Checking the 58.4% electrolyte in the Battery Room.
The North Tee aerial.

'B' tower in foreground.
View from South Aerial Field.

Showing AT H 2 in foreground.
BRITISH ARCHITECTURE SINCE THE 1920s. A BUILDING STUDY

BROOKMANS PARK RADIO TRANSMITTING STATION
HERTFORDSHIRE

Although the Brookmans Park Transmitter Station building could not be considered avant-garde for its time, it has many innovatory or 'modern' features. Since it was built for a specific purpose, site and function played a dominating role leaving the architect limited planning freedom. His expertise was mostly restricted to the elevations and the creation of functional spaces. Brookmans Park was the first purpose-built twin transmitter station in the world and as such attention was directed towards the monumental aspect of the building. This is reflected in much of the design. The station was designed in 1928 and built by 1929. The architects were Wimperis, Simpson and Guthrie. The client was the relatively newly formed British Broadcasting Corporation (1926).

The B.B.C. was licensed to broadcast radio programmes. In the 1920s this service was rudimentary. One programme was transmitted from nine relatively low-powered transmitters (1–2 kW) around the British Isles and eleven relay stations. There were many areas where reception was poor or non-existent. An engineer at the B.B.C., P.P. Eckersley conceived the Regional Scheme for broadcasting in 1924 to provide a choice of programmes and to cover the whole of Britain. Much more powerful transmitters (50KW) were required to achieve this but in order to avoid swamping of receivers nearby, new open sites were necessary to house them. This entailed the scrapping of practically all the existing transmitters since they were mostly located in city centres e.g. the roof of Selfridges store in London. It also meant that new, purpose-built transmitting stations were required.

Brookmans Park was to be the first and was to serve London and the Home Counties. There were various reasons why a site north of London was chosen. To the west, there was a problem of signals being strong enough to reach Essex and the Eastern Counties and being strong enough to overcome signals from ships at sea. To the east, much of the reception would be wasted over the North Sea. To the south, civil aviation regulations precluded the erection of masts on the North Downs. A site to the north was therefore considered preferable. The site needed to be fairly high and flat, no more than fifteen miles from Oxford Street, isolated from highly populated or built-up areas and accessible to Post Office telephone cable routes.

The site in Brookmans Park met all these requirements. It only had one significant problem and that was hard water, which could damage the valves. Consequently, a water-softening plant had to be included in the plan at a late stage. The Brookmans Park site is approximately 400' above sea level and is a flat grassy plain of 36 acres, fifteen miles from Charing Cross. The B.B.C. providentially also took an option on an adjoining piece of land of 24 acres in size and which now houses the earthing system of their transmitters.
The B.B.C. can consider itself fortunate that the station was completed before the Town & Country Planning Act of 1932 was passed. There appears to have been few restrictions on the use of this 'green-field' site. Hatfield Rural District Council had no objection to steel masts on the site, the site was not part of a "Town Planning Scheme". The only Council restriction appears to have been that the building be sited 60' back from the centre of the road. Local enquiries suggest that the prospect of a new source of rates was welcomed. The B.B.C. was one of Hatfield's biggest ratepayers before the second world war. Additionally, an interview with an eye witness to the building of the station remembers no local opposition from existing residents. "It was a five minute wonder."

Greater reservations were expressed by the local estate agent. The site was part of the Brookmans Park Estate which was in the process of being broken-up. The local agent wanted to see the plans, was concerned about the height of the masts and imposed in the conveyance that the roof should be tiled. This latter would preclude a flat roof and file correspondence indicates that this was to be brought up at a site meeting with the agent and representatives of the B.B.C. This must have been settled amicably since the building does have a flat roof.

On their part the B.B.C. placed restrictive covenants on the sale of the site of the Estate. They insisted that if they were to purchase the land, the estate should not allow "the use of any machinery, plant or apparatus involving the employment of high frequency or high voltage electricity or any process of manufacture calculated to cause interference with the normal working of the Purchasers Broadcasting Station and works connected therewith". What is more this apply to existing tenants as well as future ones. This prompted one solicitor, in 1936, to enquire of the B.B.C. whether this included a retail wireless business, or hairdressers. The answer was "no" but it is clear that if it was "yes" the development of Brookmans Park village would have been severely restricted. A recent conveyance of land previously owned by the Estate includes the restrictive covenant - "No trade business or manufacture nor any noisome noisy offensive or dangerous occupation shall be carried on upon the said land".

