

## Chapter Two

### THE WOOD LANE POWER STATION

The Power Companies - Cables - Substation  
Capacity - General features – 1908 Exhibition  
White City Stadium - The London Power Company

THE TURN of the century witnessed the start of building activities on this site, when it was decided to erect a Power Station. At this stage it would be worth considering the reasons why this Power Station was required and why this particular site was chosen (4). In order to obtain the full picture it is necessary to go back to 1888 which saw among other events of that year, the formation of the Kensington and Knightsbridge Electrical Lighting Company Limited. This Company, which had taken over the old Kensington Court Company, soon expanded and started supplying electricity to the districts from which it took its name. However, to carry on efficiently, the Company soon found that a second generating station was required and one was established in Cheval Place in 1880. All went well until 1895 when, as in the case of many of the early Power Stations, a serious fire broke out at Kensington Court, resulting in damage estimated at £6,000. By 1898 the load on both stations was something like 1,000 kW and it was evident that a further generating station would be required to cope with the growth of the undertaking. Unfortunately, it was impossible to expand the existing plants due to lack of space and the fact that, being in a residential area, any increase in capacity would have caused a public nuisance.

In addition, a neighboring concern, known as the Notting Hill Electric Light Company, were finding themselves in much the same difficulty, with the result that both Companies were looking for a new location in the west London area at the same time.

About this time a piece of land at Wood Lane, comprising about 13 acres, had been acquired by the Kensington Vestry for use as a depot (5). It was this piece of land that both electric light companies had noticed, and consequently an approach was made to the Vestry to consider selling a portion of it. Negotiations resulted in the Vestry selling 3 \* acres of the site jointly to both Companies, so that the erection of joint generating works could be carried out. This move received the Royal Assent early in

1899 with the result that the Kensington and Notting Hill Electric Light Company was formed. By September 1899 the land had been acquired and a roadway to the site constructed. The excavations for the Power Station's foundations were started in December 1899 and the first engine and alternators were in use for testing cables by 20th October 1900. The first current was actually sent through to Kensington three days later; that is, after only 10 months from the commencement of excavations.

It is of particular interest to note (5, 6) that the cables carrying the supply to the Company's districts were of a new design, the now well-known "sector" or "clover leaf" construction, which had been patented by Ferranti in 1892. Of even more interest

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to us is the fact that these three core, 5250 volt cables were manufactured by the British Insulated Wire Company of Prescott and the Wood Lane installation was the first recorded example of their use in England (6) for three phase transmission.

A further point worthy of note is that the cooling pond (situated where Faraday building now stands) was lined with concrete and "Callender's bitumen sheeting" (see Chapter Three).

Stone plaques marking the boundary of the site of the Power Station are still to be seen set in the outside face of the north wall.



Boundary Wall plaque

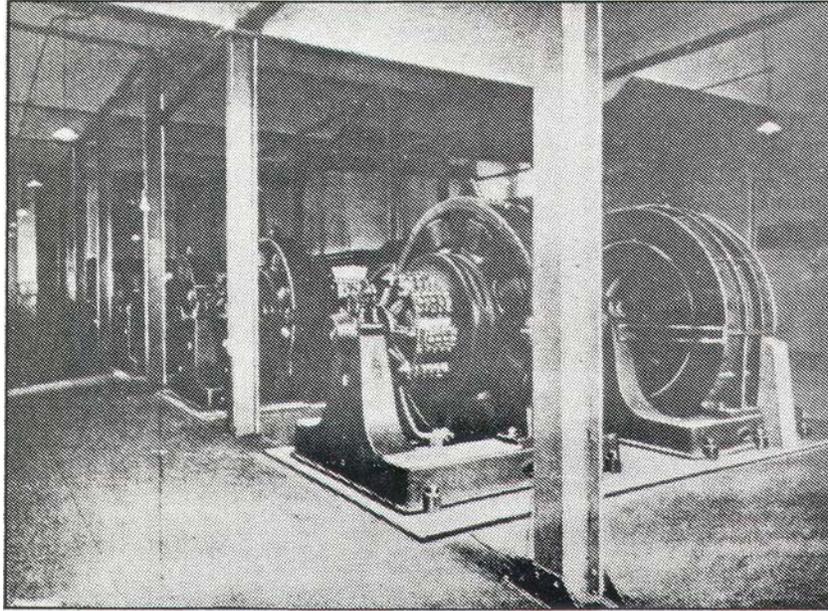
The Power Station was constructed to generate high tension, three phase current to be transmitted to substations belonging to both Companies. Believe it or not, but one of these substations was situated in the vaults underneath the Albert Memorial! (4, 5),

These vaults were quite roomy, and fairly well lighted by windows, but were rarely, if ever, used and were excessively damp and dirty. Ventilation presented something of a problem since it was stipulated that the windows should be permanently closed to prevent the escape of noise, and ventilation shafts were prohibited for the same reason. Eventually, a large fan was installed to force fresh air into the vaults at slight positive pressure, whence it escaped via a number of small outlets. In order to dry the vaults, hot water pipes were erected round the walls.

