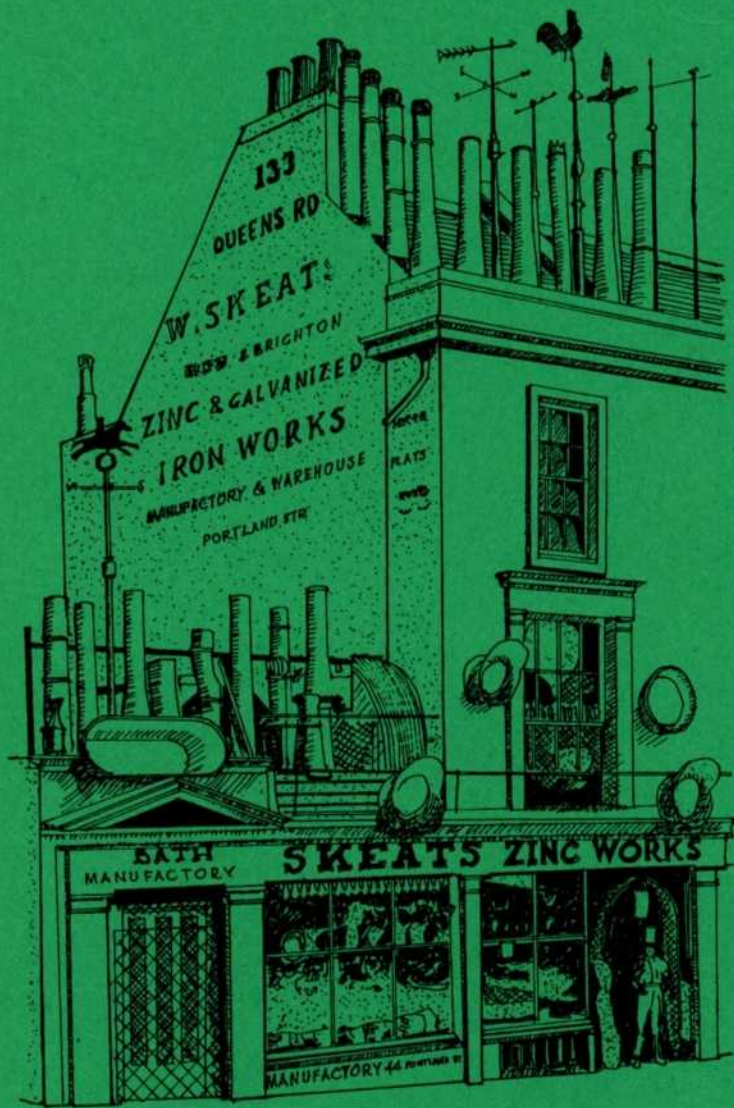


SUSSEX INDUSTRIAL HISTORY



W. SKEAT'S EMPORIUM - 133 QUEENS RD BRIGHTON

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**Chimney Cows – Longley's Wood Block Flooring –
Private Press Movement – Hunston Bridge –
King's Standing Transmitter**

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CHIMNEY COWLS WITH PARTICULAR REFERENCE TO BRIGHTON

John Redfern

Wind figured largely in the domestic and economic fortunes of seaside towns, and Brighton with its long history of fishing, seaside therapy, varied attractions and thriving social life was no exception. As Brighton expanded and houses appeared on the banks and steep slopes on either side of The Steine, mostly in close proximity and at the same time rising in narrow steps one behind another, problems arose, particularly in the area of heating and in venting the smoke and fumes that came with it. It was here that the very wind, that frequently caused rooms to be almost uninhabitable, was harnessed to provide the remedy for the nuisance of which it was the main cause. "A diversity of unique cowls and smoke cures was developed to ameliorate the problem of the vagarious currents of air that the complex developments promoted and the stiff winds that are a feature of our coastline. What is now an almost forgotten industry came into its own. It could be said that this 'hidden' industry produced a range and number of essential artefacts over a period of many years that could rival the output of any similar enterprise in the town to date. There have always been cowls on the scene. Charles I is said to have granted a patent to the inventor of a rotating smoke cure (probably a "Lobster Back") and there are earlier references to creaking apparatus on the chimney. Prince Albert applied his considerable engineering talents to the chimneys of Osborne. It is said that on the night of his death the cowls that he had designed roared and ground in the vicious tempest that assailed the house. Chimney cowls, (the word derives from the Latin cucullus: a hood), became an established and profitable industry early in the nineteenth century when a plethora of shapes, (Fig. 1) shafts and erections appeared almost overnight. For the Victorians decoration, even on the heights of the house, exemplified in these artefacts the principle that anything on which time, trouble and money had been expended should be decorous and effective and should be seen to be so.

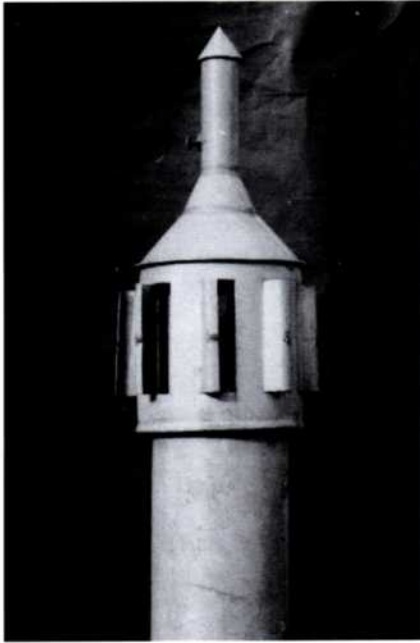
In London George Ewart, (whose family firm was well known for the 'Geyser' style water heaters that dominated the bathroom until well into the Second World War), working on a family design of 1829, or possibly earlier, produced "The Empress Smoke Cure" which rolled out of the workshops in Euston Road in thousands, exported to the outer reaches of the

Empire, where if not always smoke, ventilation required address, and continued well into the 1930s when its companion, "The Emperor" (patented in 1909), took its place until 1956 when the firm was finally wound up.

At about the time that Ewart was consolidating his stake in this promising market, G.A. Harvey of Greenwich and Frederick Braby, a near neighbour of George Ewart in Euston Road, came up with varied selections of cowls among which "The Brighton" was much favoured and by the end of the nineteenth century a good many lesser firms had jumped on the band wagon.

The biggest single organised success, however, derived from Marlborough, an elegant cowl with carefully specified bearings, patented by Joseph Milburn in 1873. (Fig. 2) Two other persons laid violent claims, the grudge, it is said, being borne into the 1950s. Milburn, who apparently had some sort of 'influence' over the then Marquess of Ailesbury, persuaded him to adopt a number of cowls on his mansion Tottenham House in Savernake Forest and to commend them to the nobility and gentry of the time, with the result that they appeared on nearly every great house in the country. Queen Victoria granted Milburn a royal charter, whereupon more cowls joined the "Emperors" and "Empresses" at Sandringham, Windsor and Balmoral. Milburn's biggest customer, however, was Lord St. Levan. Every two years or so a large order for cowls and spare heads would arrive from the Manor Office at Marazion. The contrary winds whirling round St. Michael's Mount used to whip off the heads, whence they fell into the sea with the noise of an explosion. Miss Phillips, the last surviving member of the original firm, recalled her father, with his heart in his mouth, watching J.C. Uren, the head mason, hanging over the precipitous ramparts of the Mount to put new heads on the tall cowls that overhung the rocks and sea. It was so dangerous that he would allow no one else to do it. Only a "Milburn" could alleviate the problem.

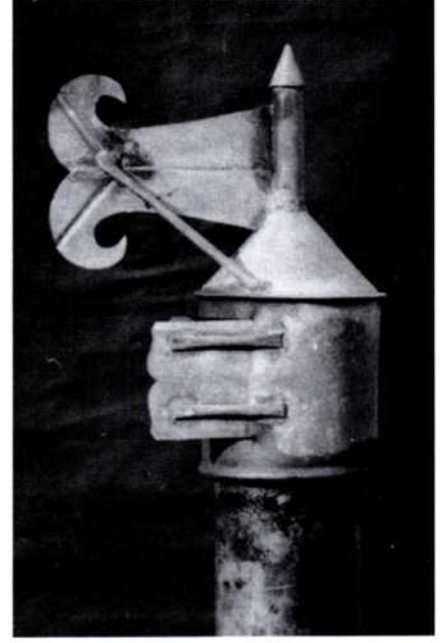
The cowls were much admired by their new owners, jappanned Venetian Brown and expensive. They were advertised in the socially correct illustrated papers of the time and promoted by master builders whose desks would sport a rather good glass paperweight with Milburn and logo therein. Messrs. James Waters & Sons, Ltd. of Forest Row, with their reputation for sterling work on important country properties, proved an excellent outlet for the cowls in this part of the South East and similar connexions were established around the United Kingdom. Their shafts were generally 6' high, of diameters from 8 to 12", generally in galvanised iron and fireproof or occasionally in unpainted copper, though on St. Catherine's Court



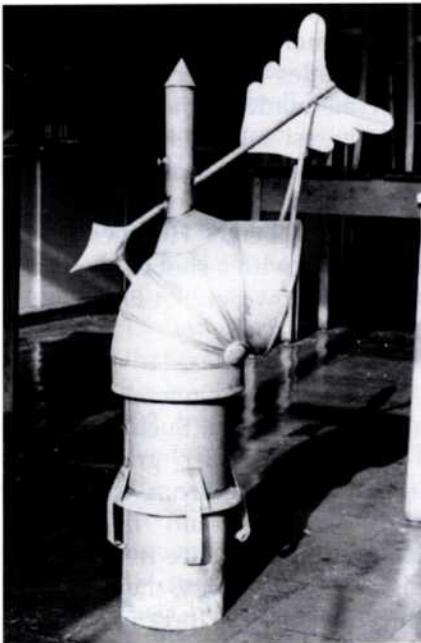
"Vertical Rotary"



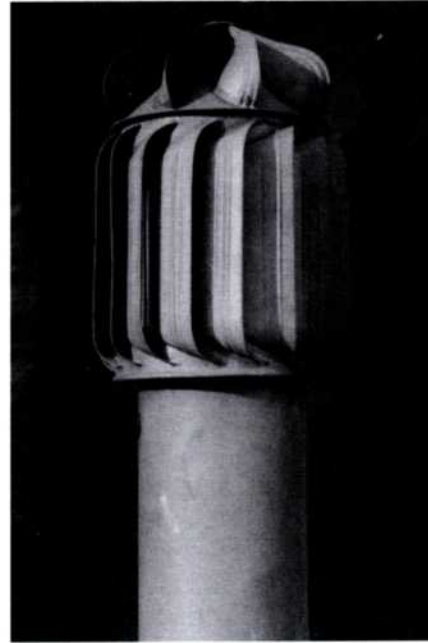
"Spiral Rotary"



"Brighton"

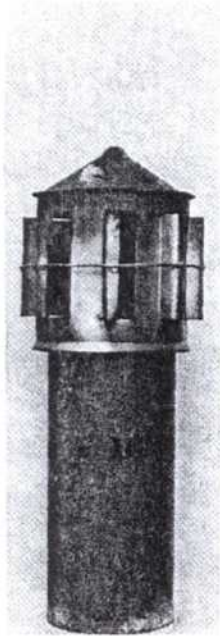


"Lobster Back"

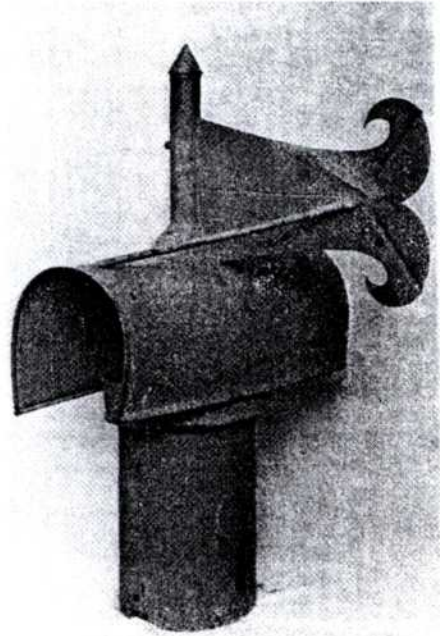


"Archimedean Ventilator"

Fig. 1a Traditional Brighton cowls



"Rotary Ventilator"



"Revolving Hovel"

Fig. 1b More traditional Brighton Cowls

in Hove, two large "Milburns" in zinc, the traditional Brighton material, revolved until well into the 1950s. To the shaft of each cowl was riveted a brass plate bearing details and a serial number. From 1873 each cowl's despatch, destination and, if requested, modification from the usual specification with appropriate drawings and details were entered in the ledgers, from cowl no. 1 to the last cowl, scrupulously overseen by Miss Phillips; well over 55,000 cowls were recorded. Changes of ownership in the 1950s resulted in the disposal of much of the accumulated documents and these extraordinary historical records were lost forever.

In their heyday the cowls were a feature of the Marlborough scene: the handsome identification plates on the tall cowls crated and standing outside Northumberland works in the Main Street, their heads often free and turning in the slightest breeze, were regularly inspected by passing residents who took a keen interest in their numerical advance. With many features in common with the "Vertical Rotary", the secret of the cowls' success seems to have been the annular ring that encircled the tops of the vertical openings in the revolving head.

Nowhere, it was generally acknowledged, was there to have been seen such a skyline of tin pots as in Brighton (though San Francisco, even now, makes a good

showing and until quite recently Paris offered a great many cowls, though these latter were mainly static). In his absorbing monograph¹ Valentine Fletcher, a retired parson, concludes chapter 3: "Finally no mention of cowls can be made without reference to Brighton, where the largest selection of oddly shaped cowls in the country can still be seen. A feature of these is that while, many follow conventional patterns, nearly all have their stems bent." He goes on to illustrate his point on page 27 with a shot of two "Brightons" on the premises of the now defunct *Brighton & Hove Herald* in Castle Square.

There is little specific reference to chimney cowls, particularly in Brighton. Such familiar and utilitarian objects were taken for granted, although those working in the trade from the last decade of the nineteenth century could fall back on an oral, anecdotal tradition whence it was agreed that, whilst their origin remained hazy, they were in general use in the eighteenth century. In Brighton four firms, whose expertise was directed rather to serious projects and major works than to minor domestic necessities, were the main manufacturers of cowls: W. Skeats of 133, Queens Road (located more or less where Messrs. Boots has replaced the Regent Ballroom and Cinema; see cover illustration), W. Gooding of 43-44 Upper Russell Street (dust now and ashes beneath Churchill Square), H.A. Waller and Sons, Ltd. of 1, 2, 3 and 37 Whitecross

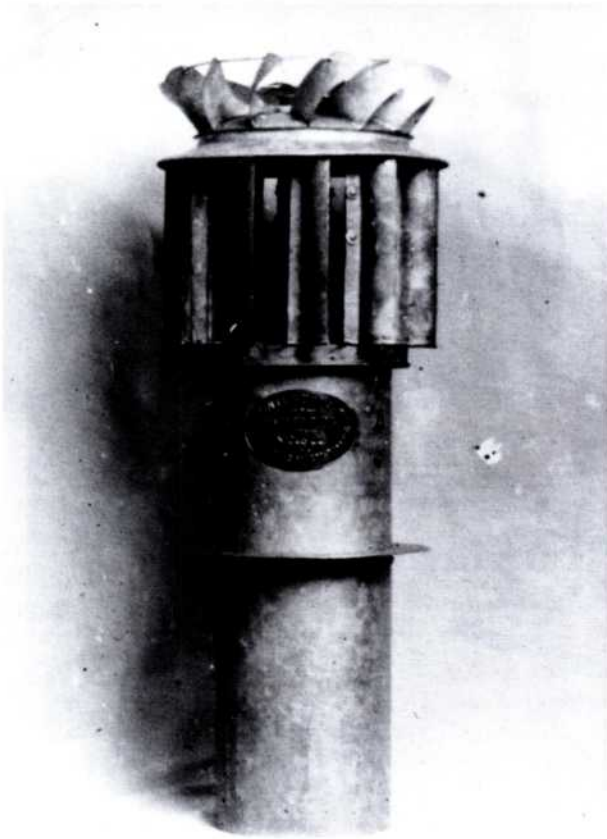


Fig. 2 Patent cowl by Milburn of Marlborough

Street (long overwhelmed by a grotesque multi-storey conglomeration) and William Shrivell of 40-50 George Street, off St. James's Street (Street mercifully still extant but not the firm). W. Skeats, established 1848, had by 1887 moved to 126-127 Queens Road and 10 Windsor Street. By 1889 the business had passed to Beale & Vickars (by 1920 Vickars & Co. Ltd). (Fig. 3) Skeats or his immediate successors were thought to have made the model 1" diameter cowls, now at the Brighton Engineerium, that were so much admired by passers-by in the windows of H.A. Waller & Sons, (Fig. 4) founded in 1902 by Henry Waller whose apprenticeship was served by W. Gooding. Highly regarded well beyond the confines of South-Eastern England Waller's undertook a variety of engineering and architectural commissions until the business was sold in 1965, the year of Henry Waller's death, when it was re-located in Cheapside. W. Gooding appears to have been well established in Upper Russell Street in the 1890s combining electrical contracting with its zinc and other metal workshop. (Fig. 6) William Shrivell took over the premises of F.T. Fairhall (ironmonger, established c.1862) in George Street, Brighton in the early 1880s, the family continuing the business until the 1950s when the prospect of retirement and no family successor caused both Gooding's and Shrivell's

to close. Hove's needs in the area of cowls and ventilators were to some extent met by G.R. Vye of Shirley Road, later Percy Vye of Ethel Street, again until the 1950s, when the firm passed into other hands.

Zinc was almost always employed in the manufacture of the cowls. Goodings, the facias of whose generous double-fronted premises (Fig. 6), supported a number of full-sized revolving cowls dominated by a 5' cranked "Hovel", and Wallers, whose plate glass window displayed a delectable row of approximately 1" diameter working models, shared the same somewhat heraldic 'flag', inherited from Skeats, to turn their "Brightons" and "Hovels". Shrivells applied to their "Brightons", "Hovels" and "Lobster Backs" a

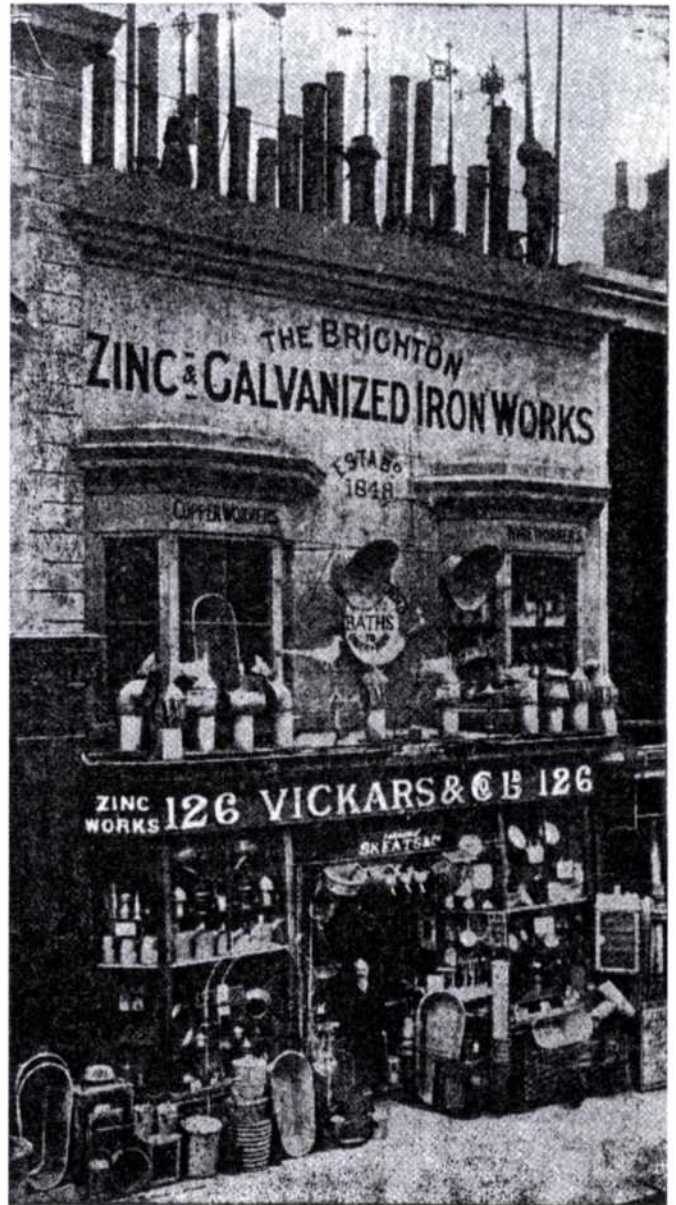


Fig. 3 Vickars & Co., Ltd., formerly Skeats & Co., Queens Road. Note the "Bent T" at right on pavement. Photo 1920.

