

## Outside Work

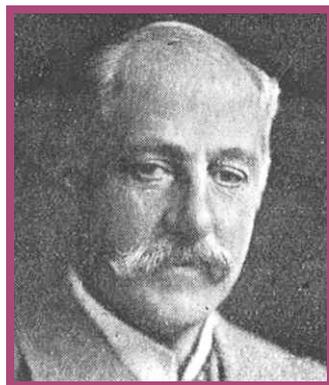
As recounted by Edgar Russell recalling his 3 year apprenticeship, starting in 1920, which included working at site:

“(While) on this work I heard the workmen’s point of view about their employers, which was generally favourable and relations were good. I learned how to use the tools these being hand tools as there was little mechanised equipment then. The hardest work was in screwing 4 inch–6 inch diameter steel pipes and for this three persons hand operated the dies and bore their full weight on them. For these pipe sizes cast iron socket and spigot piping with caulked joints was sometimes used because it was cheaper and did not have to be screwed.

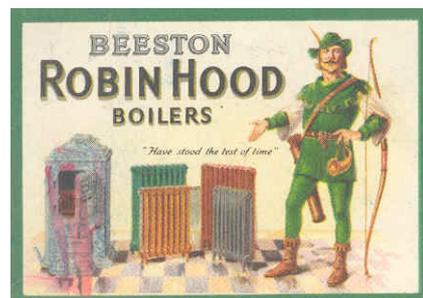
Oxy-acetylene welding for pipe junctions was in use. Acetylene was produced on the site by portable generators with a small gas holder attached to collect the gas after it had been made by dripping water onto carbide. I do not remember how oxygen was provided but possibly bottled oxygen was then available.

Prefabrication of special pipe manifolds etc, was not done ‘off-site’ but was measured and prepared on the site itself. The bending of steel pipework was also done on site. Small portable forges were used, about 3 feet diameter x 3 feet high with a hand driven blower bellows in the base. The tray on the top contained solid fuel and it was a craftsman’s job to obtain a neat looking bend by taking the pipe out of the incandescent fuel, cooling it with water, and then returning it for reheating. These forges were also used for boiling up water in billy-cans for canfuls of tea.

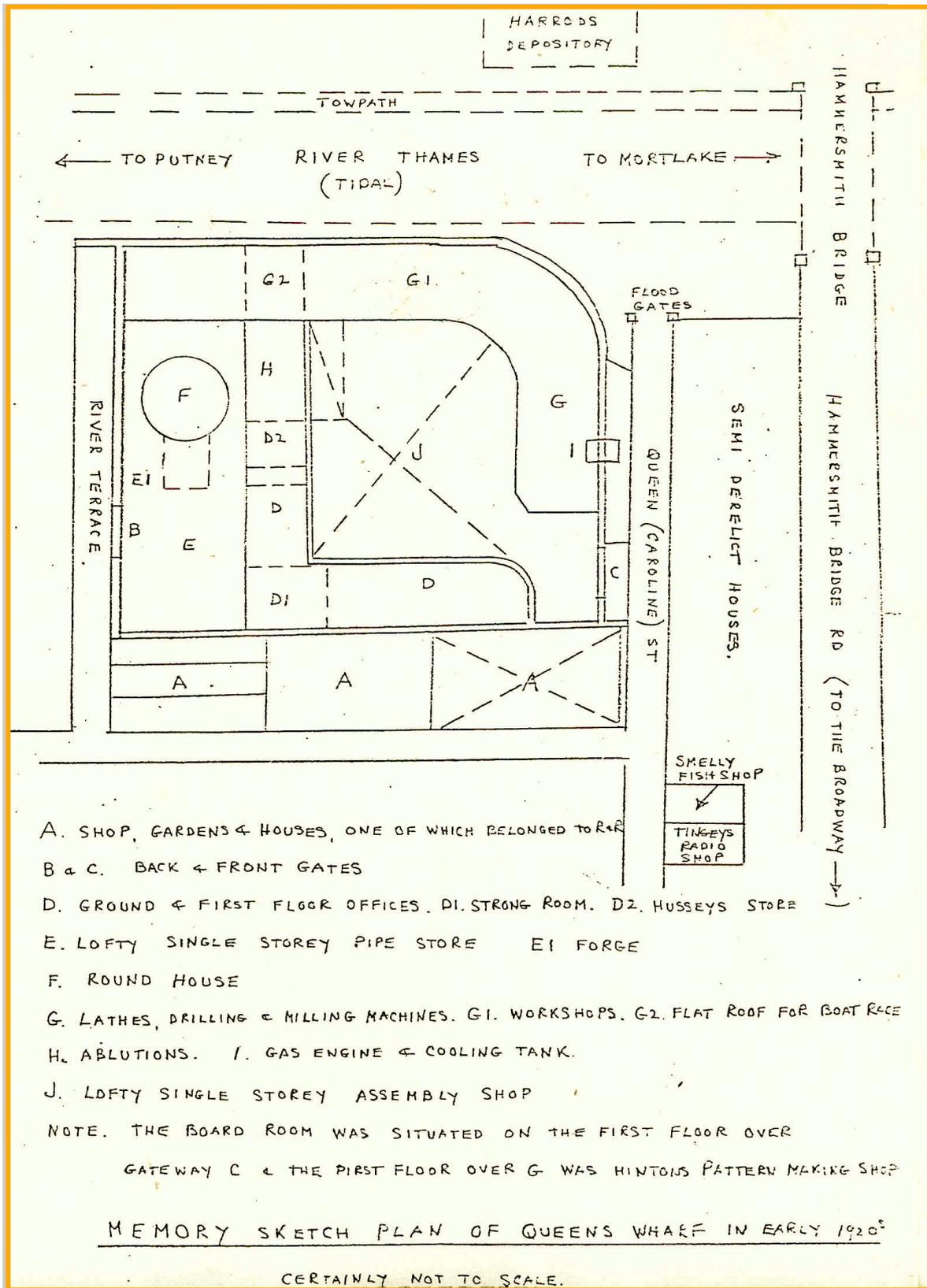
Radiators were of heavy cast iron sectional type with right and left hand screwed nipples. These were purchased from either the Beeston Boiler Company or the National Radiator Company (later Ideal Boilers and Radiators). Nelson and Frank [Russell] preferred to purchase from the former because the firm had helped Sir Louis Pearson when he set up business, and they obtained preferential treatment from him. The first radiators were of ‘decorated’ type but I do not remember fixing any of these, although some still exist. These were followed by the ‘plain’ type, which were used a lot in this period. These were followed shortly afterwards by the ‘Classic’ and ‘Neo-Classic’ types by the National Radiator Company, and the ‘Royal’ and ‘New Royal’ types by the Beeston Company.