Once a favourable site had been found and approvals gained, attention turned to the building itself. There were obviously rigid functional requirements to be met and the problem was raised of just what sort of building was required to do this. P.P. Eckersley, in his autobiography "The Power Behind the Microphone" describes how his "concentration on the aesthetic issues in an engineering scheme was a source of tolerant mirth among B.B.C. technicians". A transmitter station is obviously primarily an engineering project. Attention to the design of the building is of limited interest therefore. It appears that it was only due to the personality and sense of occasion of Eckersley that any consideration was given to design at all. He describes how he was "disappointed by sketches of architectural designs based, as it seemed, on the 'Boy's Own Building Set in Seventeen Places' and others too functional to be beautiful". The choice of architect and design was not therefore well thought out or given priority. It was more of an accident, as Eckersley describes, "At last Mr. Guthrie, an understanding architect, disciplined some indicative lines I draw at a lunch on the back of a menu".
In considering the place of the Brookmans Park Transmitting Station in architectural history, therefore, it is important to bear this in mind. As an architectural project the building was never intended to be avant-garde or innovatory, yet there are some 'modern' architectural features incorporated in it. There are metal window frames throughout the building, typical of the time. The stone capping to the brickwork at the rear of the building is reminiscent of modern Dutch work (see Photograph F). Brickwork was left exposed on the interior or just painted over. This is particularly notable in the showpiece room, the transmitter hall. Here again, as elsewhere in the building no attempt has been made to disguise the concrete ceiling. A smooth cement finish is all the embellishment.

This is a building of ambiguity. The station was built along traditional lines in brick but it had a reinforced concrete ceiling/roof. The main parts of the building are the elevations to the office block, transmitter hall and machine room, were faced in the traditional monumental English way with Portland Stone yet the station had a flat roof. Although these elevations have a classical appearance there are no decorative motifs or features on them. (see Photograph A). It has a stark, bare look of modern architecture, although it can in no way be described as belonging to the modern school. It, rather, falls into the 'modernistic' category; a transitional building between ancient and modern but facing backwards.

This is confirmed when looking at the plan. With the exception of the water treating room (a functional after-thought), the plan is symmetrical along a front/rear axis. The front elevation is also symmetrical. The plan is formal with straight lines dominating. The layout of the windows throughout the building is also formal and balanced. The orientation, although not paramount is an engineering building, is at right-angles to the Great North Road continuing the rigid formalism. The aesthetics of the building are classical rather than modern.

It cannot be said, however, that the building dominates the site. The site is large and the building relatively small in relation to it. In terms of the traditional, academic aesthetics of the time, the building does have a monumental effect without the massive impact of similar town-located buildings. When passing today, the impression is gained that something of importance is carried out inside it but what it is exactly is not imposed on the environment until the nearby, massive, high aerials are spied and these dwarf the building.

In this respect the building does meet the aesthetic requirements of a transmitting station as expressed by Eckersley thus:-

"A high-power wireless station is such a lovely thing. The process is silent, there is no gas or smoke or fussy reciprocation, no sound except a purposeful humming. One is conscious of power contained and controlled. "I felt that the building should be fitting to performance""

If the exterior of the building cannot be considered forward looking or exciting, the same is not true of the interior. The use of space and light inside the building is an unmitigated success. (with one major exception, the machine room, which will be discussed later). The building was not attached to the National Grid for its electricity supply until 1939. It used D.C. current generated on site. But it is hard to believe that energy conservation would have prompted the incorporation of as much natural light as possible in the design.
In the office block, the ground floor windows are approximately 12' high and on the first floor 10' high of clear plate glass. The windows occupy about 1/2 of the vertical wall space. Since the ceilings are high, the effect of the natural light is airy and 'modern'. There are no obstructions on the elevations outside to obscure the natural light. From entering the building.

The transmitter hall is double height with the same layout of windows as in the office block. The vertical strips of windows along two walls open up the whole space to natural light. The space is created by approximately 60' long massive reinforced concrete cross beams supporting the roof and lengthways, with reinforced concrete beams joining the cross beams. The effect is of a large, unrestricted space lit by natural light. This was achieved in some degree by the construction of a vault under the transmitter hall to house all the cables and service ducts which would otherwise impinge on the space. The hall was a great success in the use of space and light and is the highpoint of the building (see photographs Reference 6 pages 272-273).

In the single storey battery room, packing space and workshop natural light entered through pitched skylights of wired glass and continues the effect of light in the building even to the less prestigious areas of the building. The only room where this effect is lost is in the machine room. Since on plan the machine room lies across the middle of the building, natural light is lost in its centre. The ceiling is double height and the light fittings are hung high, the effect, therefore, is dingy and dark in comparison to the rest of the building. Generally however the effect of light and space in the station is excellent and can be one success placed directly at the feet of the architects. The effect of light and space disguise the fact that this building is supposed to be a purely functional engineering building and make it exciting.