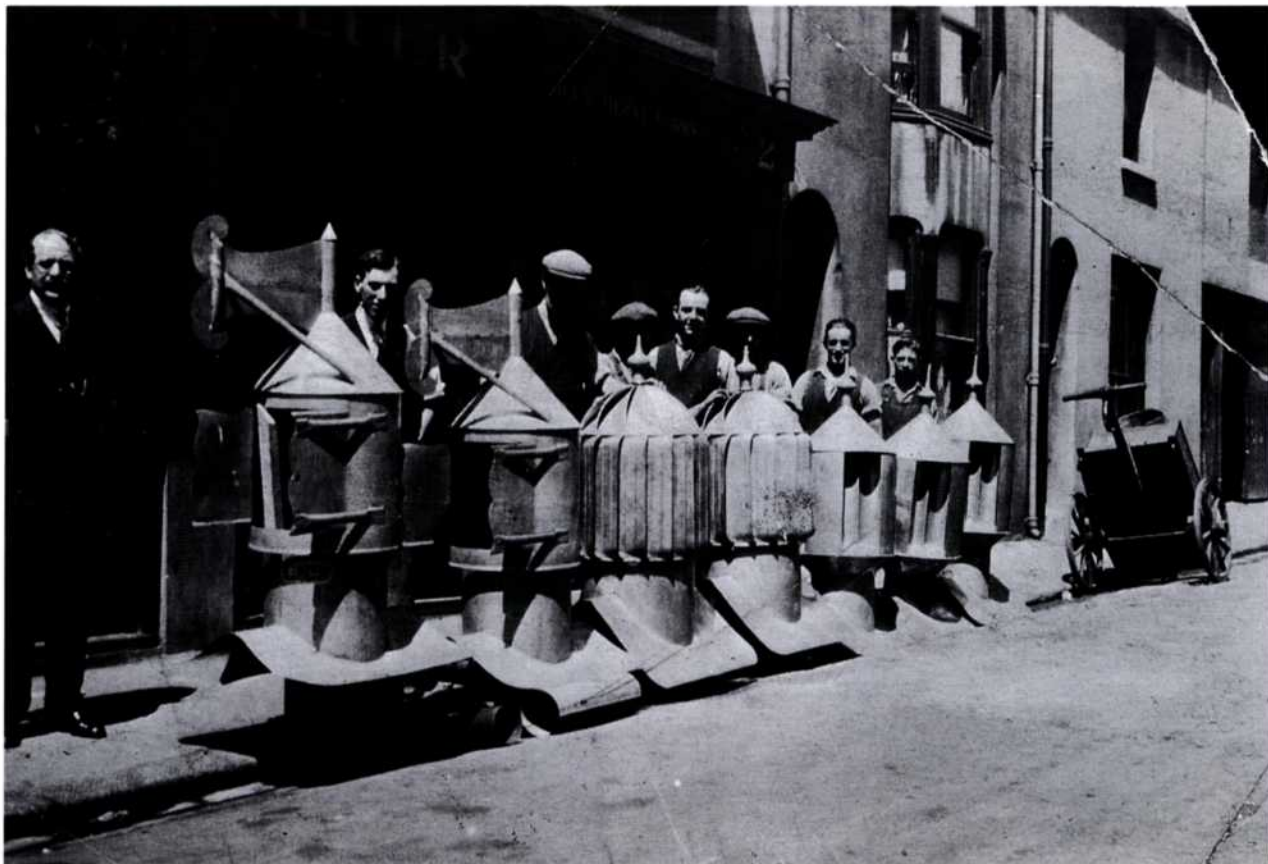


Fig. 4 Outside H.A. Waller & Sons, Whitecross Street, early 1930s. Mr. H.A. Waller on the left. These large cowls were destined for the impressive edifice that stands on the corner of Belgrave Street and Southover Street, Brighton. Two of the three fixed ventilators were extant in 2000.

'flag' that resembled a distorted clover leaf and which harks back to a pattern that seems much older in origin. A thread runs tenuously from Skeats to Vickars and another to W. Gooding who was with Skeats, on to Henry Waller and, via John Waller, into the twenty-first century. The characteristic 'trim' of William Shrivell's patterns seems to have developed from an alternative and possibly earlier source and to have remained, in Brighton, peculiar to him.

Although a medley of cowls was scattered more or less evenly across the skyline, certain builders were responsible for concentrations of certain cowls in certain areas. "Lobster Backs" were popular throughout Hove and the revolving "Hovel" proved a godsend in Kemp Town where tall buildings often overshadowed or blanked their own intermediate chimneys or those of adjacent properties. "The Brighton" and the "Vertical Rotary" were everywhere. Besides rotating cowls a number of fixed cowls were evolved to address perverse and occasionally intractable problems of extraction or downdraught. The "Bent T" proliferated in Elm Grove, Lewes Road and around Upper North Street. "Drumheads" may still be found west of Dyke Road and "Cheeseman's Cowl" and "Dr. Arnaud's Head" seem to have been

favoured in the steep streets between Queen's Park Road and The Level. The fixed "Hovel" was much in evidence on The Old Ship Hotel and between Middle Street and Preston Street sometimes with 'spats' to reinforce its anti-downdraught properties. The "Brighton", followed closely by the "Vertical Rotary", dominated the scene. A particular eye-catching stand surmounted the chimneys of Dorothy Norman's, the store near the corner of Cranbourne Street and Western Road. Eight 7' cranked "Brightons" on two stacks loomed over the premises and were replaced, surprisingly in the middle of the Second World War by an identical eight, surely the biggest concentration of one cowl to be found anywhere outside London. Another surprising display graced the two visible stacks of The Regency Tavern on the twitten between Regency and Russell Squares where half a dozen or more tall "Brightons", staggered in height to preclude entangling their 'flags', presented a very restless roofline in windy weather. A solitary zinc shaft is all that is left.

In this range of highly individual cowls "The Brighton" and the "Rotary" were paramount. So prevalent and visible was the "Brighton" on the skyline it was regarded almost as part of the landscape.



Fig. 5 One of two sets of nineteenth century model cowls from W. Goodings. A second set in a case was carried to potential customers to facilitate choice.

Early in the cowl boom it was taken up by many of the London firms and also abroad; the manufacturers invariably acknowledged its origin by listing it as "The Brighton", "Le Brighton", etc. as the case required. William Shrivell's cowls were less frequently encountered than those of Goodings or Wallers. They stood out from their neighbours by reason of the 'flag' that had become the logo of the firm and in their "Vertical Rotaries" (no "Spiral Rotaries" seem to have been undertaken) which had a less pointed cone and two more vertical apertures in the revolving head than those of the other firms. Clusters of Shrivells, often tall, survived in various states of disorder into the 1950s in the streets that accompanied Lewes Road. "Cats' creeps" provided excellent vantages from which to surve the backs of the houses in the streets that they traversed; none better than the "creep" that links Roundhill Crescent to Richmond Road. From this a miscellany of cowls could be viewed. Although now the scene is subtly different, it is still possible to catch a whiff of the old Brighton of iron railings, ivy and euonymous, gloss-painted house fronts, 'stoned' steps, burnished knockers, lace curtains, trams and perilous race meetings.

Cowls in mainland Europe turn in a counter-clockwise direction while those of the United Kingdom and the USA with the exception of cowls from one small Brighton firm, invariably adopt the opposite. Many permutations prevailed in the application of cowls in awkward positions. A cranked or elbow shaft was introduced to avoid fouling a neighbouring cowl on the same stack or to accelerate the draught in chimneys that served hearths on an upper floor of a building. The bizarre nature of the local roofline was much enhanced by the curious combinations that many stacks displayed. Useful life for a cowl did not always finish with its duty on the chimney. "Brightons" often found the upper part of their revolving heads employed as windvanes and, in the

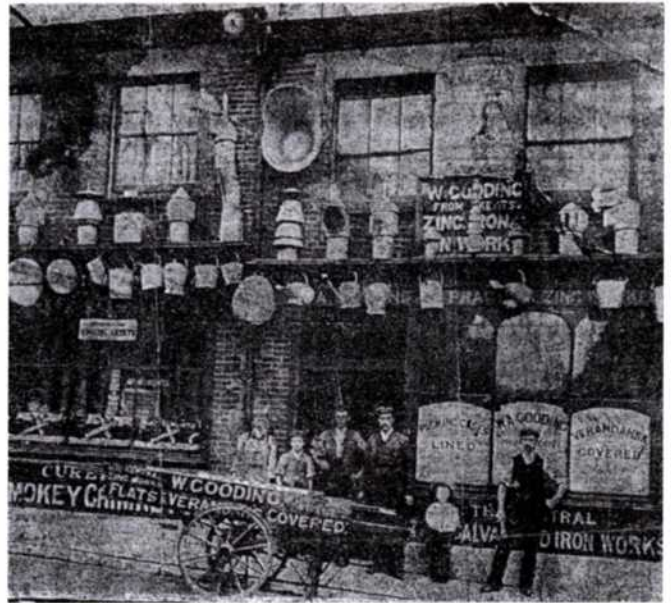


Fig. 6 W.A. Gooding, 43, Upper Russell Street in 1895. The lad in the photograph is Henry Waller, aged 14.

company of various "Rotaries", enlivened with dashes of paint, as birdscarers on allotments and small-holdings, especially those that occupied the slopes of Pratt's Lane and Baker's Bottom between the Race-course and Eastern Road. Their excellently turned spindles and oil-sleeves long outlasted the heads they supported.

Many of the popular cowls of the London firms, slightly streamlined were adapted for railway carriages, free-standing, generally iron, public lavatories, kiosks and pantechnicons and for a good many years accounted for a realistic contribution to the funds of their manufacturers.

With the advent of alternative methods of heating and ventilation the production of rotating cowls declined. The "Archimedean", a cowl universal throughout Europe and the USA, was one of the last of the old style cowls to go, Miss Cochrane of Leith turning them out to special order well into the 1950s. It was an effective cowl whose rotating many vertically-bladed head turned an Archimedean screw in the shaft. Problematic as a smoke cure when it came to sweeping the chimney, it was a fine ventilator, capable of shifting quickly large volumes of air fouled by floating substances or noxious odours such as were met with in cotton mills and similar factories or institutions.

A good eye for balance and symmetry and a feeling for the medium employed, combined with skill, experience and innate ability produced some wonderfully executed work. Few if any craftsmen of to-day would be prepared or even know how to undertake a "Brighton". 'Wally' Vinall who first worked for a firm

in Windsor Street, later for Wallers and finally for Percy Vye of 3 Ethel Street, Hove, who died this year in his 90s, is remembered as a fine, resourceful and generous craftsman. The traditions of H.A. Waller and Son are continued, however, in John Waller, currently enjoying a busy 'retirement', who is prepared to indulge old friends with the occasionally superbly turned "Brighton", "Hovel" or "Rotary" and there the expertise and future of this side of the industry appears to rest. Harry Cowley, on the other hand, was one who did not at all care for cowls. A chance encounter with H.C, outside Henekys one morning coincided with a "Vertical Rotary" being laboriously hauled up a ladder (no scaffolding then for such routine tasks) to a flue above the fried fish shop on the corner of Ship Street facing the Old Ship Hotel. Sadly his terse and pithy comment, as always, much to the point, is not exactly recalled. Strangely, one morning in October 2000 a stainless steel, mass produced "H" was in process of replacing an old cowl in the very same position.

Gone are the "Fitzroys" and "Invincibles" on Buckingham Palace, the "Alberts" of Harewood House are relegated to the cellars. What surely must be the last working pair of "Milburns" was not long ago removed from Polesden Lacey, the "Milburns" of Uppark well before that, and Osborne House, spruce and trim bears no cowls of any sort. But occasional smoke cures turn up from time to time. Two of the four 6 foot "Emperresses" fitted at the beginning of the twentieth century to the late Gerald Nabarro's house in Broadway survive intact and turning on the stack that dominates the house, as do two large "Archimedean" on the British Legion Hall in Moreton-in-Marsh. A solitary stone-coloured "Empire" spins in an out of the way corner in Whitehall, and, on the low roof that oversees an entrance to a primary school in Thame is what surely must be the last working example of Frederick Braby's "Invincible", painted cream, the paint, one could hazard, being the key to the cowl's extraordinary preservation. And there is Highclere. At Highclere from the numerous "Emperors" that turned on the many stacks of its handsome roof, a view that Lord Carnarvon must have glimpsed as he took a fleeting look at the house when setting out for the last time for Howard Carter and The Valley of the Kings, are, at the last count, nine survivors, second generation no doubt, as they are without the finial that early "Emperors" would have borne; a surprising and heartening reminder of faithful patronage.

But cowls of a different order are still produced. Messrs. Colt came up in the 1930s with the "Colt Cowl", the money-back guaranteed appliance that appears to be a blatant copy of Frederick Braby's "Sandringham" of the late nineteenth century. It displaced many of the traditional cowls not always to the new owners' advantage. Their range has currently been extended to include the "Aspiromatic" a stainless steel spinner and the "Colt Top", an expensive anti-downdraught device reminiscent, in principle, of the "Drumhead" but constructed from the minimum of materials and less imagination, though doubtless effective.

More engaging is the "Aspiromatic", a veritable phoenix in the trade, resurrected by France-based Uginox of culinary implement fame. It is the 17+ bladed stainless steel 'globe' that now spins and gleams on many chimneys throughout the British Isles and most of Europe and of which the Colt "Aspiromatic" is a derivative. Like the "Archimedean" the "Aspiromatic" has strong extracting capacity. Cowls fitted to 3" to 6" shafts are said to promote an average airflow of 4000 cubic feet per hour; 4½" to 7½" flues deliver 8000 cubic feet per hour whilst the size fitted to 6½" to 9½" flues is capable of exhausting 11,000 cubic feet per hour, the average airflow being calculated with windspeeds varying from 6 to 18 m.p.h. The Aspiromatic cowl was invented by an emigré Italian, gifted in many areas, at Beaune in central France early in the twentieth century. On the Mairie and Schoolhouse fine examples of the original many more-bladed design in iron remain, though precariously. Their inventor was still alive in the 1980s, sick and penniless, patents long having lapsed.

Cowls very like the originals at Beaune continue the tradition in an unexpected location. In the interesting complex that surrounds the Millennium Dome at North Greenwich three eye-catching structures support on their roof ridges forty-eight large spherical cowls, their many blades turning the heads with great precision in the slightest breeze, undoubtedly effective and at the same time pleasing and ornamental. There was of course the lighter side to the canvas. The somewhat masculine aspect of some of the revolving cowls' particulars often gave rise to harmless ribaldry among the bucks and blades of the building trade, whilst in Scotland, where the countless revolving cowls promoted by the indefatigable Miss Cochrane were habitually referred to as 'grannies', jokes were rife – but that's another story.

REFERENCE

1. Valentine Fletcher, *Chimney Pots and Stacks* (1968)

LONGLEY'S PERFECTED WOOD BLOCK FLOORING

*Norman Longley*¹

Parquet flooring has been in use for some 350 years. Thin strips of wood, often to form a pattern are glued and/or bradded to a subfloor to give a better and probably more attractive surface. The French word 'parquet' originally meant 'small square'. Wood block flooring is the name given to a floor formed of small pieces of wood of uniform size stuck down to a solid concrete floor. A true 'screeded' surface must be given to the concrete so that blocks of wood normally between 1" to 2" in thickness can be stuck with mastic specially made for the purpose. An uneven screed (or rough usage) can lead to blocks breaking loose and so ruining the floor surface.

LONGLEY'S PATENT WOOD BLOCK FLOORING

During the Victorian era wood block flooring was being used extensively for the ground floors of public buildings such as town halls, churches and schools. With their new Steam Joinery Works at Crawley, Longleys found themselves well equipped to make the blocks and Charles Longley hit on the idea of making a sort of tongue on each end of every block that would engage loosely (aided by the hot laying mastic) with the side of the adjoining block. Charles Longley, with the aid of his friend John Every, ironmaster of the Phoenix Ironworks at Lewes, designed a machine that with one movement of the flooring strip across two saws would give the desired tongued end – the side groove having already been made by the four-cutter machine.

He thought the system worth patenting so that Longley's flooring could be sold for buildings for which Longleys were not general contractors. This was achieved and a patent granted in 1890, but not without a man called Charteris muscling in on the idea claiming he had just thought of it also.²

In Longley's History³ there is a photo of the poster advertising and explaining the system. The original of this is in colour and is framed and hung at the Longley H.Q.

SOURCES OF MATERIAL

In the latter half of the nineteenth century the prime forests in the Mississippi area of the U.S.A. were being cut and much pitch pine was exported to Europe; the main port used latterly was Pensacola. Pitch pine was

full of turps, as heavy as some hardwoods and splendid for flooring. The specification by knowledgeable architects frequently called for 'rift sawn' wood blocks which meant edge grain to the floor surface ensuring even and longest wear with no flaking grain.

The timber was normally shipped as sawn 9" by 3" and Longley's sawyers would cut this to 3 pieces 3" x 3" and then resaw to give 3" by 1½" nominal, so that they could obtain a maximum edge of grain flooring. In the early days timber was generously sawn so that with a ground off saw we could produce flooring strips 2⁷/₈" by 1³/₈" but later finished sizes might have to be reduced to 2⁷/₈" by 1¼". For good class flooring no knots were allowed as these would stand up after years of usage whilst the wood around wore away more readily .

Frequently for important public buildings teak would be specified and for private houses oak would be popular; latterly some flooring was in deal. For deal we would import 'Ends' 3" by 9", 8" or 7". Normally joinery timber from the White Sea (Murmansk) would be 12 ft and up in length. The 'ends' would be in multiples of 1 ft from 5 ft to 11 ft long and at a cheaper rate we could import a bill of lading of these to equal quality but at reduced prices.

Ultimately the West Coast of America came in with Oregon Pine (or Douglas Fir), all sawn edge grain from large trees, and not long after packaged ready made blocks were being sold in this country at a price as low as we could purchase the unprepared timber.

In the meantime the patent which had only been valid for 14 years became meaningless as many equally good tongued variants had been developed by competitors. Finally the depression in the early 1930s combined with the quotation of prices with which we could not compete caused us to cease trading in this field.

ACQUISITION OF TIMBER

When a considerable quantity of timber to one specification and to one size was required it was invariably most economic to import in 'Bills of Lading', but not wishing to become 'timber importers' ourselves we would buy through timber merchants who for a sizeable order of say 30 St. Petersburg standards would only add a small margin for themselves as the transaction was merely paperwork to them for they only bought when we gave the order. We could either buy f.o.b. (free on board) or ex ship. We went invariably for the ex-ship price as this, though slightly higher, gave us an opportunity to inspect the timber in the barges before it was railed at Deptford Wharf for our siding. On a few occasions this

would lead to a bitter row, the merchant having bought f.o.b. had to take a parcel while we could refuse to accept delivery; this would lead to arbitration. To inspect the timber we would attend the Surrey Docks and perhaps see the timber on board or going over into barges, the Elephant and Castle being our base pub if we had to wait.

The Company used to calculate that it cost us no more to get the timber into our shedding than it did for the merchant to get it into his – about 15/- (75p) per standard or 0.5p per cu. ft. at 1984 prices. As to paying we would sign 3 or 4 month bills of exchange which the merchant would discount (i.e. turn into cash in the City). A small book was kept in the office and each month when we decided who we could pay for other building materials to get maximum discount, we would study the bill book to see what bills fell due for us to meet during the month.

Two or three days after timber had left the ship, we would learn from the Crawley goods shunter that, say 15 trucks had shown up at Three Bridges goods siding. We would indicate how many we could take into our siding next morning. The local goods train was made up at Three Bridges and would come along in the morning; if our trucks were urgent they could come immediately behind the engine and be put into our siding there and then. Otherwise all went into the main Crawley siding on the upside and we would have to wait to 4 pm when the shunting engine came over from Three Bridges. The great thing was to avoid 'demurrage'. If a truck was **available** for unloading for three days and was not cleared in this time this would cost us 5/- (25p) per day and bang went the profit. Good relations and a Christmas box for the shunter was of paramount importance.

THE MANUFACTURING PROCESS AT CRAWLEY WORKS

The peak period for Longleys in the wood block flooring trade was from about 1890 until the 1924 fire, except the 1914-18 War period. Charles Longley listed the woods used as teak, pitch pine, Jarrah, oak and deal but names pitch pine as the main variety and it was normally from timber in multiples of 1 ft used in blocks 11" long plus tongue by $2\frac{7}{8}$ " wide by $1\frac{1}{2}$ " or $1\frac{1}{4}$ " thick.