The Company took possession in April 1900 and within six months the machinery was in operation, in spite of difficulties of erection caused by the lack of head-room for a crane, and a veto against fixing anything whatever to the steel columns supporting the arched roof and the weight of the equipment which had to be man-handled.

It is perhaps not generally known, but the opening of the Wood Lane Power Station (4) was of historical importance, inasmuch as it provided the earliest example of high voltage, three phase current generation and transmission in the country, although it

*The Wood Lane Power Station*



Albert Vaults Substation (General view)

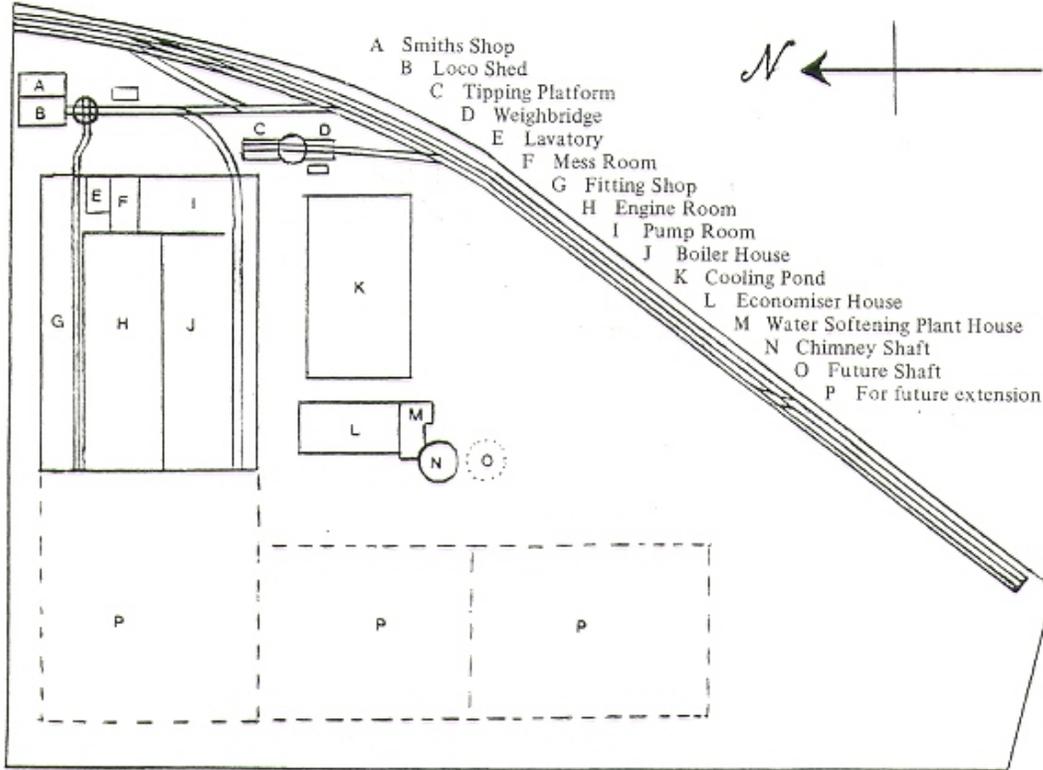


Map, 1912

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was soon to be overshadowed by the larger 11,000 volt, three phase station of the Charing Cross Company at Bow. The original scheme for generation at Wood Lane had involved generating and transmitting at 6600 V, but the Board of trade had other ideas, the result being the generation of 5000 V. (6600 V was considered too high for safety). In actual fact, the Company did not generate 6600 V until 1937 when it was raised to be in accordance with neighbouring supplies.