*Sir Louis Pearson  
President IHVE 1903  
Chairman Beeston*



*Beeston Boiler Company.  
Book-plate.*



*Plan of Rosser & Russell's premises at Queen's Wharf, Hammersmith, in the early 1920s. Drawn from memory in 1979 by Edgar N Russell who was a Director from 1929 until his resignation in 1948.*

*Note to the right of Queen (Caroline) Street the row of semi-derelict houses, the "smelly" fish shop and Tingeys radio shop.*

## Queen's Wharf, Hammersmith

The "Wharf" played an important part in the history of Rosser & Russell. The firm took on a lease in 1874, later purchasing the freehold. In 1879 the adjoining "Round House" was purchased. In 1901 No.6 River Terrace was bought, the remaining houses, Nos.1-5, being acquired later. The "Wharf" as it was in 1920 has been described by Edgar Russell (his sketch drawing is opposite):

"In those days Queen Caroline Street was called Queen Street and the walk from St Paul's Church down to the Wharf passed property which was semi-derelict. The end of the street terminated in floodgates, which gave direct access to the river.

Even in 1920 the Wharf buildings would not have been described as sound looking ones but they lasted for many years after 1920, so the basic structure must have been good. In about 1924 severe flood damage was done to the river wall at **G1** and this had to be rebuilt. The new roof was a flat one and was able to carry many visitors who came to see the Boat Race between Oxford and Cambridge Universities.

I can only guess at the site area, which must have been something, over half an acre. Also my guess is that the occupants would have numbered under 100 and probably nearer to 50.

During this period the heating and ventilating side of the business was dealt with from Duke Street, but the Wharf dealt with accounts, storage of pipes and fittings, etc. In addition, it dealt with the purely mechanical side (fabrication of plant by means of lathes, etc) for clients such as Messrs Lyons of Cadby Hall, Messrs Manbre & Garton [sugar refiners], Messrs Carlo Gatti and Messrs GEC Osram.

Area **G**, which contained most of the larger engineering equipment (lathes, etc), was served by means of overhead shafting with pulleys and belts down to the machines. The shafting was fed by the gas engine **I** of about 60 bhp. Smaller machinery in **G1** was electrically motivated.