Because wood block flooring was laid right at the end of a job, it being essential to get the subfloor and site conditions as dry as possible, the work load was normally known some months ahead. Timber could be bought to suit orders and taken into production on arrival, subject always to the demand of the joinery commitments, the one four-cutter having to serve both joinery and flooring.

Timber, 9" by 3" was first cross cut to 5ft lengths and then sawn to section required according to grain, sap and knots. Edge grain with no sap or knots on the face was the objective. Low moisture content was essential and into the drying kiln it all had to go. The drying kiln to 'dessicate' the timber was installed under the direction of a Frenchman; it was slightly over 15 ft wide to accommodate 3 tiers of strips 5 ft long about 8 ft high and about 20 ft long. The strips were hand stacked with sticks between each layer. The whole cargo was steamed for about three days and then hot air was sucked across it for two to three weeks according to conditions (i.e. whether hardwood or softwood, day and night operated, or just daytime).

The object was to open the grain right through to the centre of the timber and then to remove the moisture so that the piece shrank without splitting. The kiln was also used for hardwood joinery, the big danger being case hardening and splitting. A valuable piece of oak that still had a wet core would split when dried by the air current.

The works was served by a system of jubilee track with flat trucks. The first step after drying was to get the timber through the four-cutter – this gave the strip the four planed surfaces together with the side groove to take the end tongue. It was the subsequent cross cutting that gave rise to the patent and the machine designed for this process was sited close to the four-cutter. Two fast running cross-cutting saws were placed so that as the operator pushed a tray forward with the strip on it the top saw (with a length stop) would give a perfect end cross cut that did not quite go through to the bottom of the strip. The second saw was pitched at an angle underneath so that its cut went up as far as the bottom of the top cut so that as the block emerged it had a tongue on it.

Unfortunately this cross cutting machine was wrecked in the 1924 fire but it was returned to Every for rebuilding and remained in use till the Second World War; the brass plate recording its history is still treasured. It reads :

"This machine was invented in the year 1890 by Charles John Longley of Crawley Sussex in connection with his patent system of wood block flooring. Reconstructed after the fire of March 20 - 1924 . Maker John Every Lewes Constructional Engineer. "

Good storage conditions for the finished product were essential, lest too much moisture was re-absorbed only to be followed by shrinkage when the heating was turned on in the finished building. Blocks were stored in the works in a brick-walled building. Jubilee track ran down the centre with raised slatted floor on either side and with warm pipes under a galvanised corrugated

iron roof with fine perforations on the raised corrugations which would split rain drops and so let hot air out without letting rain in.

Later this shed was used to accommodate the Westminster Abbey Choir Stalls when being restored in the 1950s and later became a setting out shop. The building was finally removed to make way for the present Centennial building.

LAYING WOOD BLOCKS

All the time there was plenty of work about for carpenters and joiners it was difficult to get block layers. The work was extremely arduous and invariably it meant lodging away from home. Operatives did not have motor cars or even motor bikes. Consequently the work was normally done on a piecework basis with prices varying according to the nature of the work. The size of the floor areas was all important as this determined the amount of cutting in relation to the main area in which blocks could just be laid whole.

Generally the screeded floor was first inspected and needed to be sufficiently even to avoid blocks riding on some high spot or lump and of course the floor and surround conditions had to be dry enough lest the new dry blocks swell when laid and subsequently came loose. Frequently rubbing down was called for. The blocks were sent loose with the mastic in 1 cwt wood casks and accompanied by the primus stove and two open galvanised baths. Blocks were normally laid to a herringbone pattern for two reasons:

a) the best interlock was achieved, and b) there was no need to relate the face width of the block to its length. (e.g. if you had an 11" block and wanted basket pattern the blocks had to be exactly 2¾" wide – no good having them 2⅞".) A floor layer started with a line and straight edge for the first row and sited this centrally, but also to suit the cutting at the main side of the walls – both from the point of view of not wasting blocks and in not getting some tiny bits that might work loose. Normally there would be a two block border and this was kept about ¾" away from the wall and backed up by weak lime mortar stopping strong enough to discourage blocks pushing out under any skirting.

The mastic, with sometimes an addition of dehydrated tar, was heated in the tin bath over the stove, each block dipped so that its whole bottom was dripping and then put on to the floor with its tongue engaging the side of the block in the last row. No mastic was allowed to get on the surface. The bath was dragged along on the screed while mastic was heating in another bath. Cleaning off the blocks was a soul

destroying job; first a plane and then sometimes a scraper, kneeling all the time on knee pads. Invariably other people would be walking about on the floor.

Heavy floor sanders were available from about 1930 but these were very cumbersome and only worth sending on to biggish straightforward jobs.

In due course staining and polishing might present more problems. Especially if the floor had been trampled over by all and sundry which was only too often the case.

The selling of Charteris and Longley's Patent Wood Block Flooring appears to have been launched in 1890 with the information wall-sheet already mentioned.⁴ Apparently, having cashed in on the new system, Charteris dropped out and Longleys went on manufacturing and laying.⁵ There seems not to have been any attempt to sell the blocks other than as laid complete in flooring.

The bulk of the work must have been carried out on contracts for which Longleys were general contractors or on projects designed by architects who knew of Longleys. With a heavy load of joinery and great prosperity, limited drying capacity and only one four-cutter and one block cutting machine, it seems the firm did not need to embark on the hard sell till after the 1914-18 war.

Charles Longley in his *Recollections*⁶ (1923) lists some of the major flooring contracts 'most being our own Contracts' and goes on to write "had we been an advertising firm we should have received many more orders". In his article about Christ's Hospital⁷ Charles refers to the area laid there as being 20,956 sq yds 1½" pitch pine – this would require some 30,000 cu ft of timber to kiln process and lay. The most prestigious job was The Royal Naval College at Dartmouth for which Longleys were not main contractors.

After the 1914-18 war a determined attempt was made to obtain flooring business; this was set back disastrously by the 1924 fire, but after reconstruction of buildings and machine capacity the drive continued, combining wood block floor with the selling of joinery to maintain a steady work load on the plant. Timber rationing during the Second World War and after till 1954 played havoc with the specification and use of wood products. This led to a shortage of demand and suicidal price cutting. We maintained one salesman on the road who covered the south-eastern corner of England. The house building boom in the early 1930s provided some uneconomic work in small floor areas. As already mentioned the importation of ready made blocks, and the Second World War put an end to an interesting, and profitable speciality.

SOME ANECDOTES⁸

Longleys laid a special wainscot oak floor as a sample at the South Kensington Museum to set the pattern for competitive tenders and then another firm got the order.

The biggest hazard was the lifting of blocks through swelling as a result of the absorption of moisture in a new building. We would always tell clients we "Once had a floor that went wrong" in case they had heard of one!

In the 1920s Norman Longley went to Eastbourne to inspect a defect in a floor; the firm was told they wanted an experienced expert not a **boy!**

The only floor that Norman Longley can remember having got down to on his hands and knees was that of the Capitol Cinema Horsham in about 1923 – recently purchased and demolished by Marks & Spencer.⁹ The job had been sponsored by Col. Warren of Handcross Park to provide work for many demobilised soldiers from 4th Battalion (Territorials) The Royal Sussex Regiment, of which he had been Colonel. George Potter was the general contractor and Longleys got the order for block flooring. The auditorium sloped towards the screen and the seats were fixed to the block floor. As the blocks shrunk slightly they slowly moved forward and we were continually being called over to replace the blocks against the back wall at which point the whole shrinkage collected and manifested itself.

Reference has been made to the wood 'Jarrah'. This was a very heavy mahogany-coloured Australian hardwood. The dictionary gives it as an Australian mahogany gum tree. After the 1914-18 war there were many blocks about and some strips. It had never been satisfactory. I was told that the blocks came back from an attempt to pave Ebury Bridge over the railway lines at Victoria Railway Station. The strips were used finally as garden edging. It was said "Don't use Jarrah it requires chains to hold it in position."

REFERENCES

1. Director and grandson of the founder of the Company. The account which follows was written in May 1984.
2. See Appendix II p.13.
3. James Longley & Co. Ltd., *Longleys of Crawley – a Pictorial History of James Longley & Co.* (Crawley 1983) p.30
4. See p.9
5. See Appendix II p.13
6. Charles Longley, *Recollections* (1923), privately published
7. *Ibid*
8. Written by Norman Longley in 1984
9. In 1984

APPENDIX I

Extract from *Building World* 29 April 1899

CHARTERIS & LONGLEY'S WOOD-BLOCK FLOORING

On Stand No. 96, Row E, of the International Building Trades Exhibition, now being held at the Agricultural Hall, Islington, N., are exhibited numerous specimens of Messrs. Charteris & Longley's patent "Perfected" system of wood-block flooring, the remarkable simplicity and ingenuity of which will be seen upon examination. The patent "Perfected" blocks are grooved along the bottom of each side, and have at each end a rebated tongue which fits accurately into the groove of the block lying next to it. By this means every block is securely keyed to its neighbour in a most simple and effective manner, ensuring the absolute rigidity of the whole floor. Many different patterns are shown. This system has the advantage over the ordinary method of wood-block flooring in which there are loose dowels or similar contrivances which are apt to be left out by careless or lazy workmen. The blocks are laid in a special damp-proof mastic, which experience has proved to be the best obtainable, that holds the blocks securely to the substructure, even at very high temperatures. It never becomes brittle, and has a natural affinity for all kinds of woods as well as for cement. The greatest care is taken in the selection and treatment of the wood used for the "Perfected" blocks. The method of seasoning adopted is the now well-known Shapland process. After long and careful experiment it has been found that wood treated by this process is in much firmer and brighter condition than if seasoned in the ordinary way, while (what is very important) it in no way injures the fibres. By the use of the very high-class machinery which they have patented, Messrs. Charteris & Longley manufacture their blocks with an accuracy and finish not often found; a close inspection of the specimens exhibited will show this to be the case. The following are the advantages of these flooring blocks:- They can be made in any size and in any kind of wood, and floors can be laid with them in a great variety of patterns. They are especially suited to large areas, basements, schools, etc. and afford a beautifully smooth surface for dancing or for similar purposes. They are sanitary, noiseless, damp-proof, rot-proof, and fire-resisting, and enable hot-water pipes, etc. beneath them to be readily reached. Both sides of the trench to be covered with flooring are fitted with strong wood curbs on which the blocks rest. They are then securely fastened with long border blocks which are screwed into the curb on each side. To obtain access to the trench it is only necessary to unscrew the border blocks along one side, and to remove the tongued blocks. Floors laid on this system are absolutely rigid. Messrs Charteris & Longley's head offices are at 31 and 32 King William Street, London E.C.

APPENDIX II

Patents (*Notes by Peter Longley*¹)

The 1890 Patent No 4608 and 1893 Patent No 523 were filed by Charles Longley. Charteris is said to have had the same idea. There is no documentation except the coloured advertising board which is headed "Charteris & Longley Patents".

Charteris was connected with B. Ward & Co. Ltd., who described themselves in 1905, amongst other things, as "Sole Proprietors and Manufacturers of Charteris & Longleys Patent Perfected Wood Block Floors". Their London offices and showrooms were at 38/39 Parliament Street. However, in 1899 a press report puts Charteris & Longley's head offices at 31/32 King William Street. The advertising boards states Earl St. Westminster.

1. Great grandson of the founder of the Company.

APPENDIX III –

Wood Block Floors at Dartmouth Royal Naval College – Transcripts of Letters (selected by Peter Longley)

3rd April 1905: Charteris to Longley

I don't like seeming so importunate but things are so rotten and money so tight with me that if you will accept the enclosed it will be doing me a great convenience. Thanking you in anticipation.

6th April 1905: Longley to Charteris is missing

9th July 1905: Charteris to Longley

I am rather surprised at your letter of 6th inst the order ran out roughly about £7,000, my booking commission on which would have been £350 from my own firm (apart from share of profit) half of which would have been paid down on receipt of order and the balance as and when payments were received.

On your promise to treat me fairly I stood aside when the order was sent to you and you now offer me £50 which with the £50 already received makes £100 to which I most certainly do not agree and if this is the spirit in which you now propose to settle the matter, the sooner we come to an understanding ... you have promised time after time to come and see me. I on my part have offered to go down to you without effect. I must now ask you to put into definite form an equitable proposal which I hope you will let me have within next few days please. Meantime there is no reason why you should not return me the additional £50 bill duly accepted. Thanking you in anticipation.

17th April 1905: Longley to Charteris

In reply to yours of 9th. I cannot agree to allow you 5 per cent on this job or anything like as it has been a

most expensive job to us nor do I think you ought to expect such a commission but without prejudice I send you the enclosed acceptance of £50 further on account making a total of £100 paid up to date. We have only received up to date in cash £1,950. Kindly note I cannot do anything further until the job is absolutely completed.

12th December 1905: Charteris to Longley

I am in desperate straits or would not worry you – I must raise £150 before Saturday and I don't know where to get it. Will you help me by accepting the enclosed 2 bills one at 3 months and the other at 6 months and letting me have them back by Friday morning at the latest or Thursday if possible. I will accept them in full settlement of Dartmouth then will be paying off fully £75 which I can ill afford but needs must. Thanking you in anticipation.

undated: Longley to Charteris

In further reply to yours of the 12th. I am now sending you the two drafts of £50 each, one at 3 months and one at 6 months in full settlement of your claim for commission on the Dartmouth RNC wood block floor contracts as per yours of the 12th inst, although I can ill afford to do this as the expenses on this job have been so very heavy.

However I hope you are satisfied. Kindly acknowledge drafts by return.

18th December 1905: Charteris to Longley

Many thanks for your favour with enclosures which I accept in full settlement. Also for your promptitude which got me out of a very serious difficulty and I shall not forget it.

There is also preserved a letter dated 4 April 1905 from G. Hammond at the Dartmouth RNC to Charles Longley:-

Your letter to hand this morning re quantity of flooring laid up to 1st of April.

About 2,000	Yards of Teak
2,100	Short Grain Pine
1,550	Ord Pitch Pine
Total	<u>5,650</u>

Please send on the oak blocks this week as the Captain's house has to be finished off for occupation by the 1st of May. I shall return 30 ... bags tomorrow Wednesday. Please do not send any Ordinary Pitch Pine blocks on unless I order them as we get a lot which we pick out from the Short Grain. I understand that we have to lay the flooring in the new wing which is being built and it will be ready in about 4 months time. There is about 1,000 yards I should think. I do not know if you have any instructions about this.

Charles Longley has added his valuation.

2,000 at 13/4	1,333-6-8
3,600 at 6/10	<u>1,230-0-0</u>
	£2 563-6-8

It is interesting to compare these prices with the quote for Victoria and Albert Museum in 1906 which is preserved. The teak was priced at 12/6 and the pitch pine at 6/6. There also exists an undated calculation sheet showing in great detail how a price of 11/3½ for supplying and laying teak in London is worked out. It was based on a man laying 3,000 blocks per day. This might be the basis of the Victoria and Albert quote.

There were found some scraps of paper with dates of cash received for Dartmouth as follows which shows it was a long job:-

3 - 7-02	350
3-10-03	250
22-10-04	600
20- 1- 05	750
20- 4- 05	1,000
26- 6- 05	650
26-10-05	<u>1,000</u>
Total	4,600

We do not know whether this is complete as Charteris thought the job was worth £7,000

APPENDIX IV

James Longley was the founder of the business which commenced trading in 1863 and continued till 2000. By the 1890s it was operating as James Longley & Co. becoming a limited liability company soon after. The main family members involved in management were

James Longley 1836 - 1915
Charles Longley 1862 - 1931
Norman (later Sir Norman) Longley 1900 - 1994
Peter Longley b.1927



Interior view of Joinery & Moulding Mill, c.1928

Longley's Perfected Wood Block Flooring, Mouldings and Joinery Manufactures. Estab. 1860

"Longley's" Perfected Wood Block Flooring,

AS MADE BY JAMES LONGLEY & CO., LTD.,
BUILDING CONTRACTORS AND JOINERY MANUFACTURERS,
CRAWLEY, SUSSEX.

OUR firm was established nearly seventy years ago by Mr. James Longley, and is now under the sole control and management of Mr. Charles Longley and his two sons, Mr. Norman Longley and Mr. Basil Longley.

We have been manufacturing the Perfected Wood Block Flooring (the invention of Mr. Charles J. Longley) for thirty years. On March 20th, 1924, our works were completely destroyed by fire. Fortunately, however, we were able to repair the special Block cutting machine invented by Mr. C. J. Longley, but it was a year before we were able to restore the rest of our machinery to full working efficiency. In doing so we have taken the opportunity of installing the most up-to-date machines made by Messrs. Ransome's of Newark. The power is supplied by a condensing steam engine of the very latest type, supplied and fixed by Messrs. Marshall & Co. of Gainsborough, and capable of developing 120 horse-power.

We are now once more in a position to execute orders for our Wood Block Flooring in any kind of wood, in any quantity, and in any district.

Our Pitch Pine Block Floor averages 50% rift-sawn. When laying the floor, our men lay the rift-sawn blocks where the hardest wear is expected, and in

this way our customers have the benefit of a 100 per cent. rift-sawn block floor without having to pay an extra charge for the sorting and waste necessary to produce such a floor. We are always prepared to lay all rift-sawn blocks (at extra cost), but we seldom fail to convince our customers of the advantages of the above method.

The Block we strongly recommend is $1\frac{1}{4}$ in. (nominal) Pitch Pine. This thickness, we find after thirty years' experience, ample for any class of building (with the exception of Warehouses). We can, of course, supply any wood in any thickness, but we do not recommend anything less than $1\frac{1}{4}$ in.

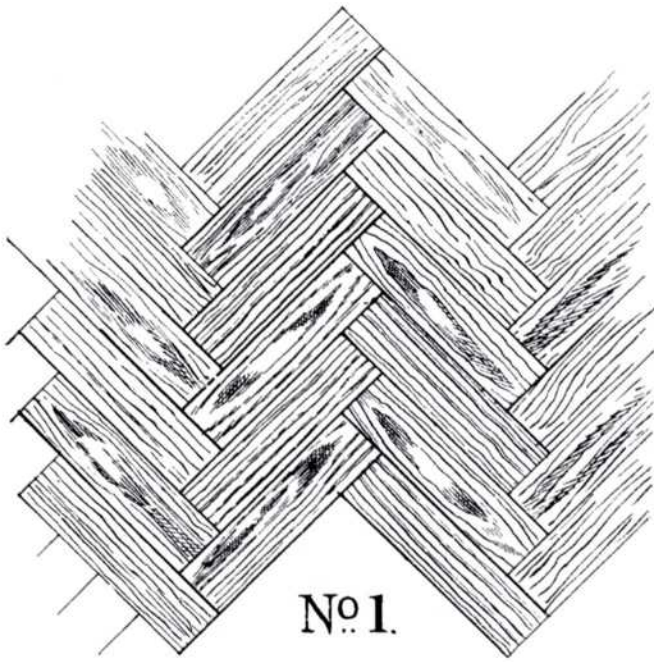
During the last twenty-five years we have only once returned to a job to make good any shrinkage or other defect in our floor, and that happened before our perfect drying plant was installed.

Enquiries for our Perfected Wood Block Floor, laid complete, or for blocks only, and for Joinery of any description, are solicited.

We are at the same time manufacturing First-Class Joinery for Architects and Builders. In most cases the joinery is being made to Architects' details, but we are always pleased to submit for approval our own standard work. One of our specialities is English-made doors, any thickness, and any design, made from Archangel boards.

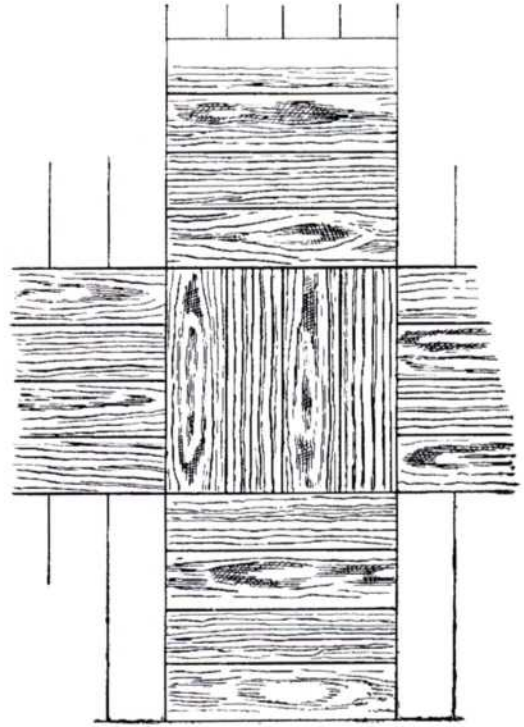
We invite anyone interested to see over our Works at any time by appointment.

