

# A TALE OF TWO TOWERS

G. C. Platts recalls the rivalry between the BBC and IBA as ITV launched its London service

I joined the BBC as a newly qualified graduate engineer in 1953 and from early 1955 until my retirement in 1989 I was intimately concerned with the provision of the TV antenna systems at Crystal Palace.

My recollection is that the BBC was greatly opposed to the creation of the Independent Broadcasting Authority (originally the Independent Television Authority) and was strongly lobbying the government for agreement to start its own second channel operating on 405 lines in Band III, and indeed provided accommodation for such transmitters at Crystal Palace and Holme Moss in Yorkshire.

In the early 1950s, the BBC decided to transfer its 405 line service from Alexandra Palace to Crystal Palace to improve and extend coverage and, having made this decision, wanted to implement it as soon as possible as increasing numbers of people using directional receiving antennas would have to re-orientate them to receive transmissions from Crystal Palace. To this end, an order was placed for a self-supporting tower with a square base of 120ft (36.6m) tapering to 440ft (134.1m) above ground level and there surmounted by a 180ft parallel-sided 9ft 6in (2.9m) square section, itself supporting a 4ft 4in (1.3m) section, bringing the total height of the tower to 640ft (195m), with provision to carry a light cantilever above this level. The 4ft 4in section and provision for a cantilever allowed for future developments. The Marconi company was contracted to supply an 8-tier antenna to be mounted on the 9ft 6in section, duplicate co-axial feeders, vision and sound transmitters to provide an Effective Radiated Power (erp) approaching 200kW (Alexandra Palace's erp was 34 kW).

The erection of the tower was delayed – I believe, due to unexpected ground conditions and foundation complications at one corner of the tower, but as the transmitter installation proceeded apace, and with the expiry date of the lease at Alexandra Palace approaching, it was decided to erect a temporary low-power antenna on a 235ft (71.6m) mast adjacent to the tower location.

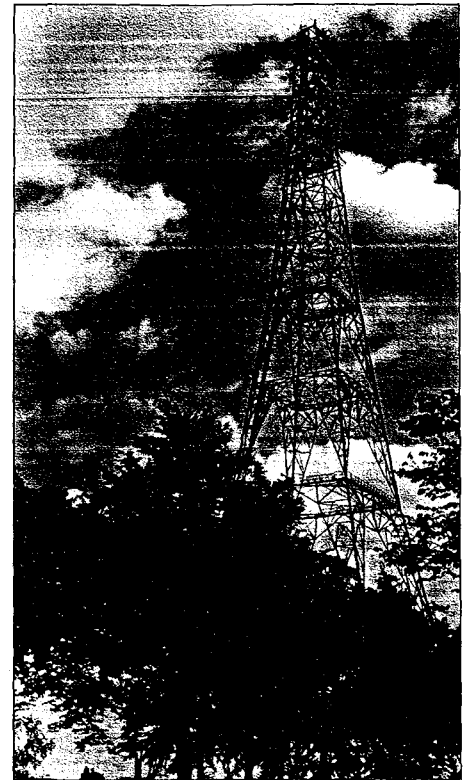
The service provided by this antenna

was poor initially and was further degraded as erection of the main tower proceeded, due to the screening effect of its steelwork and reflection from it.

At about this time, as I recall, the government ordered the BBC to make provision for the IBA's Band III service on the grounds that two towers on the skyline to the south of London were undesirable – this in spite of the fact that most if not all of the steelwork for the planned 640ft tower and the 8-tier antenna had been fabricated and was on site.

The BBC was anxious to increase its audience before the start of the new IBA service just as the IBA was anxious to start its service before this happened.