Area **G2** indicates the then limited position from which the Boat Race could be seen on a flat roof.

Area **D** was offices, those being close to **C** for the Secretary and his staff and those close to **D2** being for mechanical engineering staff.

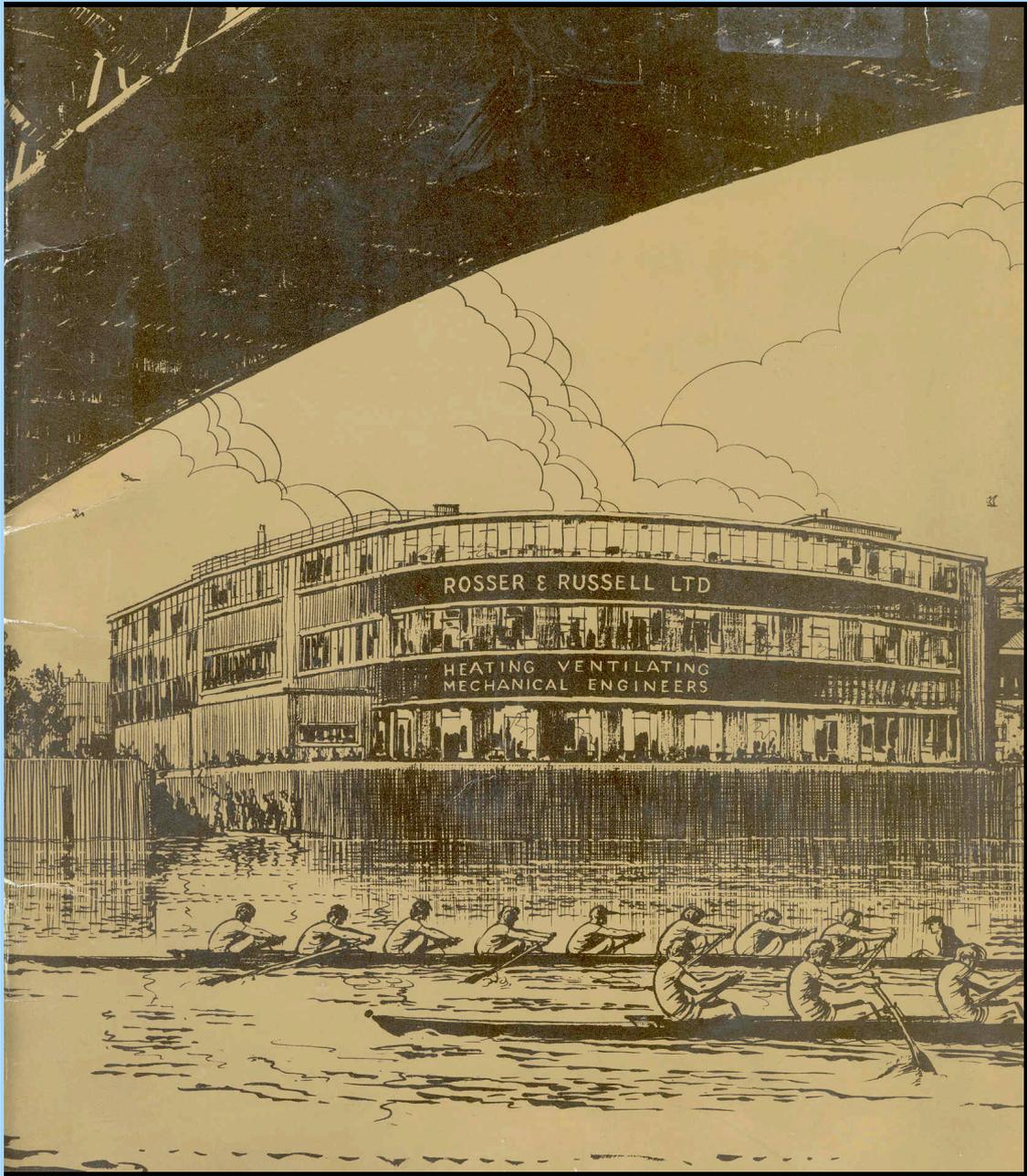
Area **D1** shows the position of the Strong Room.

Area **D2** was the store in which pipe fittings, valves, etc, were kept. A real jumble.

Area **E** is where pipe lengths of over 20 feet long were stored vertically.

Area **F** represents the Round House and its rectangular attachment.....