We append a list of some of the Buildings in which our floor has been laid. The Architect's name and the approximate number of yards in a few instances also given.



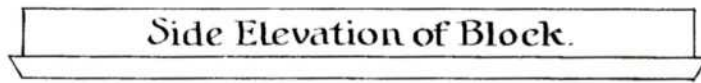
No. 1.

Herringbone Pattern



No. 2.

Draught-Board Pattern



Side Elevation of Block.



Cross Section
of Block.

Patterns of LONGLEY'S Perfected Wood Block Flooring.

Floors laid in Public Buildings, Churches, Chapels, Schools,
Banks, Stations, Shops and Warehouses

* CHRIST'S HOSPITAL SCHOOLS, WEST HORSHAM	20,250 yds.	Sir ASTON WEBB, R.A. and E. INGRASS BELL.
* WEST SUSSEX ASYLUM	2,500 "	Sir A. BLOMFIELD & SONS.
TOWN HALL, BRIGHTON	2,600 "	FRANCIS C. J. MAY, Esq.
DARTMOUTH COLLEGE	13,400 "	} Sir ASTON WEBB, R.A.
SOUTH KENSINGTON SCHOOL OF SCIENCE & TECHNOLOGY	9,380 "	
* FREE LIBRARY, BRIGHTON	2,210 "	} FRANCIS C.J. MAY, Esq.
THE TECHNICAL SCHOOL, BRIGHTON		
* THE ISOLATION INFIRMARY, BRIGHTON		} H. PERCY ADAMS, Esq.
* KING EDWARD VII SANATORIUM, MIDHURST	2,900 "	
* R.C. SEMINARY, WONERSH	...	} F.A. WALTERS, Esq.
* R.C. ST. JOSEPH'S, BRIGHTON (addition)	...	
* CHILWORTH MONASTERY	...	
* R.C. CHURCH, WEST GRINSTEAD	...	
* R.C. CHURCH, BATTERSEA	...	
* R.C. CHURCH, EAST GRINSTEAD	...	
* R.C. CHURCH, DORKING	...	
* R.C. HOMES FOR AGED POOR	...	
COUNTY HALL, LEWES	...	
* SEVERAL BOARD SCHOOLS, LONDON	...	
* SEVERAL BOARD SCHOOLS, BRIGHTON	...	LONDON SCHOOL BOARD ARCHITECT.
* COLEMAN'S HATCH CHURCH	...	Messrs. T. SIMPSON & SONS.
* ABBEY WOOD CHURCH	...	} Sir. A. BLOMFIELD & SONS.
* SOUTHALL CHURCH	...	
* PRESTON PARK CHURCH	...	
* MUNDHAM CHURCH, CHICHESTER	...	
* HUNSTON CHURCH	...	
* NINFIELD CHURCH	...	
* BEXHILL CHURCH	...	
* WEST SUSSEX ASYLUM CHURCH	...	
HOVE CHURCH	...	
* ST. AUGUSTINE'S CHURCH, PRESTON	...		Messrs. CLAYTON & BLACK.
BEAULIEU CHURCH (re-seating in Oak)	...	Mr. STREATFIELD.
LYDD CHURCH (re seating in Oak)	...	} Messrs. J. OLDRID SCOTT & SON.
SLOUGH CHURCH re-flooring with Teak Blocks	...	
* MILTON CHURCH, PORTSMOUTH	...	
* SOUTH CROYDON CHURCH	...	
GOSPORT CHURCH	...	
* HOVE CHURCH	...	} LACY W. RIDGE, Esq.
* TURNERS HILL CHURCH	...	
* FRISTON CHURCH	...	
* EASTDEAN CHURCH	...	} W.F. MURRAY, Esq.
* ST. SAVIOUR'S, EASTBOURNE (Lady Chapel)	...	
* WORTHING CHAPEL	...	} Messrs. HUNT & CURREY.
* ST. PETER'S, EASTBOURNE	...	
* HOLY TRINITY, EASTBOURNE	...	Mr. FENNING.
* MEAD'S, EASTBOURNE	...	GILBEE SCOTT, Esq.
IFIELD CHURCH	...	} Mr. NASH
WEST GREEN CHURCH	...	
* WILTON ROAD CHURCH EXTENSION	...	
* LITTLEHAM CHURCH	...	} TEMPLE MOORE, Esq.
* REDDITCH RECTORY	...	

* EAST CROYDON STATION	} Chief Engineers : F. BANISTER, Esq. Sir C.L. MORGAN	
* EASTBOURNE STATION	...	...	...
* LEWES STATION	...	...	...
* PORTSLADE STATION	...	...	...
* WEST BRIGHTON	...	...	...
* THREE BRIDGES STATION	...	...	...
* MITCHAM STATION	...	...	...
* WIMBLEDON COMMON STATION	...	...	...
* STREATHAM HILL STATION	...	...	...
* GATWICK STATION	...	...	...
* BALCOMBE STATION	...	...	...
* SOUTH HILL PARK MANSION		TEMPLE MOORE, Esq.
* LAVINGTON PARK MANSION		Mr. DETMAR BLOW.
* FOLLY FARM, SULHAMPSTEAD		} Sir E. LUTYENS.
* EARTHAM HOUSE	...	...	...
LANGLEY CEMETERY CHAPELS		} Mr. HATCHARD SMITH.
* TULSE HILL CHURCH	...	...	...
* LEWISHAM CHURCH	...	...	...

*Asterisk represents the Buildings as well as Floors were carried out by J. Longley & Co.

N.B. – The above floors were carried out in various woods, viz. : Oak, Teak, Deal, Jarrah and Pitch Pine – the majority, however, in the latter.

The list is by no means complete, and a large number of other floors can be given.

In addition to the special work of manufacturing and laying our Perfected Block Floors as described, we do a large business as Building Contractors and Joinery Manufacturers. We have carried out many important building Contracts, both public and private, and though our work has been principally in the Counties of Sussex, Surrey and Kent, we are ready to undertake Public or Private Contracts at any distance from Crawley at a reasonable figure.

It may be interesting if we mention some of the larger Contracts carried out by us during the last forty years.

CONTRACTS IN BRIGHTON DISTRICT

THE WIDENING OF KING'S ROAD from the Western Boundary to the Aquarium (five separate contracts).
 THE MADEIRA ROAD SHELTERS, HALL, LIFT, etc.
 THE FREE LIBRARY.
 THE ISOLATION HOSPITAL, OR SANATORIUM, BEAR HILL.
 THE NORTH ROAD SWIMMING BATHS
 THE EAST WING, HOTEL METROPOLE, and other works to this Hotel.
 ST. AUGUSTINE'S CHURCH, PRESTON.
 HOVE CHURCH.
 WEST END OF ST. JOSEPH'S R.C. CHURCH.
 ALDRINGTON CHURCH.
 R.C. PRESBYTERY, UPPER NORTH STREET.
 CORNER SHOP, EAST STREET.
 BAKER & CO.'S SHOP, NORTH STREET.
 PRESTON ROAD AND DITCHLING ROAD BOARD SCHOOLS.
 LEWES ROAD STATION.
 EXTENSION OF GOODS SHEDS, STABLES, etc., AT BRIGHTON STATION.
 THE FENCING TO PRESTON PARK.

THE SLUICE VALVE TO INTERCEPTING SEWER NEAR ROTTINGDEAN.
 ST. MARY'S VICARAGE.
 MANSION, FIRST AVENUE, HOVE.
 THE ABATTOIRS.
 THE DUST DESTRUCTOR WORKS, with chimney shaft 225 ft. high, built overhand, the chimney cap weighing over 20 tons (Dr. Tulk Hart, a friend of Mr. C.J. Longley, walked round the top of the chimney when finished).
 CONSIDERABLE WORKS AT THE WEST PIER, including the temporary bridge (after the storm which washed the Old Chain Pier away and cut a big slice out of the West Pier, we were called in at once on a Sunday morning to construct a temporary bridge, which we completed within three weeks, so that the Pier could be opened again to the public).
 THE CEMETERY CHAPELS, HOVE.
 THE WESLEYAN CHAPEL, LEWES ROAD.
 R.C. HOME FOR THE AGED POOR, HOVE.
 WEST BRIGHTON RAILWAY STATION AND GOODS SHED.
 THE RE-MAKING OF THE OLD SHOREHAM ROAD, HOVE.
 THE PUMPING STATIONS AT MILE OAK AND PATCHAM.

CONTRACTS FOR RAILWAY WORK, AND STATIONS,
 carried out for the late L.B.&S.C., South-Western and South-Eastern Railway Companies.

EAST CROYDON AND TOOTING BEC STATIONS.
 ALTERATION, LONDON BRIDGE OFFICES.
 WIDENING OF ALL PLATFORMS, SOUTH BERMONDSEY LINE.
 NORWOOD JUNCTION AND THREE BRIDGES STATIONS.
 HASSOCKS AND EXTENSION OF BALCOMBE STATIONS.
 EXTENSION OF PRESTON PARK STATION.
 PORTSLADE AND WORTHING STATIONS
 SIGNAL BOXES, large and small, all over the L.B. & S.C. Railway System.
 CHICHESTER STATION PLATFORM ROOFS.
 EMSWORTH STATIONS.
 BRICK OVERLINE BRIDGE BETWEEN BRIGHTON AND WEST BRIGHTON STATIONS (the only brick arch bridge built over four running lines of the L.B. & S.C. Railway for very many years, the clearance between engine funnel and arch being only 2 ft. 6 in.).
 FRATTON ENGINE SHEDS.
 PLATFORM ROOFING, PORTSMOUTH HIGH LEVEL STATION, with new staircases approaching same.
 FARLINGTON RACECOURSE STATION AND FOOTBRIDGE.
 EXTENSION OF TUNBRIDGE WELLS STATION, including engine sheds (three separate contracts at different times).
 EXTENSION, BUXTED STATION.
 FALMER, LEWES AND EASTBOURNE STATIONS.
 ALL STATIONS ON THE CUCKOO LINE (as it was christened), HELLINGLY, HOREHAM ROAD, HEATHFIELD, MAYFIELD AND ROTHERFIELD STATIONS.
 BRAMBER STATION PLATFORM ROOFS
 SUTTON AND CHEAM STATIONS
 LEATHERHEAD STATION EXTENSION
 MITCHAM STATION PLATFORM ROOFS, etc.
 STREATHAM HILL AND WANDSWORTH COMMON STATIONS.
 THE FIRST SET OF ELECTRIC ENGINE SHEDS, NORWOOD JUNCTION.
 NUMEROUS PAINTING CONTRACTS OF STATIONS.
 GATWICK RACECOURSE STATION.
 WILLOW WALK STATION EXTENSION.
 ARTIZAN DWELLINGS, BERMONDSEY.
 PURLEY AND PURLEY OAKS STATION.
 CHRIST'S HOSPITAL STATION.
 NUMEROUS WORKMEN'S COTTAGES all over the L.B. & S.C. Railway System.
 ALL TRANSHIPPING SHEDS, ENGINE SHEDS, WORKMEN'S COTTAGES AND THE CONTINENTAL STATION, NEWHAVEN. (The Station existed only one year when it was completely destroyed by Fire, we getting the order to re-build within four days after the Fire.
 WATERLOO STATION EXTENSION FOOTBRIDGE.

SOME OTHER IMPORTANT CONTRACTS

CHRIST'S HOSPITAL SCHOOLS, HORSHAM.
KING'S SANATORIUM, MIDHURST.
WEST SUSSEX ASYLUM, CHICHESTER.
LAVINGTON PARK ADDITIONS.
SOUTH HILL PARK, BRACKNELL.
FOLLY FARM AND EARTHAM.
FEN PLACE, WORTH, ADDITION.
KNEPP CASTLE (after fire).
MANSION, HOLLY HILL
MANSION, SAINT HILL.
MANSION, NETHERFIELD.
MANSION, SULLINGTON.
EWHURST HOUSE.
"ÆCEN GILL" AND "KURANDA" [FOREST ROW].
TWO VERY LARGE HOUSES, HASLEMERE.
FIVE VERY LARGE HOUSES, WORTHING.
FIVE VERY LARGE HOUSES, EAST GRINSTEAD.
LOXWOOD HOUSE.
BUCKINGHAM HOUSE.
ANSTIE GRANGE, HOLMWOOD.
"STEEPLEHURST", PETERSFIELD
"THE MOUNT", IFIELD
STEEP HOUSE
"PADDOCKHURST," very Extensive Works for R. Whitehead, Esq., and Lord Cowdray.
BLACKHEATH SCHOOL and Another, London School Board.
LEWES HOSPITAL.
DORMANS CHURCH.
BEXHILL CHURCH
NINFIELD CHURCH.
CHAPEL, KING'S SANATORIUM.
LEWES RACE STANDS.
GATWICK RACING STABLES and other Works connected with Racecourse.
R.C. SCHOOL, WOOLHAMPTON.

The total costs of the works executed by us runs into some Millions of Pounds.

Prices and samples will be sent free on application.

[These details of floors laid appear on pages 6 - 12 of the original brochure]

THE PRIVATE PRESS MOVEMENT IN SUSSEX

Peter Longstaff-Tyrrell

The printing industry has been one of perpetual transition ever since resourceful trader William Caxton introduced reproduction by movable type to Britain in 1476 from Germany. A few years previously in 1472, for example, the library at Queen's College, Cambridge, contained all of 199 books – elegantly handwritten – as an epitome of learning for the nation. As reading and communications accelerated across Europe the evolution of the modern world developed rapidly. Turning a full circle towards the twentieth century it has been common-place for many a neighbourhood to have a 'man that does' print jobs as a pastime. The passing image of an Adana hand-press being the popular impression of the cottage industry means of obtaining dance tickets, business cards and modest stationery items. Into the twenty-first century the instant image revolution escalates at an alarming rate, with desk-top publishing and digital system instant-print shops opening unlimited potential

The passing of trade skills increases the interest in the private press movement in Sussex.

References to hand presses in Sussex have been found in back issues of the *Sussex County Magazine*. In Volume 7 (1933) James Guthrie, President of the Association of Hand Printers, wrote of four hand press establishments. These functions of type-setting by hand and sheet feeding single sheets of paper for letterpress printing could be compared to the realms of present day vanity printing – reflecting the interests of the publisher, or those financing the print run, usually in short editions. It emphasises the divide between art and industry and its mentors like William Morris and his famed Kelmscott Press (1834-1896), located near Oxford, that influenced so many ambitious crafts people at the beginning of the century.

James Guthrie, in a 1928 issue of the *Sussex County Magazine*, wrote about the art of printing and the labour intensive aspects that have since forced the industry into a relentless race in technology. He writes about the Silver Unicorn Press of Sheila Thompson at Middleton near Bognor Regis. Hand press work revolved around the Ms Thompson's interest in engraving posters, Christmas cards and short run books like the title '*Goblin Market*' and subsequently '*The House That Jack Built*' and '*A Childs Anthology*'.

The bizarre name of the Oak, Ash, and Thorn Press operated by Geoffrey Higgens stems from 1922 when

he worked with primitive equipment to produce a pair of books off zinc plates. Upon moving to 2 Lawrence Road, Hove, Geoffrey Higgens constructed his own press and hand printed a book called '*Diary*', followed by '*Triad*' that contained poems. '*God's A-Begging*' was a play and '*Songs and Translations*' his own composition. A translation of '*Pervigilium Veneris*' was another individual literary piece. Mr Higgens had trained previously at the St. Dominic's Press on Ditchling Common where Eric Gill created his own workshops. James Guthrie speaks of H.D.C. Pepler founding the St. Dominic's Press in 1916, joined in 1918 by Cyril Costik. They started their printing operations on a Stanhope and an Albion press with a pair of Caslon Old Face fonts of founders type. Mr Pepler stated that they started with the modest intention of printing anything from a billhead to a book. This they indeed did over the ensuing years and as the name suggests the press had Catholic influences from the start. A sequence of bench books was instituted. Works covered '*Vegetable Dyes*', another title was '*Woodwork*'. Modes of influence were dictated by revenue and work covered plays, poetry, posters and pamphlets.

UNINTERRUPTED PUBLISHING

The Pear Tree Press had been established in Essex in 1899 by James Guthrie, later moving to Flansham, Bognor Regis, where he could indulge himself in the magnificent world of publishing devoid of the restraints of publishers, editors and hideous schedules. At Harting, Sussex Guthrie moved up from his small Albion press to a Stanhope to produce books. In 1908 he acquired a plate press to produce media direct off zinc plates produced by chemical and electrical methods that were rapidly advancing the scope of letterpress printing. He produced an edition '*A Child's Good Day*' on the plate press from his own poem, script and designs, all in much the same way that twenty-first century artisans may design, typeset and print their own work by means of desk-top publishing techniques.

Writing in Volume 2 (1928) of the *Sussex County Magazine* Joan Firmin comments about "Two Sussex Hand Presses". Again the St. Dominic's Press on Ditchling Common is featured, describing the workshops and certain of the obscure titles they indulged in. '*King George and the Turkish Knight*' is said to be based upon an old mumming play, a performance of which was given locally some 30 years previously. Other titles at the St. Dominic's Press included '*Brewing Beer*', whilst '*A Plain Plantain*' covered recipes and country remedies. '*Vegetable Dyes*' by Ethel Mairet was the first book produced by St. Dominic's. '*Sculpture*' was an essay by Eric Gill who

used to live adjacent at Hopkins Crank, later occupied by H.D.C. Pepler. Many of their works included line engravings by Eric Gill who had since moved on to his Black Mountains sanctuary in Wales. All the publications were on hand-made paper with sharp letterpress black impressions – adding to the lustre of their hand press editions.

Another hand press featured by Joan Firmin was off the High Street in Steyning. An elegant gabled cottage in Church Street was the home of Victor Neuberger who produced copies of Sussex verse and local literature from the Vine Press at the end of his large home. Their books of numerous titles covered diverse subjects from cricket, Sussex verse, tales of old Russia, together with collections of county observations.

Sussex remains rich in many areas of its industrial past and these hand press establishments, or should we collate them as private presses, differed from more commercial concerns in that they could decide upon the work they undertook and were not necessarily restricted by commercial influences. Much of the equipment used in hand printing had of course previously been used in more commercial environments. Invariably the machinery and relics of industrial progress often ended their day dumped or sold for

scrap. Yet only a year or two ago Jenners Ltd. in Hailsham High Street was selling off its redundant letterpress equipment. Today surplus letterpress equipment often embraces a new role as exhibition show-pieces and one at the foyer of the former Brighton College of Art in Grand Parade comes to mind. Another iron hand press, or proofing press, is currently on display at the entrance to Sumfield and Day Ltd. in Station Street, Eastbourne. While a commercial printer in Rye still excels in the art of letterpress printing in all its vagaries. For public consumption a splendid example of a thriving letterpress printing works, in all its modes, can be experienced at Amberley Museum near Storrington in West Sussex.

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HUNSTON CANAL BRIDGE

Hundred of Manhood & Selsey Tramway

A.H.J. Green

INTRODUCTION

In 1984 I was asked by Rosemary Gilmore, the then Curator of Chichester District Museum, if I would be prepared to construct for a forthcoming exhibition a model of the bridge which carried the Selsey Tramway across Chichester Canal at Hunston.

With little remaining on site and no drawings available it seemed a tall order but I accepted the challenge (I'm not sure I really had an option!) and the research proved fascinating, as one would expect of a Colonel Stephens' venture.

Chris Bryan of SIAS (now Rosemary's husband) persuaded me to transcribe the 1985 notes I made for the Museum into this paper which he felt would be of wider interest.

CONCEPT

The flat coastal plain of the Selsey Peninsula offered little in the way of natural obstacles to the Engineer of the Hundred of Manhood and Selsey Tramway, the redoubtable Lieutenant-Colonel H.F. Stephens. Indeed the stage was set for a cheap and cheerful railway taking full advantage of the dispensations offered by the 1896 Light Railway Act.

There was, however, one man-made obstacle namely the Chichester Branch of the Portsmouth and Arundel Canal which required to be crossed in a manner which did not impede navigation. At the time of construction of the line (1897) the canal traffic was dwindling, having been creamed off by the LB&SCR which reached Chichester in 1846. However ocean-going barges were still sailing into the City's canal basin bringing timber to Covers who were the principal timber merchant in the area. As such there were no immediate plans for closure, so the Colonel was forced to come up with a design for a bridge which would permit the passage of fully-masted vessels. A fixed design would have entailed high approach embankments and considerable cost. As unnecessary expense was not a term in the Colonel's phrase-book he plumped for a movable structure. He would not have had to look far for inspiration for the LB&SCR had two movable railway bridges over navigable rivers in Sussex at Ford and Southerham but these would have been too conventional, not to say far too costly, for the Colonel.