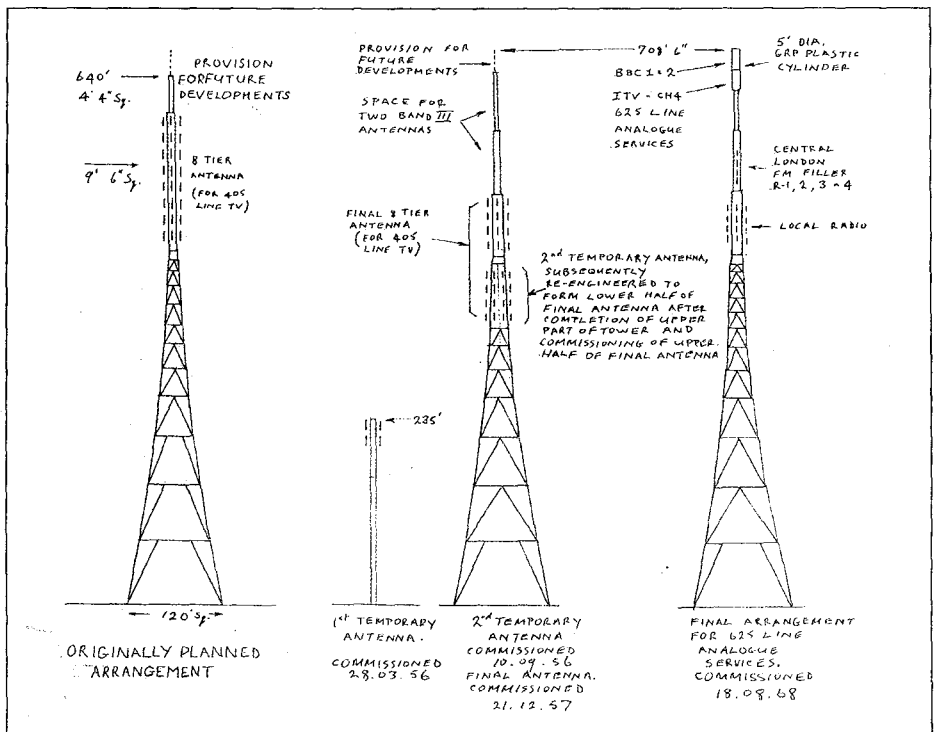
The BBC decided to continue erecting the tapering section of the tower as quickly as possible and to mount a temporary 4-tier antenna on the upper part. This antenna was brought into service on 10 September 1956 and greatly extended the service area. The upper part of the tapered section was strengthened and above this level the tower was redesigned to have three parallel-sided square sections, each of 72 ft (22.2m), with cross-sections of, respectively, 9ft 6in (2.9m), 6ft 6in (2m) and 4ft 6in (1.4m) with tapered joining sections bringing the

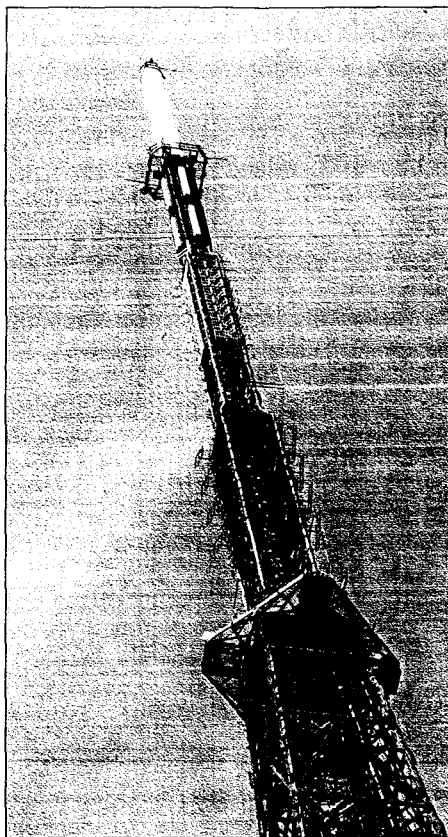


The Crystal Palace transmitter partly built with second temporary antenna.

total height of the tower to 672ft (204.8m) with provision for a light cantilever extending the height to 708ft 6in (215.8m). The originally planned 8-tier Band I antenna was lowered by half

Drawings by G. C. Platts.





*Antennas on the Crystal Palace tower: TV main and reserve antennas with radio antennas below.*

its aperture so that half of it was on the 72ft (22.2m) 9ft 6in (2.9m) square section with the other half – with twice the number of dipoles to maintain the desired radiation pattern – mounted on the upper part of the tapered section of the tower. The other 72ft (22.2m) sections could then each accommodate a Band III antenna, with provision for future developments on a cantilever pole.

