12	9	1,400
6E and 7E .	Gramophone effects.	<i>Untreated</i>	12	8	9	860
7A . . .	Speech in plays	Dead	13	13	9	1,500
8A . . .	Orchestral and Band music.	1.1 secs.	51	33	16	27,000
8B . . .	Debates and discussions	0.45 secs.	16	13	10	2,100

THE CONTROL ROOM

A well-lit 'L'-shaped room on the eighth floor, the Control Room is divided functionally into two halves. Eight control desks are provided for *rehearsals*, together with their accompanying supervisory positions. The *transmission* section is equipped with six control desks, also with supervisory and simultaneous broadcasting positions. Along the length of the transmission section of the room are placed racks of amplifiers, each group of amplifiers fulfilling a definite function in the chain of transmission between the studios and the transmitters.

The principles underlying the design of the Control Room have been: firstly, the provision of adequate stand-by equipment, with means of bringing it into circuit without delay should any of the equipment in use develop a fault during a transmission: secondly, switching by 'relays' has been exploited to enable the complete chain of transmission between any studio and any outgoing telephone to be set up in the least possible time. The room is well equipped with signalling devices to show the approximate positions of any faults which may develop.

The Control Room contains much subsidiary equipment, such as wireless check receivers, land-line testing equipment, amplifiers for distributing the outgoing programmes back to the Listening Rooms, or to various offices in the building, interval signal equipment, Greenwich Time Signal apparatus, etc. All the switching on and off of the actual microphones in the studios, with their accompanying signal lamps, amplifiers, and polarising circuits, is carried out from the Control Room. In this way one man seated at a control position is able to control all the studios in the building. The power supply is by means of batteries which are in duplicate throughout.

SUBSIDIARY EQUIPMENT

Accommodation has been found at Broadcasting House for the installation of apparatus which has only come into general use since the building was designed. For example, control cubicles have been provided on the seventh floor where musicians can control outgoing



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The Site from the air, showing All Souls' Church,
and Queen's Hall beyond.

programmes, and hear them on loudspeakers, without it being necessary for them to sit at a control position in the main Control Room. Recently, the B.B.C. has made use of the Blattner-Stille system of steel-tape recording of programmes. Accommodation for the recording machines (and for the storage of the steel-tape records) has been found on the same floor, the apparatus being connected with the Control Room so that any outgoing programme can be recorded or played back on to a transmission or into any studio in which the performers are rehearsing. There are also a number of quality-checking rooms, which have received special acoustic treatment, quite apart from those next to the studios. In these rooms engineers can sit and listen by wireless to any outgoing programme as an independent check, in addition to those responsible for handling it at the studio, Control Room, or transmitters. Quality-checking is mainly carried out on loudspeakers, as the majority of listeners use them.

There are also two Listening Halls designed for the use of Press critics or others who may wish to hear any particular transmission under satisfactory conditions of reception. These, like the other rooms designed for high-quality reproduction, are acoustically treated.

Mention should also be made of the two Dramatic Control Rooms which take their place in the chain of transmission between the studios and the main Control Room. Their function is to enable dramatic producers to use any number of studios up to eleven simultaneously on one transmission, and to mix their outputs in synchronisation and strength as may be required. In this way stage management is facilitated in the studios and a completely mixed programme is passed into the Control Room for distribution to the various transmitters. It would be quite impossible to undertake some of the elaborate dramatic productions broadcast in recent years if the 'effects', incidental music, supers, and principals, had all to be accommodated in one studio.

ELECTRIC POWER SUPPLY

Broadcasting House is supplied by the St. Marylebone Borough Council's Electricity Department by means of six separate feeders (3 phase), three of which are at high tension 6,600 volts, the other

three at 240 volts between each phase and neutral. As the supply is fed on these six separate feeders, there is little likelihood of any failure, but were one to occur there would be an immediate cessation of transmission, mainly because the studios would be plunged into darkness. For this reason an emergency lighting system has been supplied to all the studios and dependent accommodation. This secondary lighting supply is from a storage battery in the basement. Should the public supply fail, the emergency lighting, which is permanently switched on in addition to the regular lighting, will provide sufficient illumination for the continuation of the performance. If the breakdown is of long duration, a 100 k.w. Diesel-driven generator, installed in the Sub-Basement, will be capable of providing indefinitely all the absolutely essential electric power which the building requires.

VENTILATION

One of the main features of Broadcasting House is its elaborate system of ventilation. The studio 'Tower', being entirely surrounded by the offices and built so that it excludes all external noise, has to be provided throughout with artificial lighting and ventilation. In order that artists may work under the most favourable conditions, the air provided to the studios and their suites is 'conditioned' before being circulated through them.

The raw air is drawn in through intake panels high above Langham Street by suction fans that serve the plants in the Sub-Basement. There the air is drawn into the plants and passes through water sprays which wash out all particles of dust and soot. If people are to feel quite comfortable in a room supplied entirely by artificial ventilation, it is necessary that both the temperature and the humidity of the air should be of the correct value. If the air is too dry, there will be a feeling of general discomfort. For this reason the humidity and the temperature of the air supplied to the studios is automatically maintained at a comfortable level whatever the outside atmospheric conditions may be. When the temperature in one of the studios or their subsidiary rooms tends to rise because more people have come into it, a thermostat

operates an automatic device, and a greater quantity of cooler air is introduced. The ventilation of the studios has been so designed that there should not be more than a variation of $1\frac{1}{2}$ degrees in any studio, irrespective of the number of people occupying it. The vitiated air is extracted from the studios by fans on the roof of the building. A refrigerator of sufficient capacity to freeze 200 tons of water per day has been installed in the Sub-Basement for the provision of sufficient cooling for the air-conditioning plants in hot weather.

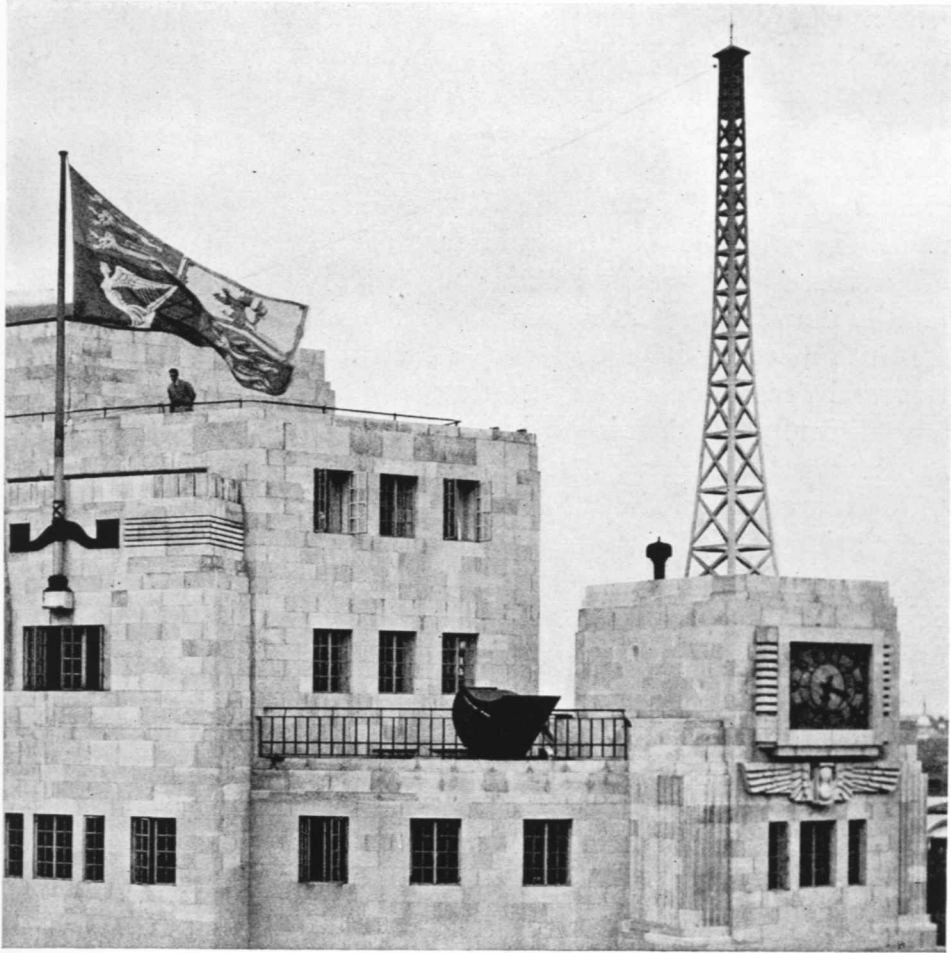
Another precaution taken in the ventilation equipment is possibly peculiar only to a building designed for broadcasting. The air is fed from the various plants in the Sub-Basement to the studios, listening rooms, artists' waiting-rooms, green room, etc., in the 'Tower', by means of several thousand yards of metal ducting, in which materials for absorbing sound have been placed in such a way as to prevent sound travelling along it. In addition, the studios are grouped onto four *separate* studio air-conditioning plants as another means of eliminating sound-interference between the studios.

As the offices are open to fresh air, conditioned air is not provided to them. They are, however, heated in winter by means of hot-water radiators, the water for which, together with the hot water required for domestic purposes, is heated by calorifiers connected with the oil-fired steam-raising boilers in the Sub-Basement. These boilers supply the steam required for the heating of the heater-batteries in the ventilation plants and the ducts. There is oil storage sufficient for over one month's use.

CONCLUSION

The facilities provided by Broadcasting House should make it possible for programmes to be handled far more smoothly than in the past, with, it is hoped, an improvement in timing and presentation.

The rapid developments which have been made in recent years in the all-important question of acoustics, and the fact that studios have been built as studios and are not converted offices, should lead to a noticeable improvement in reproduction. In the past, for various



6

The Clock Tower and South-west Corner of the Building, showing the Royal Standard flying on the occasion of H.M. the King's visit on July 7th, 1932. Note on the balcony the loudspeaker used for broadcasting Big Ben at approximately its natural strength.

reasons which are outside the scope of this article, studios had to be made 'dead', i.e. with practically no reverberation. To-day a brilliant and natural effect can be obtained, comparable with the acoustics of the best outside halls from which broadcasts are relayed.

The additional accommodation will permit more elaborate programmes to be undertaken, and will provide more space for rehearsals, while the provision of the latest methods of switching will enable minor faults to be rectified during the run of a transmission far more rapidly than has ever been possible in the past.

British materials have been used almost exclusively in the construction and decoration of Broadcasting House. At first the B.B.C. met with difficulty in obtaining British substitutes for some foreign fabrics and materials which were required for decorating the studios. Eventually the efforts of the B.B.C. and the designers resulted in certain firms being persuaded to manufacture, at competitive prices, articles of the same quality as the foreign ones. The heavier materials—stone, bricks, timber, metalwork, fittings—were all of British manufacture, all the timber coming from within the Empire.

The design itself may truthfully be described as an English design, an example of modern English architecture, which, although it shows the influence of twentieth-century currents of thought, yet pays its respects to the great English tradition of urban building which still lingers in Portland Place. As Mr. Howard Robertson says: 'If good architectural design, as all true architects believe, is an aid to human efficiency, the future of British broadcasting is doubly bright.'

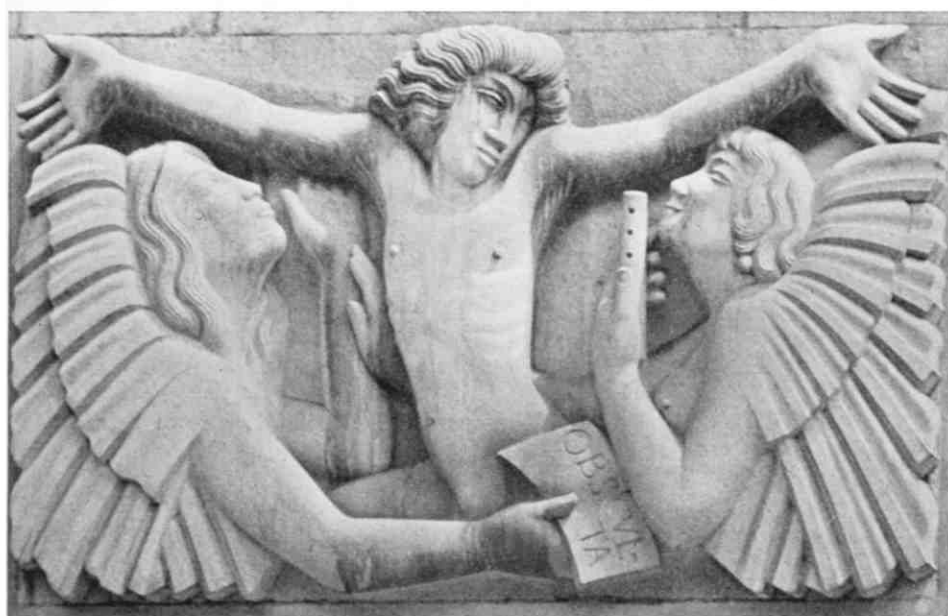


8 The South Front.



9

The West Front. The photograph is taken from the corner of Portland Place near the Langham Hotel. The architectural features of this façade are discussed on p. 12 in the introductory article.



10 and 11

Sculpture Groups on the West Front at the first floor level; above, Ariel hearing Celestial Music; below, Ariel between Wisdom and Gaiety. Both groups are by Eric Gill and are carved in Portland stone.

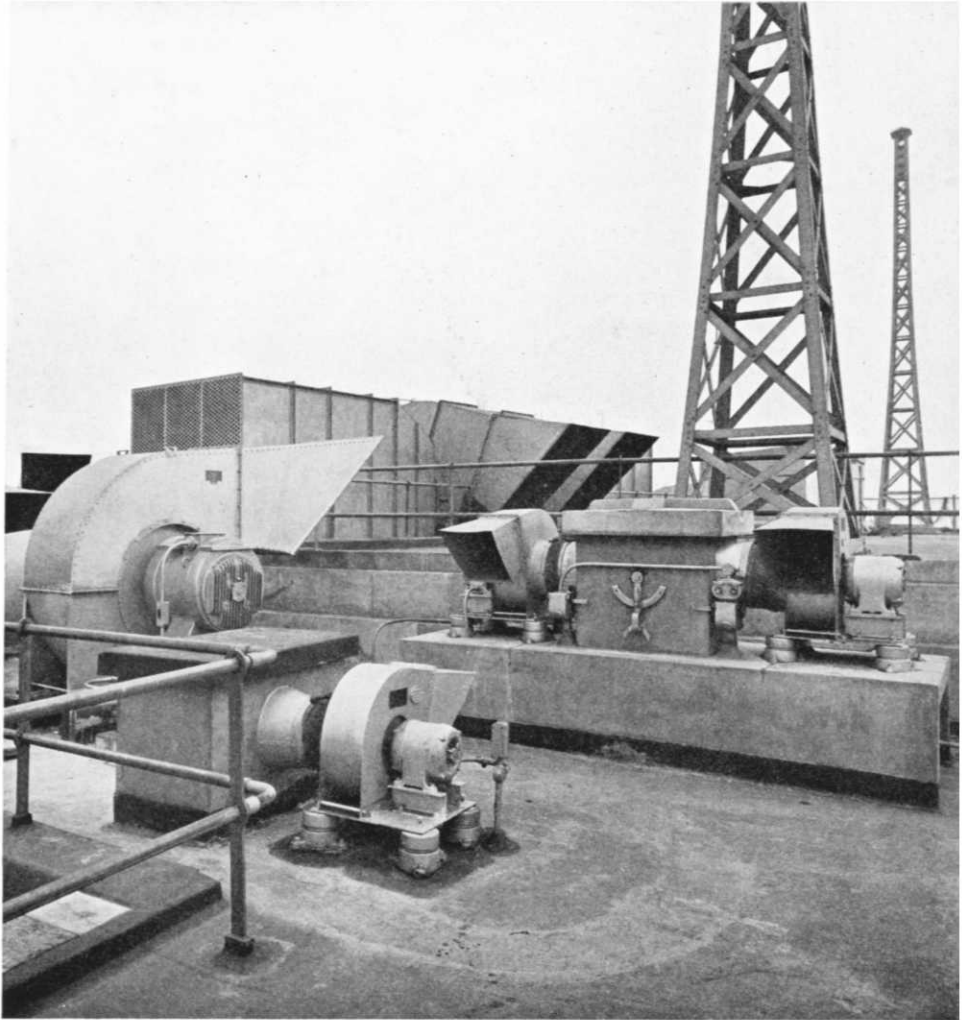


12

Sculpture Group on the East Front, at the first floor level, carved by Eric Gill in Portland stone. Ariel is represented piping to children.

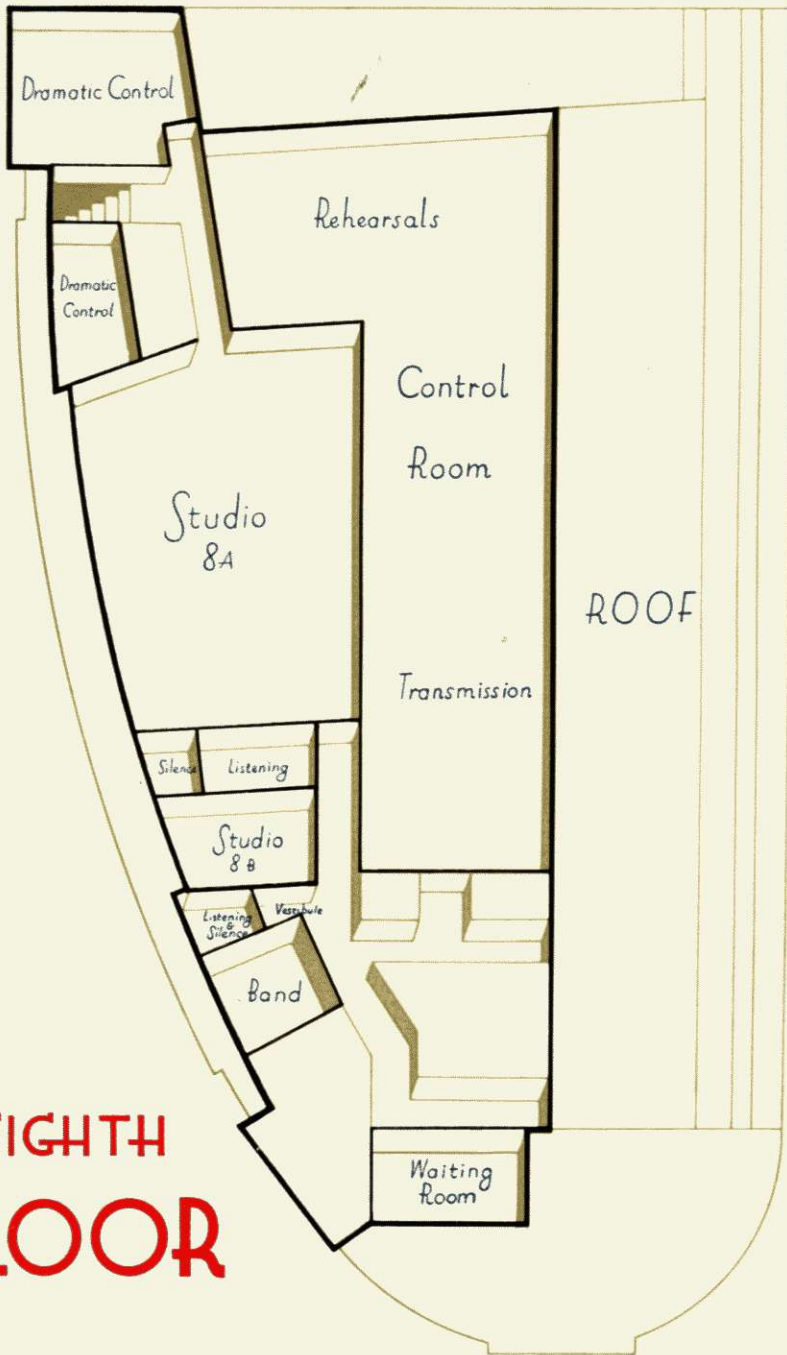


The East Front, facing Langham Street. Note the cutting back of the roof from the fourth floor upwards, made necessary by the existence of 'Ancient Lights'. Note also the intake panels at the third floor level, through which air is drawn in to supply some of the ventilating and air-conditioning plants.



14

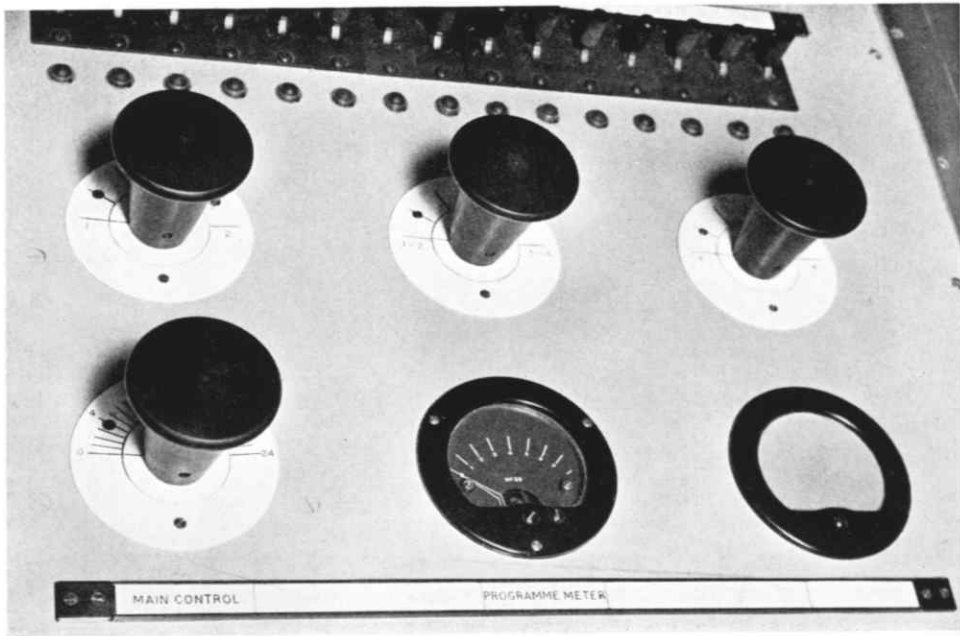
General View of the Roof, showing the fans by which the vitiated air from the building is extracted.



**EIGHTH
FLOOR**



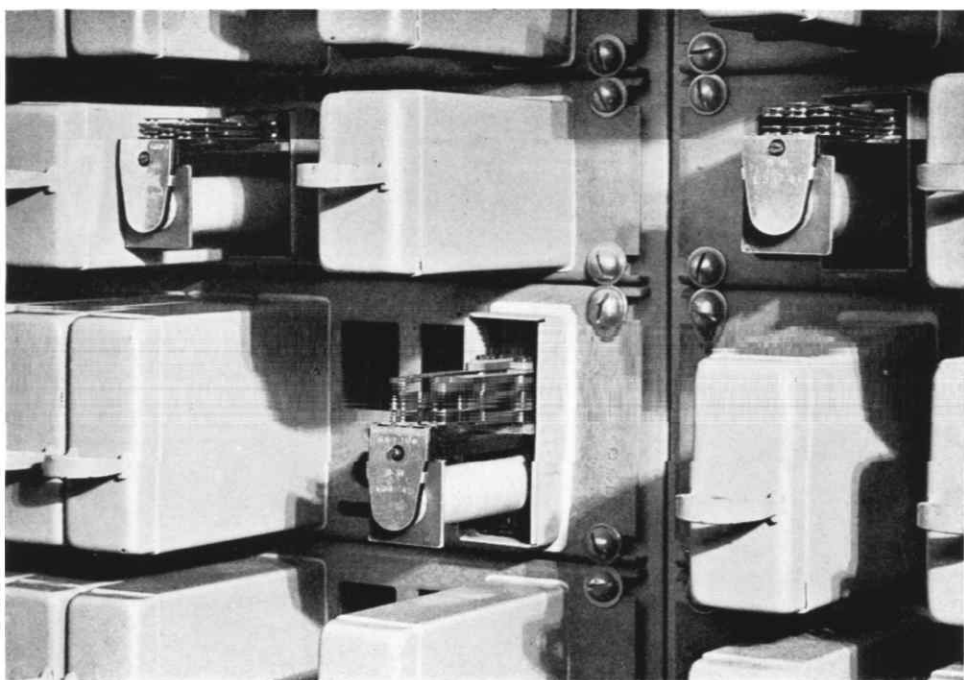
General view of the Control Room, of which the details are illustrated in the next few pages. The apparatus is finished in 'battleship' grey, with stainless fittings.



17

CONTROL ROOM

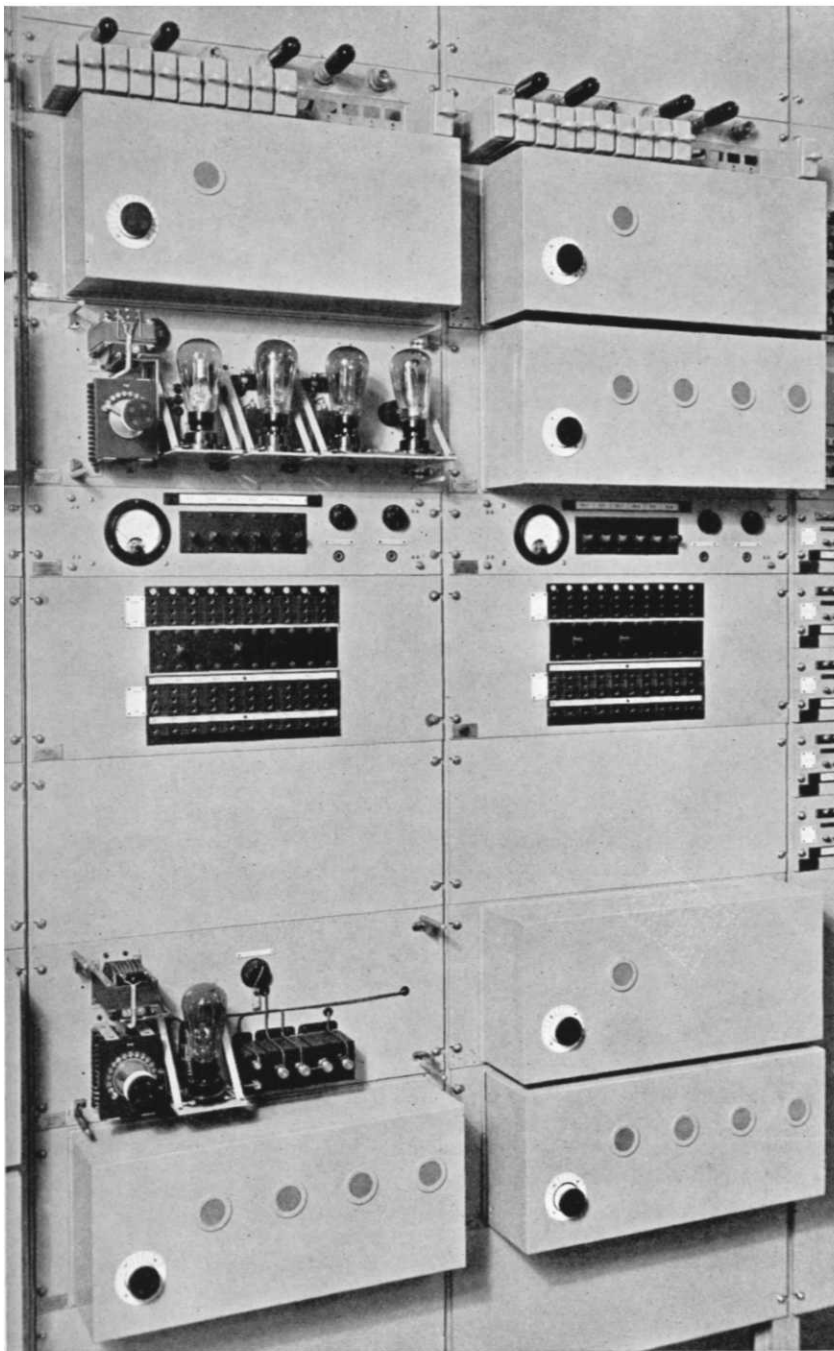
Detail of a Control Position, showing a 4-channel Fade Unit.