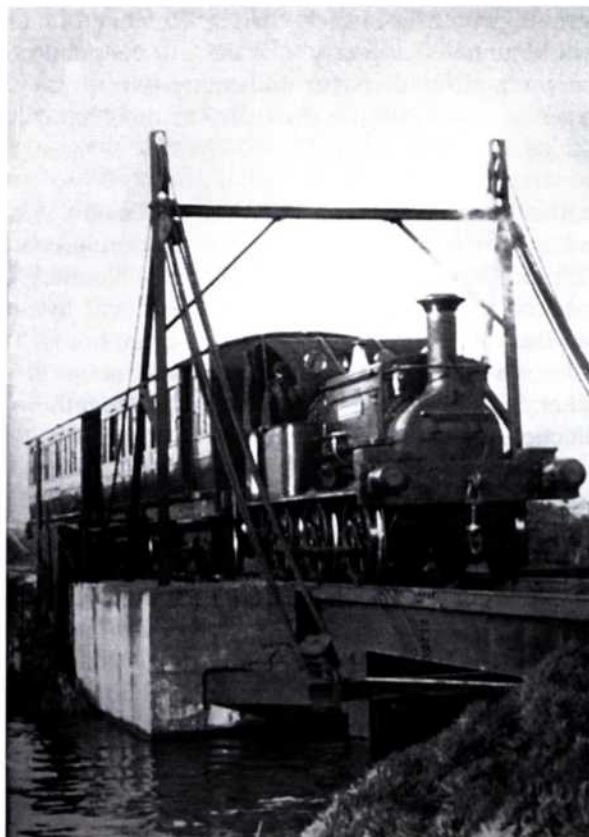


Fig. 1 A train makes its way across the bridge towards Selsey – note the main girders appear to rest on the timber fenders.

Reproduced with permission from Mitchell & Smith, *Branch Lines to Selsey* (Middleton Press)

The crossing point was at Hunston, just west of the canal's junction with its "main line" of the Portsmouth and Arundel and the railway approached the canal on a skew of 28° – far from ideal from an engineering point of view. The design adopted was a half-basculer bridge with its "fixed" end on the Chichester bank and operated entirely by hand. The resulting structure appeared to have been inspired by the drawbridge of a castle and the Ordnance Survey obviously thought so too as they described it (erroneously) on their 1:2500 map as "Drawbridge" (See Fig. 2). It did, however, fit in perfectly with the emerging eccentricity of the line.



Fig 2 Extract from 1:2500 O.S. map, 1932 edition

DESIGN

The original drawings are missing so one can only assume that the design was by the Colonel himself (he was a corporate member of the Institution of Civil Engineers) but even if not he must have had a strong hand in it since it carries all his hall marks.

As was to be expected the Colonel kept costs to the absolute minimum and he avoided the complications of a skew bridge by constructing the bridge square to the railway rather than the canal thus drastically reducing the navigable opening, especially as massive timber fenders were required to protect the abutments from collisions. Indeed navigating the opened bridge must have called for considerable skills on behalf of the bargemen as the opening presented to them was only about 18 feet – less than half the canal's statutory width.

The Chichester abutment (Fig. 5) was of mass concrete, a material which was coming increasingly into fashion in the late nineteenth century, measuring 17'5" wide by 19'8" long and only 6' above the water line. The reason for its massive size was that it had both to accommodate the lifting gear and have sufficient mass not to overturn when the bridge was raised. The Hunston abutment however was insubstantial and, as a result of the Colonel's desire to reduce the span was sited almost in the middle of the waterway and approached on a small embankment.

The superstructure was formed entirely of rolled wrought-iron joists. The fixed end was carried on trunnion bearings at the extreme ends of the main girders when raised, but it would appear from photographs, it rested on the timber fenders when lowered thus reducing its effective span. The free end rested on the Hunston abutment but it is not clear what the detail of the top of the abutment was. The main girders, sited directly below the rails, seem* to have been formed of 20" x 7" x 15# wrought iron joists¹ and their slender nature supports the view that they rested on the fenders when lowered. Longitudinal timbers were bolted to the top flanges of the main girders to which the flat-bottomed rails were spiked.

No decking was provided nor were there any parapets; any railway staff needing to cross on foot had either to jump between the cross-girders or risk a tight-rope walk along the rail head. Neither was an option for the faint-hearted. No Health and Safety at Work Act forced the Colonel to provide for their wellbeing!

On the Colonel's Rye and Camber Tramway the fixed bridge over the North Point Sewer was of similar construction with the same lack of basic safety features.

The lifting arrangements were manual consisting of two independent hand winches mounted either side of the track, the chains from which passed over pulleys at the top of a portal frame which spanned the track, then around pulley sheaves attached to a transverse lifting beam bolted to the bottom flanges of the main girders. The slender portal frame was constructed of rolled wrought-iron joists the vertical members being of 8" x 4" x 15# section.

CONSTRUCTION

Construction commenced early in 1897 under Col. Stephens' supervision and, for some reason, an agreement was drawn up with Chichester City Council vesting ownership of the bridge in the Council rather than the Company who paid the princely sum of £2 p.a. for its use.² This arrangement no doubt suited the Company well as the cost of maintenance – assuming that is that there was any maintenance – would fall to the Council.

A report in the *Chichester Observer* of 14 July 1897 states that "– the chief piles have been driven and the water pumped out for laying the concrete foundations."³ Journalists are not renowned for their accuracy in reporting matters engineering so it is more than likely that the piles referred to were to form the coffer-dam rather than to support the abutment itself.

During the first few weeks of the line's existence a barge was moored beneath the bridge when trains passed in case of collapse⁴ – obviously the Inspecting Officer, or maybe even the Colonel himself, was not too impressed by the apparent flimsiness of the completed structure. Fortunately, and perhaps surprisingly, the services of the barge were not called for either then or subsequently.

OPERATION OF THE BRIDGE

As the structure was not counter-balanced (another of the Colonel's economies one assumes) opening the bridge for canal traffic was no easy task. It is reported that screw jacks had to be used to start the lift⁵ after which considerable manual effort would have been required to complete the operation. A further problem was the mechanical independence of the two winches which, if not operated at exactly the same speed, could cause the superstructure to twist jamming the bearings. In the line's first year of operation the bridge once jammed so firmly that it caused the line to close for "several days"⁶ whilst a means was found of restoring it to the horizontal.

Photographs show that as originally built only one fall of chain was provided but that, after the turn of the



Fig. 3 A view of the bridge looking east, note the four falls of chain. (Chichester Museum)



Fig. 4 The same view with the bridge raised (Chichester Museum)

century, the rigging was changed to four falls with multi-sheave pulley blocks (Figs. 3 and 4) which increased the mechanical advantage and reduced considerably the effort required of the winchmen. When not in use the winch handles were removed for obvious reasons. Before the lift could commence fish plates had to be removed to provide the necessary breaks in the rails. On hot or very cold days this could cause further havoc if, due to expansion, the bolt holes no longer lined up when the time came to put the fish plates back on.

SERVICE AND DECAY

The canal traffic dwindled to nothing by the 1920s and in 1924 the City Council declared it closed and agreed to the replacement of the cast-iron swing bridges carrying the roads at Donnington and Birdham with culverts.⁷ For the HM&ST this meant that Hunston Bridge no longer required to be opened, for which they must have been eternally grateful, and for the remainder of its life it remained fixed.

The line closed in January 1935 and its assets were put up for sale. Hunston Bridge however, not being in the Company's ownership, was not included in the catalogue and remained in situ despite its obvious scrap value. However its main girders were to find a further use in 1940 when they were removed to Shripney to replace a bridge over the Rife which had been bombed cutting off Bognor's water supply.⁸ They remained in position until the early 1950s.

On site now only the Chichester abutment and the short approach embankment from the Hunston bank of the canal remain. The Hunston abutment, the portal frame, lifting gear and entire superstructure have vanished.

BUILDING THE MODEL

Having accepted the challenge of building the model the first task was to gain access to, and carry out a survey of, the remains. This I did one Saturday morning in November 1984 aided by some willing assistants. Removal of the luxuriant growth of ivy revealed the burnt-off stumps of the portal frame, measurement of which enabled their sections to be identified from an ancient set of WI Rolled Joist tables. The stumps of the holding-down bolts for the winches were also in situ, to one of which a fragment of the cast-iron winch frame was attached. (See Fig. 5) Measurement of the recess and a surviving piece of running rail enabled the size of the main girders to be assessed.



Fig. 5 The west face of the Chichester abutment in 1984 showing the burnt-off remains of the portal frame and part of a winch. (Author)

Two good square-on photographs were provided by the Colonel Stephens Museum of the bridge in both its open and closed positions. From dimensions taken on site the "scale" of these photographs could be established enabling principal dimensions to be assessed (sufficiently accurate for 1:76 scale!) and working drawings to be produced. The 1932 1:2500 O.S. Map enabled the skew to be measured.

The model, which is owned by Chichester District Museum, was built to a scale of 4 mm to 1 foot (1:76) but with the track gauge set to the correct 18.83 mm rather than "OO" I have to confess that, although the lifting tackle is fully rigged it most certainly does not operate – such was well beyond my capabilities and patience!

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ACKNOWLEDGEMENTS

My thanks are due to Rosemary Gilmour and Peter Hounsome who assisted in the survey all those years ago, and my former BR colleagues Alan Blackburn who drew my attention to the Rye and Camber Bridge and Bill Nobes who produced the ancient WI section tables. Also to the Colonel Stephens Museum at Tenterden who supplied photographs.

KING'S STANDING, CROWBOROUGH

Ron Martin

INTRODUCTION

"Germany Calling" was William Joyce's (Lord Haw-Haw's) catch phrase from quite early in WWII., his first broadcast being in September, 1939. The British response was to set up a network of short wave transmitters based at Woburn Abbey in Bedfordshire under the control of the Political Warfare Executive (PWE) with the object of countering the enemy propaganda.¹ Most of this material was of a comparatively innocuous nature, and was really preaching to the converted.

This all changed when Sefton Delmer was appointed head of PWE.¹ He was born in Germany in 1904 the son of a professor of English at Berlin University. The family was interned in 1914 and repatriated in 1917, when Sefton continued his education at St. Paul's School and later at Lincoln College Oxford. After the war he became a journalist and with his German connections was able to associate with the top ranks of the Nazi hierarchy. He returned to England in May 1940 and spent some time trying to get suitable employment in the security services and eventually was recruited by Dick Crossman, who later became a Labour MP, as head of PWE in late 1940 or early 1941.² He set up a short-wave radio station called "*Gustav Siegfried Eins*" (GS1), ostensibly a branch of the German Army Signals, using a German announcer known as "*Der Chef*". Much of the material transmitted was of a lascivious nature and included anti-British statements with the object of attracting listeners who found the station accidentally by "knob twiddling". Subversive propaganda could then be slipped in unobtrusively. The station was also based in Woburn Abbey and the studios were eventually built at nearby Milton Bryan.³

In May 1941 a more ambitious project got the backing of the Prime Minister to use German wavelengths to transmit confusing broadcasts and Harold Robin, the chief Engineer was sent to USA to purchase a large transmitter for £165,000. This was a 500 kW medium-wave unit manufactured by RCA ordered by the State of New Jersey. The Federal Government however would not give permission for its use as they had a power limit of 50 kW for local radio stations. The transmitter was languishing in RCA's works and Harold Robin spent the summer of 1941 learning about the transmitter and getting the power output increased to 600 kW, making it what was believed to be the most powerful in the world. What was unique about this

unit was its ability to alter frequencies, giving it a degree of flexibility not available with other transmitters.⁴ This was used, for example, when using the frequency of a local radio station to pick up a broadcast immediately it was cut off by the Germans in the event of an imminent RAF raid.

Back in England there was a search on for a suitable site for the transmitter. By now it was being jocularly known as the "Aspidistra" after the Gracie Fields song "The Biggest Aspidistra in the World" and this was shortened to ASPI. The first one was ASPI 1 and subsequent ones numbered consecutively. A 70 acre site was eventually found on the Ashdown Forest near the parish of Crowborough at King's Standing 620 feet above sea level and work commenced to excavate a large hole to house the transmitter. At first, the task seemed interminable until a team of Canadian Engineers, stationed nearby, were brought in, extensively bribed with the promise of unlimited quantities of beer and the excavation was completed within six weeks. The rest of the building works was carried out by a team of 600 men working round the clock.⁵

There were also two Parasitic Aerial Tuning Buildings in underground bunkers, and a third bunker under the Driven Tower Mast which was on top of and accessible from the main bunker. In the eastern Parasitic bunker was located ASPI 2 and this could be used as a back-up in case ASPI 1 failed.⁶

Other buildings that were erected in 1941-42 were the No.1 Power House and Cooling Tower, the Transformer House, the Power Maintenance Workshop, which was also believed to have been used by Harold Robin as his office, and two pillboxes.

The first broadcast made from King's Standing was in November 1942, when in support of the Torch Landings in North Africa, President Roosevelt's nephew spoke in French to the Vichy French. However there were still disagreements between PWE and the BBC and for a time ASPI 1 was only used by the BBC for their European Service.

In addition to this a new short-wave transmitter (ASPI 3) was installed at Crowborough in a building known as the "Cinema" because of its similarity to a 1930s cinema building. Finally in February 1943 Sefton Delmer was able to set up a new station named *Deutsche Kurtzwellensender Atlantik* or German Short-Wave Radio Atlantic. The station, its name shortened to *Atlantiksender*, was aimed chiefly at U-boats. To aid the deception all sorts of ruses were adopted by the studios using German music and gleaned information from recently captured POWs.

By October 1943, total control of ASPI 1 was finally obtained and *Atlantiksender* was joined by another station masterminded by Sefton Delmer and known as *Soldatensender Calais* directed chiefly at the Wehrmacht and Luftwaffe. One of the ruses used was to monitor local German broadcasts and when they shut down due to an imminent RAF raid the fake broadcast would cut in six milliseconds later, thus creating considerable confusion.

The *Atlantiksender* and *Soldatensender* stations were closed down on 20 April 1945. However the transmitters continued to be used by the Foreign Office's Diplomatic Wireless Service (DWS) for teleprinter communications and were also hired by the BBC for their Foreign Language Service with Harold Robin continuing as the Chief Engineer. When Harold Wilson wanted a transmitter to be located in Botswana to broadcast to Rhodesia after UDI a Continental unit was bought from the USA and Robin had this running in three weeks. On its return to the UK it was installed in the "Barn" building (see p.30) and used amongst other uses for jamming Radio Caroline. ASPI 1 continued to be used until 1982 and the site was finally closed down in 1986, when the active transmitters were transferred to Orford Ness.

DESCRIPTION OF BUILDINGS

This survey which was carried out between October 1999 and September, 2000 but did not include the bunker which housed ASPI 1.

TRANSFORMER HOUSE AND POWER MAINTENANCE WORKSHOP (Figs. 2 and 3)

Two of the original 1941-42 buildings were the Transformer House, which took the limited public electricity supply when it was not using its own generators and the Electricians' Workshop, which was probably used by Harold Robin as his office during the construction of the site. Both buildings were built partially below ground level with brick walls and a reinforced concrete roof. The projecting edge of the roof is singular in that it has a wavy edge possibly in order to soften the profile and make it less obvious to aerial observation. The Transformer House has solid walls and the door openings are protected by a blast wall. The Workshop has hollow wall 225 mm (9") thick comprising two brick-on-edge skins, the outer skin being in "Rustic" Flettons. The inner face of the walls are all plastered, possibly because of its use as Robin's office.

NO.1 POWER HOUSE (Fig. 4)

The station was designed to be self sufficient and consequently was provided with its own power system, generator and cooling system. The Power House was built as part of the original construction in 1941-42 and was partially underground. It is 24 x 10 m (78'9" x 32'10") and 5.2 m (17'1") high internally with double steel sliding doors at the south end at each side of which are two full height exhaust vents. It is constructed with reinforced concrete walls lined with precast concrete panels, used as permanent formwork and has attached piers supporting the traveller crane beams. The roof is 1.68 m thick with a reservoir 0.84 m deep above this. It is probable that the roof is constructed with upper and lower reinforced concrete beds with ballast filling between. This was a method used during the war for bomb proof construction and is to be found at the radar buildings at RAF Pevensey of the same date.⁷ Earth is piled up at both sides and the spandrel ends are supported by sandstone rubble walls probably using material dug out of the site.

The Power House contained a 3000 h.p. 16-cylinder supercharged Crossley Premier diesel generator and there was a high level control gallery at one end. This machine was scrapped in the 1970s and replaced by two Deltic units, similar to those used in diesel-electric locomotives.

COOLING TOWER (Fig. 5)

Adjacent to the Power House there is a circular Cooling Tower in a small pond lined with asphalt. This sat on a reinforced concrete ring beam on concrete pillars and was originally of timber construction. It was rebuilt in the 1950s in brickwork using in-house labour.⁸

PILLBOX (Fig. 6)

One very small circular pillbox still survives. It is 2.4 m (7'10") internal diameter with four loopholes and an entrance door. The wall are 400 mm (1'4") thick with brick-on-edge both sides used as permanent formwork with concrete core. The concrete roof is 300 mm thick with earth filling on top.

"CINEMA" BUILDING (Figs. 7 and 8)

This building was probably built during 1942-43 to house ASPI 3 and later ASPI 6 and is remarkable for the quality of its design and workmanship particularly bearing in mind the shortage of materials and labour

in the middle of the War. The "architect" was Cecil Williamson, who before the War was "involved" with cinema building, but in exactly what capacity is unknown.⁹ The building has a reinforced concrete frame, mostly exposed, infilled with hollow brickwork with several rows of decorative brick and tile courses. Most of the lights were of glass bricks with a continuous row across the back and a curved wall at the main entrance. This opened into a foyer with a curved staircase which led up to the main operating floor at mezzanine level. Beneath this floor were air ducts, which also used the cavities of the wall to ensure adequate ventilation throughout the building. To the side of the main block was a low level area housing items of heavy plant, mainly transformers and switching gear.

The entrance floors, staircase and walls are lined with terrazzo and the curved wall beside the staircase has an inset lighting feature with vertical hardwood mullions. There is a deep coved cornice and decorative recessed bands to this and to the window all picked out in gold paint.

The principal floor is divided longitudinally with a screen with the control room on one side and the servicing area on the other. This area has hardwood flooring, part wood block and part oak strip and like the entrance area has deep coved cornices and concealed lining in the false ceiling.

The construction of the roof and floors is interesting in that it epitomises the shortages of building materials at this time. Bricks, tiles, stone, cement, plaster and steel were all available but most timber was imported, some from Canada, and means had to be found to minimise its use. In the case of this building the roofs were supported by deep upstand and downstand reinforced concrete beams with precast concrete beams spanning between them at 1 m (3'3") centres. On these were laid unreinforced precast concrete paving slabs with weak concrete topping. The floor is similar but with better quality concrete, probably reinforced.

"THE BARN" (Figs. 9 and 10)

This building was probably built during 1943-44, probably after the "Cinema" building and is of more modest design. Maybe it was realised that the lavish design of the "Cinema" building was unnecessary. As originally built it comprised a single storey 64 m (210') long with 300 mm (11") hollow walls and external projecting piers, which supported segmental timber trusses. Internally it was divided halfway with a brick wall, one end being the Transmitter Room housing a short wave transmitter, ASPI 5 used initially for

jamming Luftwaffe ground-to-air communications and later for daily communications with Washington DC between 1945 and the 1970s. There was also installed a 50 kW RCA long wave transmitter known as ASPI 7 which was acquired second-hand from the Rampisham BBC Station and used mainly for testing purposes. Some RAF personnel were posted to King's Standing to transport and assemble these and one stayed on and became the Chief Engineer in the 1970s.¹⁰

The windows are mostly high level glass brick panels and the main entrance with an entrance lobby is at the north end. There are four full height roller shutters along the east side

In 1954 a short wave transmitter was acquired by Harold Robin. This was a 50 kW unit designed and built by Marconi in the 1930s and destined for Singapore when the Japanese invasion intervened. It was put into store, installed at King's Standing in 1955 and to accommodate this unit the south end of the building was raised to two stories high. Access to the first floor was by a staircase at the north end of the new floor but at that date the entrance was still at the extreme north end. The west entrance and porch was not built until the 1970s.¹¹

There are several strange features about this building. The external attached piers to the extension are raised to roof level – apparently unnecessarily – and two of them are interrupted by first floor windows. The pattern of piers and the ring beam supporting the structure seem illogical and the whole building is painted with camouflage paint.