In terms of function, the building has passed through many stages. The sittig of the rooms in the plan was largely determined by their function eg the generators in the engine room needed to be as far as possible from the delicate transmitters in the hall. Originally, however, the B.B.C. engineers were delighted with the plan and layout of functions at this station. So much so, that the plan of the Brookmans Park Transmitting Station was used in eight other later transmitting stations, all part of the Regional Scheme. The B.B.C. bought the copyright of the original plan and only used architects as consultants and to design the elevations. Wimperis, Simpson and Guthrie were employed in at least three other of these stations eg. Staghound (1937), Burhead (1936) and Lisagarvey (1936). The elevations in these cases utilized local stone or materials for their finish. In this sense Brookmans Park can be said to be innovatory since it was following the modern trend of standardization. The Regional Scheme was an unqualified technical success and the building contributed to this. But this had its drawbacks for the building itself.

The suitability for its function has suffered in this building due to technical progress and innovation. By the late 1930s, the success of broadcasting led to the need for the power of the transmitters to be increased and an extension was built in 1940 to accommodate these new powerful ones. Fortunately the extension was built with the same external finish, materials and window layout and is thus in keeping with the original. The symmetry of plan is lost, however. The worst effect of the extension was that it was built in the space between the transmitter hall, office block and machine room, thus robbing the transmitter hall of one whole
wall of natural light.

Since the war, other technical advances have been made, particularly to the scale of machines in comparison to their power. In 1962, new 50KW transmitters were installed yet they only took up the space at one end of the now obsolete machine room. Today, the transmitter hall and the 1940 extension are no longer needed to house the new smaller transmitters and are being converted to office accommodation. Those on the the one remaining open side of the transmitter hall have been completed. There is now, therefore, no natural light in the transmitter hall and the overall space has been reduced. Thus the highlight of the interior of the building, the use of light and space in the transmitter hall no longer exists. Technical progress and the success of broadcasting has therefore led to the demise of certain important architectural features of this building although its function as a transmitting station is as successful today as when it was built.

In terms of materials used the fortune of the building is mixed. The main staircase was made of Portland cement but this was found to be slippery and therefore, dangerous. The surface has been changed twice to overcome this. The stepped decorative effect of the parapets have acted as traps for rainwater and when asphalt was used to cover the roof, this has been taken over the edge of the parapets and bent down with aluminium strips to keep out the rain. Rainwater or damp has also got behind the Portland stone facing and is forcing it to crack outwards (see Photographs J and K). The roof/ceiling in the machine room sagged after 25 years and has had to be strengthened by an exposed metal beam. Acid spillage damaged the adhesive and the floor tiles in the battery room damaging the tiles themselves. The heating was insufficient and more radiators needed to be installed. The exposed site and large windows did not help in this respect.

The story is not all gloom however. The extensive use of brass fittings on the interior of the building eg window catches and entrance-mat-well edges have served the test of time, if in need of a little cleaning. The original oak flooring in the transmitter hall is still there and in good condition. The two hand cranes in the machine and engines rooms are still working and in very good condition (see Photograph L). The floor tiles in the engine room are in good condition. The oak floor on the first floor corridor is beginning to show signs of wear and tear after 52 years. The attractive cast iron rainwater pipes are also only just beginning to crack and need replacing (see Photographs F and G).

Generally, the use of high quality materials has ensured a long life. The building has suffered mostly due to change of use brought about by the success of broadcasting and subsequent technical changes in machinery. This building has suffered in one other way. Because of its function as a radio transmitting station, it is an important public building with strategic implications. It has therefore to be secure. In times of war it can be commandeered by the Government. In the second world war the exterior of the building was painted in camouflage paint. Although this was washed off after the war, it has left its stains. Many windows have been bricked up (see Photograph G) and those that were not were protected by steel shutters. These latter have been removed but they have damaged the stonework (see Photographs C and D) and may be responsible for water getting behind
the stone slabs.

One interesting and impressive feature in the building is the use of exterior sliding doors. Since the building had to accommodate large pieces of heavy machinery, ease of access to their positions was important. Full height sliding doors were incorporated in the design in the transmitter hall, machine room and engine room to achieve this. The doors were glazed and so designed that they blend in with the general design and layout of the windows (see Photograph C and D). Additionally, this feature was included to the packing space to enable a delivery vehicle to drive right through the building to unload (see Photograph E). This was obviously vital if delicate electrical machinery and parts were not to be damaged in wet or other bad weather conditions.