A plan of the Power Station published soon after it opened (5) shows a number of interesting points. In an endeavour to complete the picture in the reader's mind, let



Kensington and Notting Hill Power Station - Plan of Works

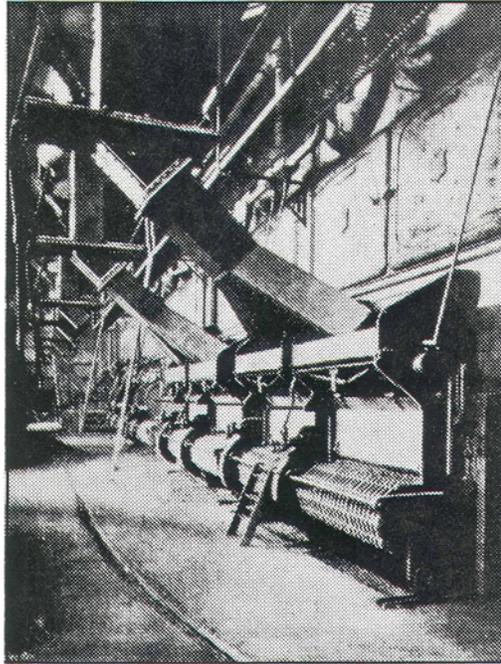
us list some of these features and point out the latter-day structures, if any, which have replaced them and which are familiar to Wood Lane personnel.

First, and until it was demolished in 1958, most obvious was the chimney. This was originally 210 ft. high but was shortened in comparatively recent times. The foundations were taken down 26 ft. and the chimney stood on a block of concrete some 36 ft. square and 10ft. thick. Reference (5) gives details of its construction, but suffice it here to say that it was built of brick and that the bore was 11 ft. throughout. The plan shows also the position of a second shaft alongside the first which, although built, was removed before Callender's arrived.

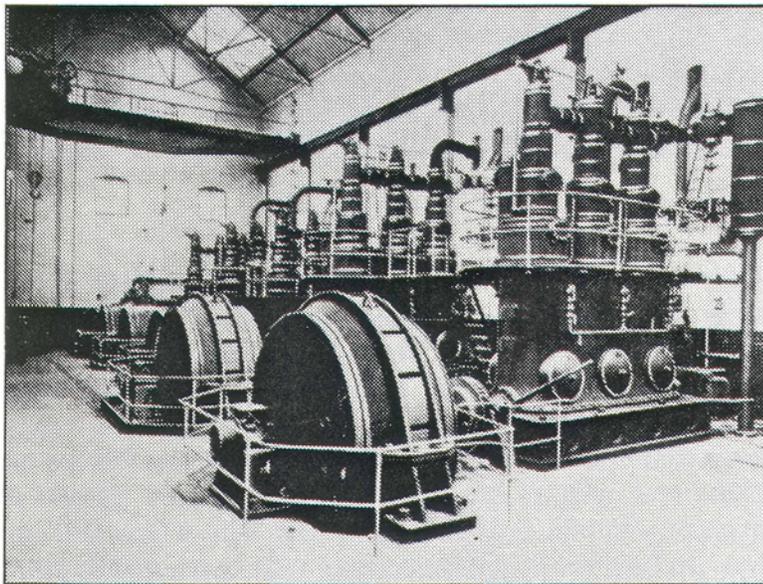
At the eastern end of the present lawn stood what was termed the "economiser house" and the water softening plant, and beyond this, where the Faraday building now

stands, was the cooling pond as has already been mentioned. This was 100 ft. long by 60 ft. wide and 7 ft. deep, and provision was made for doubling this later.

The main power station building was divided, as today, into four main sections at ground level. Southernmost were the coal chutes and mechanical stokers, feeding the