The first floor and roof is supported independently of the original walls and the reason for this odd construction was because the existing external walls are above the new first floor level and it was decided that it was unnecessary to lower the walls. Interestingly enough the two existing roller shutter doors extended above first floor level.

The south end was occupied by the new transmitter and the various generators and power units on the ground floor and the transmitters on the upper floor. In the southwest corner of the first floor was Harold Robin's secure laboratory which was surrounded by a Faraday's cage to keep it isolated from radio waves. The first floor was divided into partitions in the 1970s and used for offices. The camouflage paint was not applied until 1955 when the extension was built. This was due to objections by the Conservators of the Ashdown Forest who were concerned about the impact of the enlarged building on the environment. During the war this building was covered with a camouflaged netting.¹²

SWITCH HOUSE (Fig. 11)

One of the buildings which immediately followed the installation of ASPI 4 and 6 was an aerial Switching Roundhouse. It was used on the short-wave broadcasts to switch the transmitter feeds from ASPI 3 and 6, being controlled from, the front panel of ASPI 6. After 1955 an additional tier was added to enlarge the system to accommodate several more transmitter feeds to several more aerial rhobics.¹³ This was built of the same bricks as the "Barn" so was probably contemporary with it. It was circular 6 m (19'8") internal diameter with hollow walls. There was a continuous ring beam over the high level windows, through which the feeders were taken by overhead lines to the various transmitters. It was later extended upwards when a circular switching system was installed.. There are copper earthing strips in the floor taken out to earthing stakes.

NO.2 POWER HOUSE (Figs. 12 and 13)

Abutting the south end of the old Power House, a new Power House was built, to house stand-by diesel units and connected to it by a short passage. This is sunken below ground but not buried like the original Power House. It is 20 m x 11 m (65'6" x 36'1"), brick built with 300 mm (11") hollow walls, some decorative brick band courses and glass brick panels. It has somewhat similar but simpler details to the "Cinema" building and it is suspected that it was also designed by Cecil Williamson. The date was uncertain until it was noticed that over the main entrance the glass brick panel has the date "1947" picked out in a different pattern of glass blocks.

Adjacent to No.2 Power House there is a complex of single storey buildings built successively in three phases during the 1960s and containing a workshop, laboratory and toilet.¹⁴

NEW LABORATORY (Fig. 14)

In the 1960s Harold Robin required a larger laboratory than was provided by the one in the corner of the "Barn" building. The New Laboratory was built adjacent to the No. 1 Power House. It was of straightforward brick construction with hollow walls but the interesting feature is that floors, ceilings and internal walls of all the work rooms are lined with chicken wire, covered with fibreboard to create a "Faraday Cage".¹⁵

There is a variety of other minor building on the site – workshops, stores, a canteen, offices, a coach garage, gate house, none of which have been recorded in detail.

FINAL PHASE

In 1984-86 the Home Office built a Regional Seat of Government (RSG 6) on the site of ASPI 1, to replace the former site under Dover Castle known as *Dumpy*. The RSG was constructed by gutting the original bunker and inserting a mezzanine floor. A new wing was added to house the generators, air conditioning etc. and to provide a new entrance. The Home Office closed the site in 1992 and it was subsequently bought by Sussex Police who currently use the site as a training establishment.¹⁶

REFERENCES

1. Mark Kenyon, *After the Battle No.75, Black Propaganda*, (1992), p.9
2. *Ibid*, p.12
3. *Ibid*, p.13
4. *Ibid*, p.16
5. *Ibid*, p.17
6. E.T. Awcock, who worked on the site from 1951 to 1986 as an Engineer/Technician, personal comments to the author, who acknowledges his invaluable assistance in preparing this paper.
7. A.G. Pope, owner of Pylons Farm, Pevensey. formerly RAF Pevensey, in conversation with the author.
8. E.T. Awcock information
9. Ellic Howe, *The Black Game*, (1982) p.79
10. E.T. Awcock information
11. *Ibid*
12. *Ibid*
13. *Ibid*
14. *Ibid*
15. *Ibid*
16. *Ibid*

APPENDIX.

KING'S STANDING BROADCASTING STATION – SCHEDULE OF TRANSMITTERS

Ref.	Manu- facturer	Power	Wave- length	Date installed	Date removed	Location	Use
ASPI 1	RCA	600 kW	Medium	1941	1982	Underground Bunker	<i>Gustav Siegfried Eins</i> , 1943-45, BBC Foreign Language Service and Voice of America (1945-82)
ASPI 2	RCA	2 kW	Medium	1941	1955	Parasitic Aerial	European Service (to 1945) then teleprinter Tuning building communications (1945-55)
ASPI 2	Doherty	500 kW	Medium	c.1968	c.1986	"Barn" building north end	Replacement when ASPI 1 closed down; later removed to Orford Ness
ASPI 3	GE	100 kW	Short	1943	c.1986	"Cinema" building	<i>Atlantiksender</i> and <i>Soldatensender</i> (until 1945) then DWS teleprinter communications and Foreign Language Service and Voice of America(1956-86)
ASPI 4	Marconi	50 kW	Short	1954	c.1968	"Barn" extension	DWS teleprinter communications
ASPI 5	RCA	7.5 kW	Short	c.1944	c.1968	"Barn" building, (southwest of north wing)	DWS teleprinter communication with Washington
ASPI 6	GE	100 kW	Short	1942/3	c.1986	"Cinema" building	Jamming, 1945-55, then DWS teleprinter communications then BBC Foreign and World Service and Voice of America
ASPI 7	RCA 50E	50 kW	Long	c.1944	c.1986	"Barn" building (north end)	Testing for medium and long wave transmissions
ASPI 8	Willcox	5 kW	Short	c.1955	c.1968	"Barn" building room F19	Standby for ASPI 4
ASPI 9	214 Tx	2 kW	Short	c.1955	1960s	"Barn" building	DWS teleprinter communications
ASPI 10	Marconi	20 kW	Short	1950s	1968	"Barn" SW of north wing	DWS teleprinter communications
ASPI 11	214 Tx	2 kW	Short	c.1960	1968	"Barn" building	DWS teleprinter communications
Continental		50 kW	Medium	c.1968	1984	"Barn" building Room G14 South end	DWS after use in Botswana, (during the Rhodesia crisis) Jamming Radio Caroline on the Essex coast; later removed to Orford Ness

Notes on Transmitter Sources

RCA – Radio Corporation of America (USA)

GE – General Electric (USA)

CONTINENTAL – (USA)

WILLCOX – (USA)

MARCONI – (USA)

DOHERTEY – (DWS built at King's Standing)

214s – (DWS built at King's Standing)

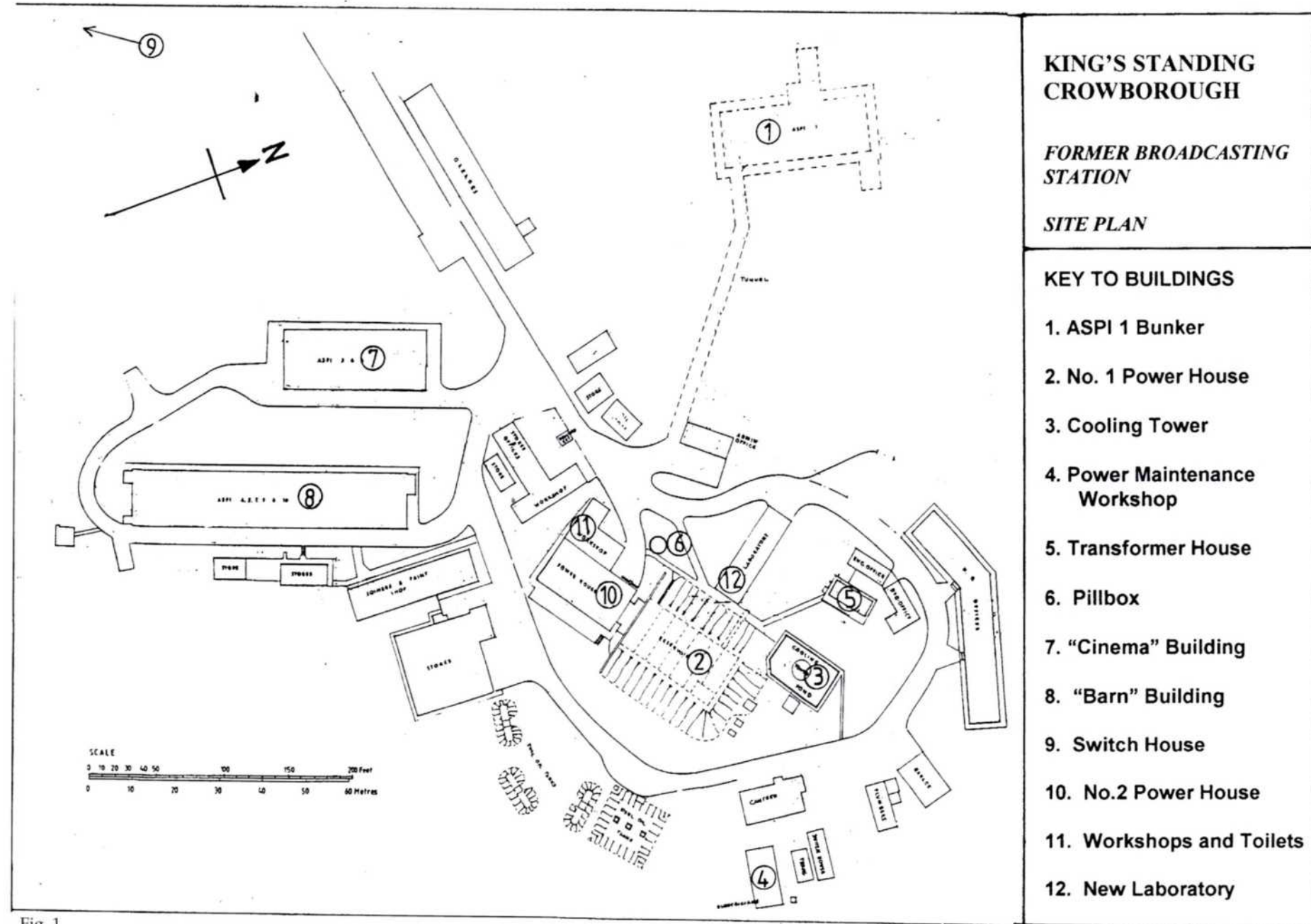


Fig. 1

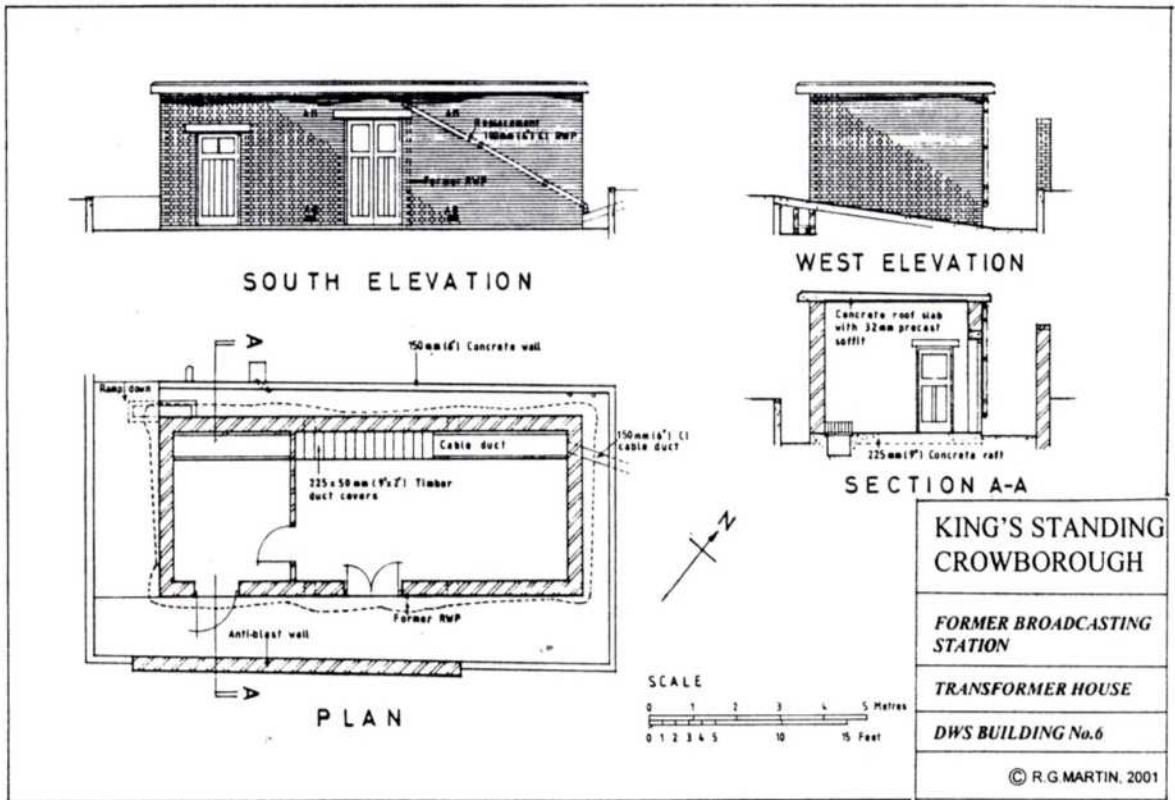


Fig. 2

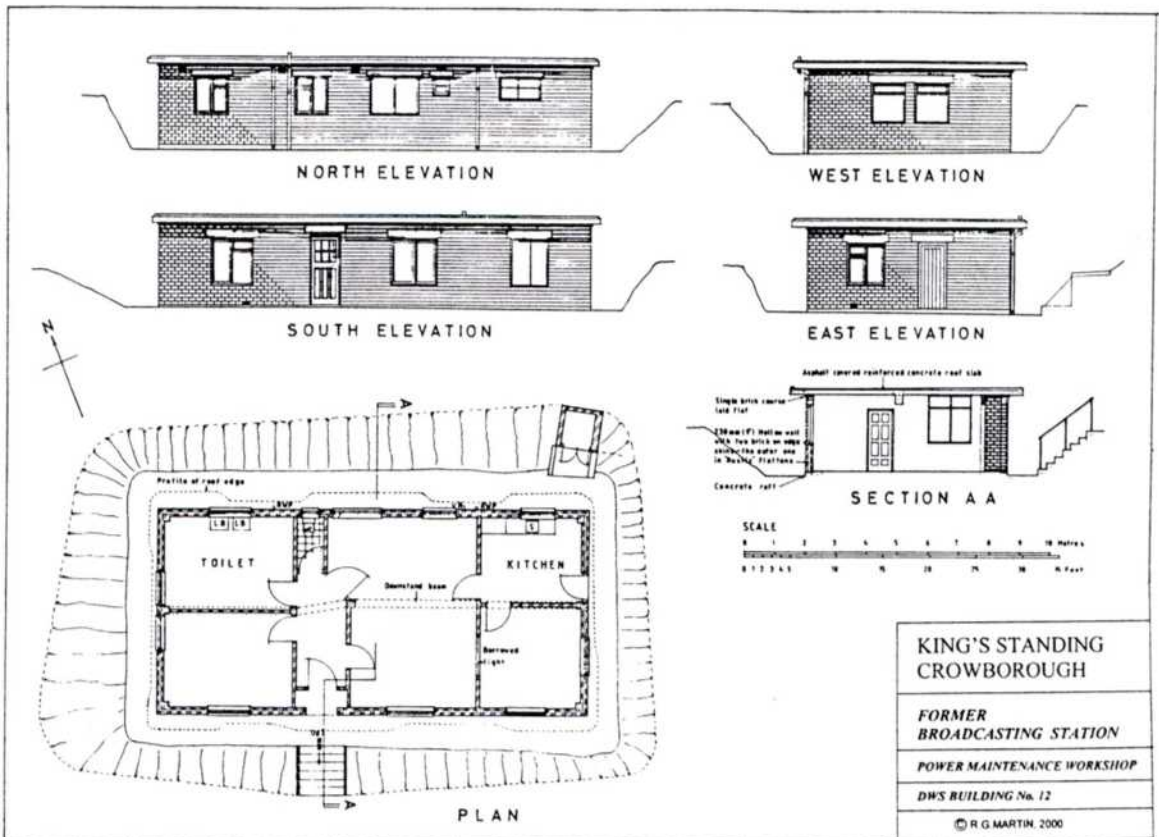
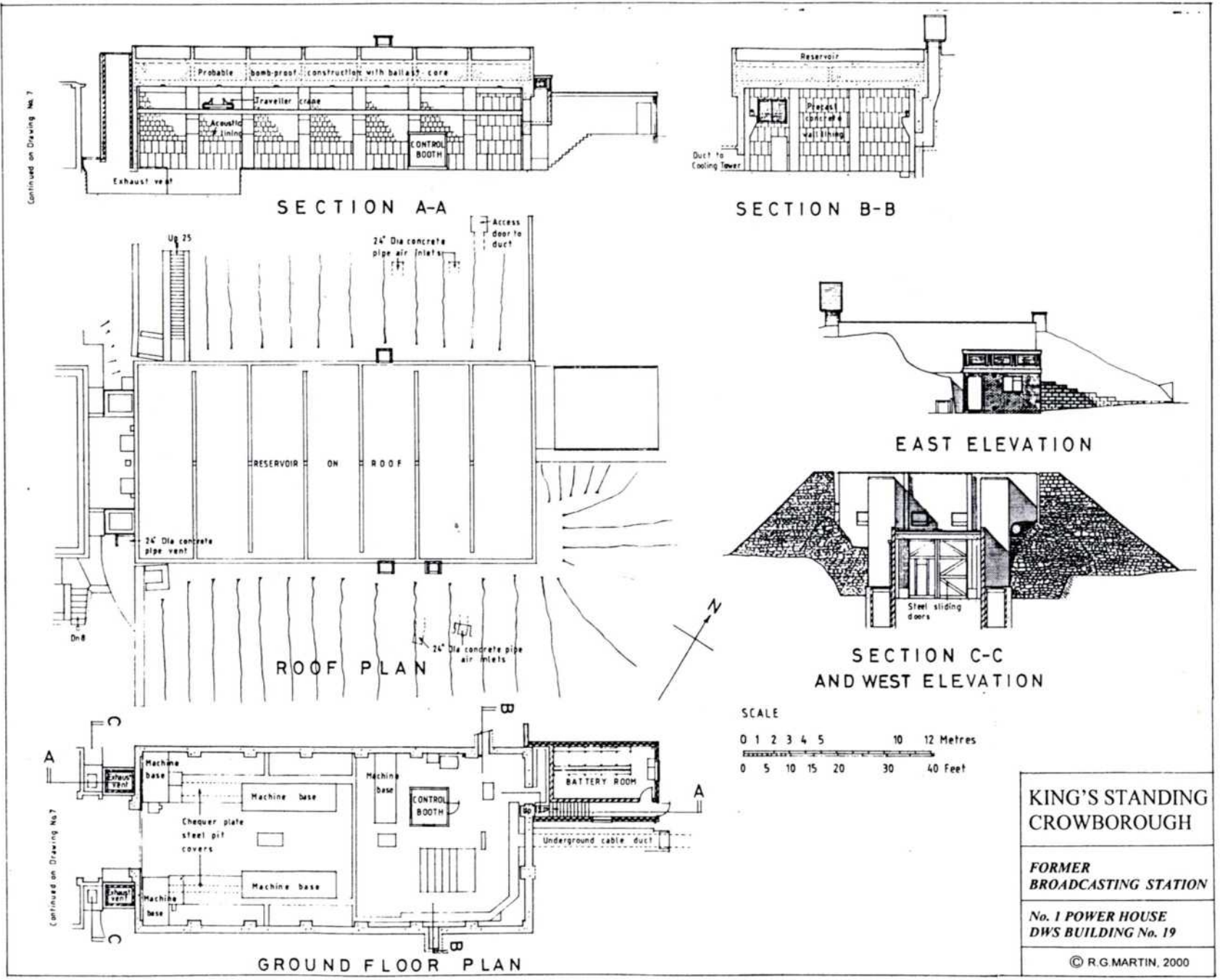