18

CONTROL ROOM

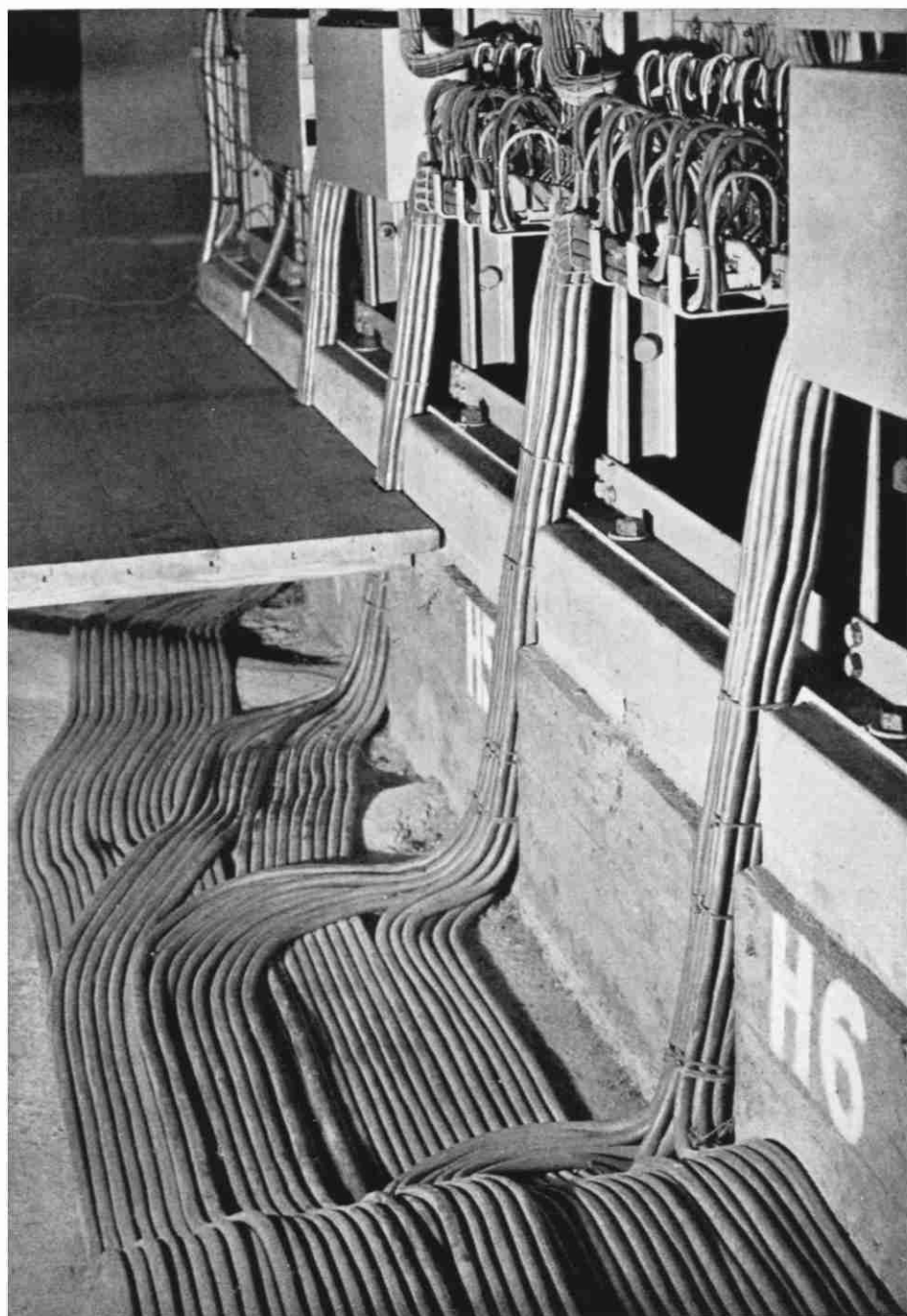
Part of the Relay Bays, showing three types of relay used in amplifier switching.



19

CONTROL ROOM

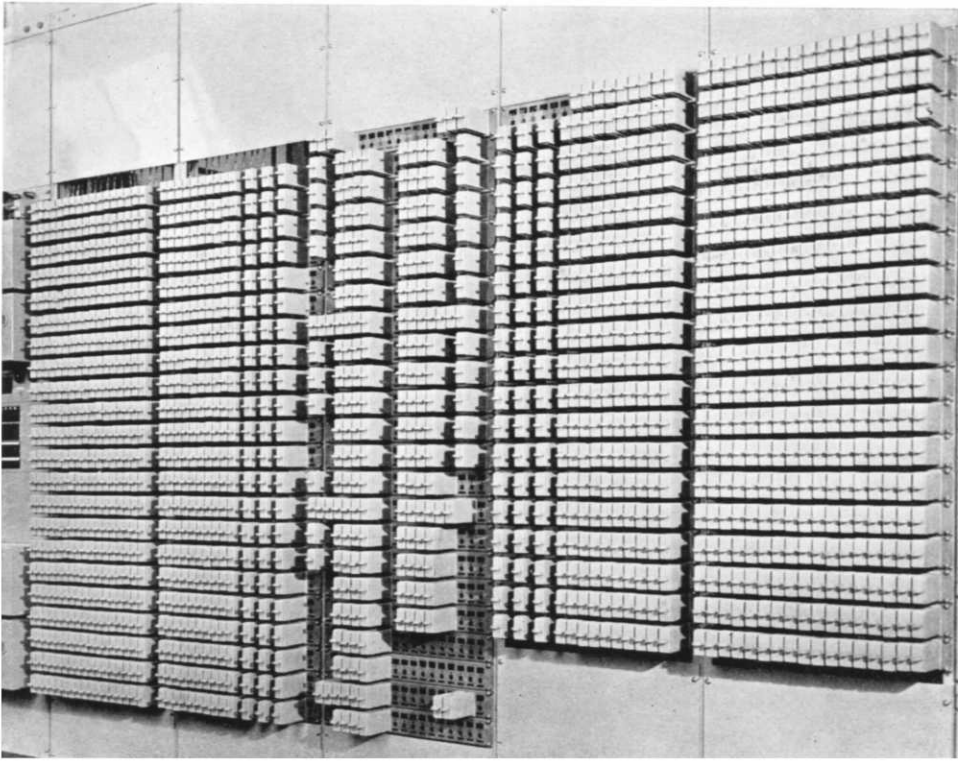
Two of the 'B' Amplifier Bays. The covers have been removed from a 'B' Amplifier near the top of the Bay, and from a Programme Meter Amplifier near the bottom of the Bay.



20

CONTROL ROOM

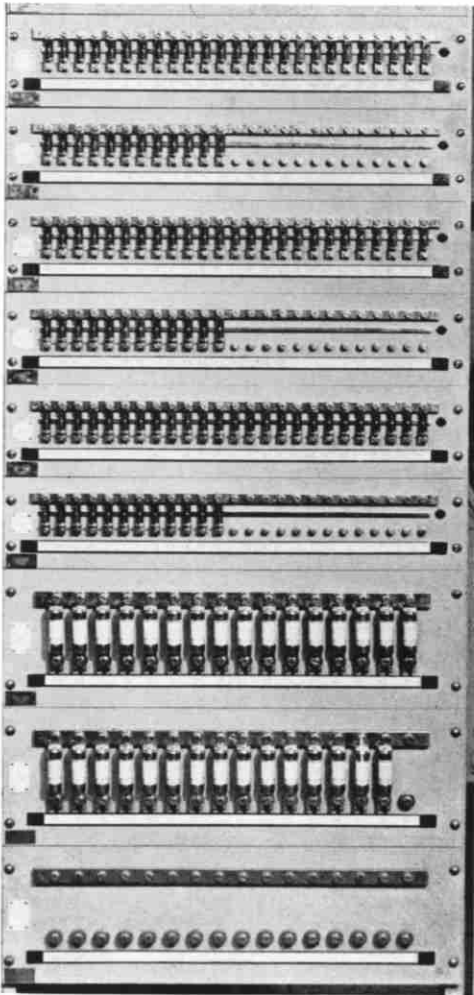
Cables in the false floor, ending on terminal strips at the bottom of the 'A' Amplifier Bays and connecting them with the studios.



21

CONTROL ROOM

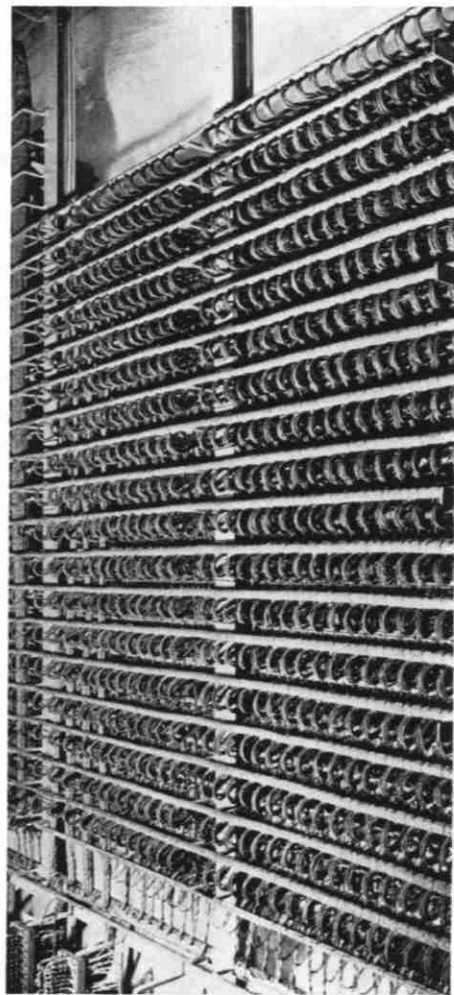
The 'B' Amplifier Input Switching Relays.



22

CONTROL ROOM

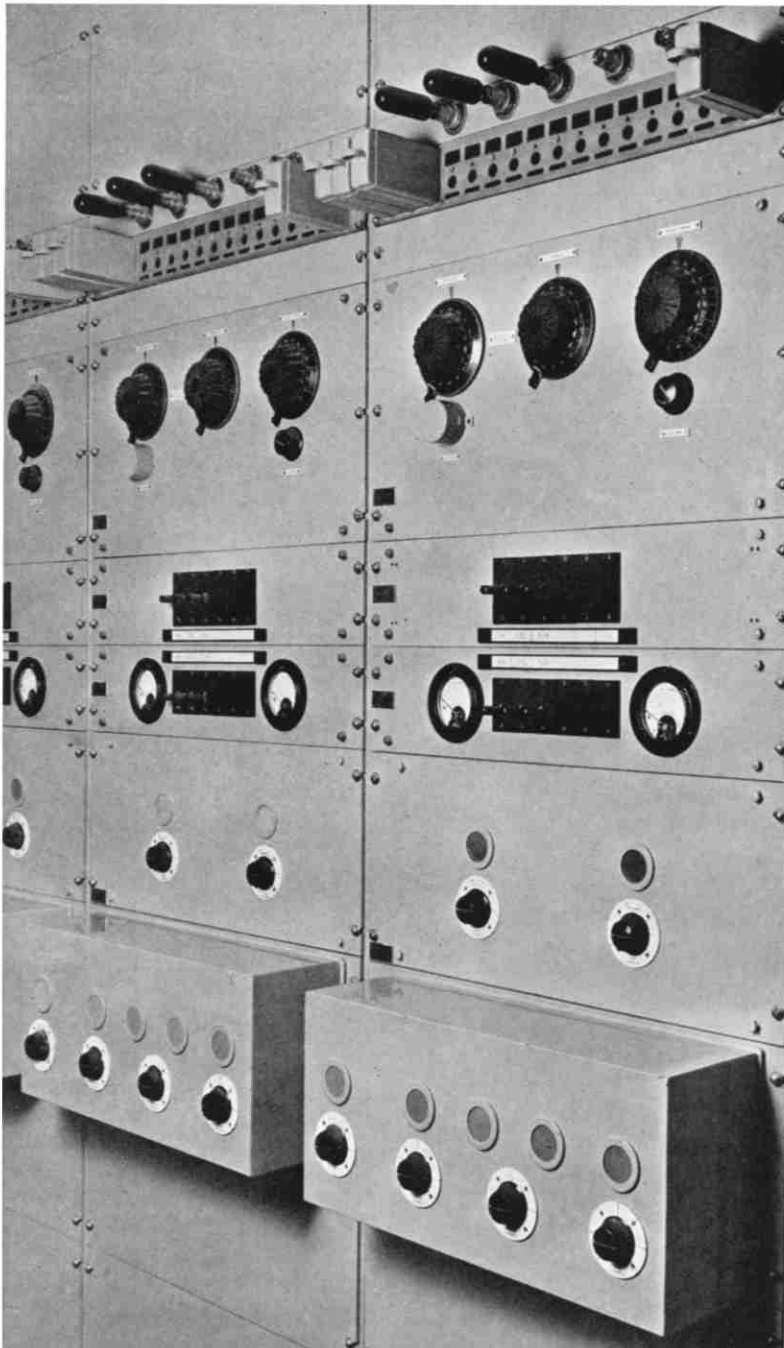
One of the Fuse Bays.



23

CONTROL ROOM

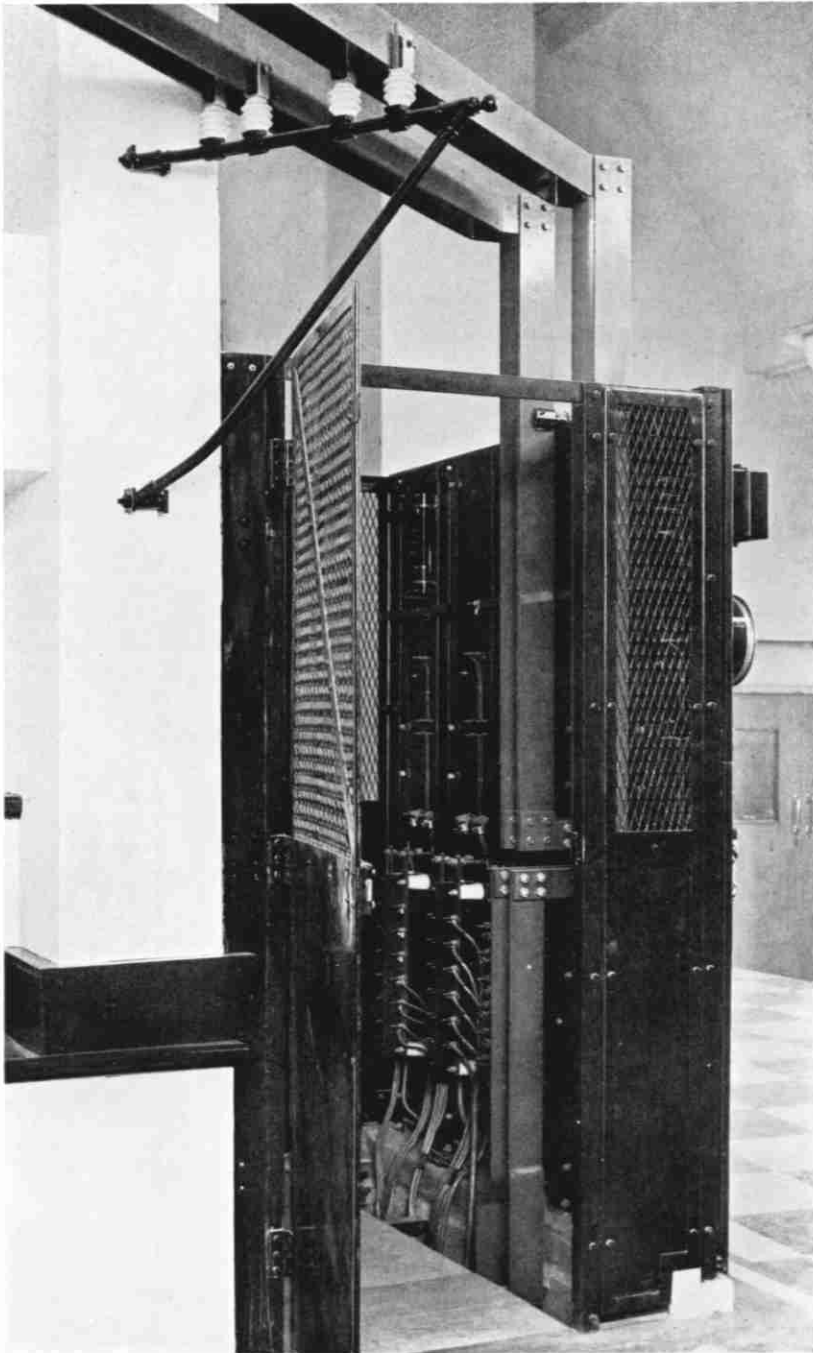
Reverse of the 'B' Amplifier
Input Switching Relays,
showing the wiring.



24

CONTROL ROOM

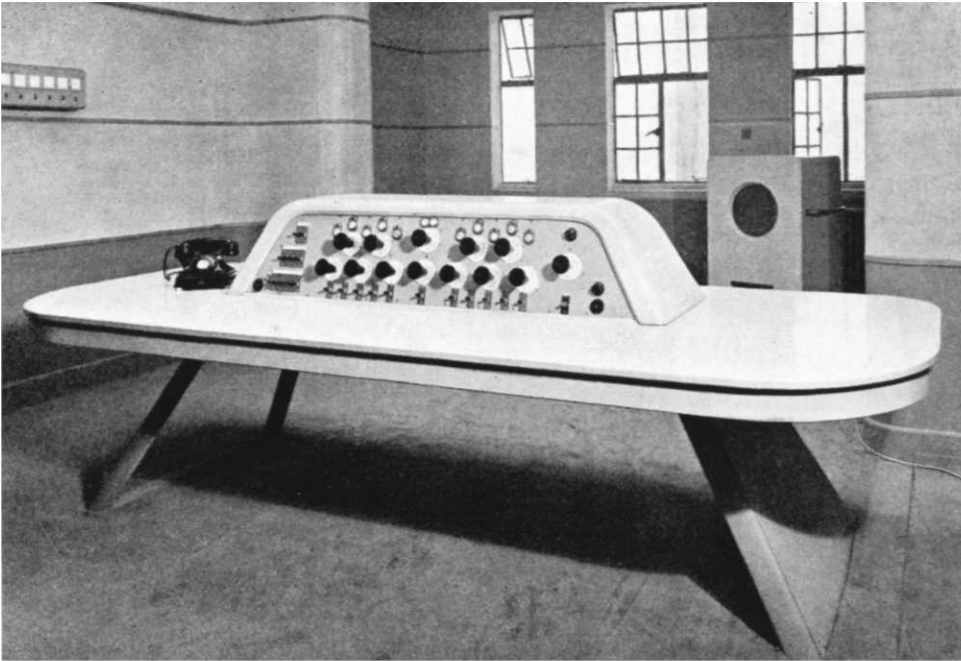
Two of the receivers used for checking the quality of transmissions.



25

CONTROL ROOM

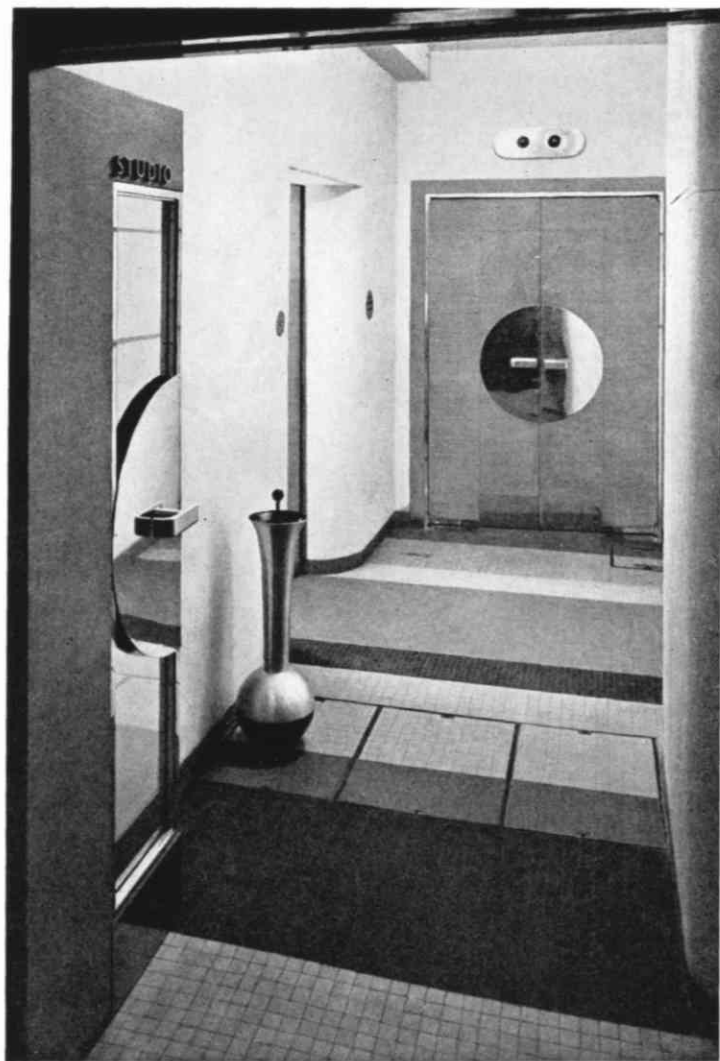
The back of the Discharge Power Board, showing the massive Low Tension Busbars supported on the insulators.



26

One of the Dramatic Control Panels, which enables the producer of a play to mix the output of as many as eleven studios at the same time; this makes it possible, for instance, for a mixture of sounds such as shouts of a crowd, the noise of guns firing, a background of military music, and speech by individuals, to be broadcast simultaneously without the inconvenience of all the performers being in one studio.

The Corridor leading to Studio 8A, showing the closed doors of the studio and the mosaic floor.

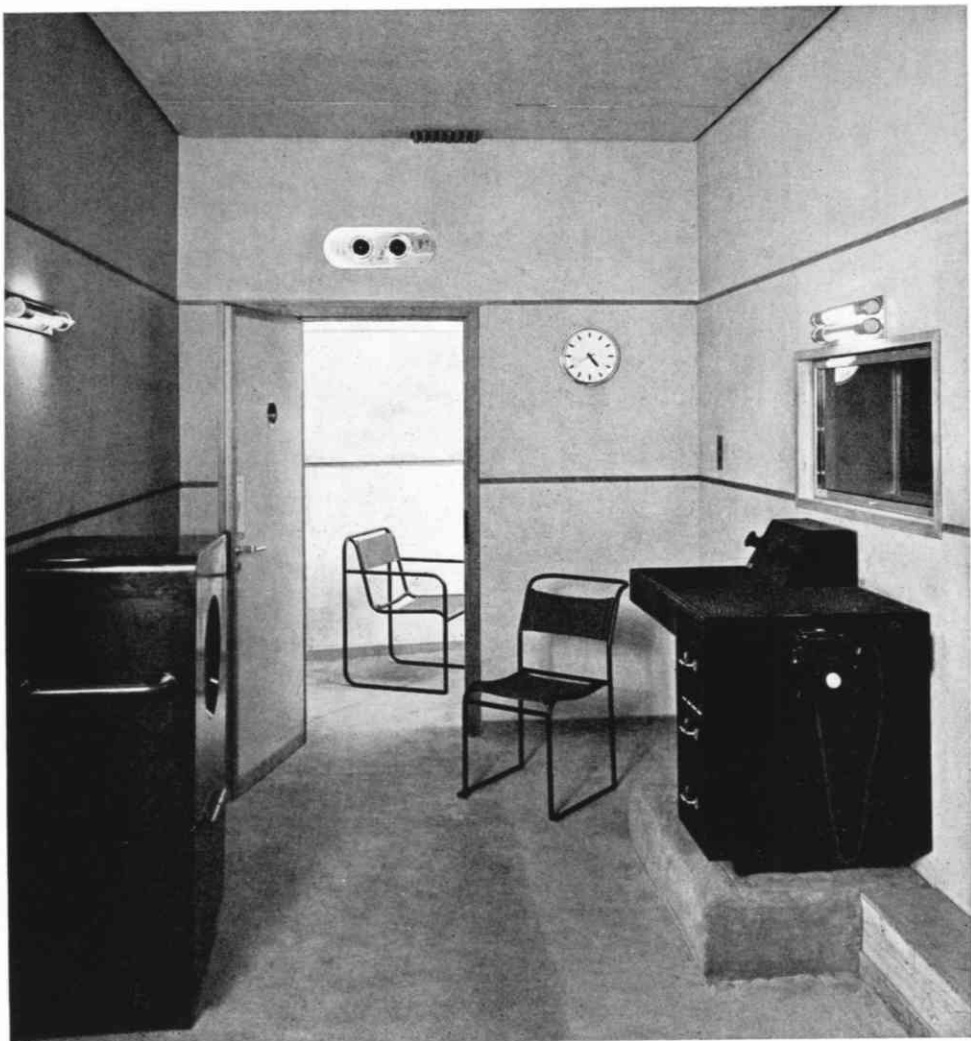




A glimpse of the interior of Studio 8A through the open doors.

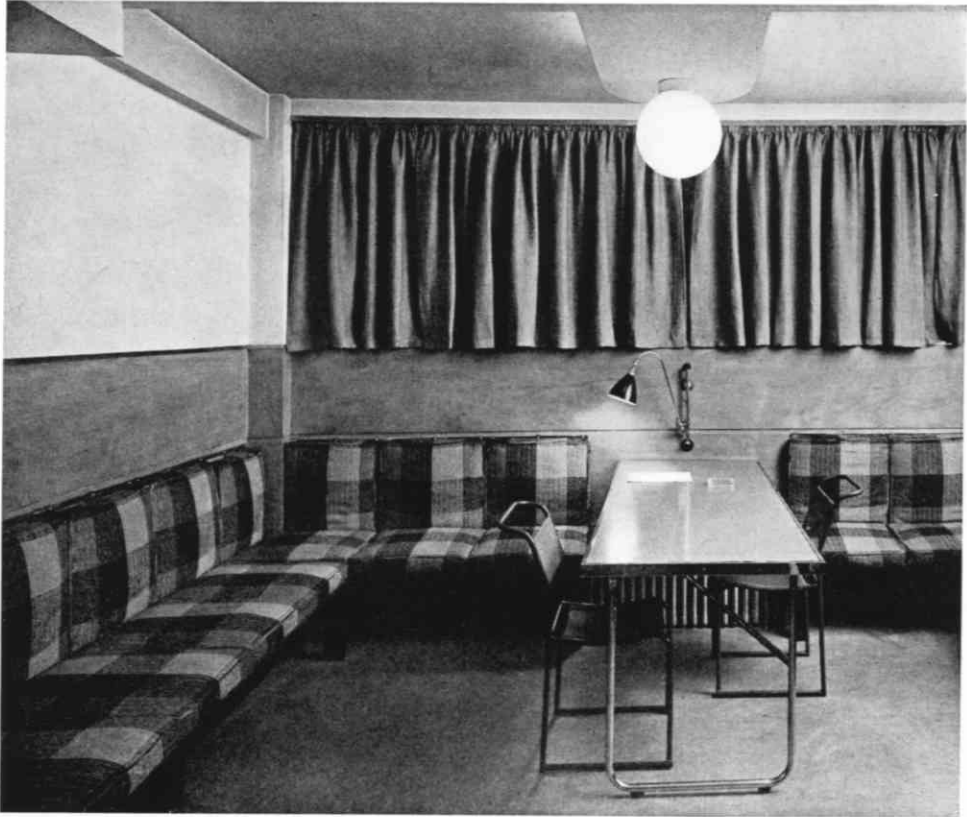


General view of Studio 8A, used for the Wireless Military Band and other bands and orchestras. Note the new type of adjustable microphone-stand in the foreground, and the nest of steel chairs against the right-hand wall.



Listening Room for Studio 8A: showing, through the door, the Silence Room, where announcements can be made during an interval in the studio.