The BBC at this time was still hoping to be allowed to start its own Band III service and had learned that the IBA was intending to start transmissions from a site it had acquired at Beulah Hill in advance of facilities to be provided for its service on the Crystal Palace tower. The BBC then proceeded to buy the only two Band III transmitters available in the country, which had been manufactured by Marconi presumably in the expectation that there would be a demand for them from either the BBC or IBA. These transmitters were, in fact, stored at Crystal Palace for many years before eventually being used to provide BBC-Wales from the transmitting station at Wenvoe near Cardiff. Meanwhile, I recollect that the IBA placed a contract with Marconi to revamp the prototype transmitter they had used to develop the pair of production Band III

transmitters purchased by the BBC and was thereby able to start its service from Beulah Hill on 22 September 1955 using temporary accommodation with an antenna on a 200ft (61m) tower.

The IBA continued to use its Beulah Hill site, eventually constructing permanent accommodation for higher powered transmitters and a 600ft tower to carry a higher gain antenna, and never used the facilities provided for it on the Crystal Palace tower for its 405-line Band III service.

Some years ago, two retired senior BBC Research Department engineers, then in their eighties, told me that the IBA never had any intention of coming onto the Crystal Palace site and the whole saga of the modification of the Crystal Palace tower was to minimise the size of the BBC television audience before the IBA service was opened. Certainly, I have no knowledge of the IBA ever placing an order for an antenna to be mounted on the Crystal Palace tower.

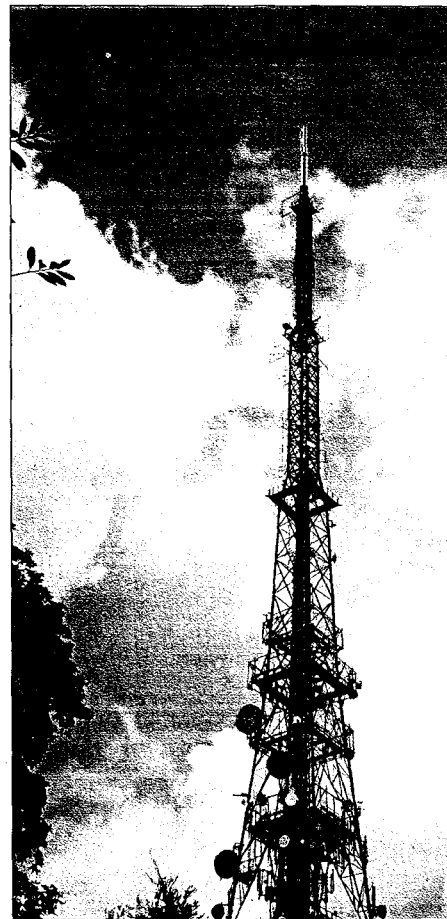
However, there is no doubt that the redesigned tower and 405-line antenna, whilst degrading the BBC service due to the lower antenna height, was an improvement in the long term on the original design in so far as it facilitated – through a number of stages – the accommodation of separate two-channel BBC and IBA UHF antennas for the present 625-line analogue services and other services introduced more recently.

The two UHF antennas are accommodated on a 60ft triangular cantilever with sides of 3ft 3in (1m)

*The Crystal Palace transmitter viewed from the north.*



*Start of construction of the IBA "Croydon" transmitter at Beulah Hill in 1955 and the transmitter today.*



enclosed in a 5ft (1.8m) diameter cylindrical fibreglass shroud bringing the height of the structure to 708ft 6in (219.6m).

The original 405-line services broadcast in Bands I and III required separate receiving antennas, but those required for UHF reception were generally highly directional and it was clearly desirable that all UHF services in a given area should be radiated from the same site – and, indeed, this was decreed in the National Plan for UHF Television Services. By this time, engineering co-operation between the BBC and the IBA was greatly improved, the BBC had carried out extensive UHF tests from Crystal Palace, the Crystal Palace tower was both taller and more suited to carry the UHF antennas – and, accordingly, it became the prime site for the UHF services in the UK.