Fig. 3



**KING'S STANDING
CROWBOROUGH**

**FORMER
BROADCASTING STATION**

**No. 1 POWER HOUSE
DWS BUILDING No. 19**

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Fig. 4

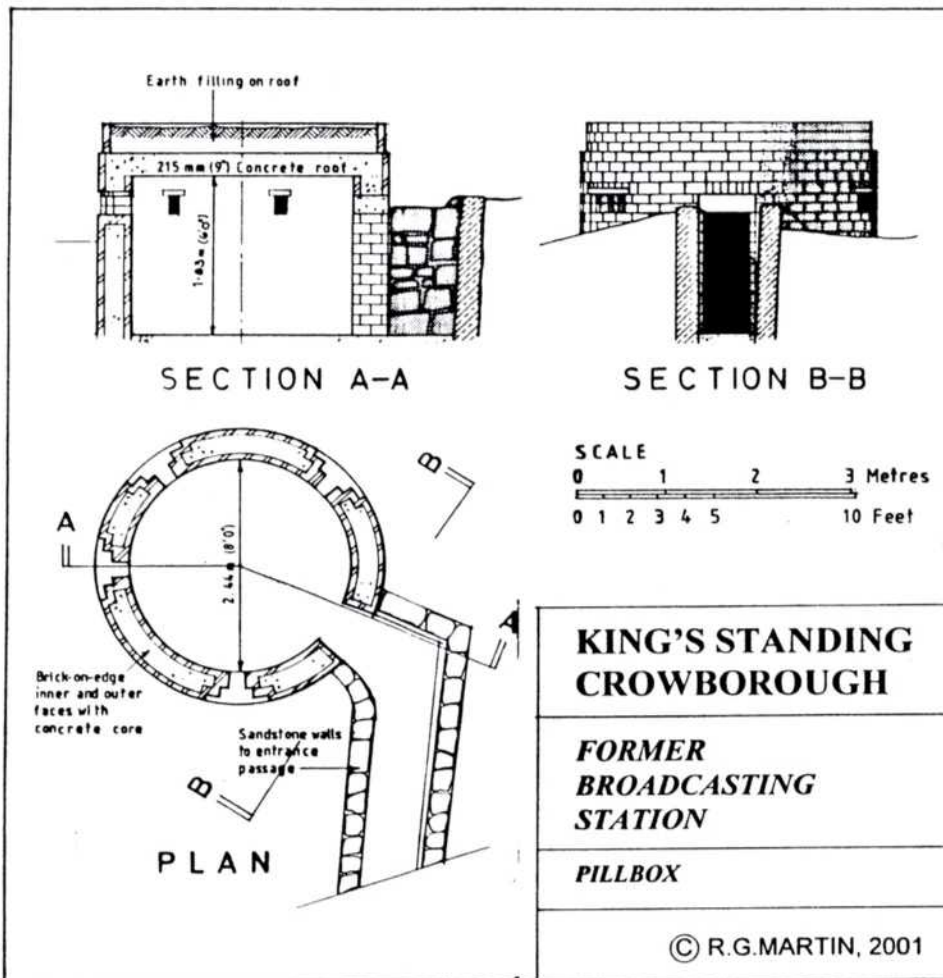
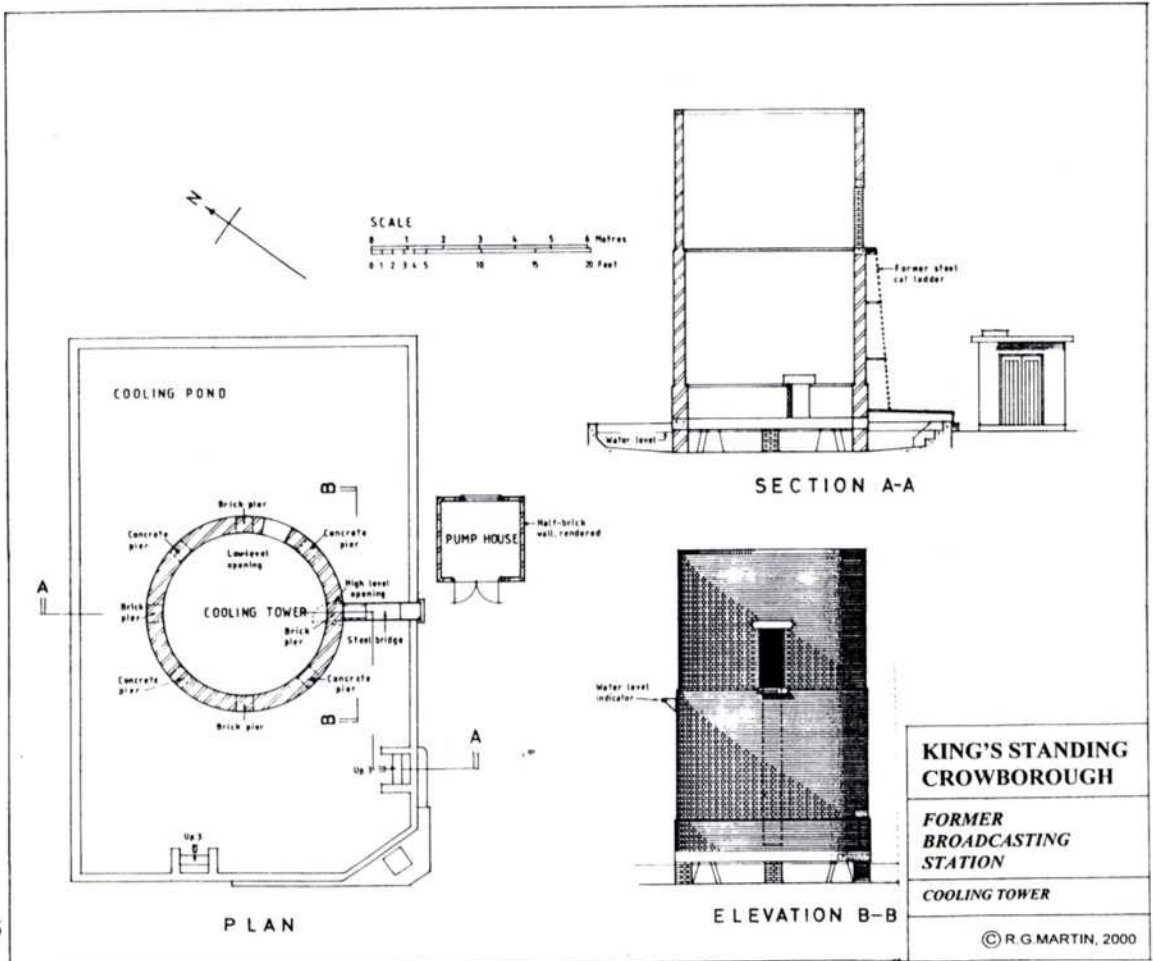


Fig. 6

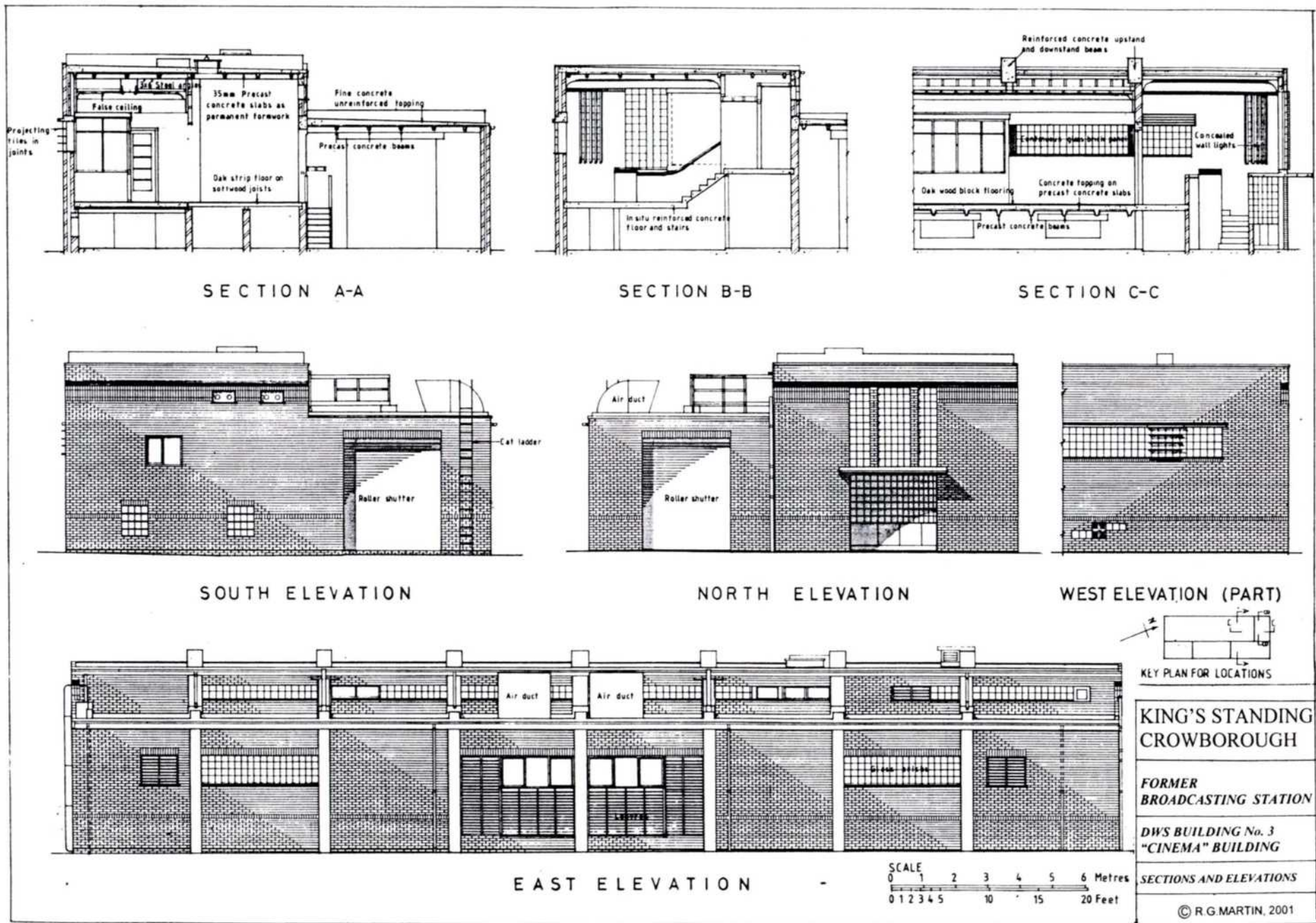
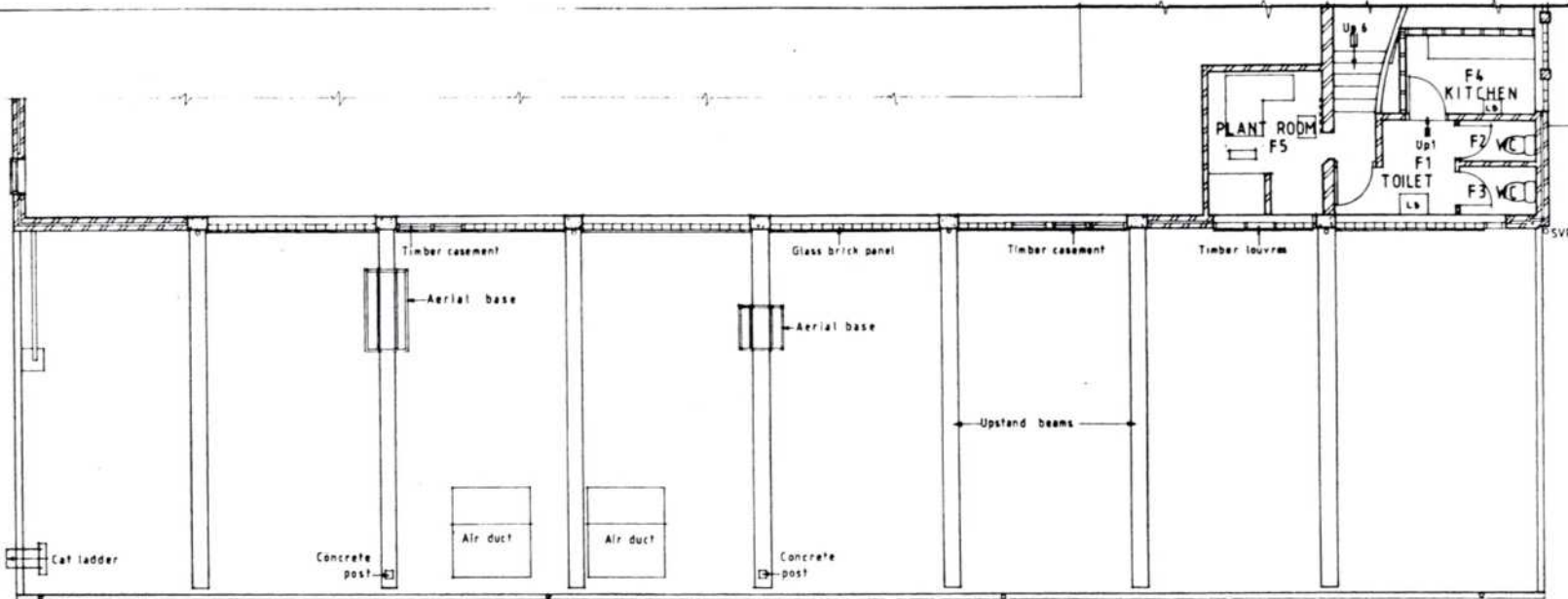
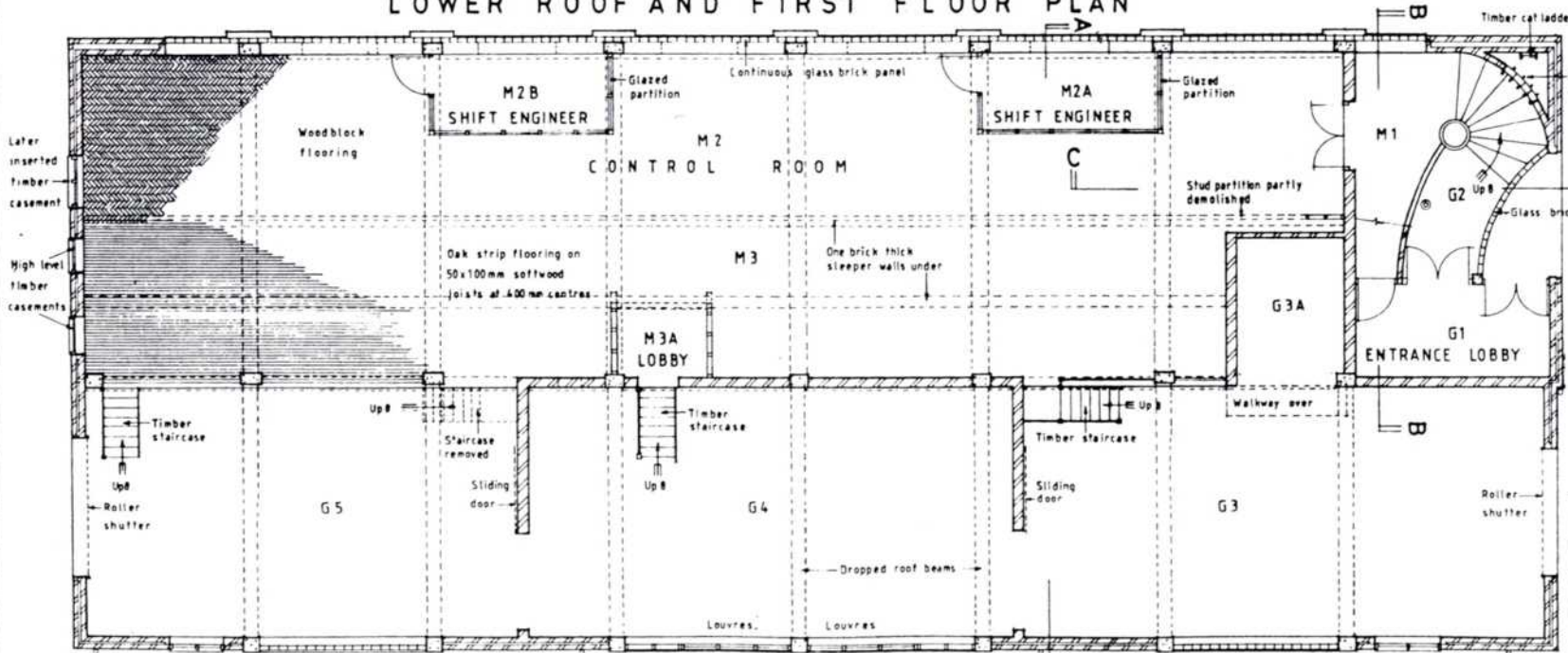


Fig. 7



LOWER ROOF AND FIRST FLOOR PLAN



GROUND AND MEZZANINE FLOOR PLAN

SCALE
 0 1 2 3 4 Metres
 0 1 2 3 4 5 10 15 Feet

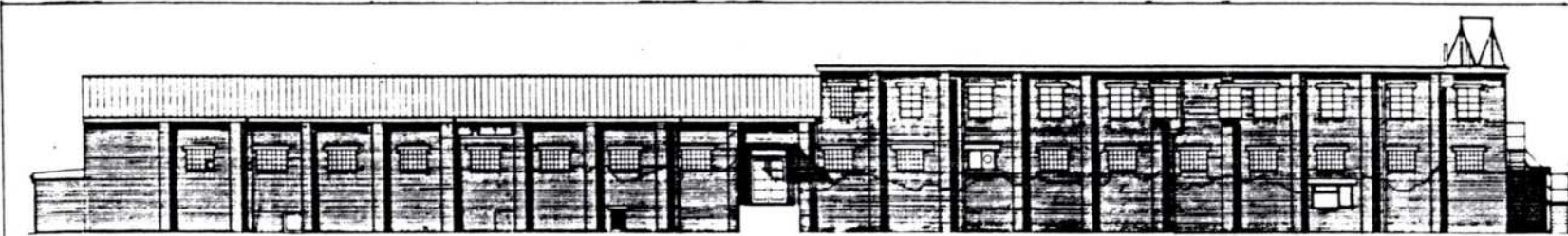
**KING'S STANDING
 CROWBOROUGH**

**FORMER BROADCASTING
 STATION**

**DWS BUILDING NO.3 "CINEMA"
 PLANS**

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Fig. 8



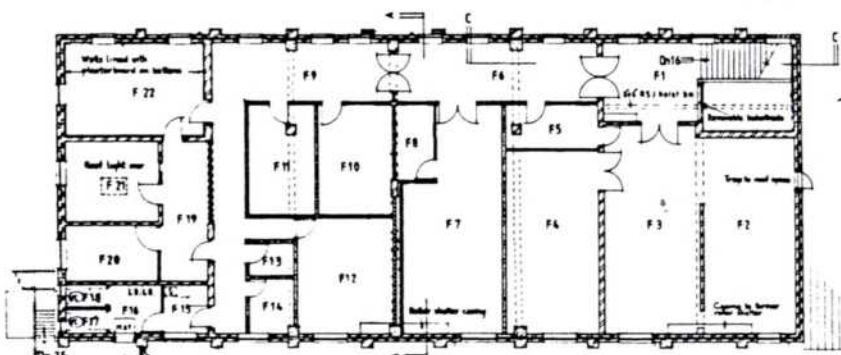
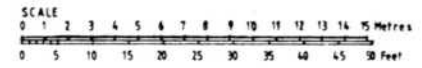
WEST ELEVATION



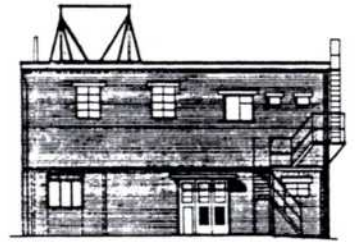
EAST ELEVATION

- KEY TO ROOM NAMES**
- G3 Stores and Capacitor Room
 - G4 Transformers
 - G6 Stores
 - G7 Welding Bay
 - G8 Stores
 - G9 Workshop
 - G10 Office
 - G11 Assembly Shop
 - G14 Stores
 - G16 Stores
 - G16 Battery Room
- F2 & F3 Radio Workshop**
- F4 Plumbers' Workshop
 - F7 Electrical Workshop
 - F8 Electricians' Office
 - F10 M & E Office
 - F11 Screened Room
 - F12 Deputy Engineer-in-Charge
 - F13 Photo-stat Room
 - F14 Ladies Toilet
 - F19 & 20 Registry
 - F21 Admin Officer
 - F22 Engineer-in-Charge

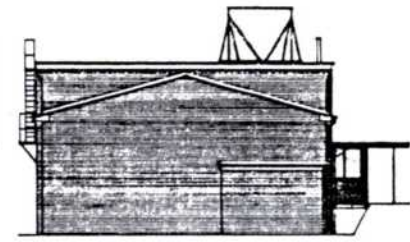
- KEY TO MATERIALS**
- Brickwork
 - Concrete blockwork
 - Reinforced concrete
 - Stud partitions