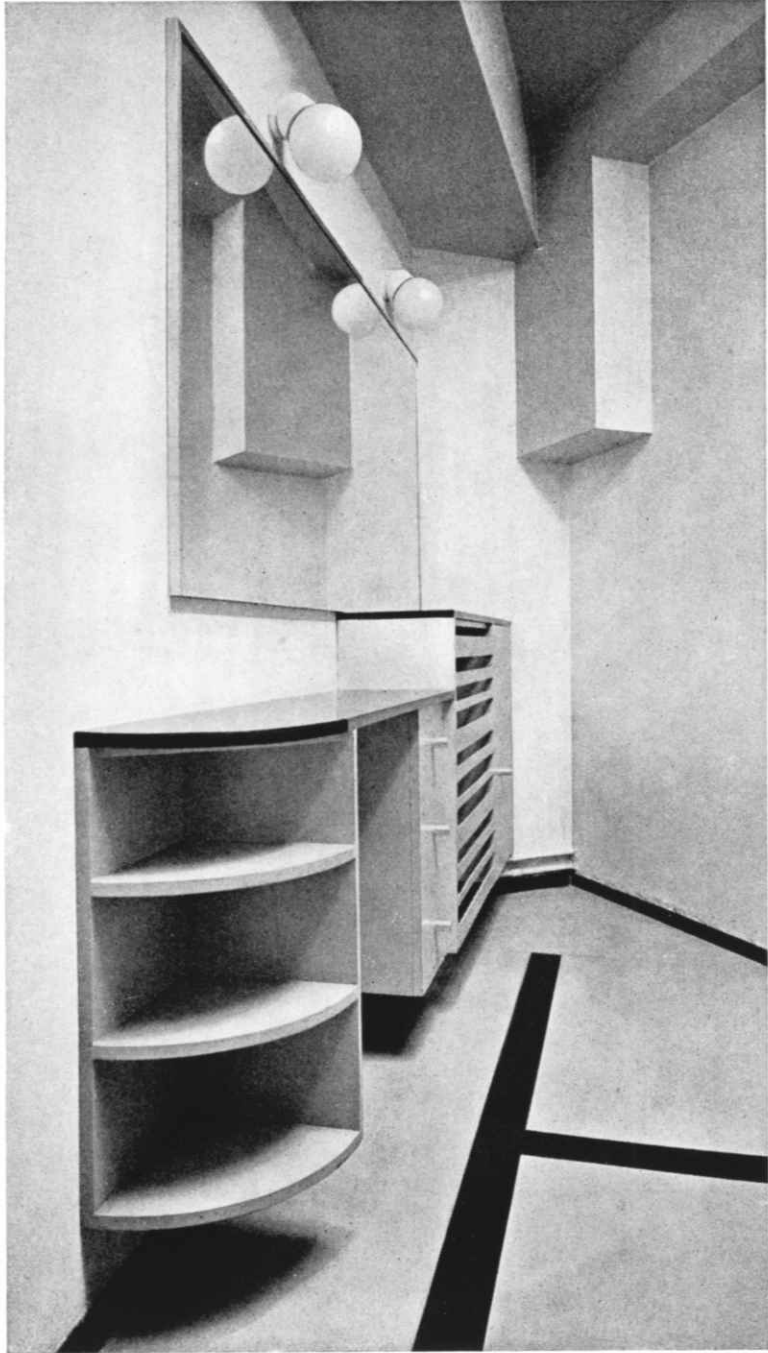


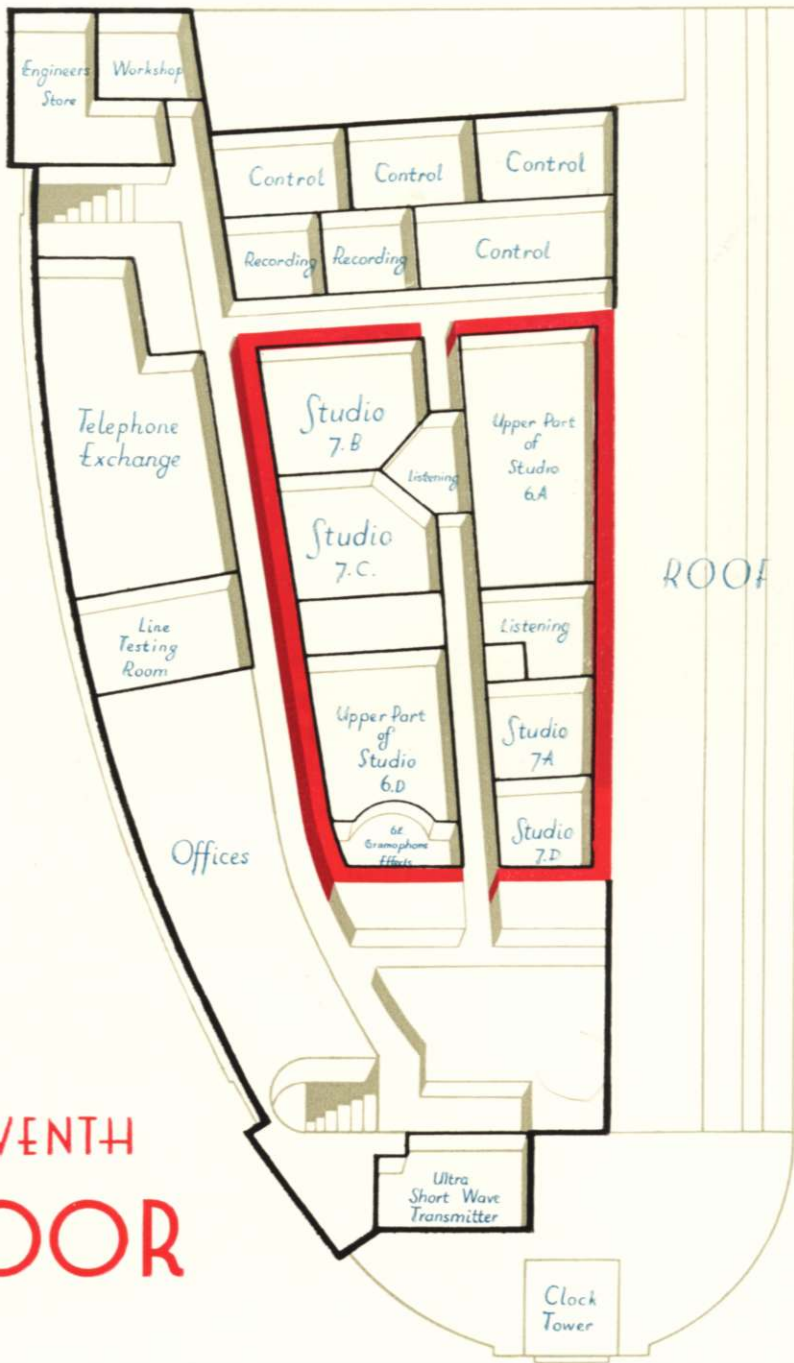




33

Studio 8B, used for Debates and Discussions.



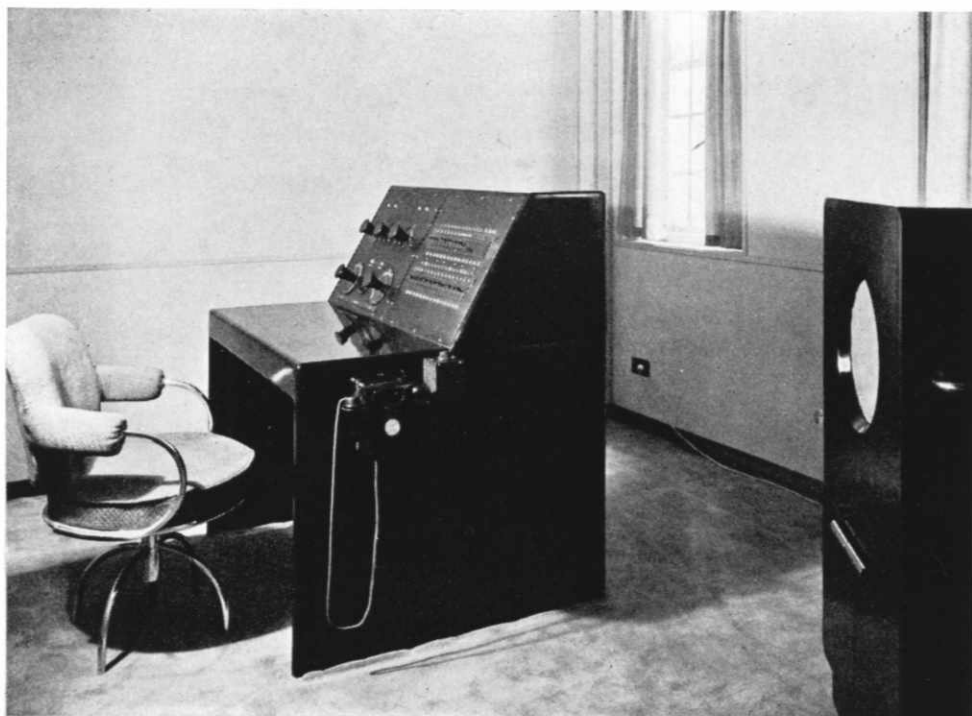


SEVENTH
FLOOR



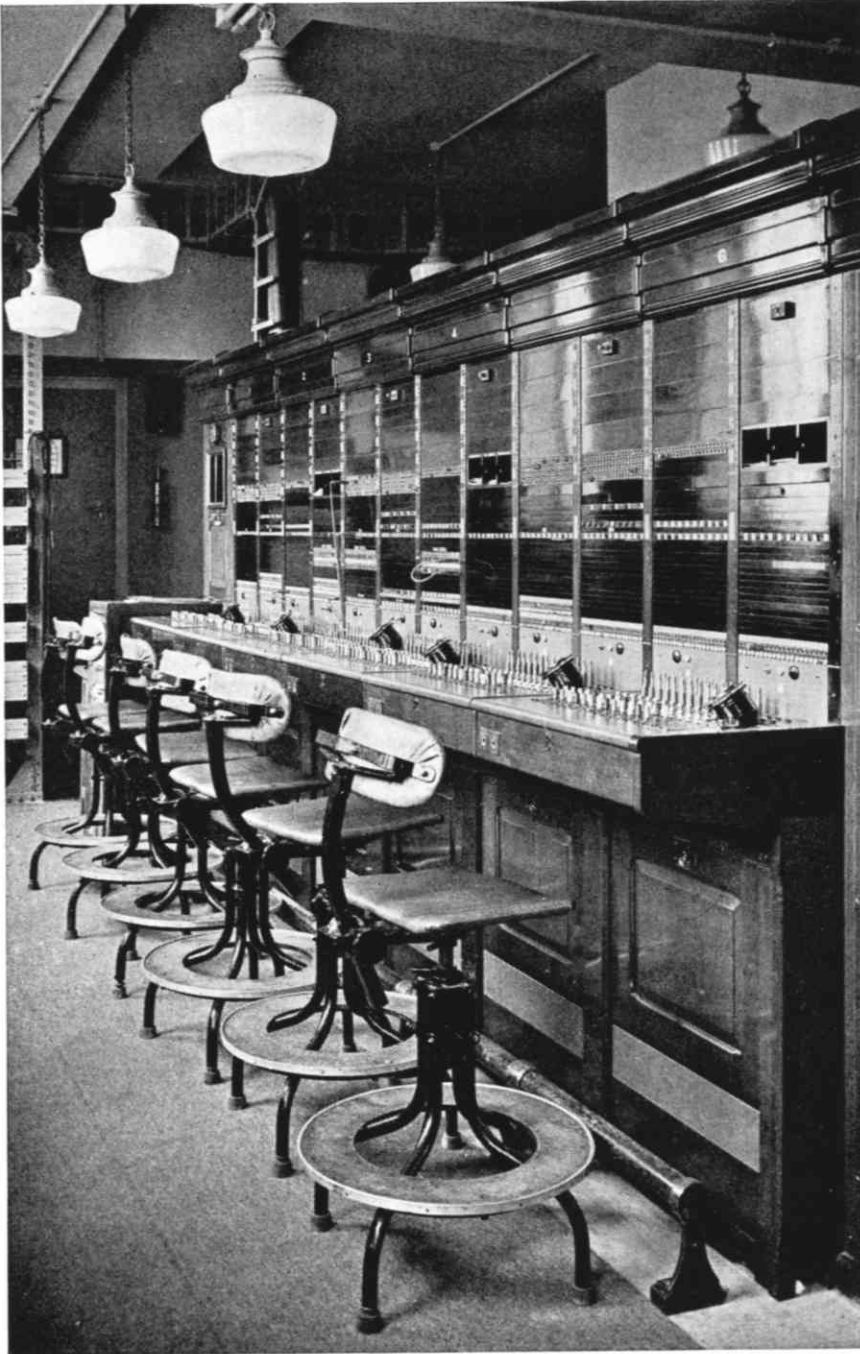
36

Studio 7B: one of the Productions Group of Studios.



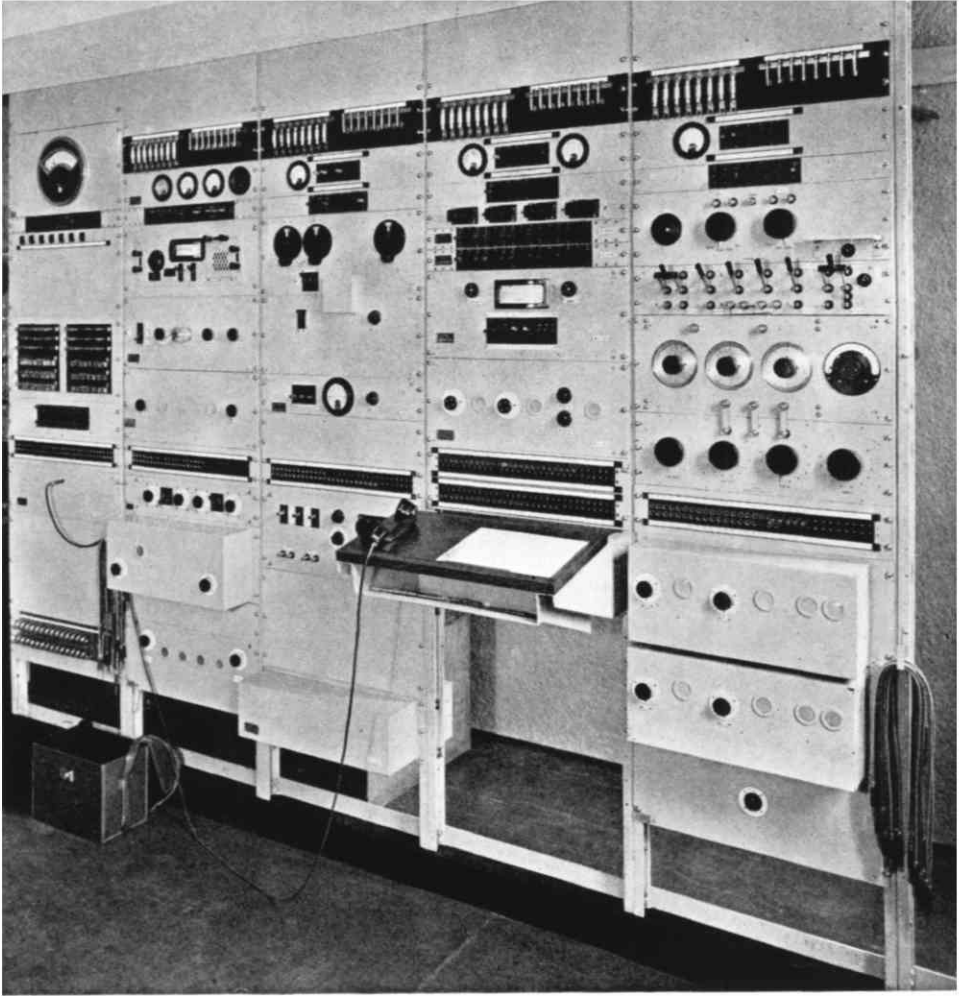
37

A Music Control Cubicle, showing the control desk and loudspeaker. Here a musician with the music score in front of him carries out the necessary controlling of the music, checking the quality by means of the loudspeaker shown at the right of the picture.



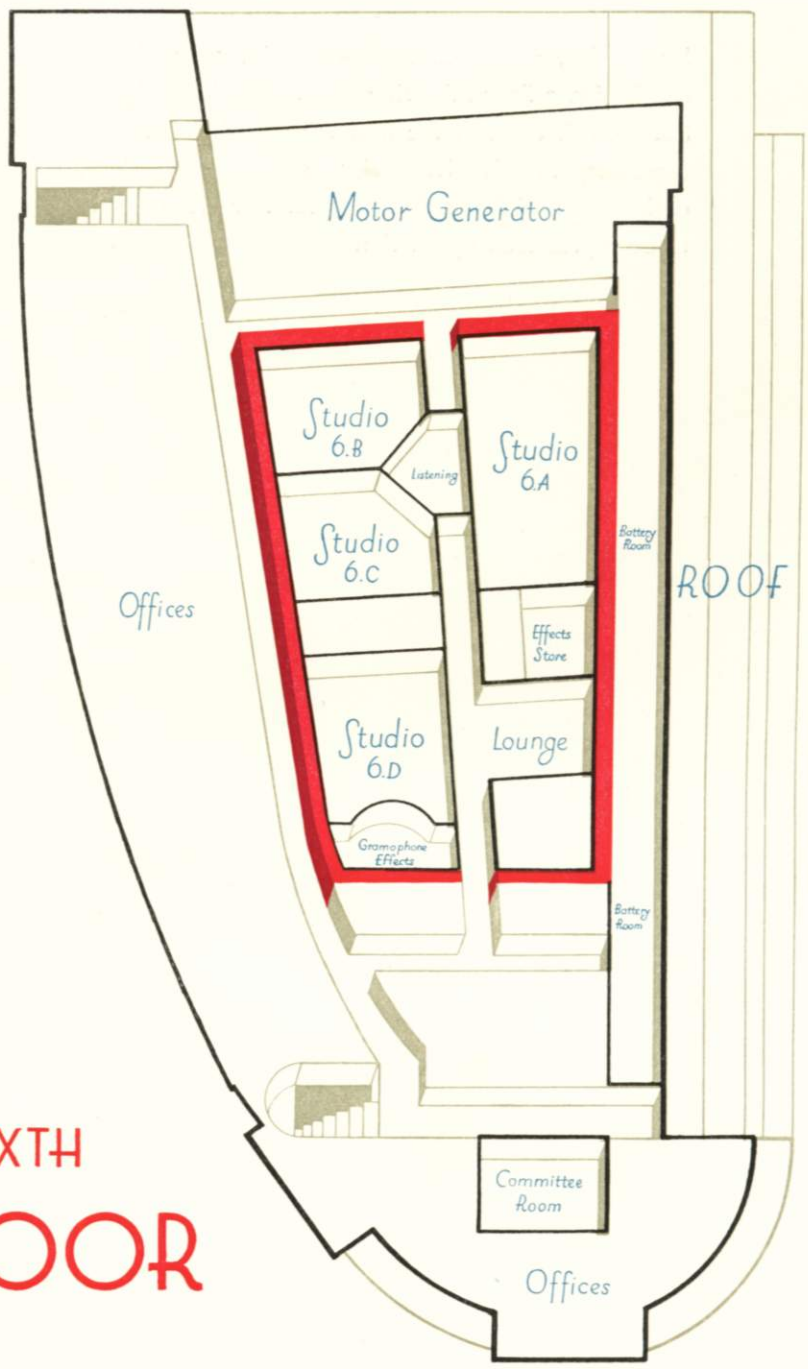
38

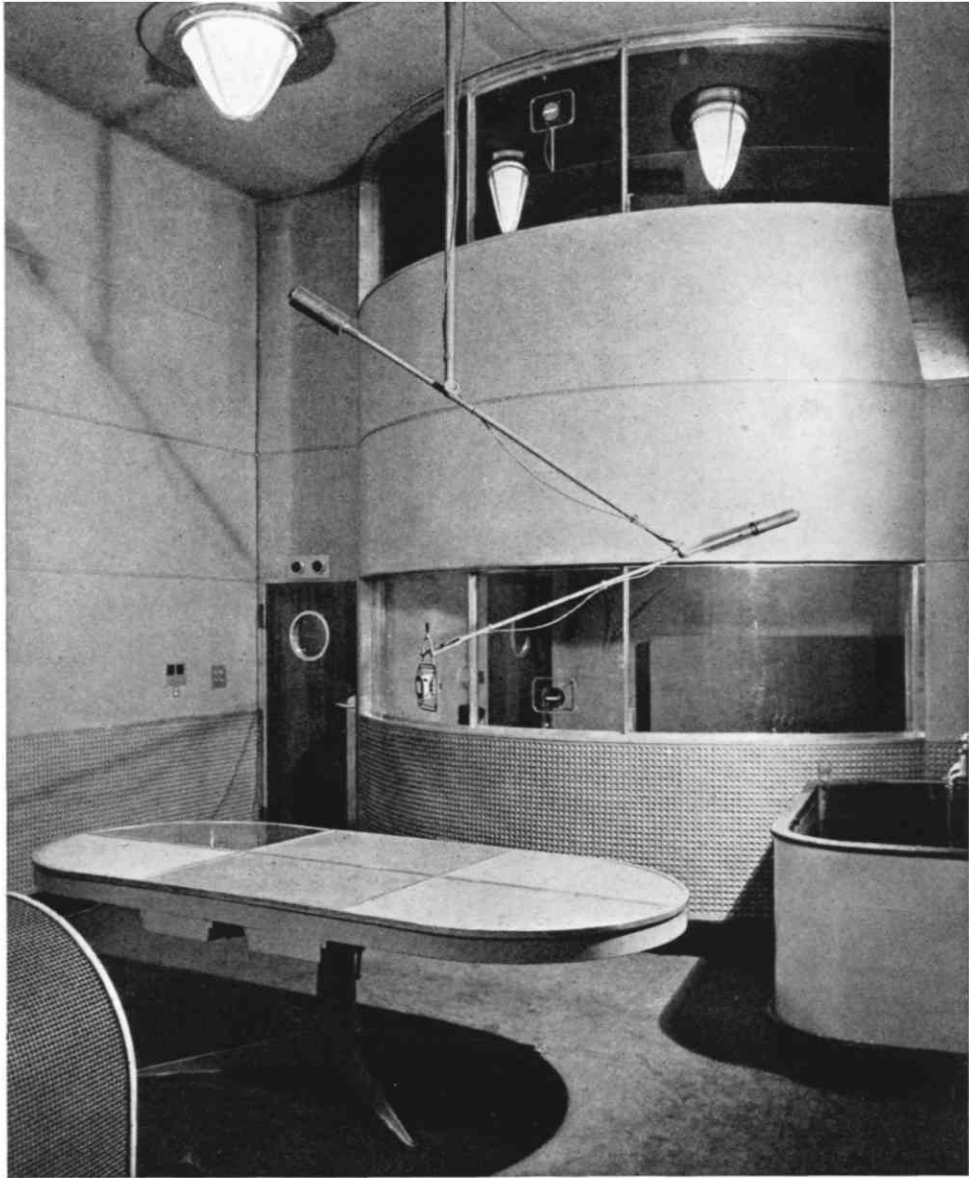
The Office Telephone Exchange.



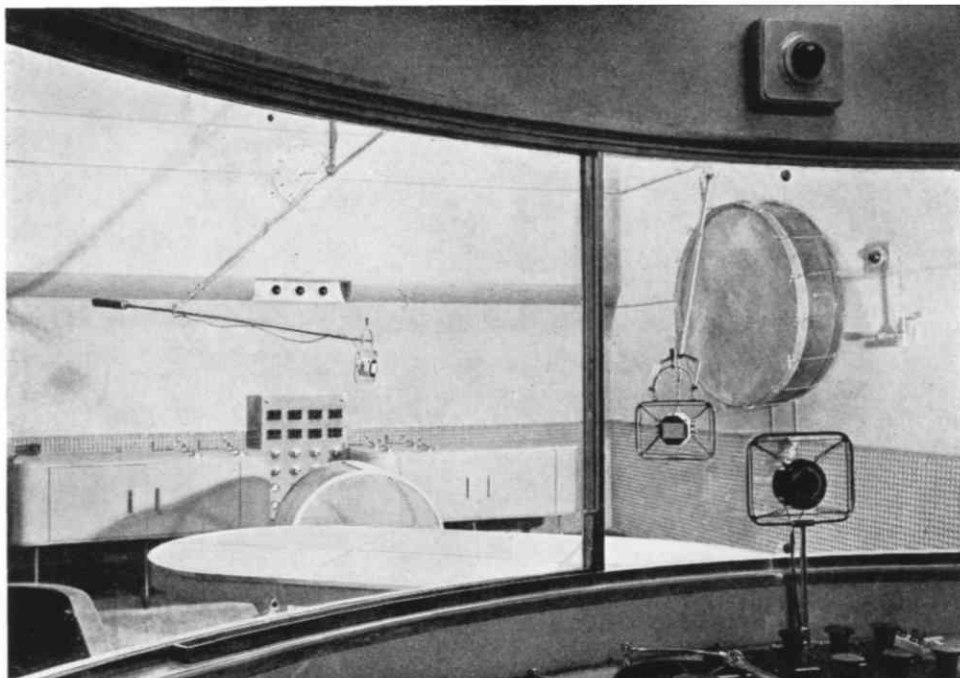
The Line-testing Room, where the many telephone lines used for broadcasting are tested for their 'frequency response' (electrical performance).

SIXTH
FLOOR





Studio 6D, the main Effects Studio, occupying a depth of two floors, showing the Gramophone Effects Studio, 6E, through the bow-window. The table in the foreground is divided into six surface sections, each with a different finish to enable various sounds to be reproduced by friction.



42

Another view of the Effects Studio, 6D, as seen through the window of the Gramophone Effects Studio, 6E.

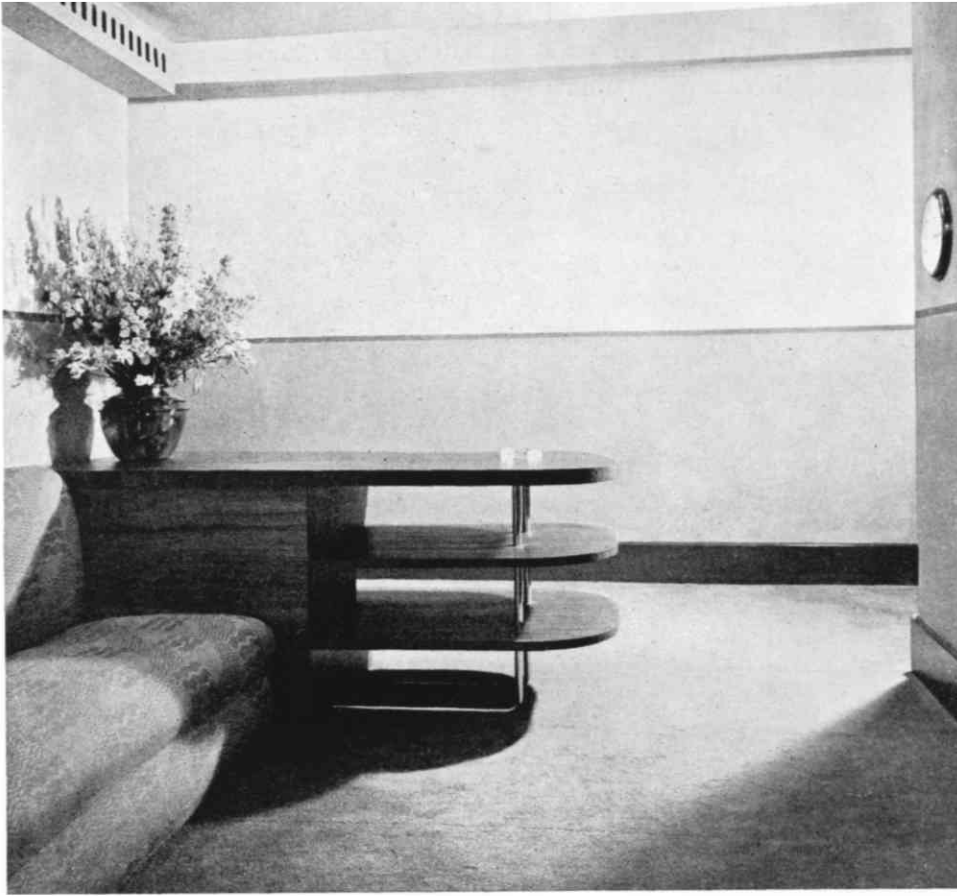


43

Studio 6E, Gramophone Effects. The outside of the studio is shown in the lower half of Plate 41. Studio 7E, another similar Gramophone Studio, is directly above it. The photograph is by Shaw Wildman.