Two other interesting features were included in the design. One was the glazed viewing panel to the transmitter hall from the first floor corridor of the office block. Eckersley had the idea that members of the public could walk in and see the radio station in operation. Early obsolescence of equipment in the transmitter hall and the need for security have prevented this from being realised. The other was the novel use of wasted heat. Heating in the building was provided from a boiler heated by the exhaust gases of the engines in the engine room. This was sufficient to heat the whole of the building for times when the engines were not working a separate oil-fired boiler was provided.

In conclusion it can be said that although the building was not avant garde, there were some pioneering aspects to it. The first was that it was itself part of a pioneering project, being the first purpose built twin transmitter station in the world. In this functional area the building has been a great success and is still in operation today. The site was ideal at the time and remains so today. The lack of planning restrictions no doubt assisted since today the site would be considered to be part of the 'Green Belt' around London, with all sorts of implications. The story of the progress of broadcasting can be traced through this innovative building, and later alterations to it have reflected this.

The second pioneering aspect of this building is the use of the plan as a standard for other transmitting stations. Even the elevations of later stations are not dissimilar from Brookmans Park. In terms of working function and layout of functions, the building was a pioneering success.
Aesthetically, the exterior of the building reflects its importance as a monument. The interior is one of pleasing, well-lit spaces using modern materials and methods where possible. In some ways it could be said that as an engineering project there was no need for the height of the building but there is little doubt that this adds to its prestige on such a large, open site. Three smaller stations commissioned early in the war, Penmon, Clevedon and Redmoss, reflected this. They had low ceilings, approximately 11', as opposed to the very lofty ceilings of the original 'Regional' type of building'. In terms of architectural history, this building is not outstanding but can be said to be typical of its era.

The head of the B.B.C., Lord Reith, like Eckersley, had wanted a monumental building. The area of the Brookmans Park station was 20,500 square feet as compared with the 725 square feet of the single transmitter site at Selfridges, which it replaced. According to Pauley "they[the new Regional transmitting stations] were larger than was strictly necessary for technical reasons because Reith wanted them to symbolise the status of broadcasting as a part of national life". The classical appearance, use of Portland stone and the large, imposing entrance convey this, if in a somewhat uninspiring way. Even Eckersley, who was instrumental in choosing the architects described it as "good, but it fell short of our imaginings".

Considering its exciting, innovatory function, it is perhaps disappointing that a more exciting exterior does not reflect this, nor does it complement the successful interior.

This building aptly expresses another traditional British problem is, how to marry forward-looking technicians with architects and public, which was so prominent in the 1920s in England. It also expresses the unhappy alliance between architect and engineer, an alliance in which so often the architect is the junior partner.

When the B.B.C. decided that it needed to convert existing or build completely new buildings they appointed an engineer, M.T. Tudsbery was appointed Civil Engineer in January 1926. He had a staff of two architectural draughtsmen, two clerks of works, and one secretary. He was in charge of all new buildings, including Brookmans Park. Pauley describes the status of the architects working on the transmitting buildings as follows:

"In each case, the architect's responsibilities ended with the acceptance of his drawings for the elevations and thereafter he was called in only when Tudsbery felt that his advice and assistance on the elevations would be desirable."

In this subjugated position, Wimperis, Simpson & Guthrie were the consultant architects at the Stagehau Transmitting Station (1937). The plan is almost identical to Brookmans Park. Again, there is a strong front/rear symmetry. This is again taken to the front elevation by the architects and also to the layout of windows. Stagehau, unlike Brookmans Park, had no massive, imposing, classical entrance. The main entrance door is normal height and is only marked by a canopy as opposed to the classical, double-height loggia at Brookmans Park. There is, however, a classical touch added by the wide supports either side of the door. This is continued by the motif on the front elevation over the door. Brookmans Park, on the contrary, was marked by a lack of decorative motifs. Wimperis, Simpson & Guthrie had moved forward in architectural history at Stagehau, but were still not avant garde. Nevertheless, the 'Builder' describes it as "restrained and modern in character" in 1937.
It must be noted that when the Brookmans Park building was designed, International Style architecture had not reached Britain. One or two private houses had been built heralding it but this had not reached public buildings. The pioneering building work of architects, like the Dutchman, Dudok, was being copied, as the rear elevation of the Brookmans Park building suggests. Contemporary buildings to which this building could be compared are perhaps the Royal Horticultural Hall, London (1929) which was an example of building design in Britain evolving to modern architect not revolting to it. The Beaux-art symmetry of plan here can be compared to Brookmans Park.