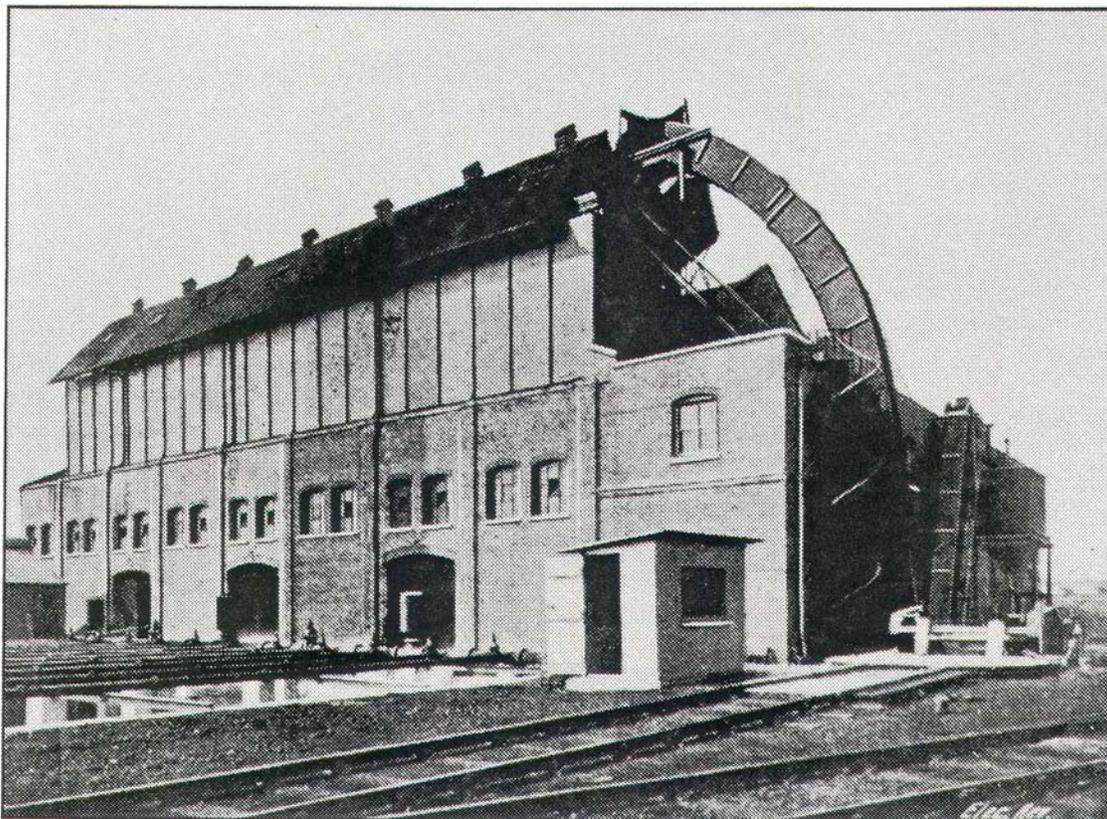
Water tube boilers and mechanical stokers



Engine room

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boilers which were in the next section. (These two sections comprise the part which became known, and is still known, as HV I, occupied today by Polymer Processes Department). Beyond the boilers, in the next section which is now the High Voltage Laboratory (HV2) was the engine room, and beyond that next to the north road was a fitting shop, now HV2 substation. Above the chutes were coal bunkers, filled by conveyor from railway wagons which ran onto a tipping platform at the eastern end of



Exterior of Works

the building in approximately the position of the present entrance to HVI. Turntables and a weighbridge were also located at this end and railway lines ran through the building at both south and north sides. Above the boilers were two large water tanks holding 55,000 gallons, occupying the space which is now the Polymer Materials laboratory, whilst above the fitting shop were, and still are, offices. The coal bunkers were not demolished until 1950 when the Rubber and Plastics laboratory (now Polymer Materials) was rebuilt, together with the adjacent offices and conference room, i.e. the whole southern side of the building. The offices and conference room have since become the Polymer Physics laboratory. The room slightly below ground level at the eastern end of HV 1/2 (now used by HV laboratory for Environmental Testing) was the pump room, with offices above, as today. Below the boilers and the stoke-hold ran

an ashes tunnel and the main flues, the ashes from the boilers being taken by conveyor to a storage tank and thence to railway wagons as desired, whilst the flue gases were discharged via the chimney. Some of these tunnels are still in existence, though few people know of them. The flue leading out to the chimney was exposed during demolition of the old Machine Shop (formerly "economiser house", above) and levelling of the site prior to laying out the gardens at the time of erection of McFadzean building (1958-61). It is now blocked off, of course. An engine shed and blacksmith's shop stood in the north east corner of the site. These were replaced in fairly recent times by modern garage accommodation, which has been put to good use by "Samy & Charlie" (sic) since this corner of the site was handed over to BR in 1980 as part of the deal which allowed BICC to purchase the area of former railway sidings where the Brazier laboratory now stands. Railway sidings were a feature of this side of the site, and have come to light several times, notably in 1957 when it was necessary to use an oxy-acetylene torch to excavate the foundations for an extension to the old canteen buildings (now Works Engineering), and later when the erection of Brazier laboratory was being commenced.