Studio 6E, Gramophone Effects. The outside of the studio is shown in the lower half of Plate 41. Studio 7E, another similar Gramophone Studio, is directly above it. The photograph is by Shaw Wildman.



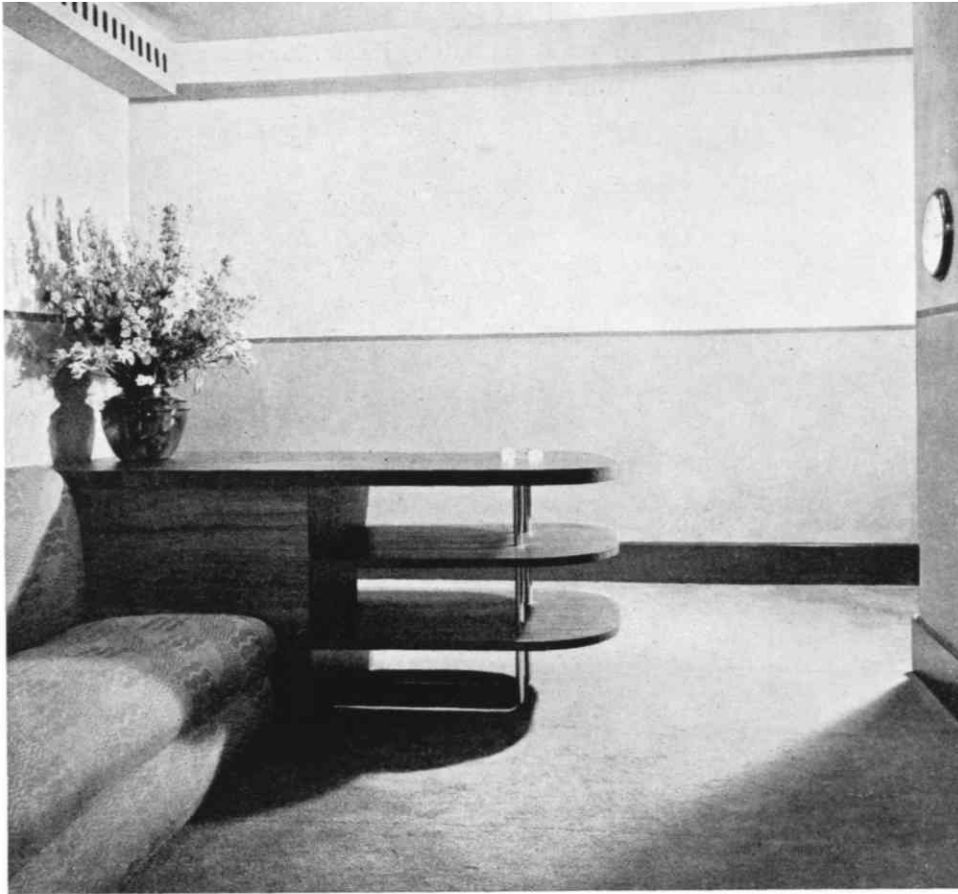
43

Studio 6E, Gramophone Effects. The outside of the studio is shown in the lower half of Plate 41. Studio 7E, another similar Gramophone Studio, is directly above it. The photograph is by Shaw Wildman.



44

A Corridor in the 'Tower' in the Productions Group of studios on the sixth floor, showing the entrance to a small alcove Lounge on the right.



45

The Lounge, the entrance to which is shown on the right of the previous picture.

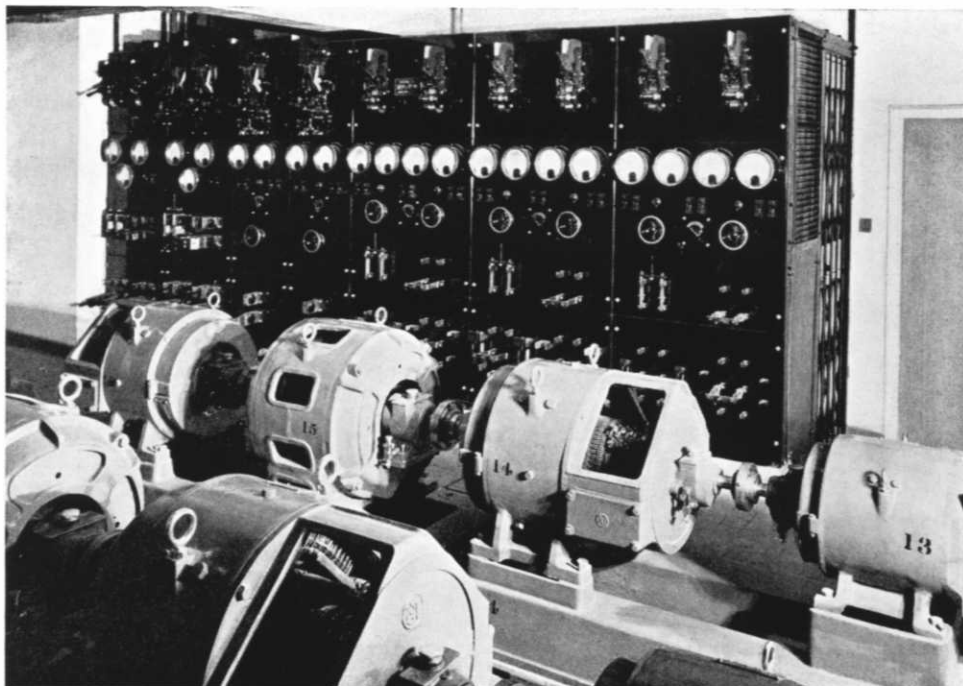


Part of the Control Room Battery Room. The battery in the foreground supplies current to operate the relay-switches and signal-lights in the Control Room.



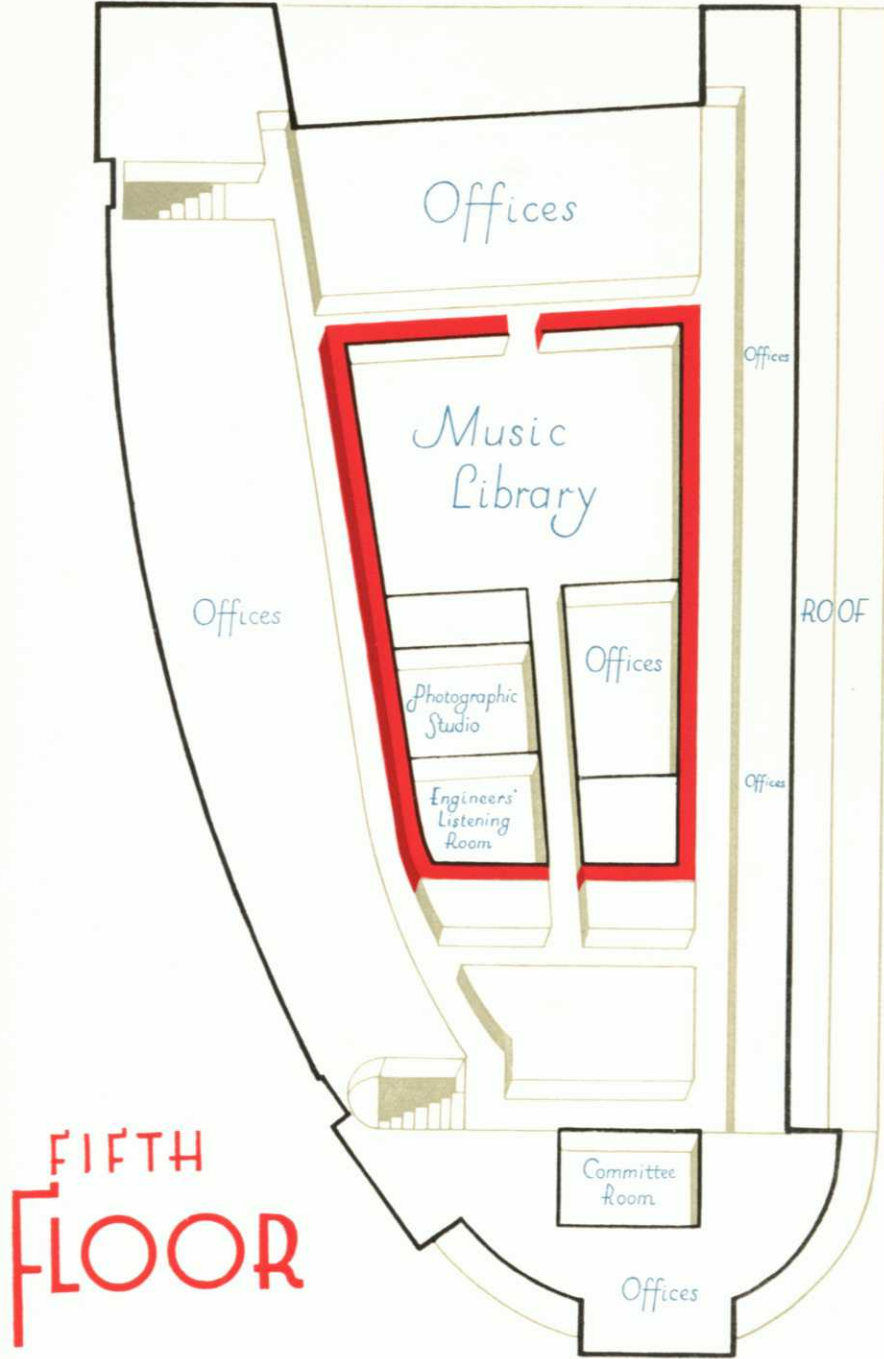
47

Storage Batteries for the high tension supply to the Amplifiers in the Control Room.



48

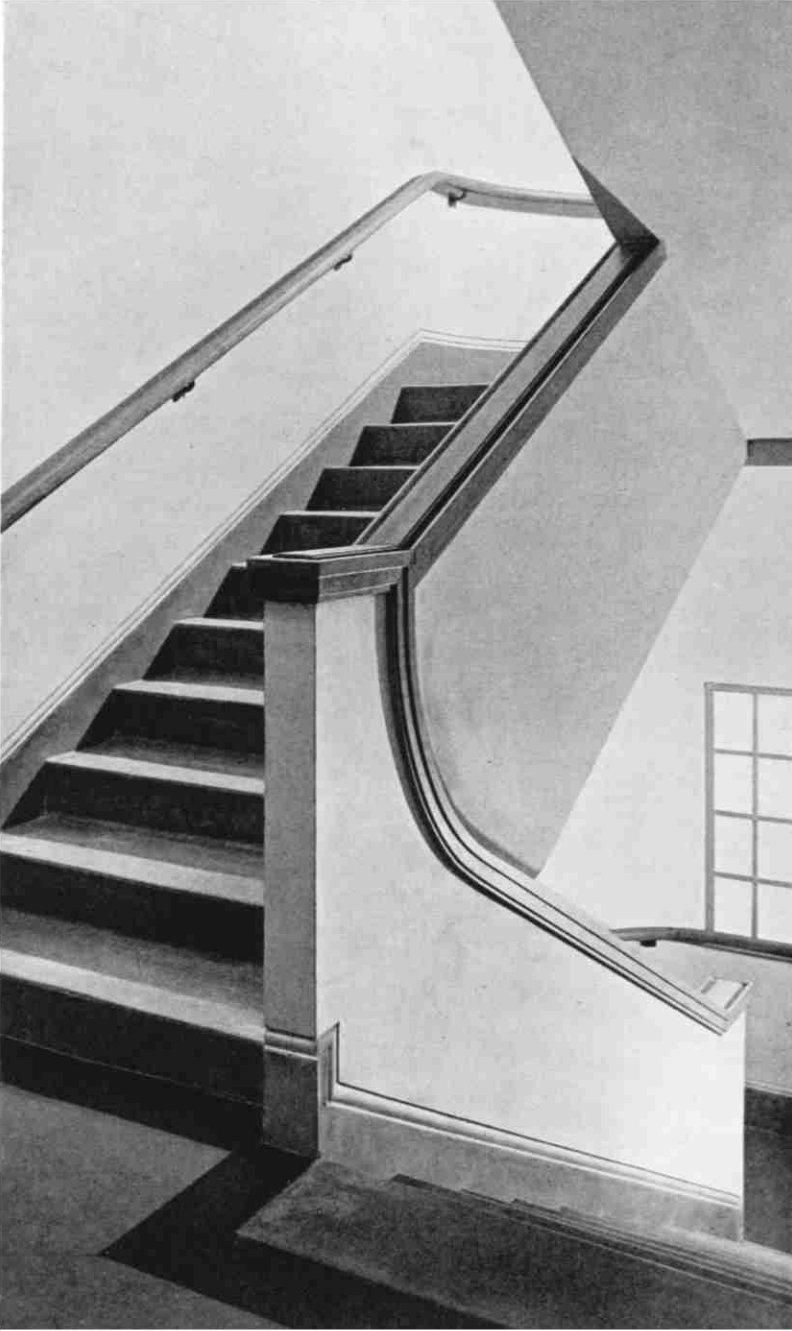
Motor-Generators and Switchgear: for charging the
Control Room Batteries.



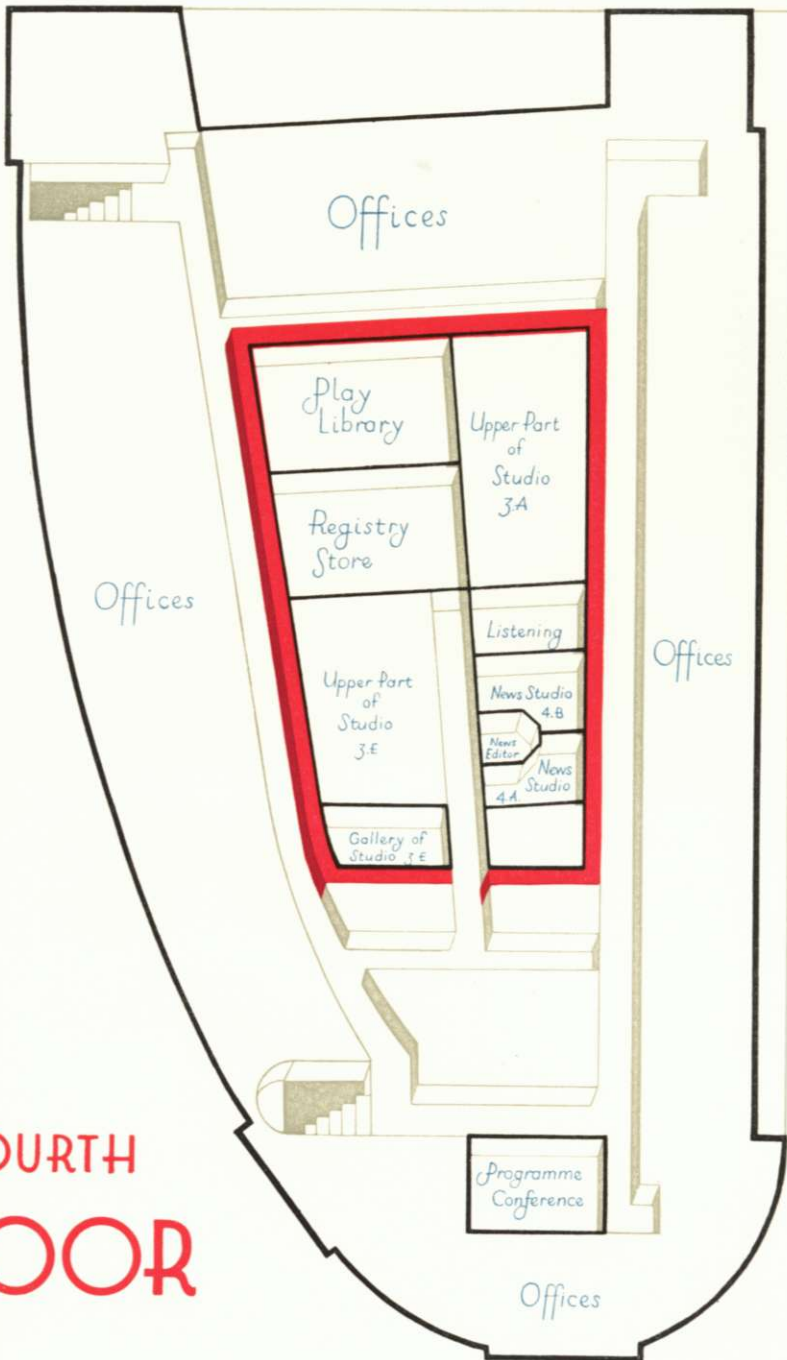
FIFTH
FLOOR



The Music Library, said to be the largest in the world. It contains music of every kind, from manuscript parts of Bach cantatas to the latest comic song. It has an orchestral library of 10,500 works, military band parts for 4,000 pieces, and 32,000 copies of vocal scores of every kind.



The Staircase within the 'Tower', giving access to the artists' lifts and the studio corridors.

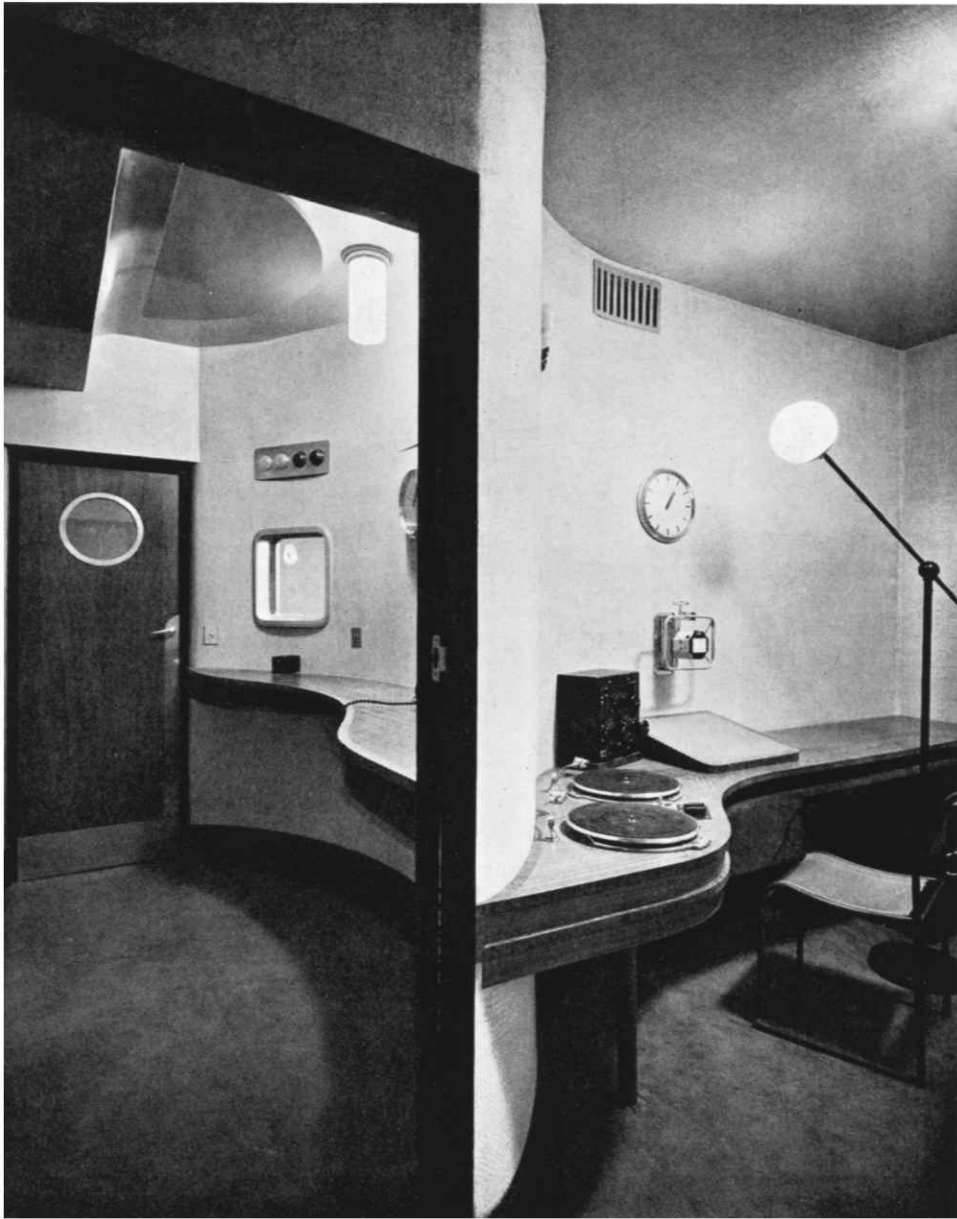


FOURTH
FLOOR



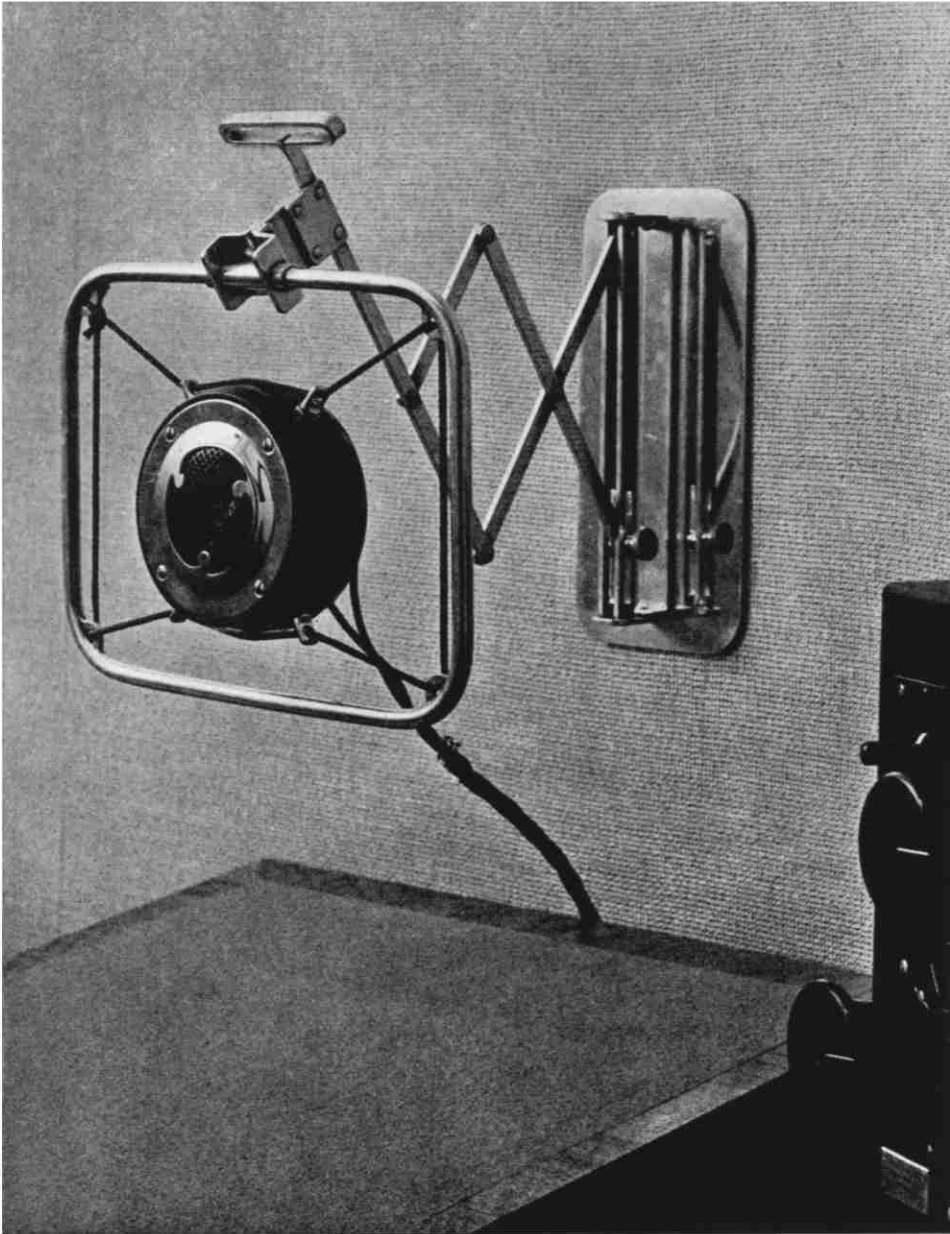
53

The Office of the Director of Programmes. Photograph
by Arthur Gill.



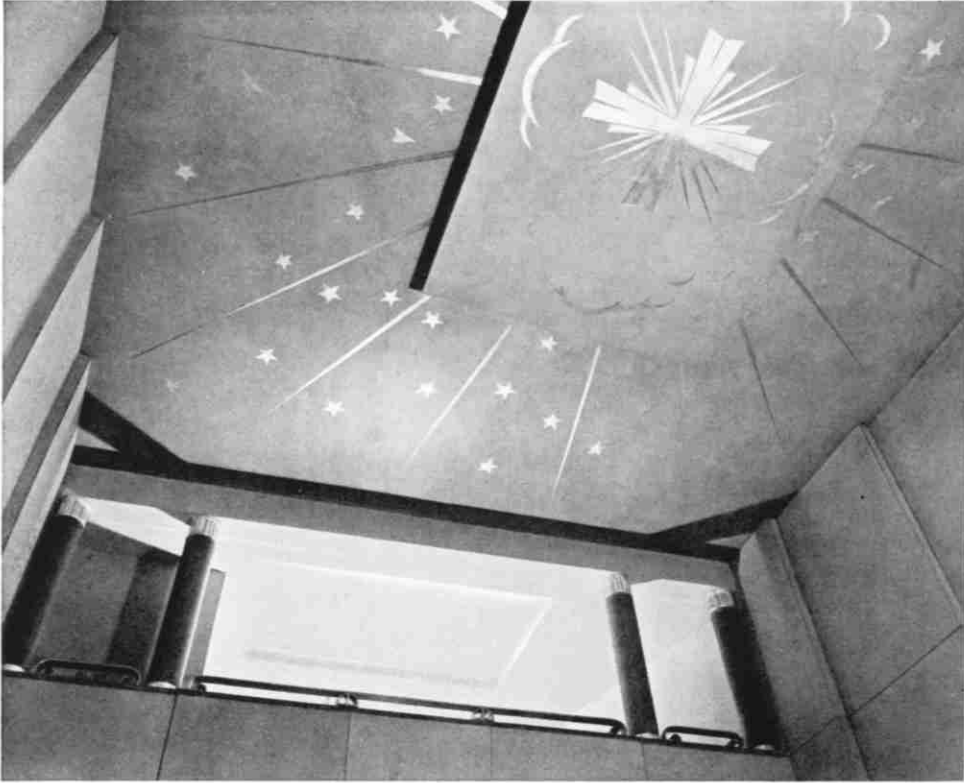
54

Studio 4B on the right, and on the left the News Editor's cubicle, where he is able to prepare late items of news before passing them through to the Announcer during the reading of the bulletin.