Probably the nearest other comparable buildings in the 1920s were the factories along the Great West Road eg Firestone Factory, Brentford (1928-29). Symmetry of elevation again suggest a Beaux-art background and there is a monumental main entrance along the same classical aesthetic lines as Brookmans Park; but there is none if the elaborate decorative tiling or corner turrets of the Firestone Factory at Brookmans Park.

It was not until the 1930s that modern architecture reached Britain with any impact but, again, this was mostly restricted to private houses. The architecture of public buildings tended to be 'modernistic'. This tried to bring modern architecture to the public but with a warmer face than the rigid formalism of the International style. There is no intellectual purism about 'modernistic' architecture. It does therefore tend to incorporate eclecticism in its designs.

This is actually the style used at Brookmans Park. Many factors influenced the plan and aesthetics of the building but it cannot be denied that the front elevations were under the control of the architects at least. And they have a classical effect. Although modern materials and building methods are included occasionally, the overall appearance is not modern. This is very much a building at the crossroads of modern architecture; a building moving to the future but looking backwards.

*Note on Architects (see Reference 36 in Collection of Factual Material)*

Before this building, the architectural practice of Wimperis, Simpson & Guthrie had worked on the Fortnum and Mason building in Piccadilly (1926-27). At the same time as this building, the firm were also working on the Cambridge Theatre, London (1929-30) and the Williams and Glyn's Bank in Whitehall (1929-30). The form of these two also had, like Brookmans Park, a symmetrical design and is faced mainly in stone. (see Reference 26 p.328 in the Collection). The latter was a brick neo-Georgian building. According to Pevsner's descriptions of the firm's later work it was undistinguished, being eclectic or modernistic. This should not be relied upon, however, since he does not even include the Brookmans Park Transmitting Station in his 'Buildings of England' series 'Hertfordshire' volume. The architects do however appear to have adopted the role of consultants to the B.B.C. after the Brookmans Park building, since they had that role in at least three other radio transmitting buildings and on Television Transmitting Station eg Sutton Coldfield (1949?). (See Reference 27 pp 820/1 in the Collection)
I wonder how many times you have passed the B.B.C.'s Transmitting Station, the A1000 at Brookmans Park without realising what a wealth of historic interest it contains. For this building has played a crucial part in the history of broadcasting in this country.

The station was the first of the B.B.C.'s adventurous and experimental Regional Scheme which aimed to bring existing radio reception to cover the whole of Britain. Before the Regional Scheme was instigated the radio broadcasting service was rudimentary. Our programme only was transmitted at a time from a series of relatively low-powered 1-2 Kilowatt town-centre transmitters around the British Isles and eleven relay stations. There were many parts of the country where reception was poor or non-existent. Brookmans Park was the first purpose-built twin transmitter station in the world capable of broadcasting two programmes simultaneously when it was completed in October 1930. After the success of the Brookmans Park Transmitting Station, which first broadcast on 19th March 1930, the Regional Scheme went on to its successful conclusion.

The B.B.C. site for Brookmans Park's twin transmitter station was downloaded to its 50kw output, replaced Radio 2LO on the roof of Selfridges store in Oxford Street and was designed to extend reception to London and the Home Counties. There was great controversy at the time as the Regional Scheme was introduced. Previously, the city-centre based signals could be picked up on homemade receivers such as cigar box with an earphone attached or homemade aerials. After twin-transmitting stations opened these sets could not differentiate between signals and became largely redundant. The production and development of domestic wireless sets was therefore given a big boost. A peak of 700,000 twin-transmitter stations such as at Brookmans Park came into being in a few months due to the success of the Regional Scheme.

The station was one of the first 'A' Category Regional Stations opened by the B.B.C. for its London Regional Station. A station of the regional type was needed to bridge the gaps left by the launch of the first public transmitters in the Regional Scheme. In these modifications were made to the original plan only in terms of scale. Different materials were used to make best use of local stone. Even so, it is surprising how similar some of the later stations look in comparison with Brookmans Park. The original building cost £50,550, and was built by the Anglo-Scottish Construction Company. The cost of the work was £130,500.

The station was well equipped with all the latest broadcasting facilities. The studio and the transmitter rooms were equipped with the latest technology of the time. The studio featured a large control room with a soundproofed control panel. The transmitter rooms were equipped with the latest broadcasting transmitters, which were designed to broadcast the station's programming.

The station was a model of efficiency and innovation. It was equipped with the latest broadcasting equipment, which was state-of-the-art at the time. The station was a testament to the B.B.C.'s commitment to providing the best possible broadcasting service to the nation.

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