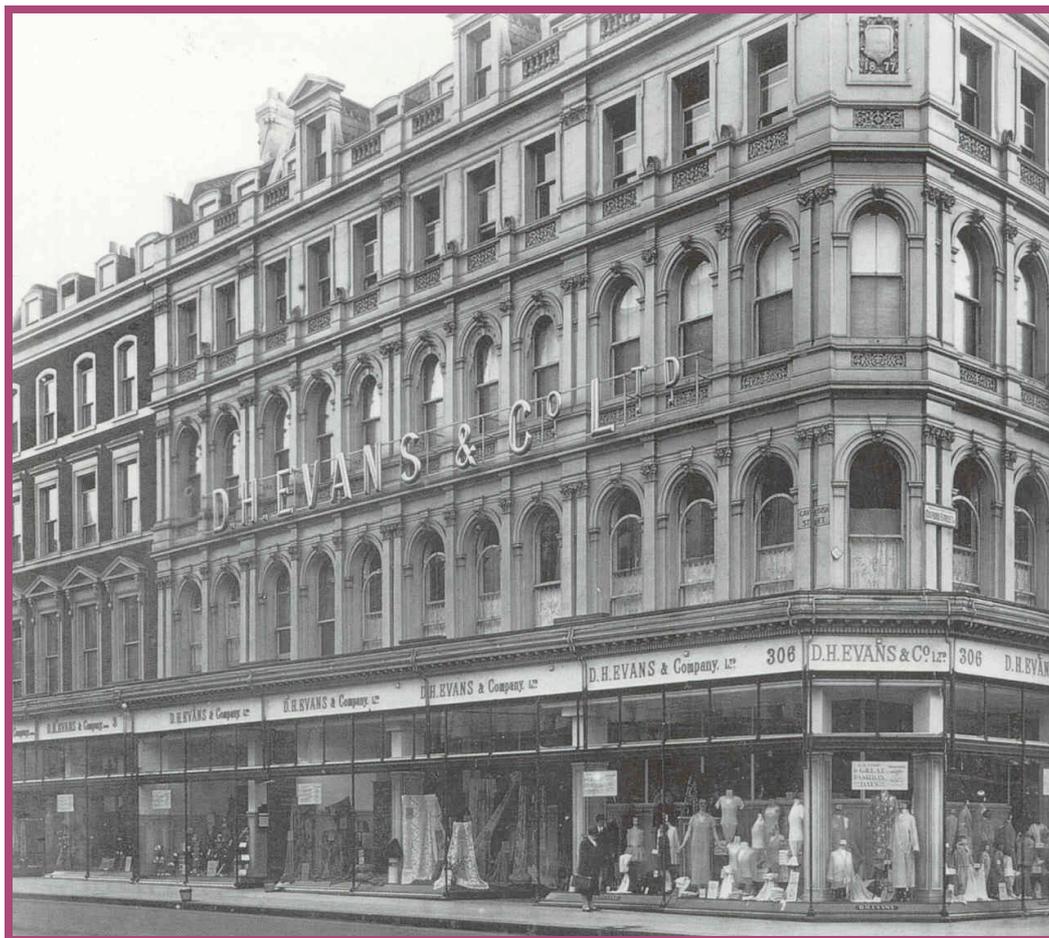
The towpath across the river was, and still is, a relic of the old days when horses were used to pull barges up and down the river. I have often wondered how they got on at low tide, when the river diminished to a stream with mud at the sides."



*Cover of "Rosser & Russell Limited: The First Two Hundred Years" by Ian Murray Leslie. Published in 1974 the book starts in 1774 with the birth of Charles Sylvester.*



*Swan & Edgar's new store, Piccadilly/Regent Street, London: drawing of 1925.  
Part of the rebuilding of Regent Street. Architect Sir Reginald Blomfield.  
Rosser & Russell installed invisible panel warming and mechanical ventilation.*



*D H Evans department store, Oxford Street, London, photographed in 1928. Included  
in a Rosser & Russell list of projects, but the date and extent of their work is unclear.*

## Invisible Panel Warming

Arthur H Barker, now regarded as the *Father of Radiant Heating*, established the basic principles in about 1908. He wrote his classic textbook *Barker on Heating* in 1911, and was elected President of the IHVE in 1922. The firm of Richard Crittall developed his ideas and patented a system of burying low temperature hot water piping, operating around 120 degF, into the building structure. Their first major installation was at the Royal Liver Building in Liverpool in 1911. Rosser & Russell entered into a licensing agreement and used the system extensively.