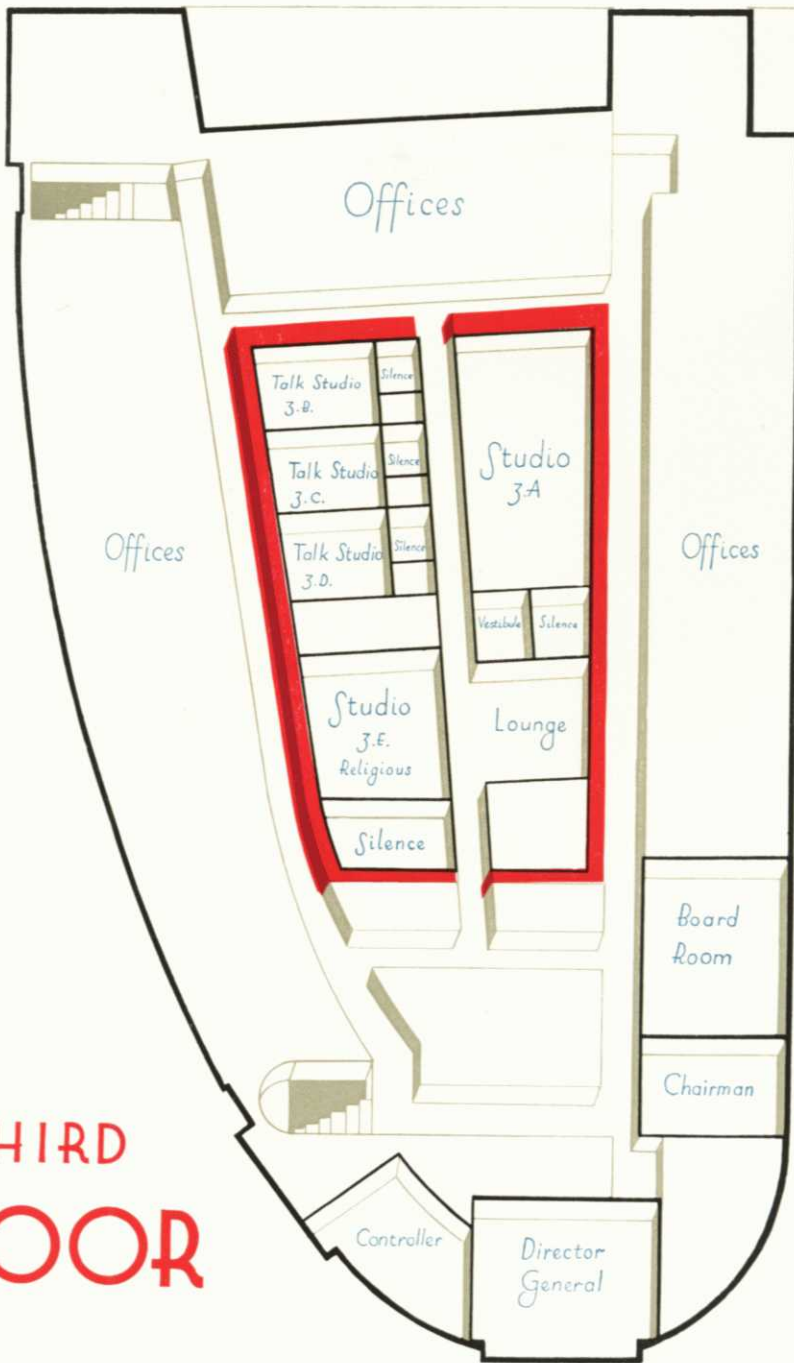
55

The Microphone in Studio 4A, showing its 'lazy-tongs' suspension.



The Gallery and Ceiling of the Religious Studio, 3E.
Plate 4 is a reproduction of a colour photograph of
the studio: see also Plates 58, 59, and 60. This
photograph is by Shaw Wildman.

THIRD FLOOR



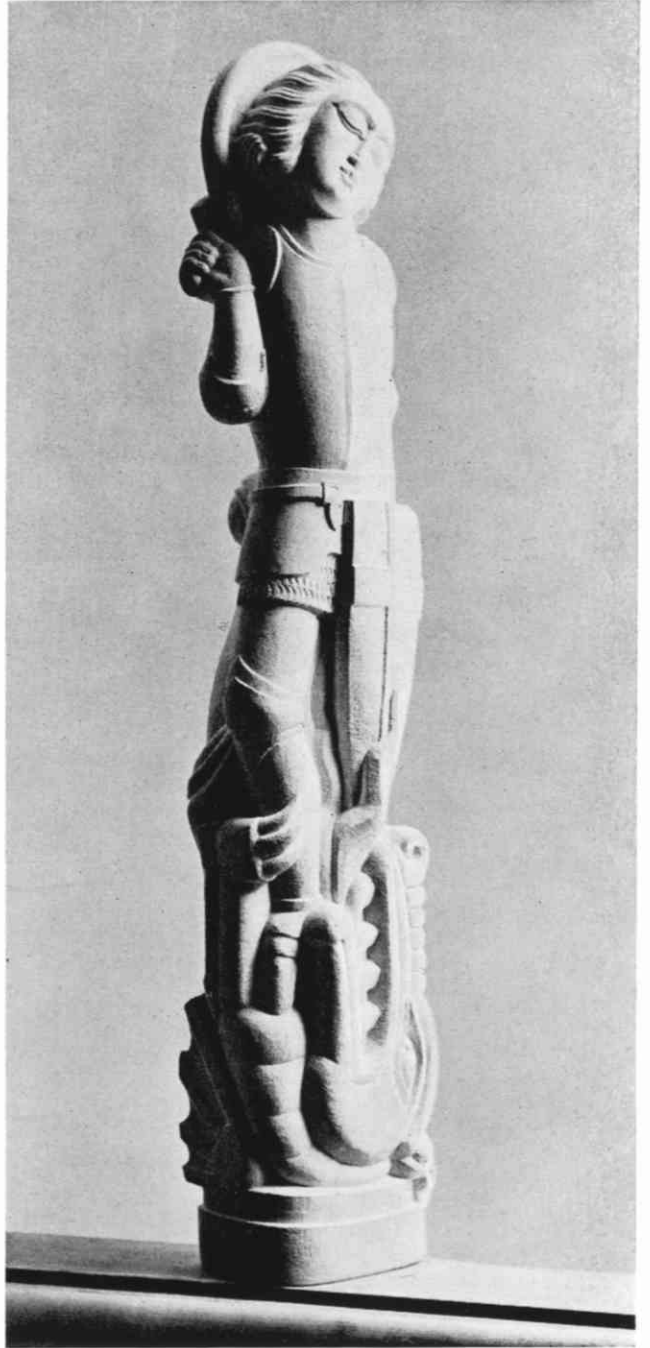


Studio 3E for Religious Services, looking toward the central recess, lighted so as to produce an effect of infinite distance. On secular occasions the recess contains a vase of flowers; for religious services the shadow of a cross is projected on to the white background.



Studio 3E for Religious Services, looking toward the central recess, lighted so as to produce an effect of infinite distance. On secular occasions the recess contains a vase of flowers; for religious services the shadow of a cross is projected on to the white background.

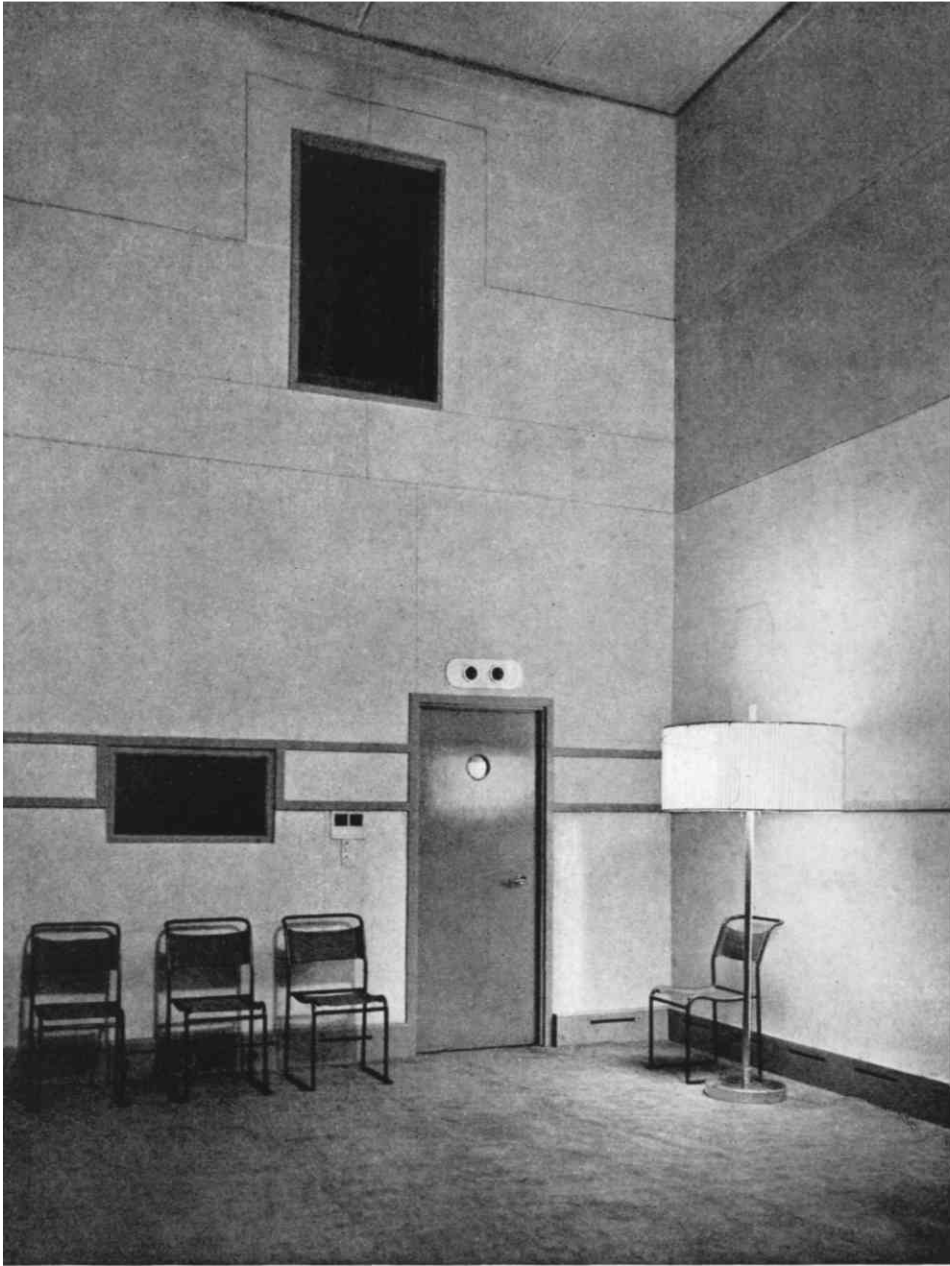
Statue of St. George, which occupies a niche to the left of the grand piano in the picture opposite. It is the work of Mr. Vernon Hill.





60

Studio 3E, looking towards the balcony. The table in the right foreground is for the use of the choirs engaged in the services. Photograph by Arthur Gill.



61

Studio 3A, where the Children's Hour is conducted,
The window at the top is that of the Silence Room
shown in Plate 66.



62

Studio 3B, for Talks.



63

Studio 3D, for Talks.

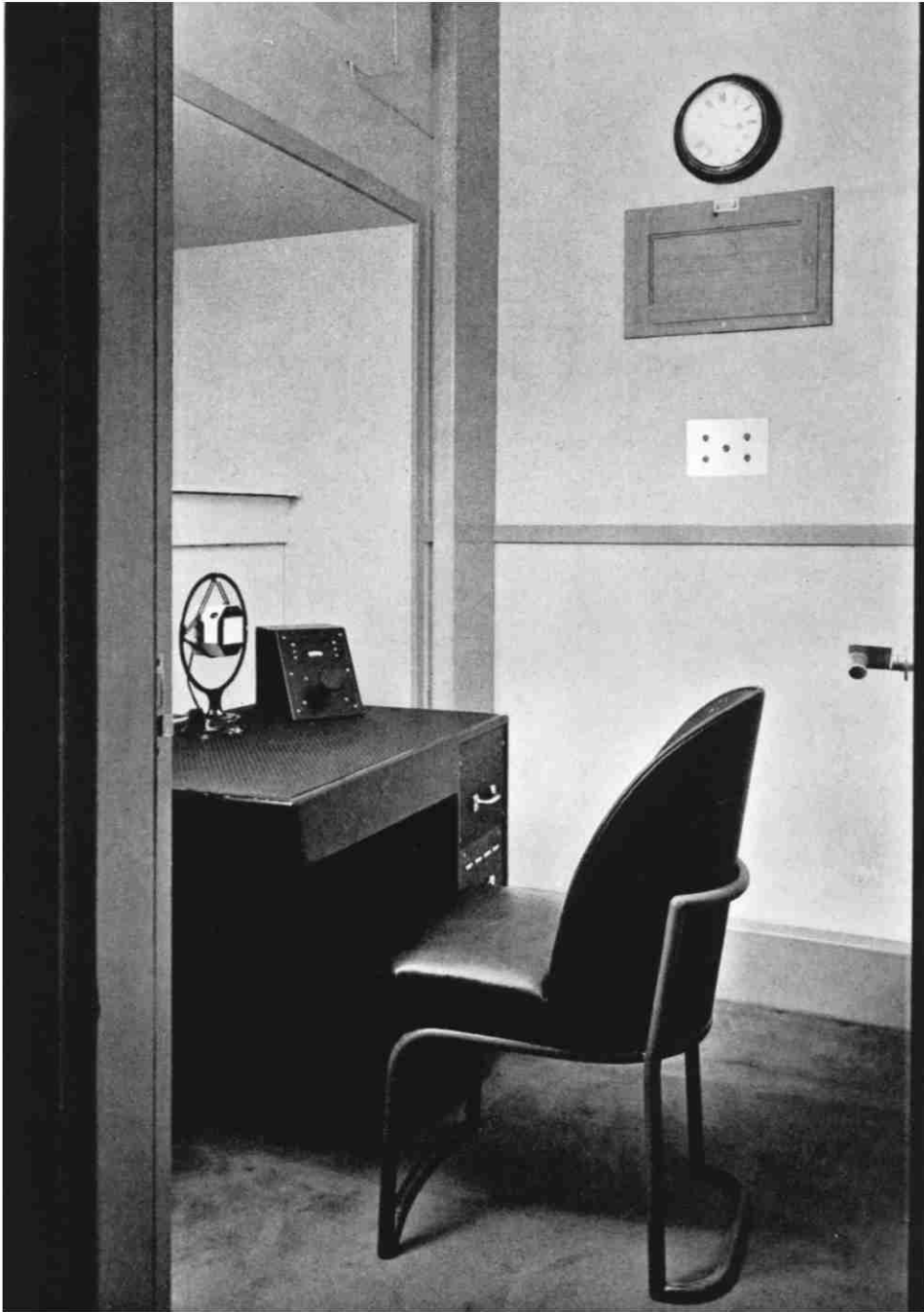


Another view. There are three Talks Studios; this one is designed to give the talker the feeling of being in a study or library. Note the picture of George Washington over the fireplace, indicating the use of this studio for some of the special talks to America. The chair used in this studio is one in which the late Mr. Arnold Bennett wrote many of his works. The Colour Plate shows another view, that looking towards the 'window'.



65

The Third Floor Waiting Room Lounge, attached to the Talks Studios.

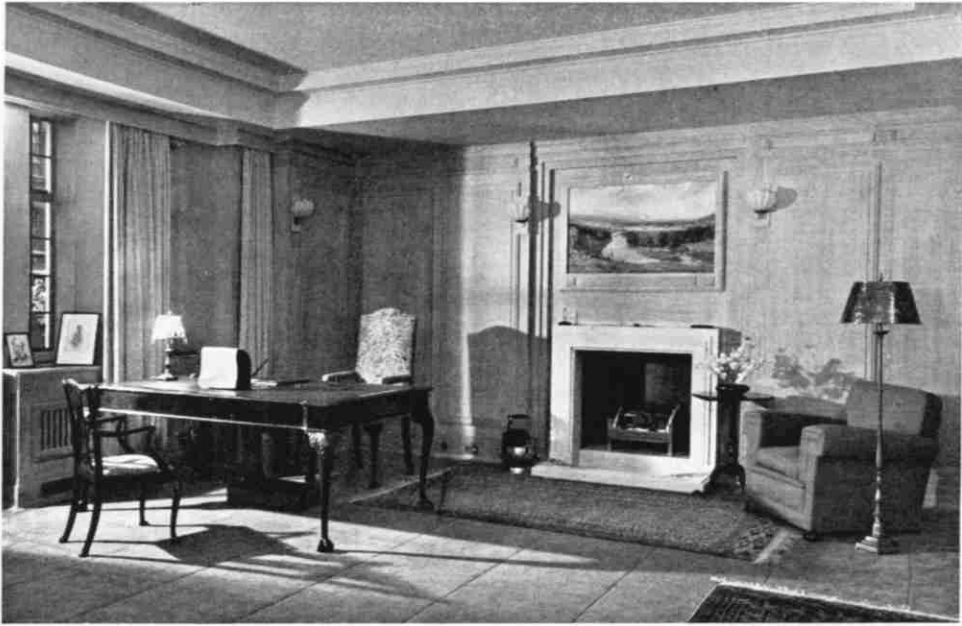


The Silence Room, attached to Studio 3A, where announcements can be made (e.g. during a change of programme) without the necessity of enforcing silence in the studio.



67

The Chairman's Office.



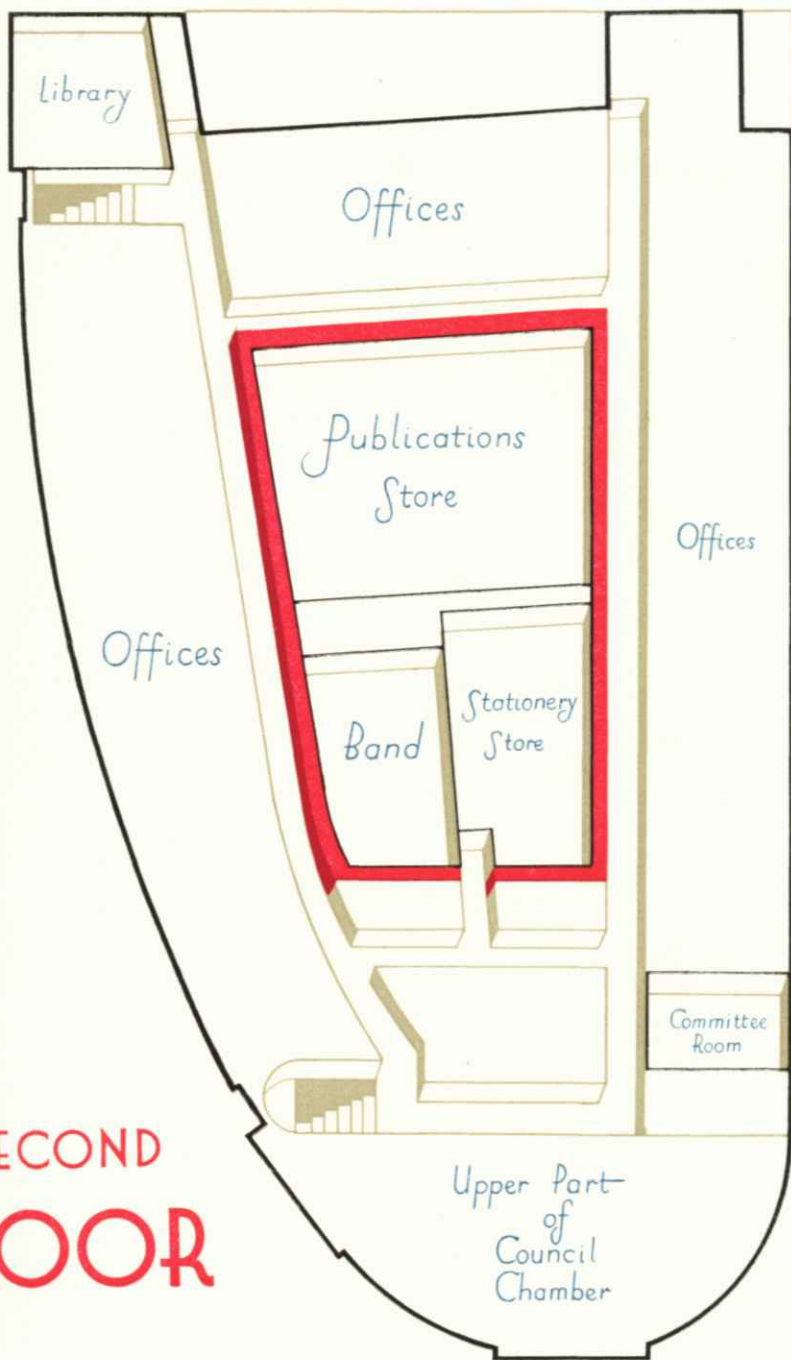
68

The Director-General's Office.



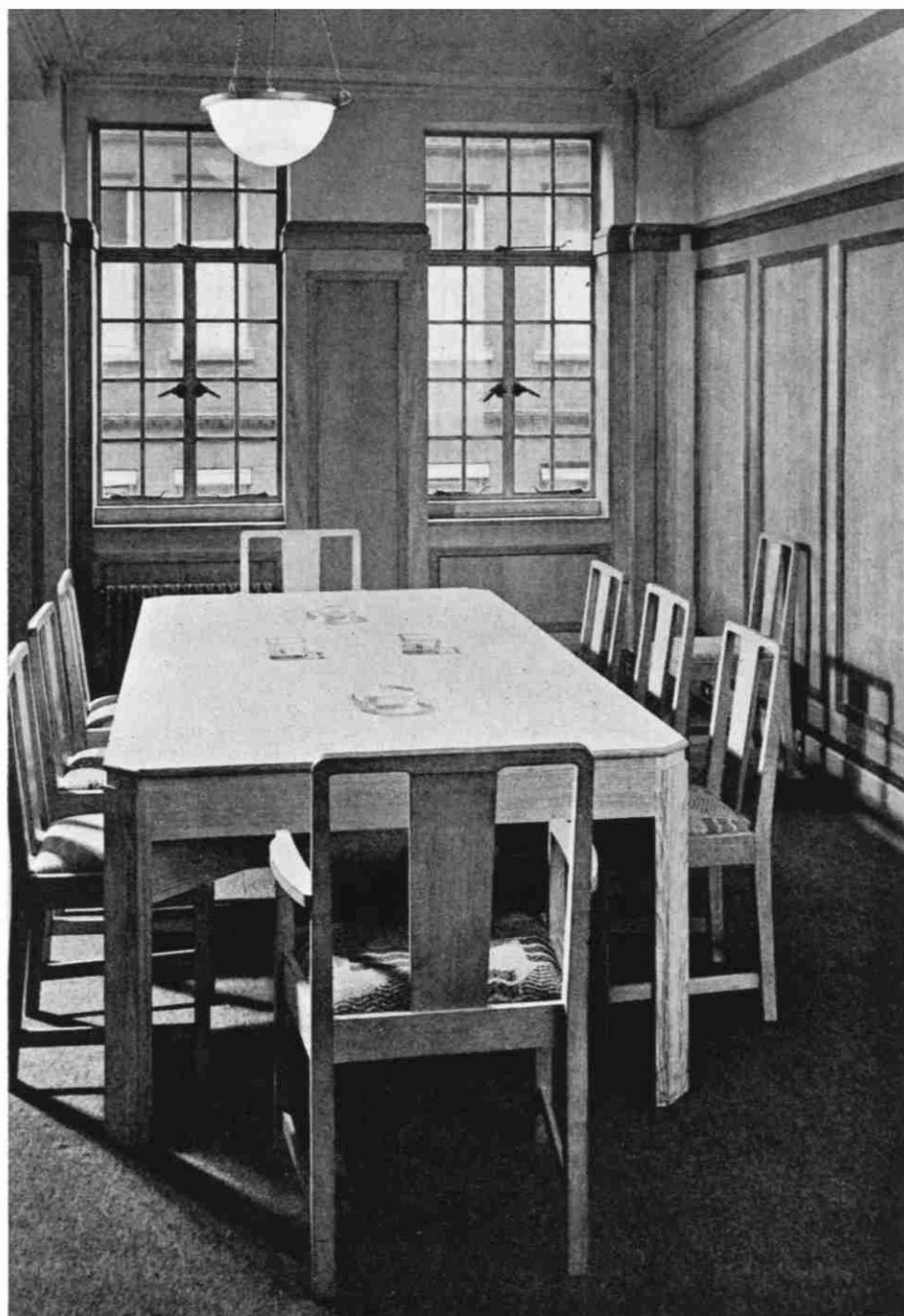
69

One of the Accounts Offices.



SECOND
FLOOR



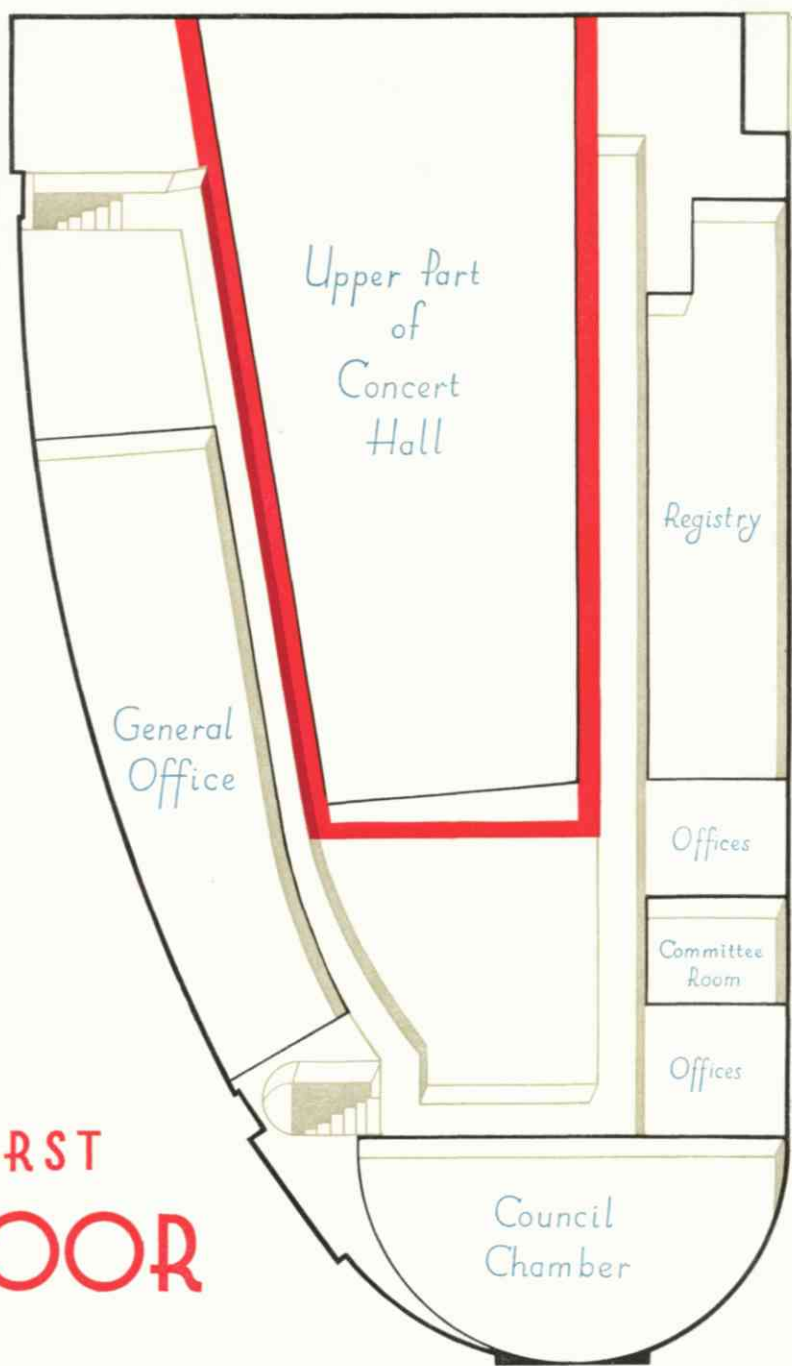


The Committee Room on the second floor. The paneling and furniture is in light oak.



The Corridor outside the 'Tower', with offices on the left, and the wall of the 'Tower' on the right.

FIRST
FLOOR





75

The First Floor Landing, showing the staircase up to the Council Chamber and the Staff Lifts.



76

The Council Chamber. A general view, showing the walls panelled in Tasmanian oak, the indirect lighting, and the furniture. The tables are made of Queensland walnut of a dark grey colour. In height the Council Chamber occupies one and a half floors, the entrance being on a level half-way between the first and second floors.