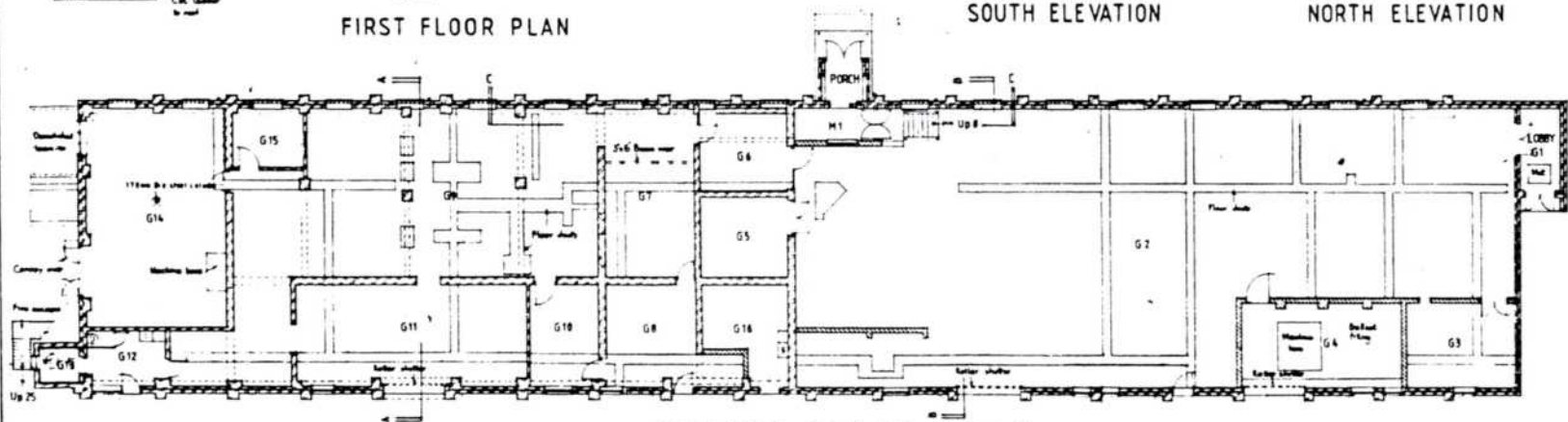
FIRST FLOOR PLAN



SOUTH ELEVATION



NORTH ELEVATION



GROUND FLOOR PLAN

**KING'S STANDING
CROWBOROUGH**

FORMER
BROADCASTING STATION

DWS BUILDING No. 2 "BARN"
PLANS AND ELEVATIONS

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Fig. 9

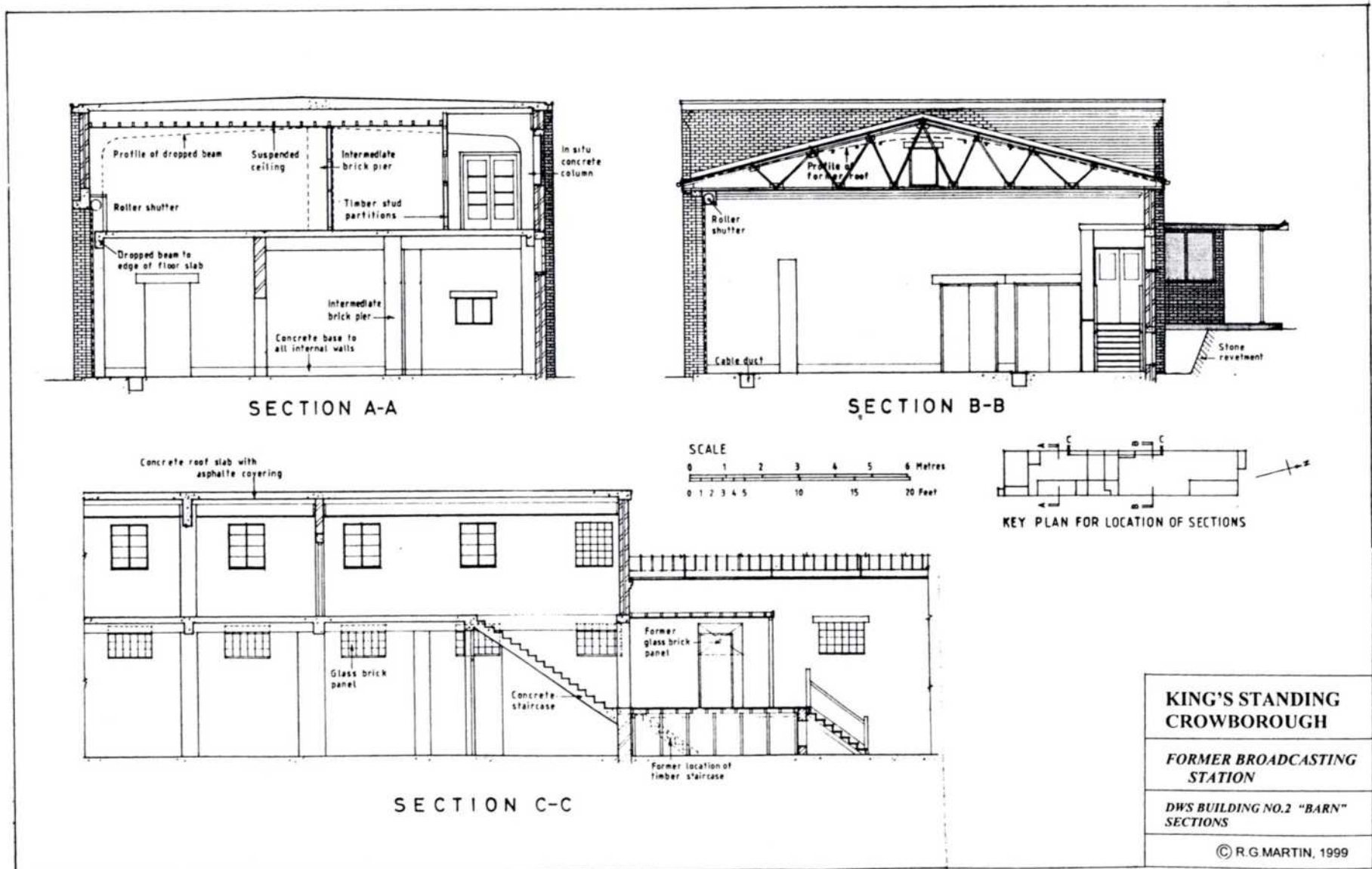


Fig. 10

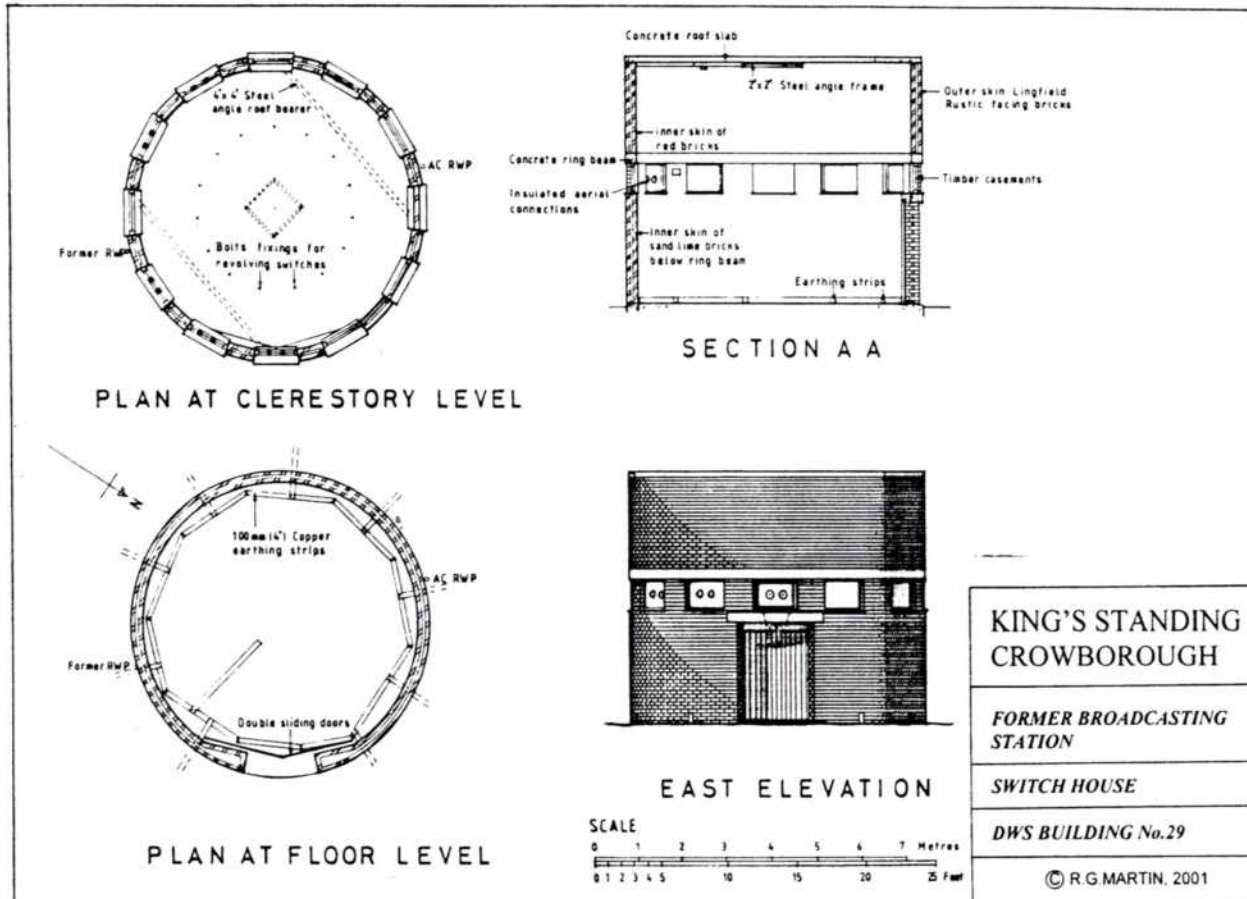
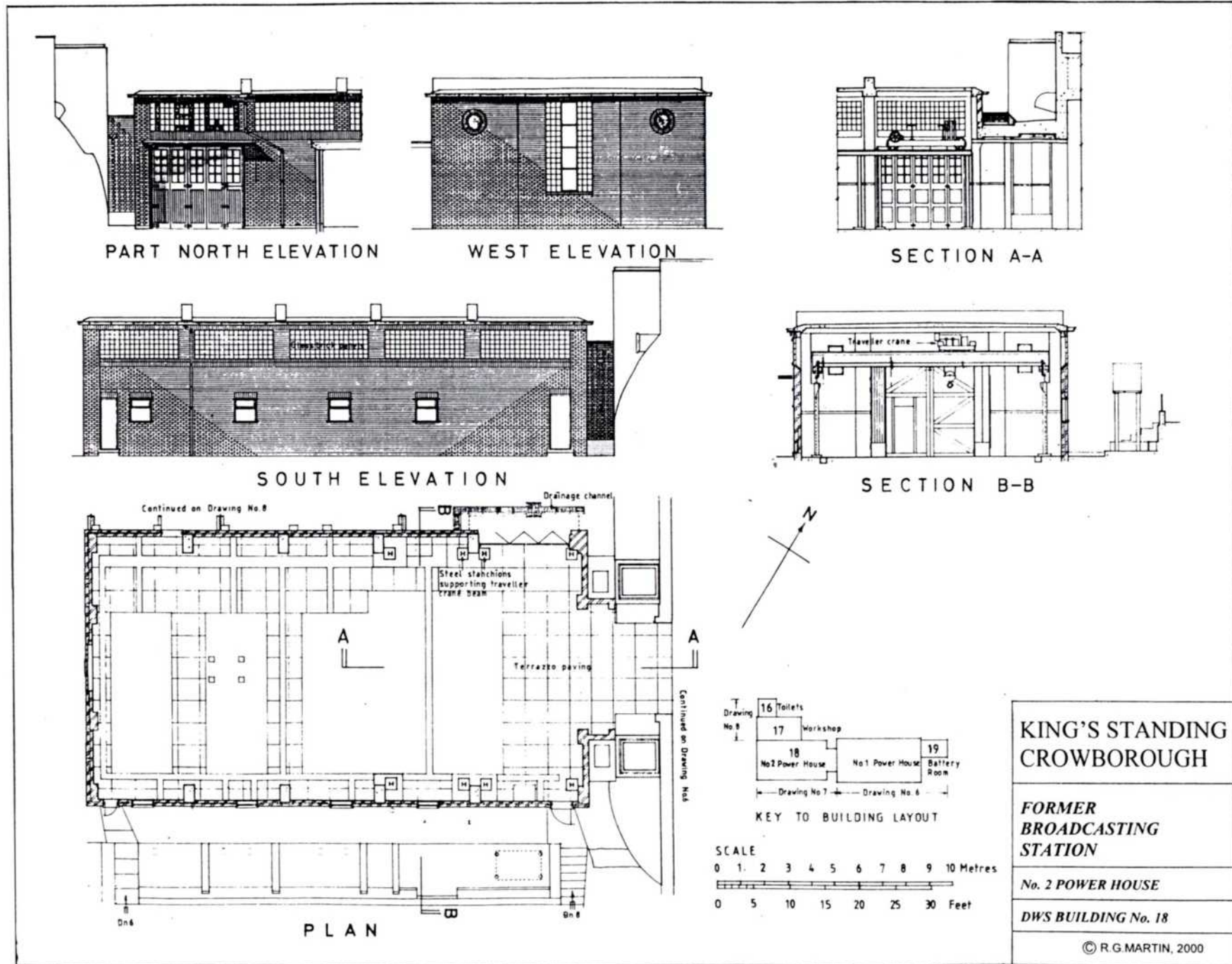


Fig. 11



**KING'S STANDING
CROWBOROUGH**

**FORMER
BROADCASTING
STATION**

No. 2 POWER HOUSE

DWS BUILDING No. 18

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Fig. 12

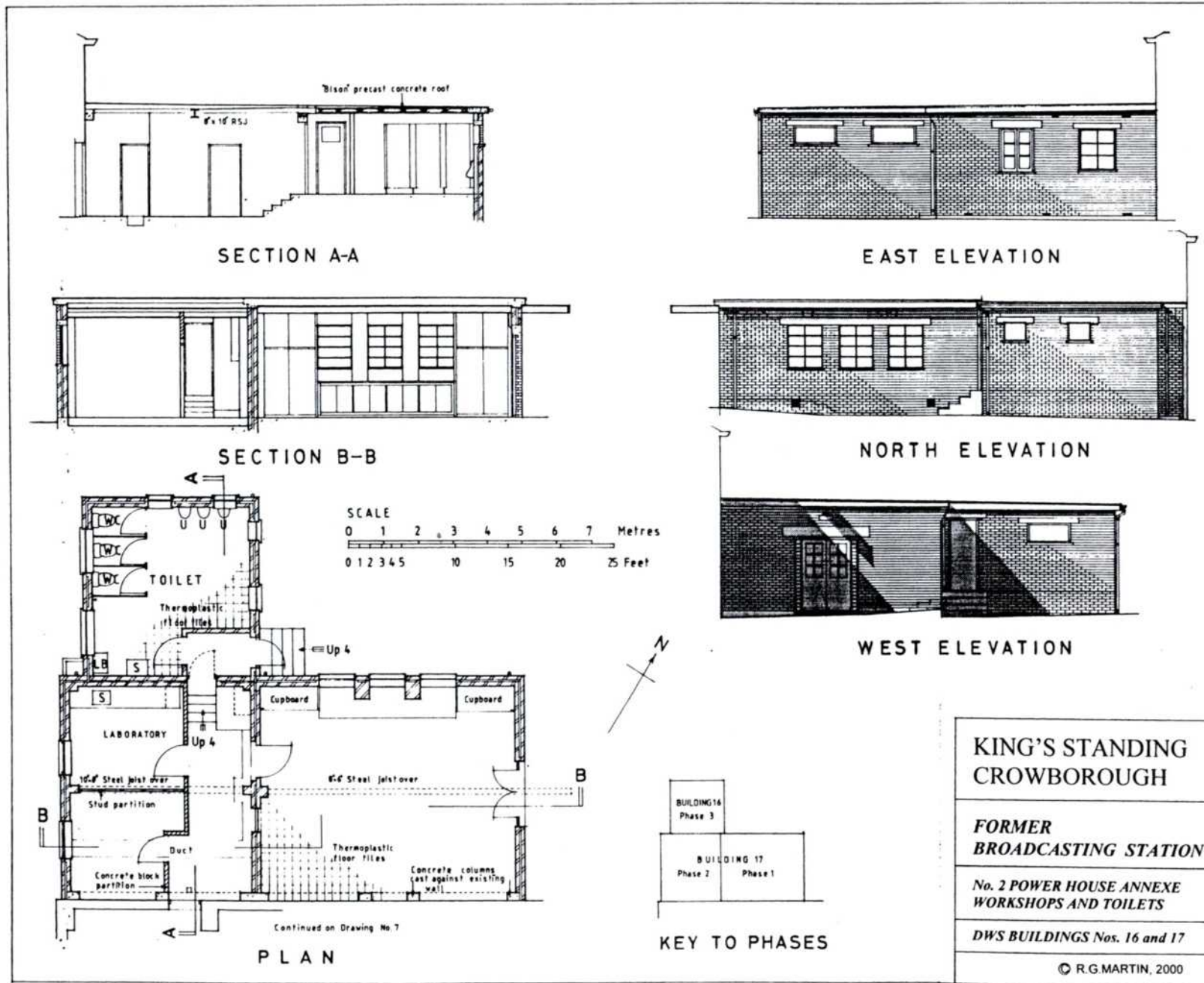


Fig. 13

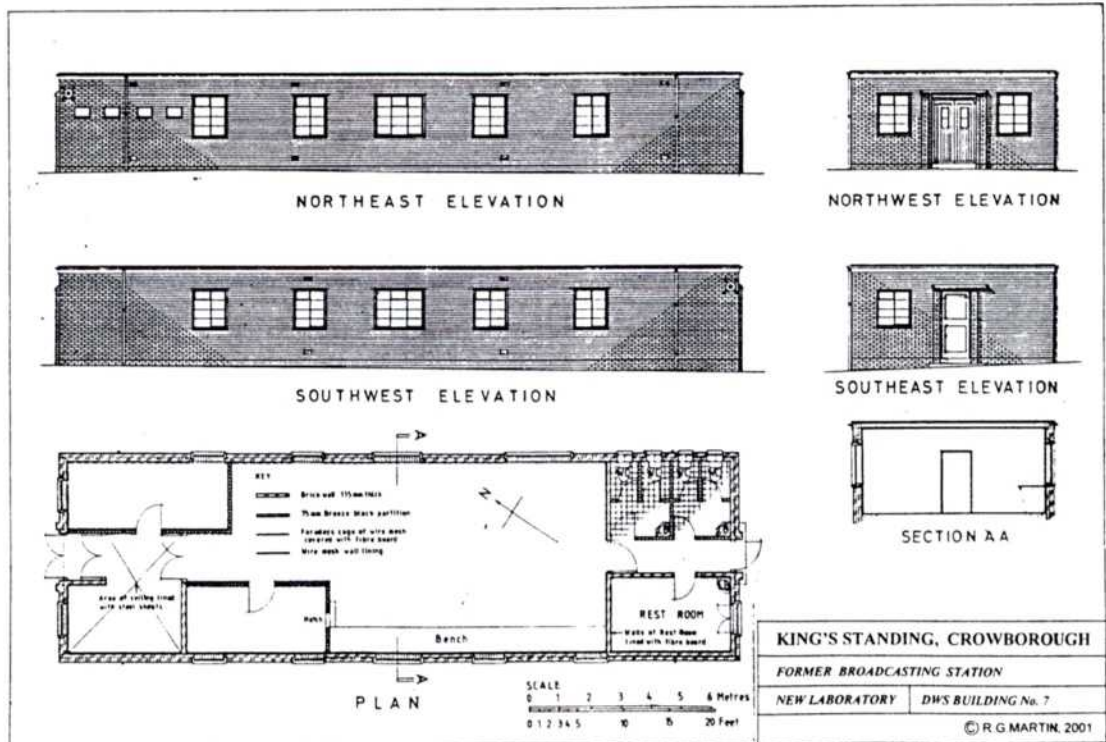


Fig. 14

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