On the plan, the areas now covered by the buildings known as HV3 (now housing the Stores and Optical Fibres) and HV4 (Conform Project), and by McFadzean and parts of Rutherford and Brazier, are marked out "for future extensions". However, only the HV3/HV 4 part was completed by the time the Power Station was closed down in 1928. This was the "second part" of the Power Station, referred to below. Its construction was much the same as that of the first part and we will not bore the reader with detail.

During the years that immediately followed the erection of the Power Station, considerable improvements were made in the efficiency of the plant. The original three phase, 45 cycle alternators were driven by reciprocating engines. Installation of a turbo-alternator of 1000 kW capacity in 1903 completed the first part of the station. Reciprocating machinery was reverted to for the second part, which was started in 1906 with (and we quote from reference (4)» "a 1600 kW slow speed horizontal cross-compound Sulzer engine carrying a flywheel alternator on the centre of the crankshaft". The installation of this mouthful afforded an opportunity of gradually raising the frequency of the whole system to 50 cycles. A changeover from reciprocating machinery to turbo-alternators was commenced in 1916 and in 1928, when the Power Station closed down, the latter alone remained, their aggregate capacity being 13,700 kW.

During the early days of the Power Station, various buildings of odd shape had started to appear on the landscape round about. These were built to house the Franco-British Exhibition that was to be held in 1908. At this period relationships between France and some of its neighbouring countries had become somewhat strained and it was thought that this exhibition might, in some small way, help to improve matters. The exhibition buildings stretched (and parts still do) from Shepherds Bush underground station across to what was shortly to become the White City Stadium and covered 145 acres. The official opening was conducted by the Prince and Princess of Wales and visits to the exhibition were later made by King Edward and the French President.

The exhibition, which was a huge success, was mainly situated on the site now occupied by the BBC Television Centre, and stretched alongside the site of the White

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City Stadium which was then being constructed. The brains and money behind this venture belonged to the Kiralfy brothers and the exhibition certainly came up to their expectations.

The part of the exhibition which still runs alongside (and lately over part of) our site was in fact the main entrance to the exhibition. Visitors entered at Uxbridge Road (by Shepherds Bush Central Line Underground Station) and passed through the "eight halls" as they were then known, entering the main exhibition site via a bridge over Wood Lane. In those "eight halls" were display and trade exhibits, four halls being devoted to the French aspect and four to the British. The French even had a little wine shop housed there!

Like all exhibitions, somebody had to complain about something and the "eight halls" were the "something" in this case. It was said (and people who have to shop in "the Bush" at lunch-time will appreciate this) that by the time that visitors had reached the exhibition site via the eight halls and then toured this huge exhibition itself, they were in no fit state to walk all that way back to Shepherds Bush.

The Wood Lane Power Station played its role in this exhibition. According to "The Electrical Review" (7) careful consideration had to be given to the supply of electricity to the exhibition. In order to ensure practically the illumination of the whole of the building and grounds by electricity only, two independent supplies were arranged, one source being the Wood Lane Station of the Kensington and Notting Hill Electric Supply Company, and the other being the Hammersmith Borough Council's Station in Fulham Palace Road. Full details of the electrical aspects of the exhibition appear in this article together with six photographs of the actual exhibition. Additional photographs and information are housed in the Central Library, Hammersmith.

A few years later a second exhibition was held in these buildings to sponsor Anglo-Japanese relations.

The opening of the exhibition also coincided with the opening of the Underground extension between Shepherds Bush and Wood Lane Stations, the latter being the now derelict building at the end of Ariel Way.

The same year also saw the occasion of the Olympic Games which were due to be held in London. The authorities chose the west London area for the location and, as a result, the White City Stadium was erected. This stadium was soon to witness one of the greatest marathons of all time when the Italian Dorando was disqualified at the finish - after having just run from Windsor!

Another notable feature of the district at about this time was the serious flooding, which, due to the low level of the once marshy land, occurred from time to time, and from which the Power Station was not immune.

By 1925, so many small electricity companies had sprung up in the London area that Parliament was forced to act. The result was that, in 1925, Electricity Acts were passed to centralise the control of electricity and thus the London Power Company was formed. Among the various Power Stations which this Company took over was the one at Wood Lane. In actual fact the L.P. Co. leased the Power Station early in 1926 and it remained in operation under this Company until 15th May, 1928, when it was closed down.

*The Wood Lane Power Station*

Although the London Power Company bought Wood Lane Power Station in December 1930, it remained untenanted from 1928 until it was leased to Callender's Cable and Construction Company in October 1931.