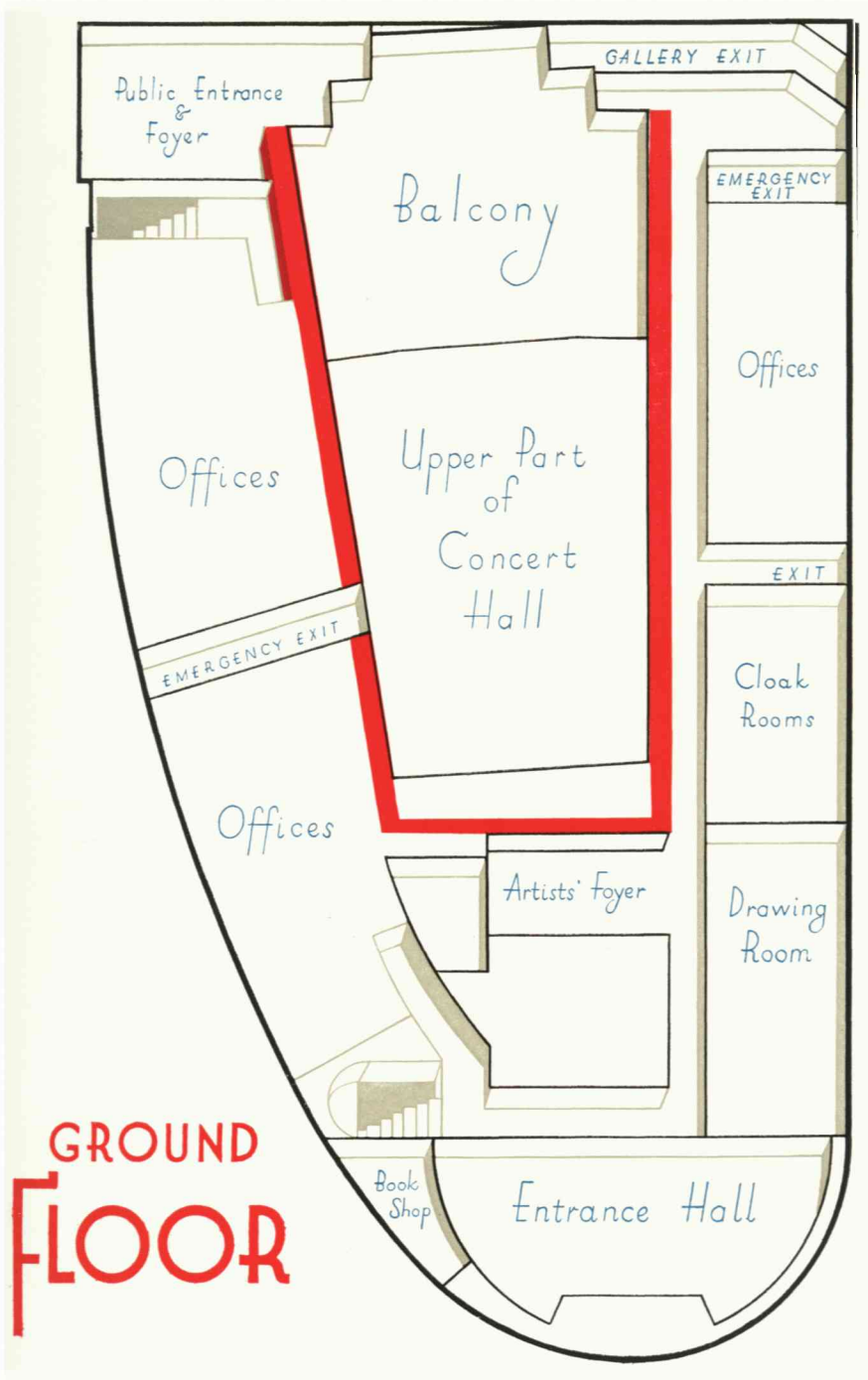
77

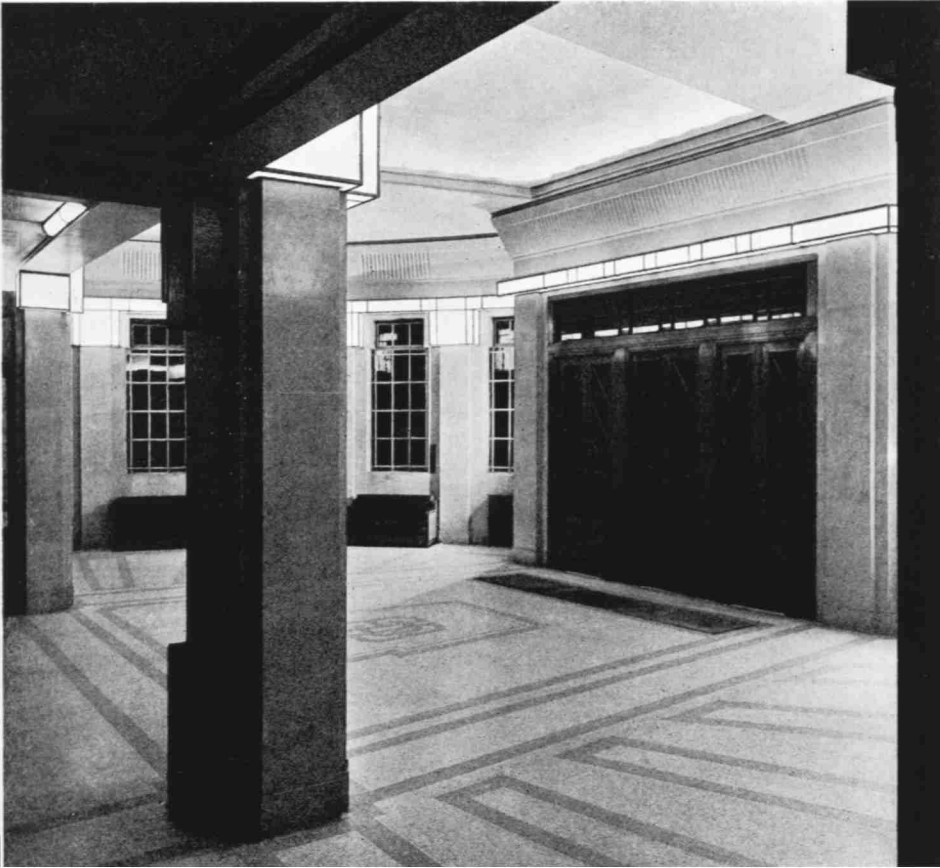
The General Typing Office on the first floor, with windows looking onto Portland Place.



78

The First Floor Committee Room.





80

The Entrance Hall, looking from the corner by the staircase towards the doors.

The Entrance Hall, looking towards the staircase at the Portland Place corner of the Hall. The staff lifts are shown in the centre of the picture, the door into the Artists' Foyer being just behind the right-hand pillar. The Latin inscription, with its translation, reads as follows:

DEO OMNIPOTENTI

TEMPLUM HOC ARTIUM ET MUSARUM ANNO DOMINI
MCMXXXI RECTORE JOHANNI REITH PRIMI DEDICANT
GUBERNATORES PRECANTES UT MESSEM BONAM BONA
PROFERAT SEMENTIS UT IMMUNDA OMNIA ET INIMICA
PACI EXPELLANTUR UT QUAECUNQUE PULCHRA SUNT
ET SINCERA QUAECUNQUE BONAE FAMAE AD HAEC
AVREM INCLINANS POPULUS VIRTUTIS ET SAPIENTIAE
SEMITAM INSISTAT

Translation:

This Temple of the Arts and Muses is dedicated to Almighty God by the first Governors of Broadcasting in the year 1931, Sir John Reith being Director-General. It is their prayer that good seed sown may bring forth a good harvest, that all things hostile to peace or purity may be banished from this house, and that the people, inclining their ear to whatsoever things are beautiful and honest and of good report, may tread the path of wisdom and uprightness.



DEO OMNIPOTENTI
MUSEUM HOC ANNO ET MUSEUM ANNO DOMINI MCMXXXI
PROFICERE ET MUSEUM BONAM PACI PROFERAT SEMENTIS
ET MUSEUM QUINIA ET INIMICA PACI EXPPELLANTVR
MUSEUM AD MARE AVREM INCLINANS POPVLVS
MUSEUM ET SAPENTIAE SEMITAM INSISTAT





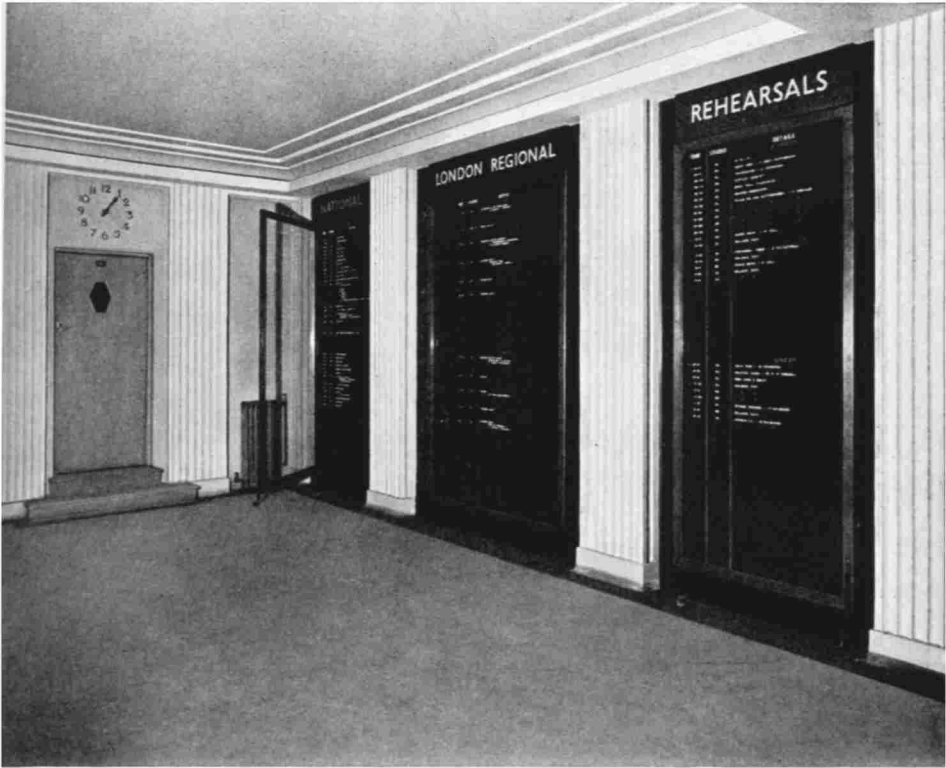
82

'The Sower', by Eric Gill. The photograph shows the sculpture before the finishing touches have been added.



83

The Artists' Foyer, showing (behind the pillars) one of the lifts for taking artists to the various studio floors. The photograph is by Arthur Gill.



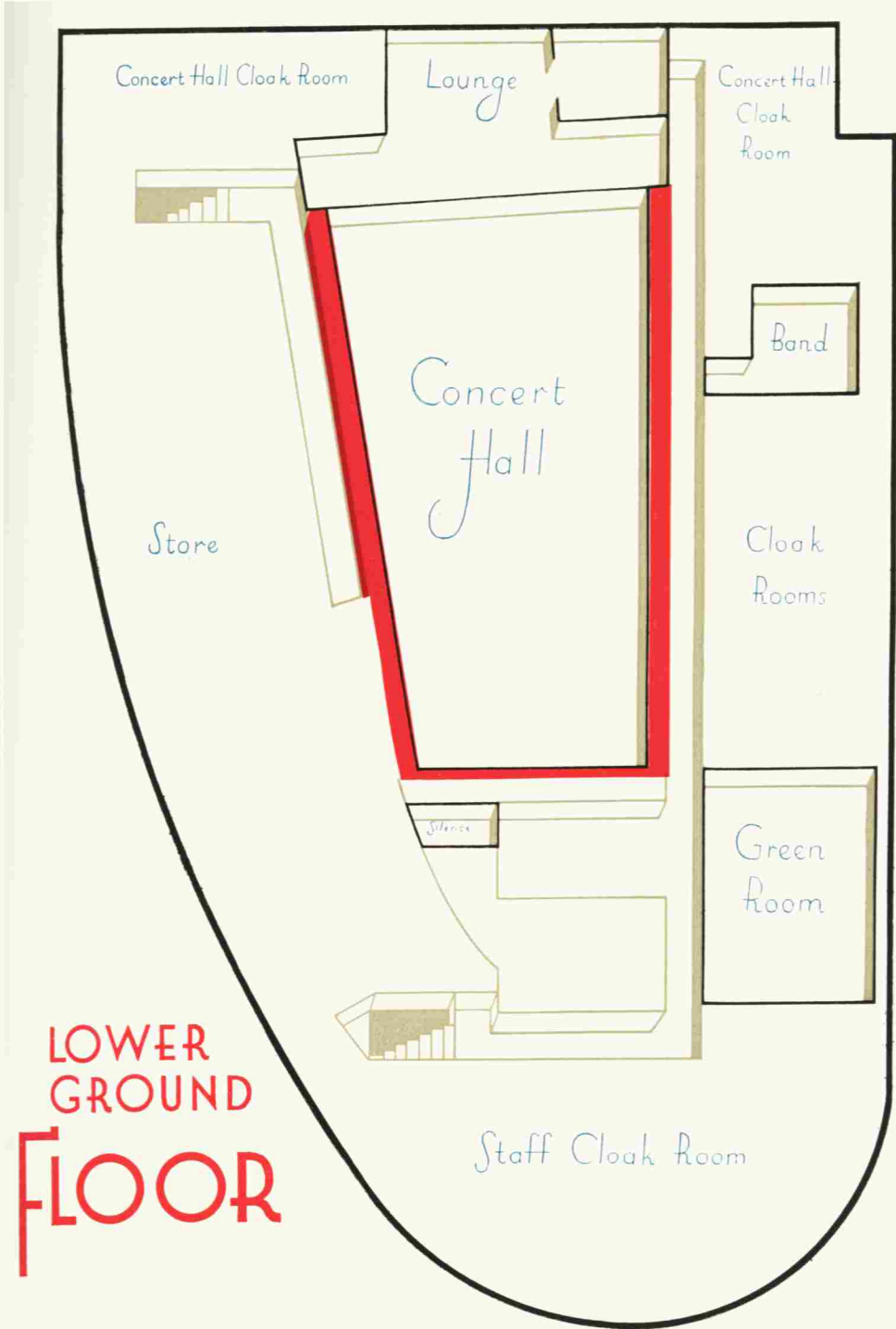
84

The other side of the Foyer, showing the Studio Notification Boards facing the lifts and the Entrance Hall door.



85

The Drawing Room: the chairs are upholstered in green leather to match the pale green carpet. The tables are made of Padauk, an Indian wood of a reddish colour with a grain resembling mahogany.



LOWER
GROUND
FLOOR



87

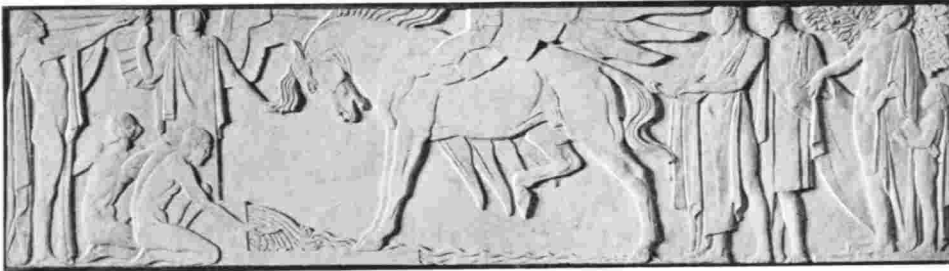
The Concert Hall, looking towards the platform. This and the next photograph are by S. W. Newbery.



88

The Concert Hall, taken from the stage, looking towards the gallery, and showing the seating accommodation for 538 people in addition to a full symphony orchestra. The microphone is seen suspended in the middle.

The six Friezes on the Western Wall of the Concert Hall, forming horizontal panels under the rectangular lights. The carvings are of classical scenes representing Poetry, Dancing, a Ball Game, a Sacrifice, a Foot Race, and Music. The sculptor, Mr. Gilbert Bayes, is to produce a further six reliefs, with modern subjects, for the opposite wall.

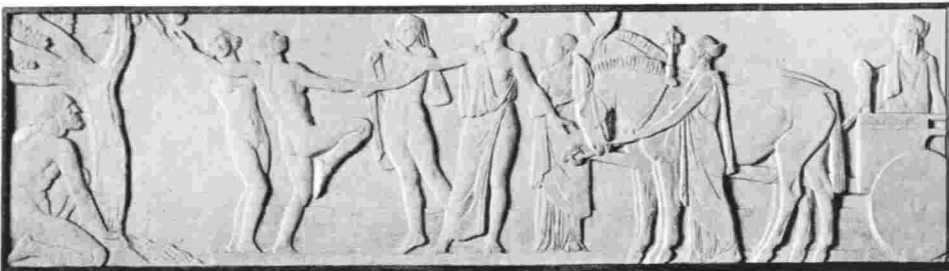


Pegasus unseals the spring of *Poetry*.



'Dance, and Provençal song, and sunburnt mirth!'

Keats, *Ode to a Nightingale*

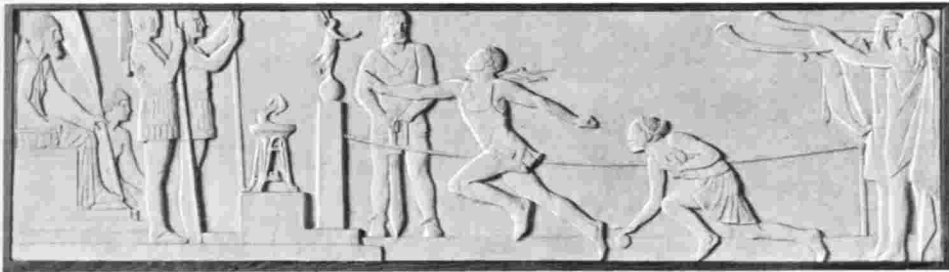


Odysseus watches Nausicaa and her companions at a game of *Ball*.



‘Who are these coming to the *Sacrifice?*’

Keats, *Ode on a Grecian Urn*



Milaniion Conquers Atalanta in the *Foot-race*.

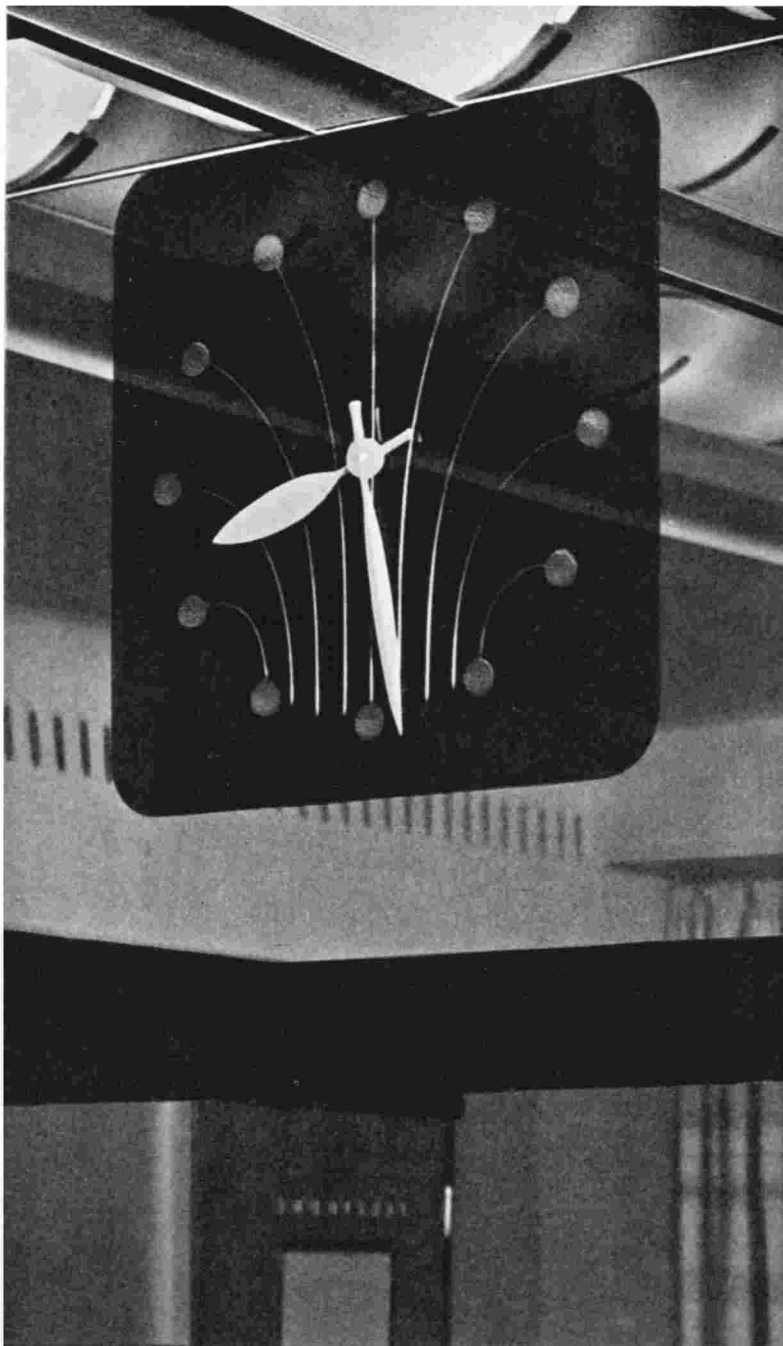


‘Naught so stockish hard and full of rage
But *Music* for a time doth change its nature.’

Shakespeare, *Merchant of Venice*

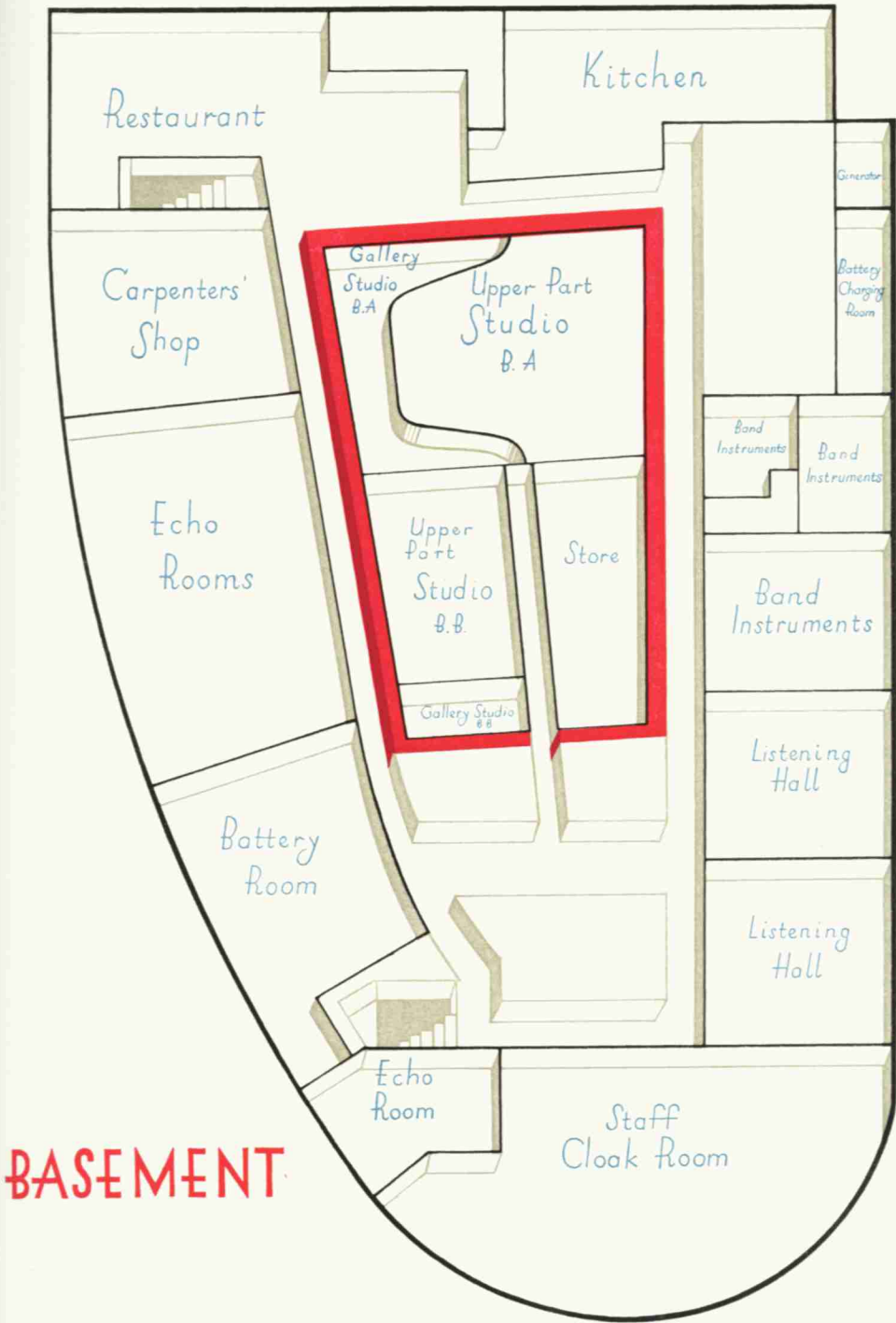




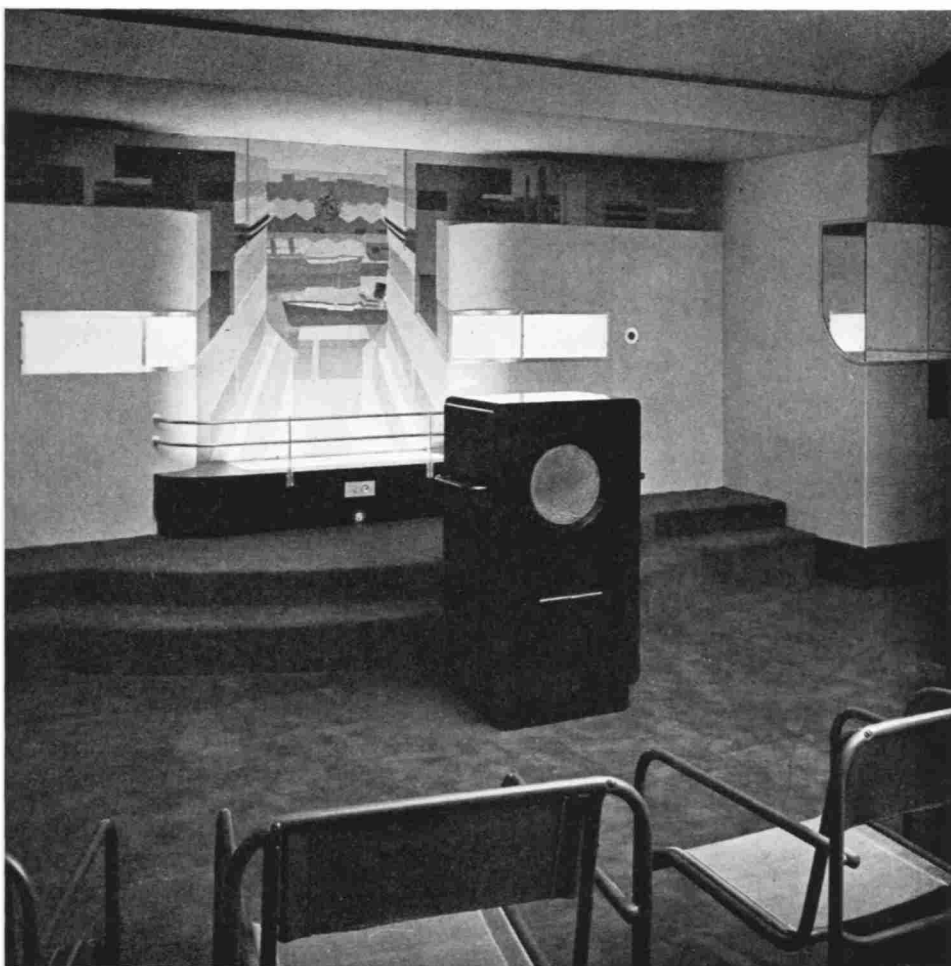


92

The Green Room Clock.



BASEMENT

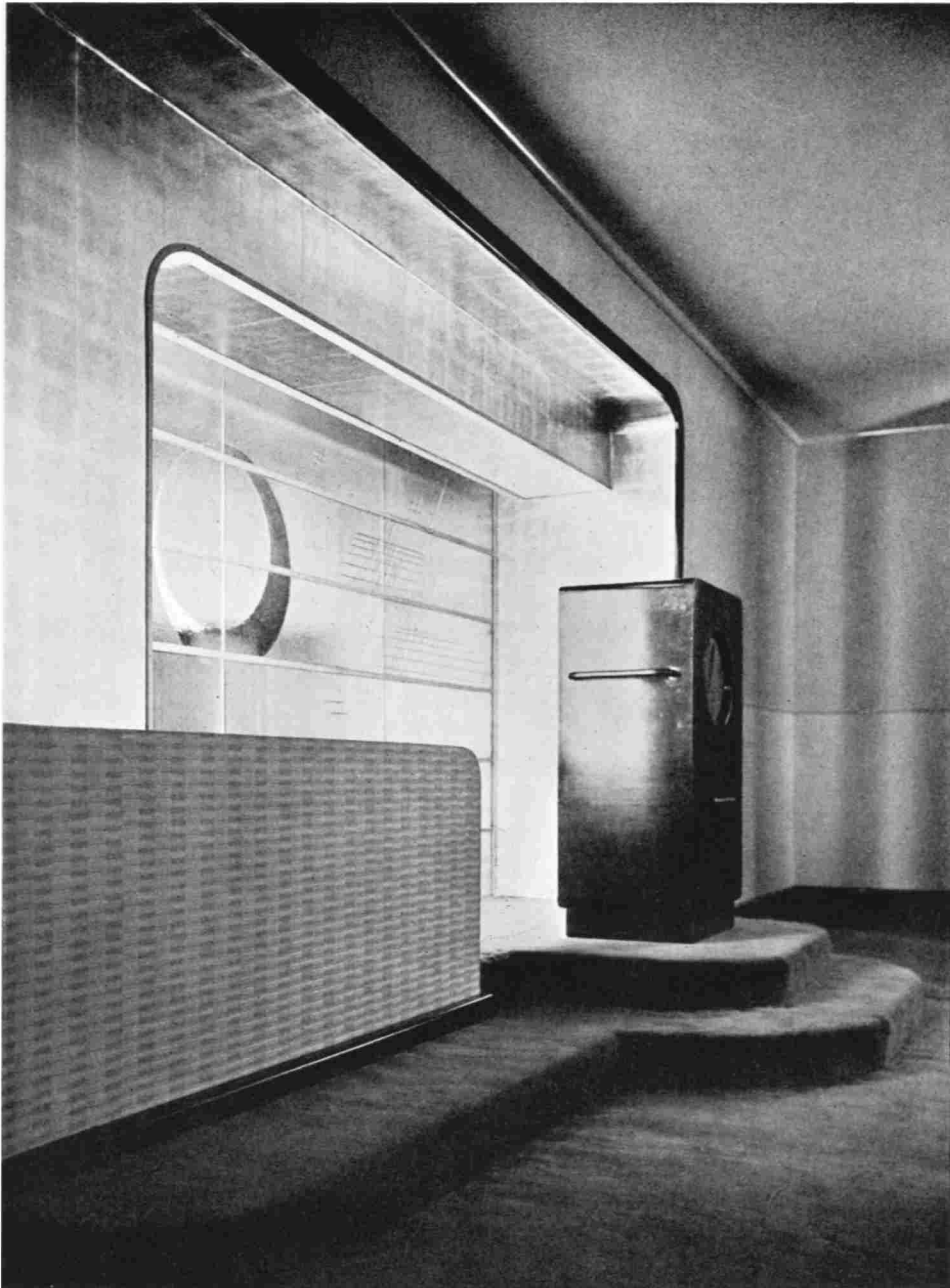


94

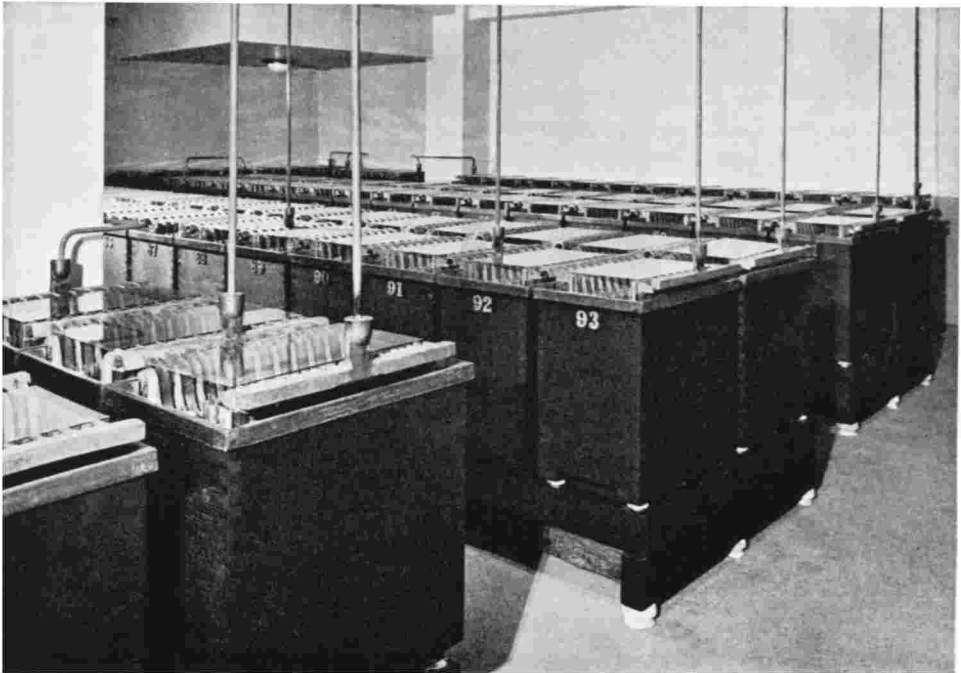
Listening Hall No. 1. A seascape roughly painted on canvas has been introduced to counteract the effect of being shut in a small room.



Listening Hall No. 1. A view of the back of the room showing the furniture.

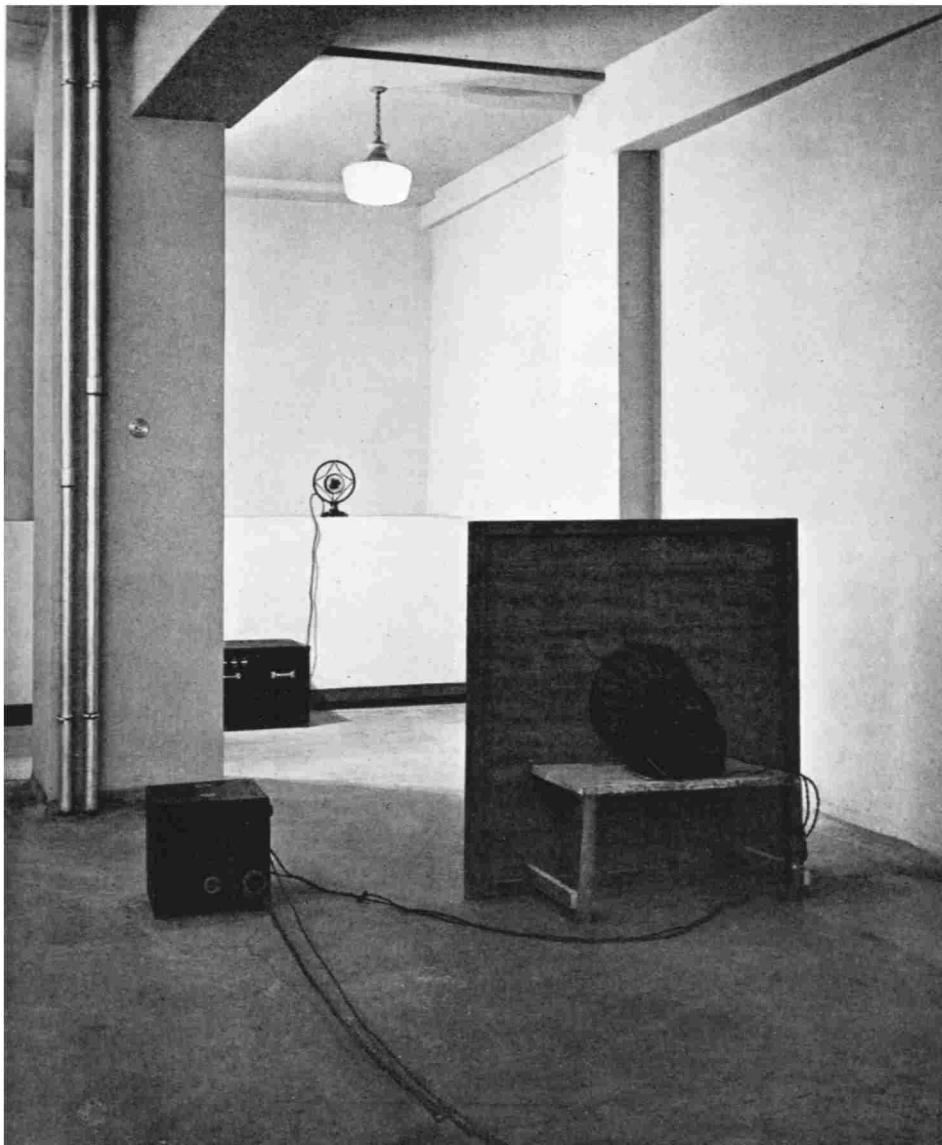


Listening Hall No. 2. The designer has produced a stimulating effect of sunlight by the use of gold and silver foil.



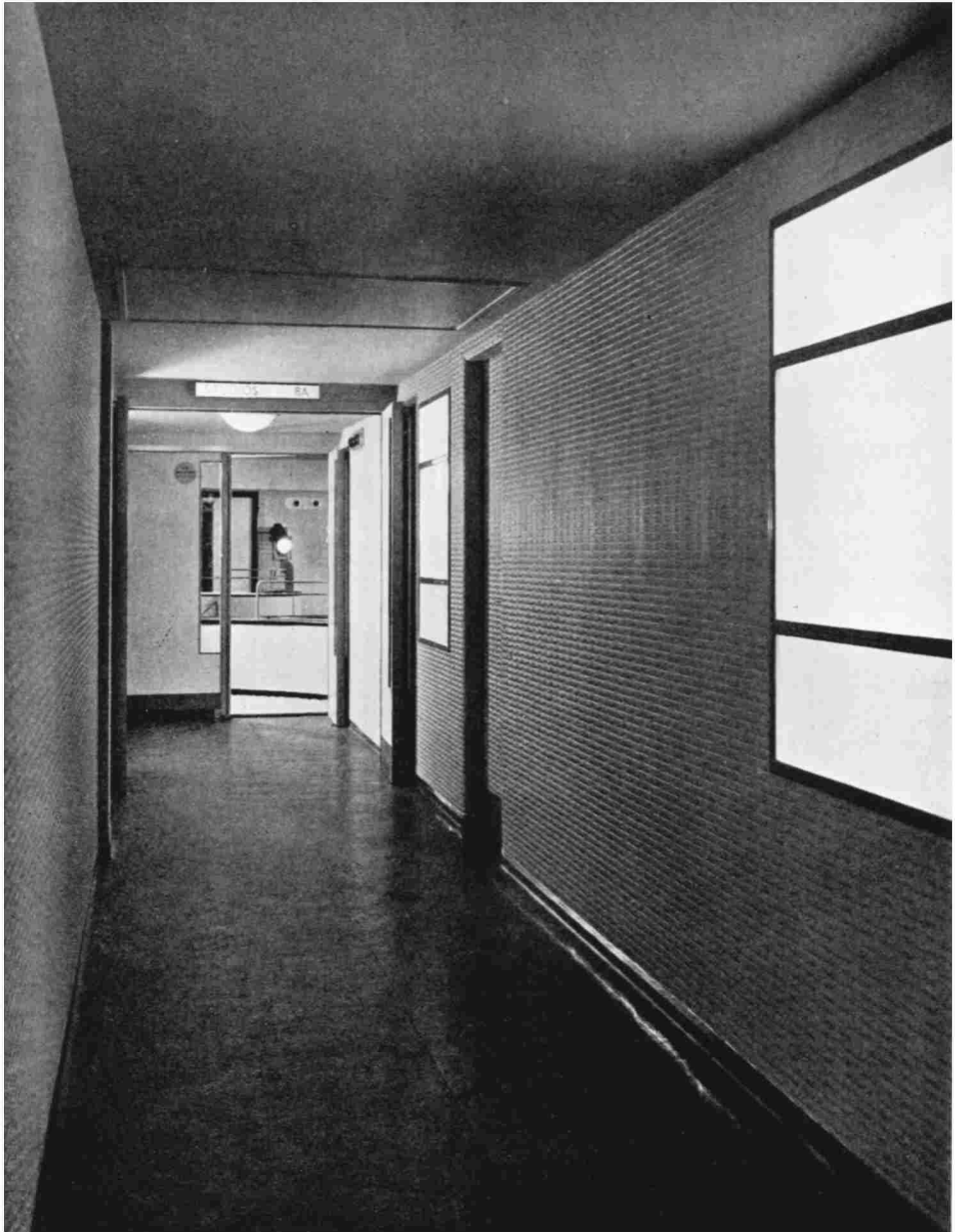
97

Storage Batteries for the Emergency Lighting Supply.
This lighting is permanently switched on to enable the performances in the studios to be continued in case of failure of the ordinary lighting.



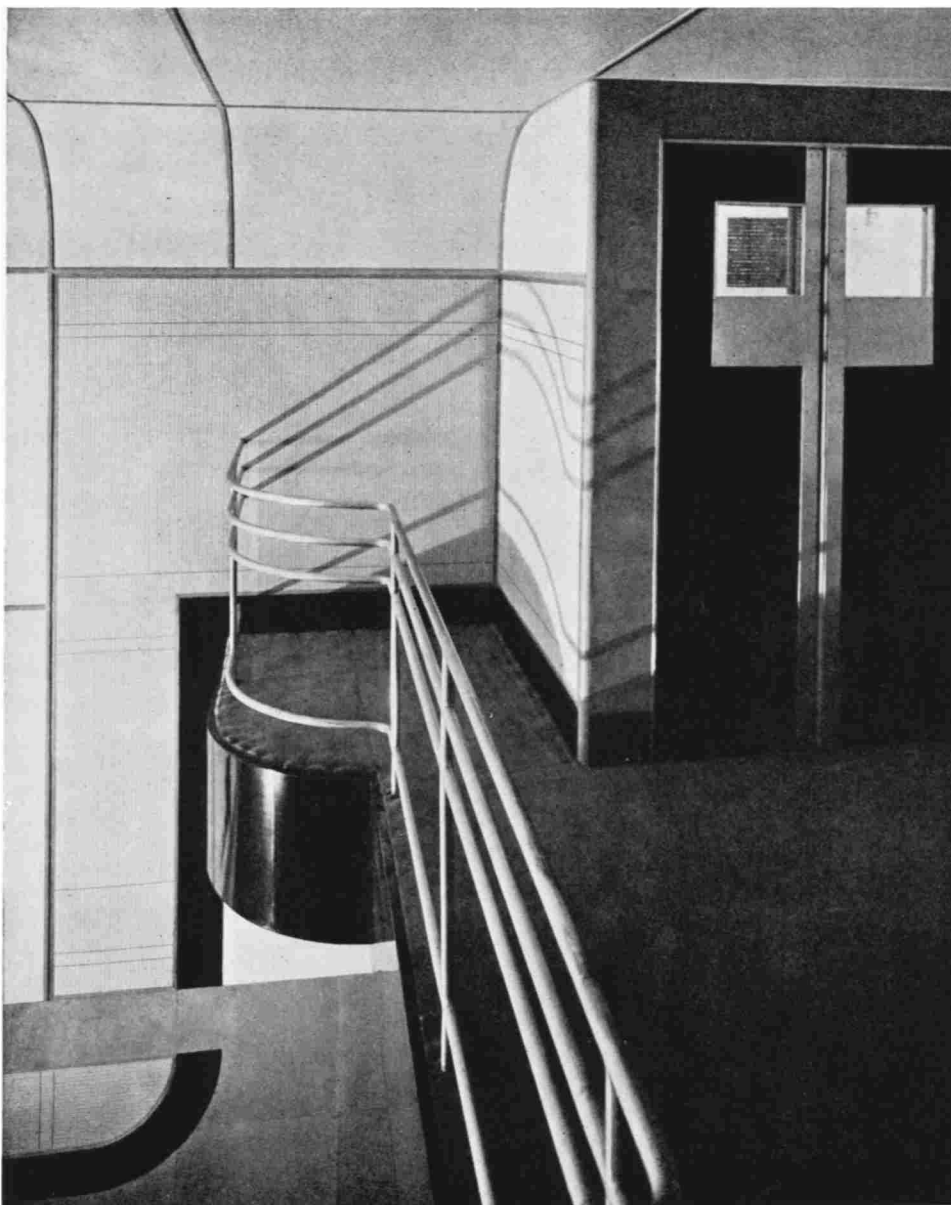
98

One of the Echo Rooms. The music from the studio is reproduced on a loudspeaker in a resonant room, and the sounds thus obtained are picked up on a microphone and sent on to the Control Room, where they are simultaneously added (in any required degree of echo effect) to the same music coming direct from the studio.



99

The Studio Corridor, leading to the balcony of the
Vaudeville Studio, BA.

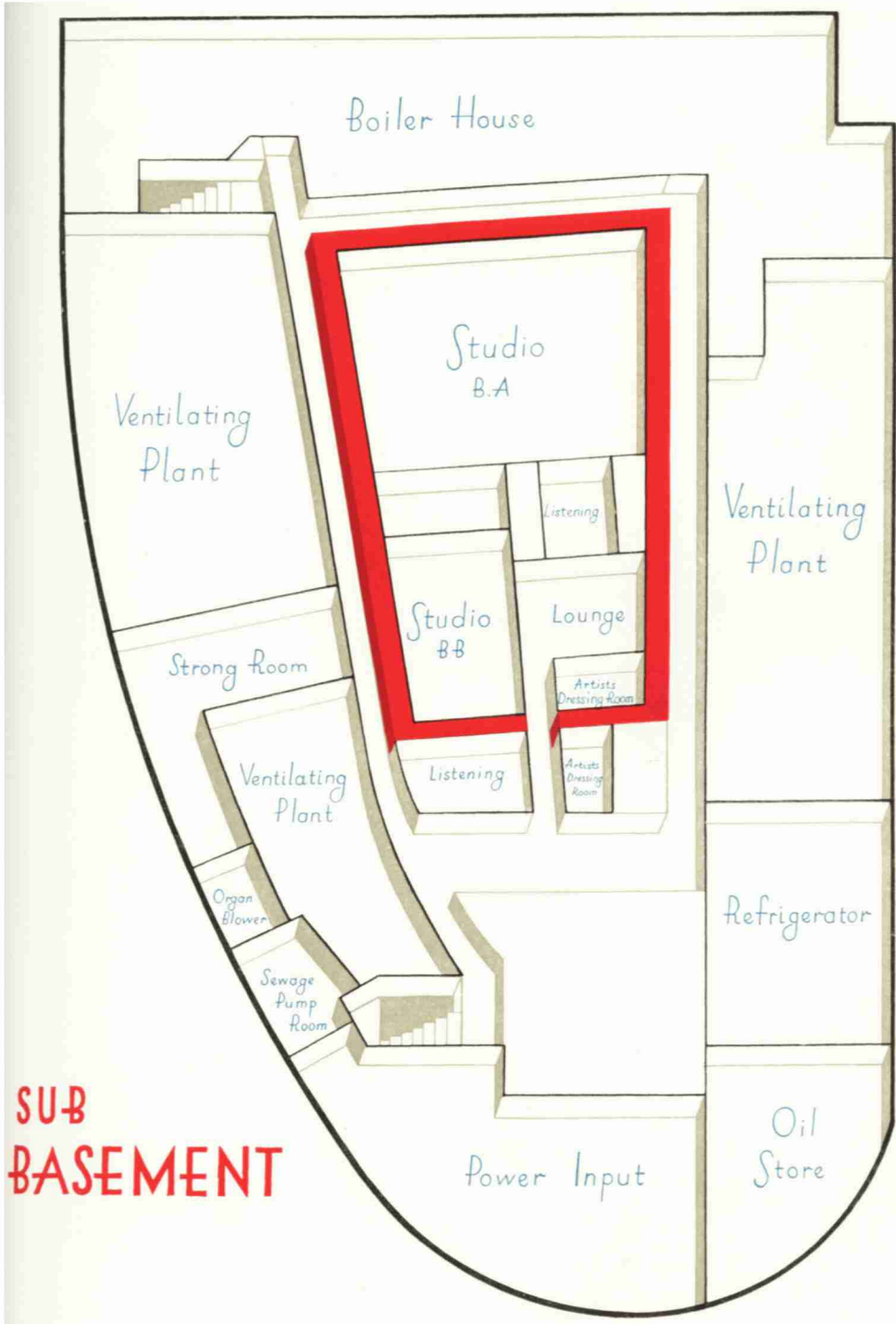


100

Studio BB: a view of the Balcony. See also Plate 106.



Vaudeville Studio: the Balcony, intended to accommodate part of the small audience required for giving atmosphere to the broadcasts. See also Plates 103-5.



Boiler House

Studio B.A

Ventilating Plant

Ventilating Plant

Listening

Strong Room

Studio BB

Lounge

Artists Dressing Room

Ventilating Plant

Listening

Artists Dressing Room

Organ Blower

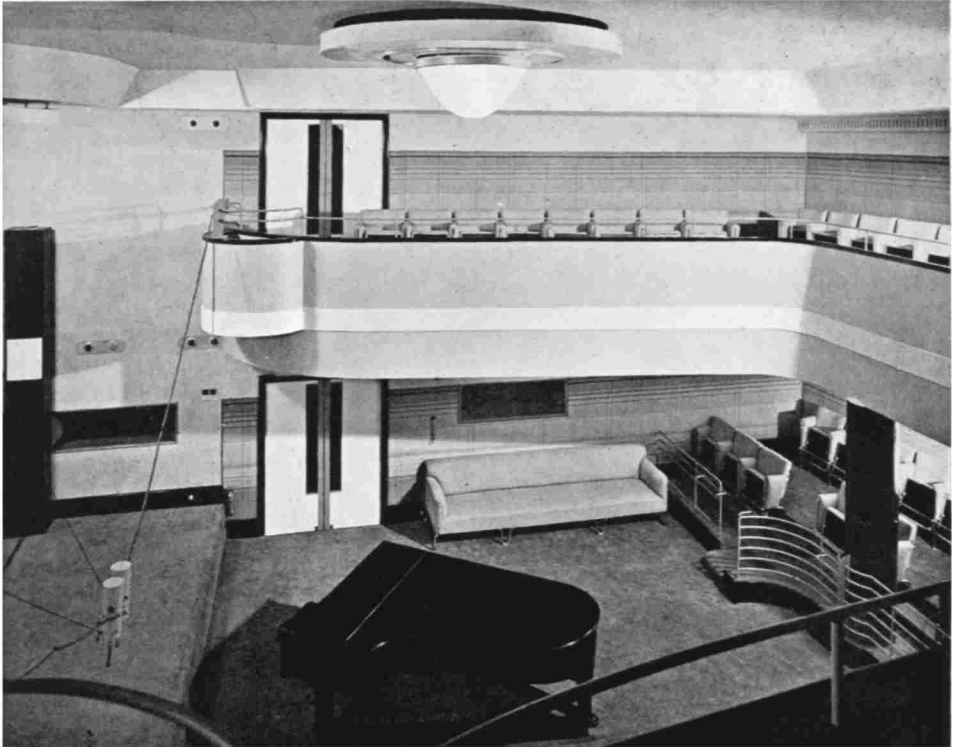
Sewage Pump Room

Refrigerator

**SUB
BASEMENT**

Power Input

Oil Store



103

Vaudeville Studio BA. General view, showing the stage in front of the 'wings', the floor space where the orchestra is normally accommodated, and the seating for the audience at the back.

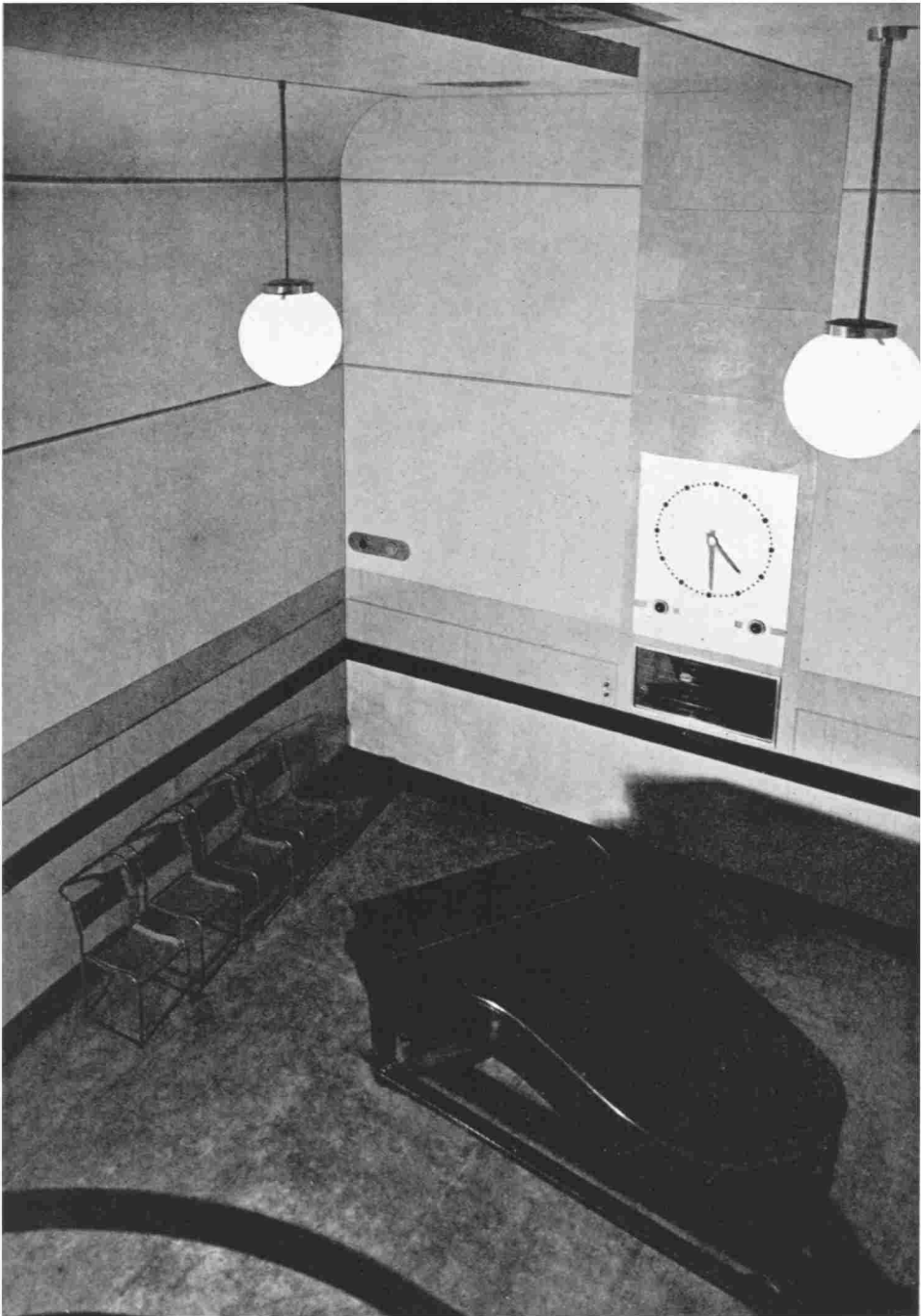


104

The Vaudeville Studio BA. A view taken from the back of the stage, looking across towards a corner of the balcony. Note the collapsible black screens at the sides of the stage, which are intended to be drawn out to form 'wings'. The prevalent colouring of the decorations is grey blue, lemon yellow, and pale red.

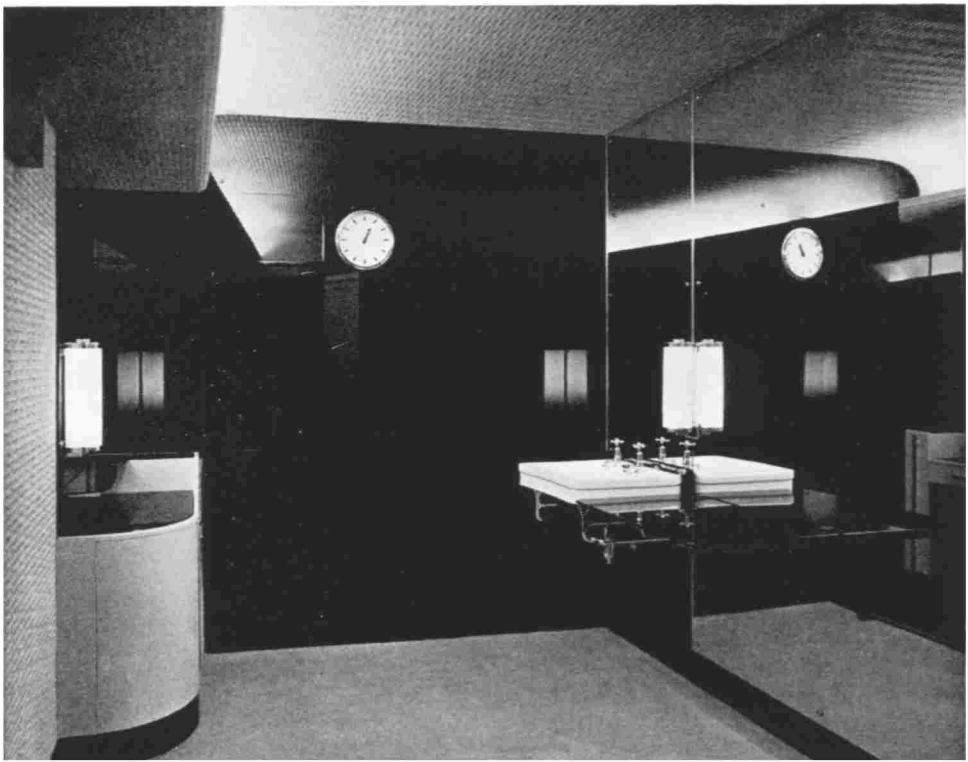


105. The Steel Chairs.



106

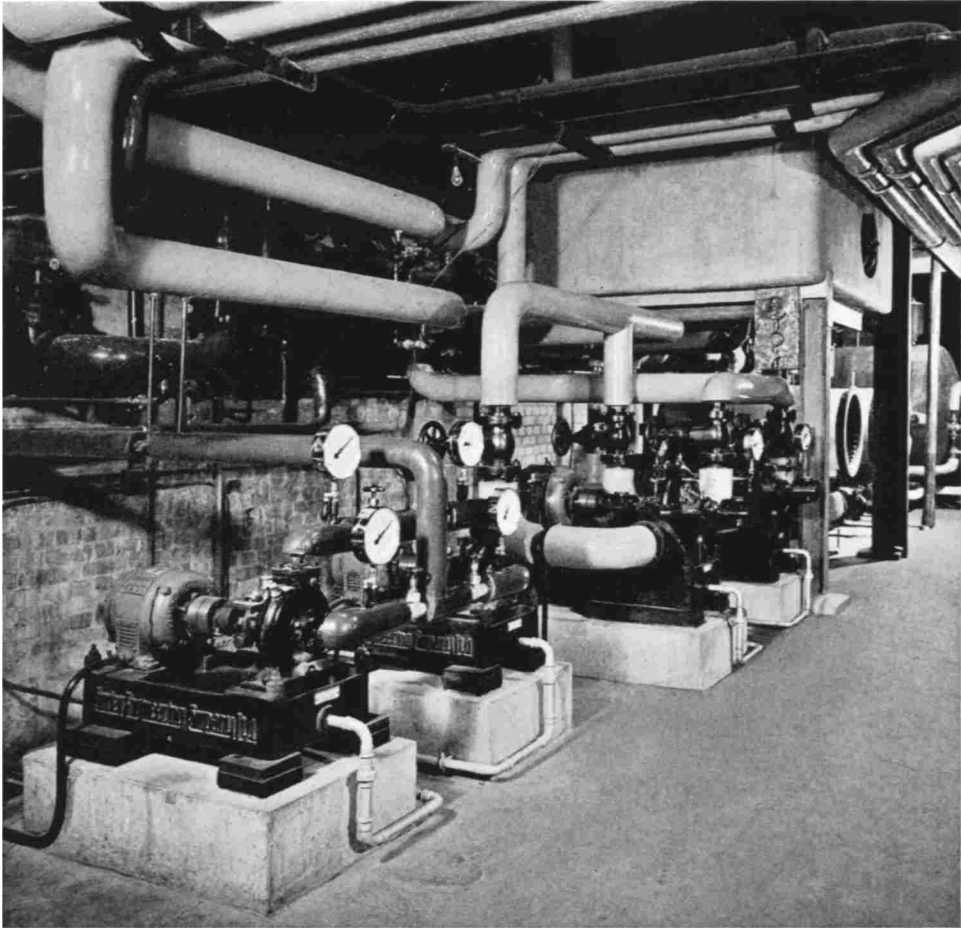
Studio BB, normally used by the B.B.C. Dance Orchestra.



107

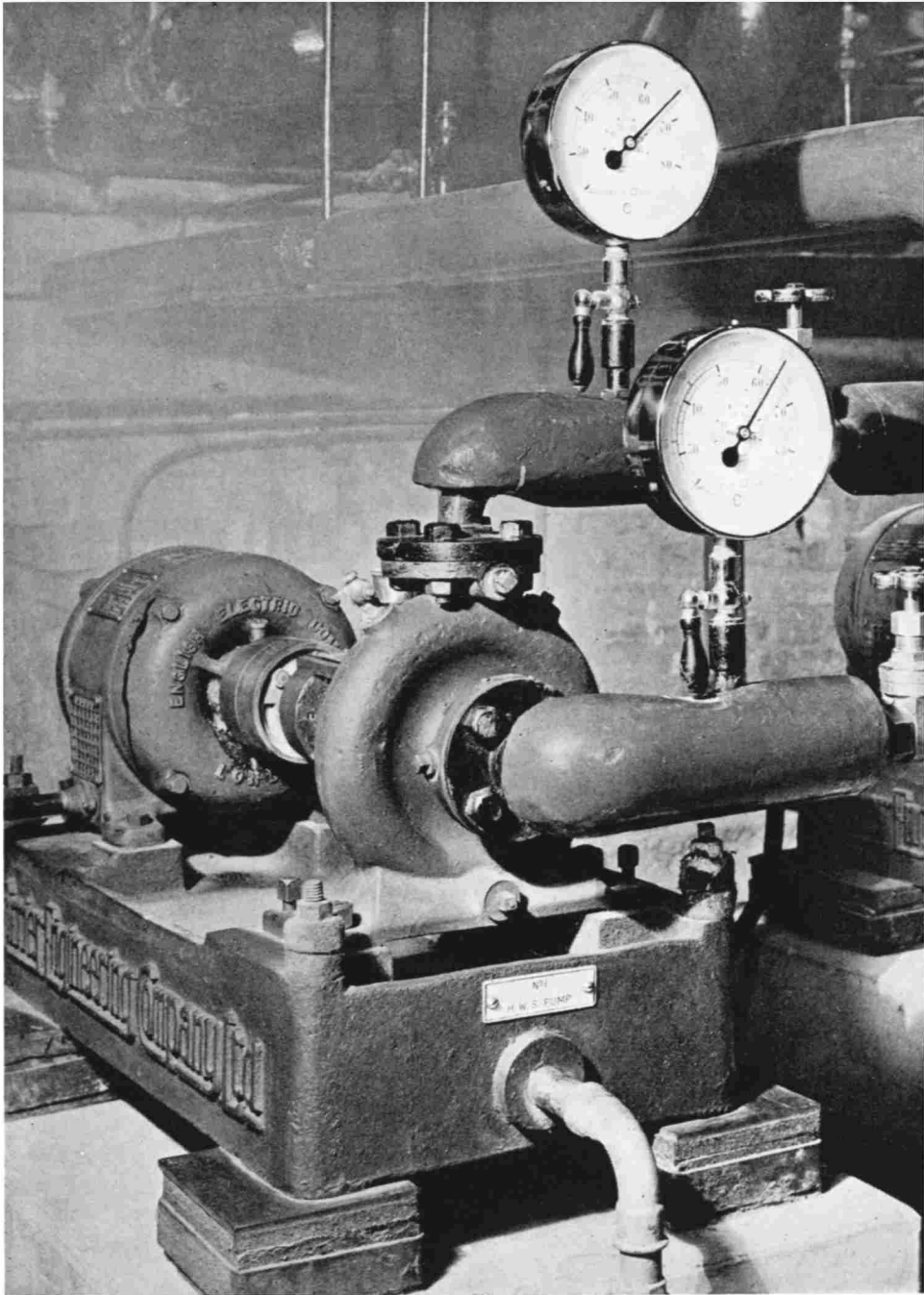
Artists' Dressing Room for Women. Intended for artists broadcasting from the Vaudeville Studio. The back wall is of black glass which is reflected in the mirrors on the side walls.



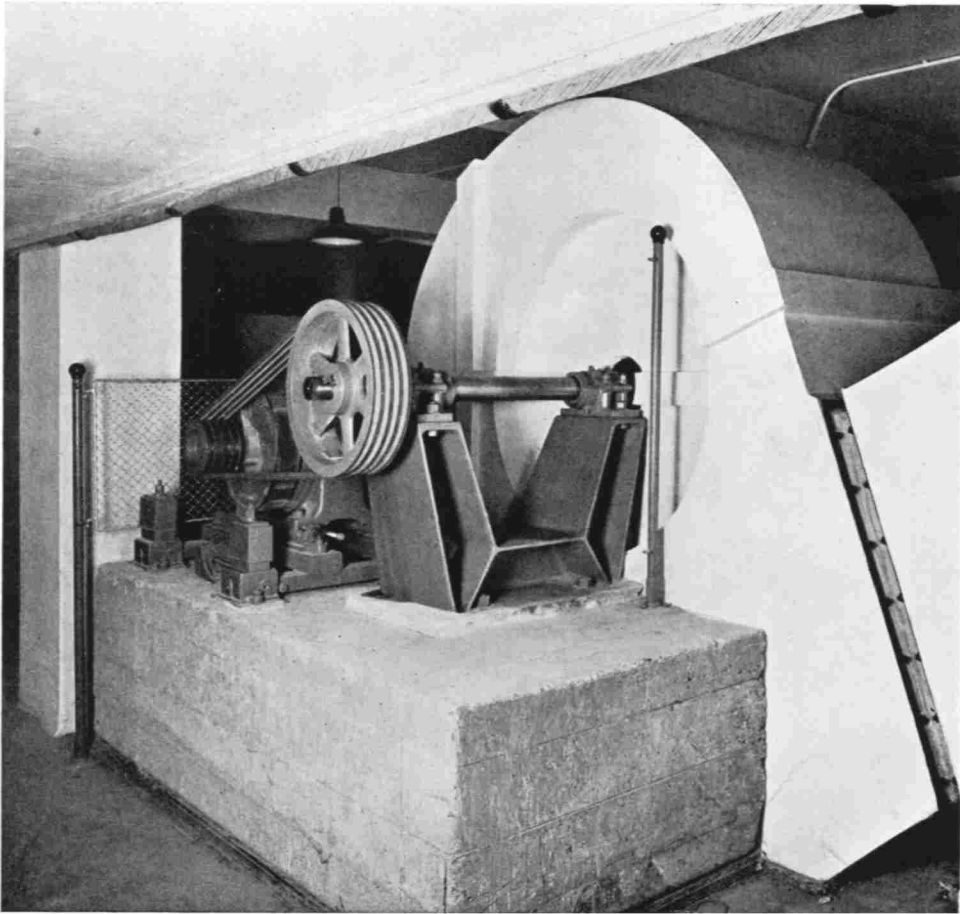


109

Corner of the Boiler Room, showing hot-water circulating pumps, hot-water storage tank and calorifier.

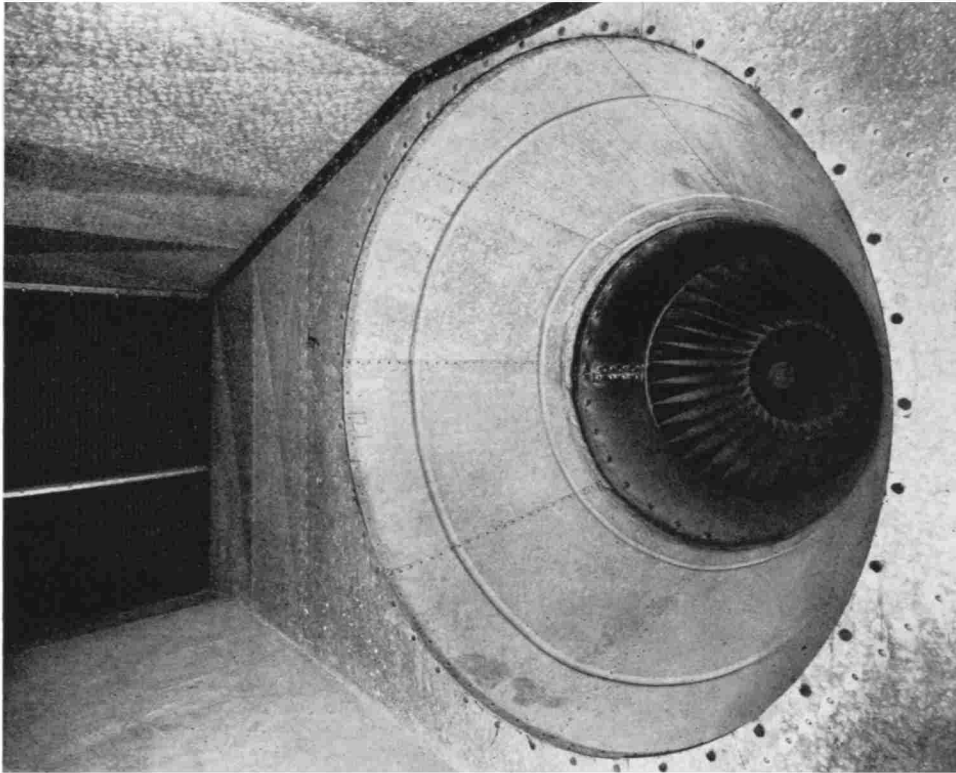


Boiler Room—Pumps for the domestic hot-water supply.



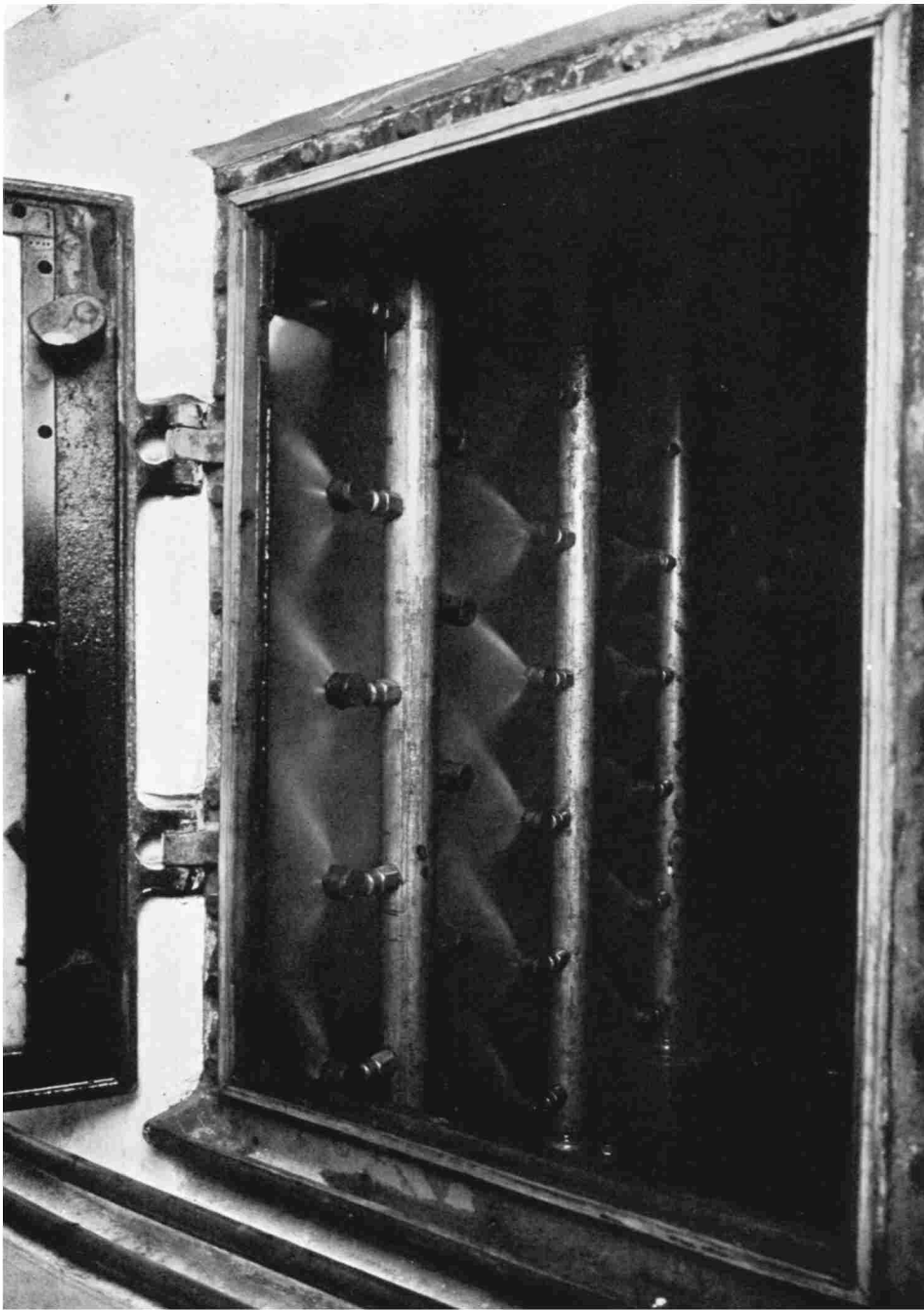
III

A Ventilating Fan, showing its motor fitted with a joint for insulating the vibration of the engine.

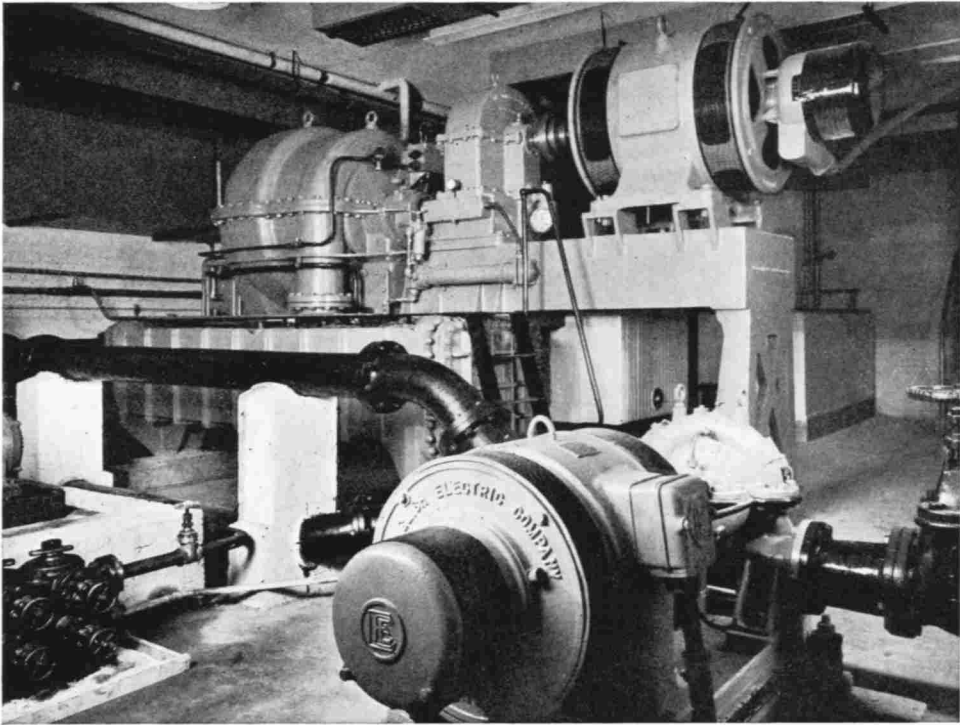


112

An Air-Conditioning Plant—an interior, showing one of the large intake fans. This and the next photograph are by Sims & Co.

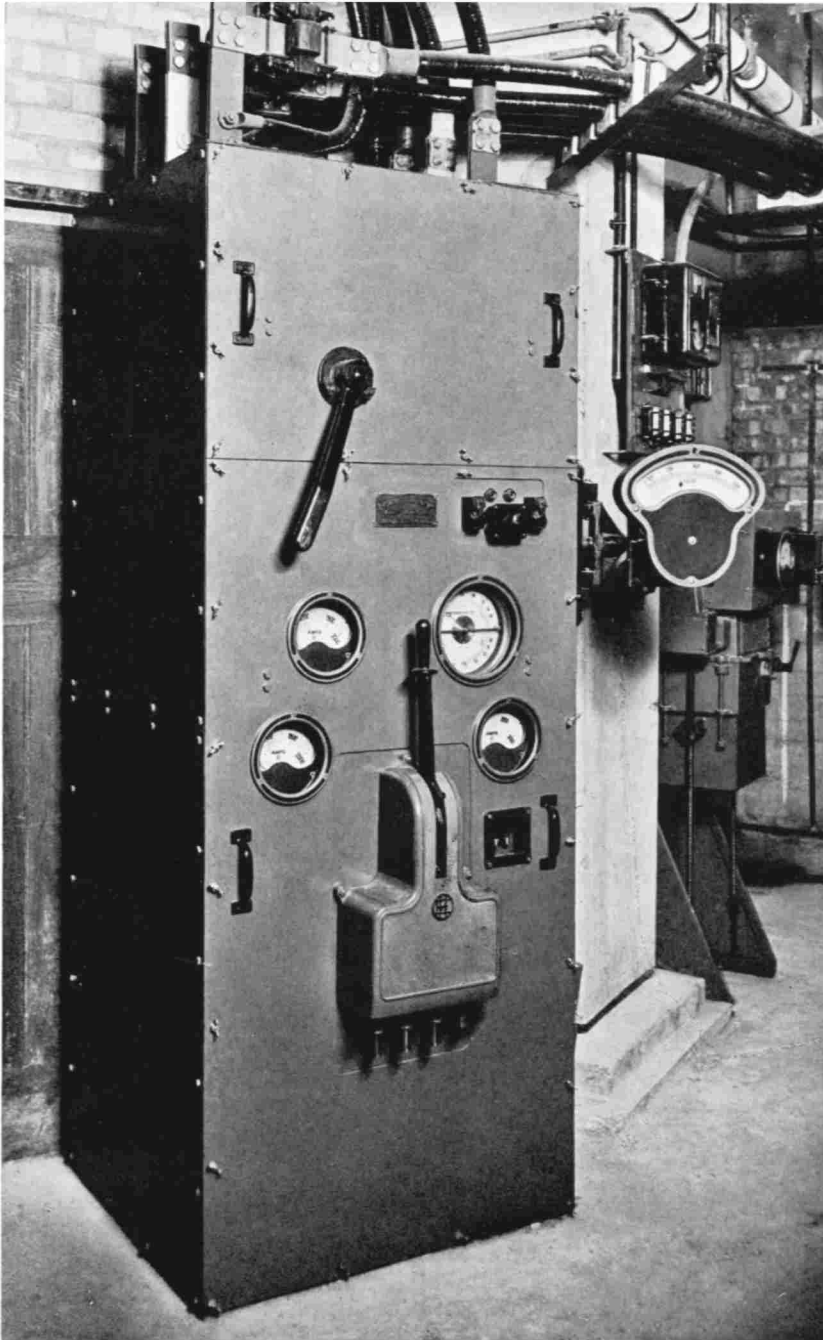


An Air-Conditioning Plant—the Water Spray for washing the particles of soot and dust from the air drawn in from the street.



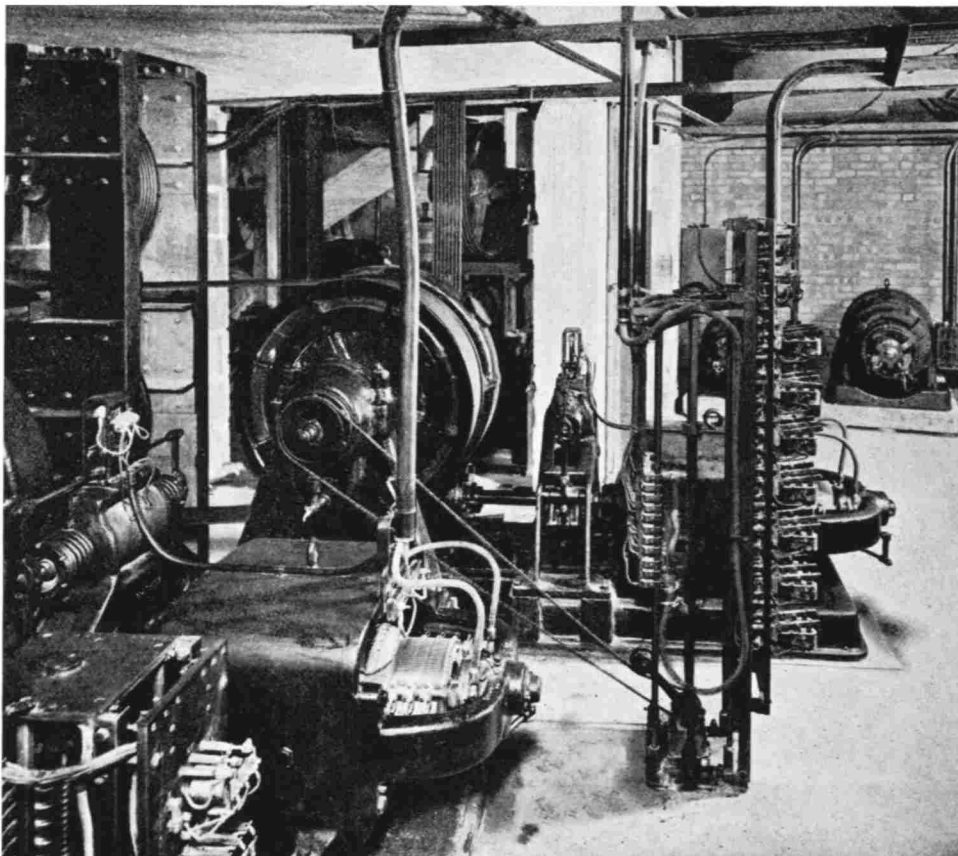
114

The Refrigerator, for cooling the air in summer when it is too hot to be circulated to the studios at its natural temperature. The plant is capable of freezing 200 tons of water a day.



115

Main Power Input Circuit-Breaker. The power is supplied by the St. Marylebone Borough Council on six separate feeders (3-phase), three at high-tension 6,600 volts, and three at 240 volts between each phase and neutral.



116

Passenger Lift Motors and Controls.

B R O A D C A S T I N G H O U S E

The following, among others, have been responsible for the building and equipment of Broadcasting House:

G. Val Myer, F.R.I.B.A.,
Architect

N. Ashbridge, B.SC., A.M.I.C.E.,
Chief Engineer of the B.B.C.

M. T. Tudsbury, M.INST.C.E.,
Civil Engineer

H. Bishop, B.SC., A.C.G.I., A.M.I.E.E.,
Assistant Chief Engineer

Studio Interiors designed by:

Raymond McGrath, B.A.R.C.H.,
A.R.I.B.A., *Decoration Consultant*

H. L. Kirke
A. B. Howe, M.SC. } *Acoustics*

S. Chermayeff

Wells Coates, B.SC., PH.D.

Edward Maufe, F.R.I.B.A.

Mrs. Philip Trotter

B. N. MacLarty
W. K. Newson } *Installation*

External Floral Decorations by:

Lady Allen of Hurtwood

F. M. Dimmock
C. H. Colborn, } *Design and*
B.SC., A.M.I.E.E. } *Manufacture*

Sculptures by:

Eric Gill

Vernon Hill

A. G. Dryland, M.C., B.SC.,
Acting Engineer-in-Charge

M. J. Rendall, C.M.G., LL.D., *of the Board of Governors of the B.B.C.*

V. H. Goldsmith, *Chairman of the Studio Decoration Committee*

R. H. Eckersley, *Studio Decoration Committee*

G. C. Dailey, M.C., *Secretary of the Studio Decoration Committee*

R. Wade, *Office Accommodation*

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- 112 Ditto: the Interior of a Fan.
- 113 Ditto: the Water Spray.
- 114 The Refrigerator.
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- 116 The Passenger Lift Motors and Controls.