An early system was installed in Bush House in London. Others followed including Nottingham Exchange, Coventry Isolation Hospital, the School of Pathology at Cambridge, Derby Hospital, Marshall & Snelgrove in Birmingham, the County Fire Office in London's Regent Street, Glynn Mills Bank in London and, their most important contract, the Bank of England. In addition Rosser & Russell provided invisible panel warming for a number of stores in Regent Street: Swan & Edgar, Goldsmiths & Silversmiths Company (later Garrards), Austin Reed. Work was also carried out for Bourne & Hollingsworth in Oxford Street and for Fortnum & Mason in Piccadilly.

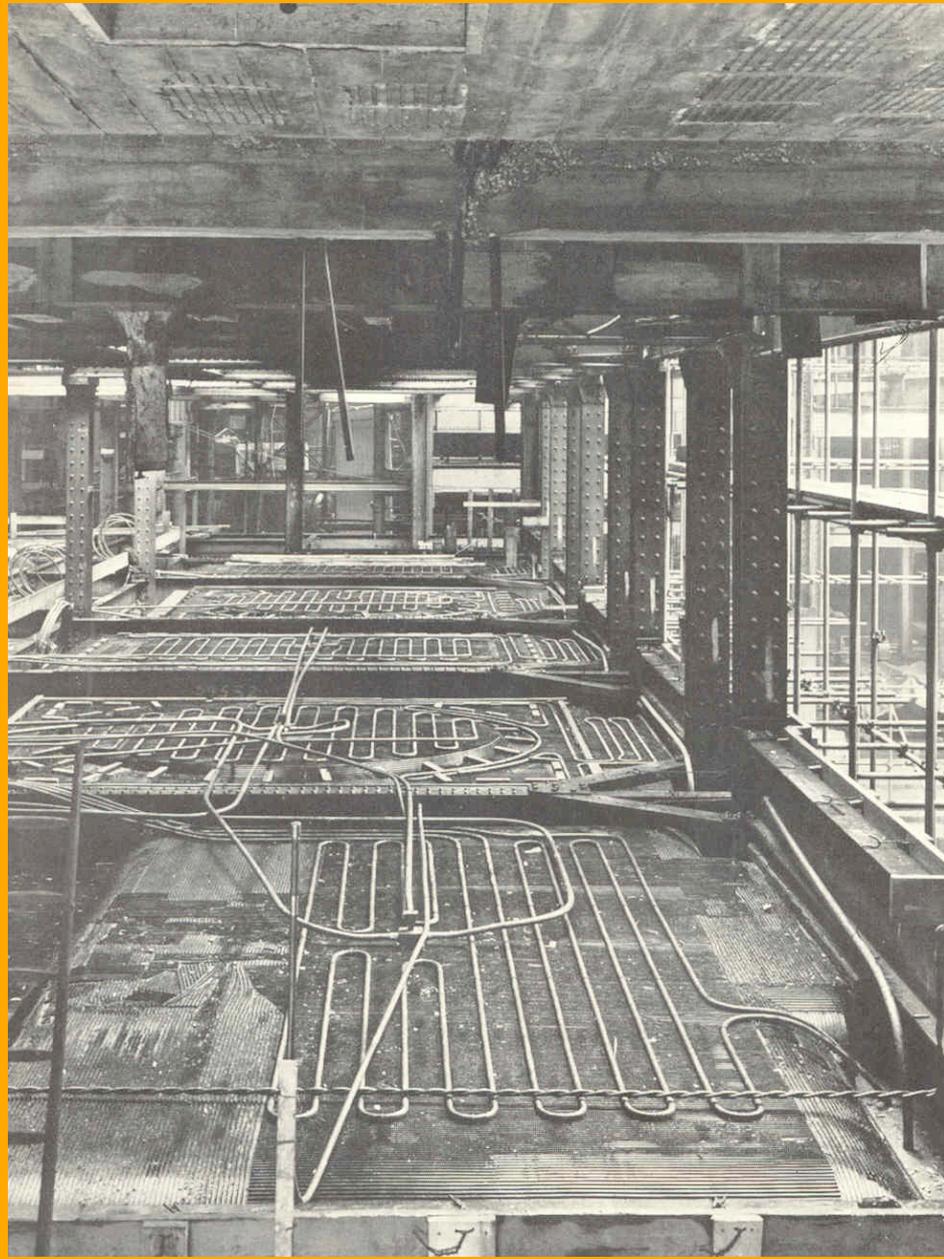


*Bush House, Aldwych, London WC2, built 1923 with wings added 1928-35.*

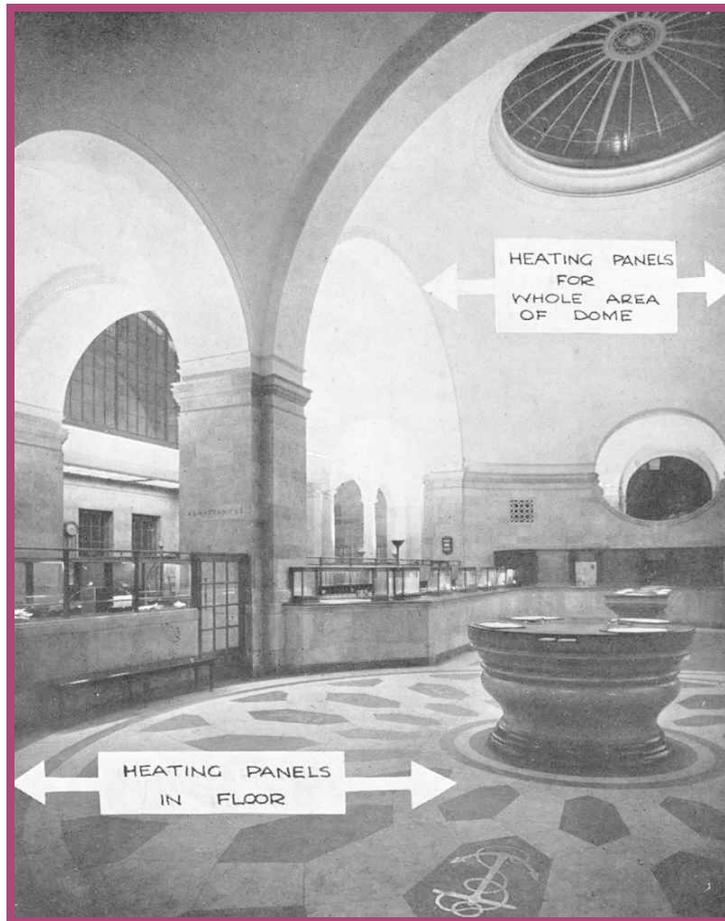
*Designed by American architects Helmle and Corbett for the Anglo-American Trading Organisation headed by Irving T Bush, after whom the building is named.*

*Well known for being the home of the BBC's Overseas Service.*

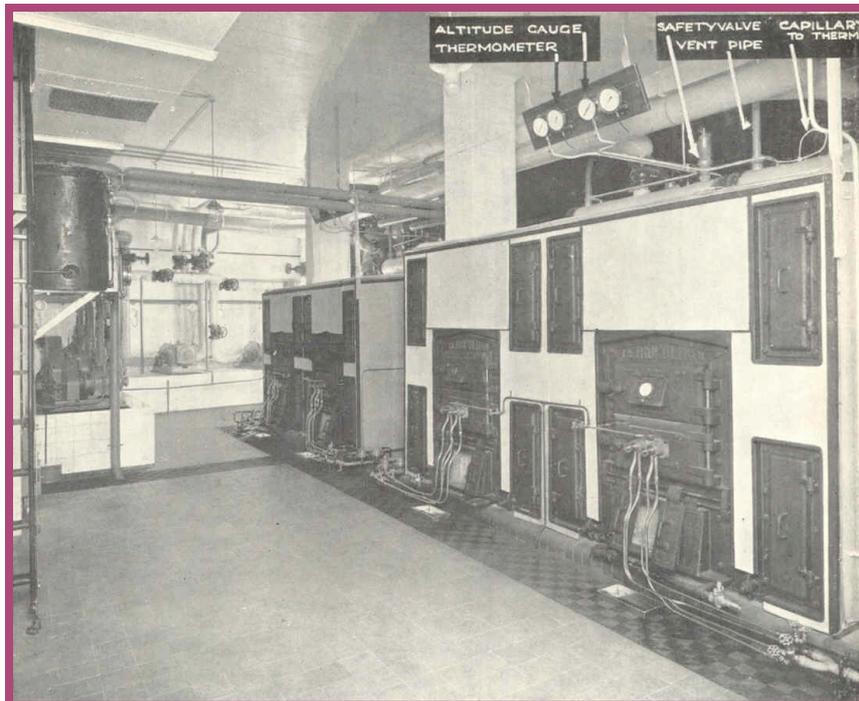
*Rosser & Russell was one of three firms, which installed panel heating.*



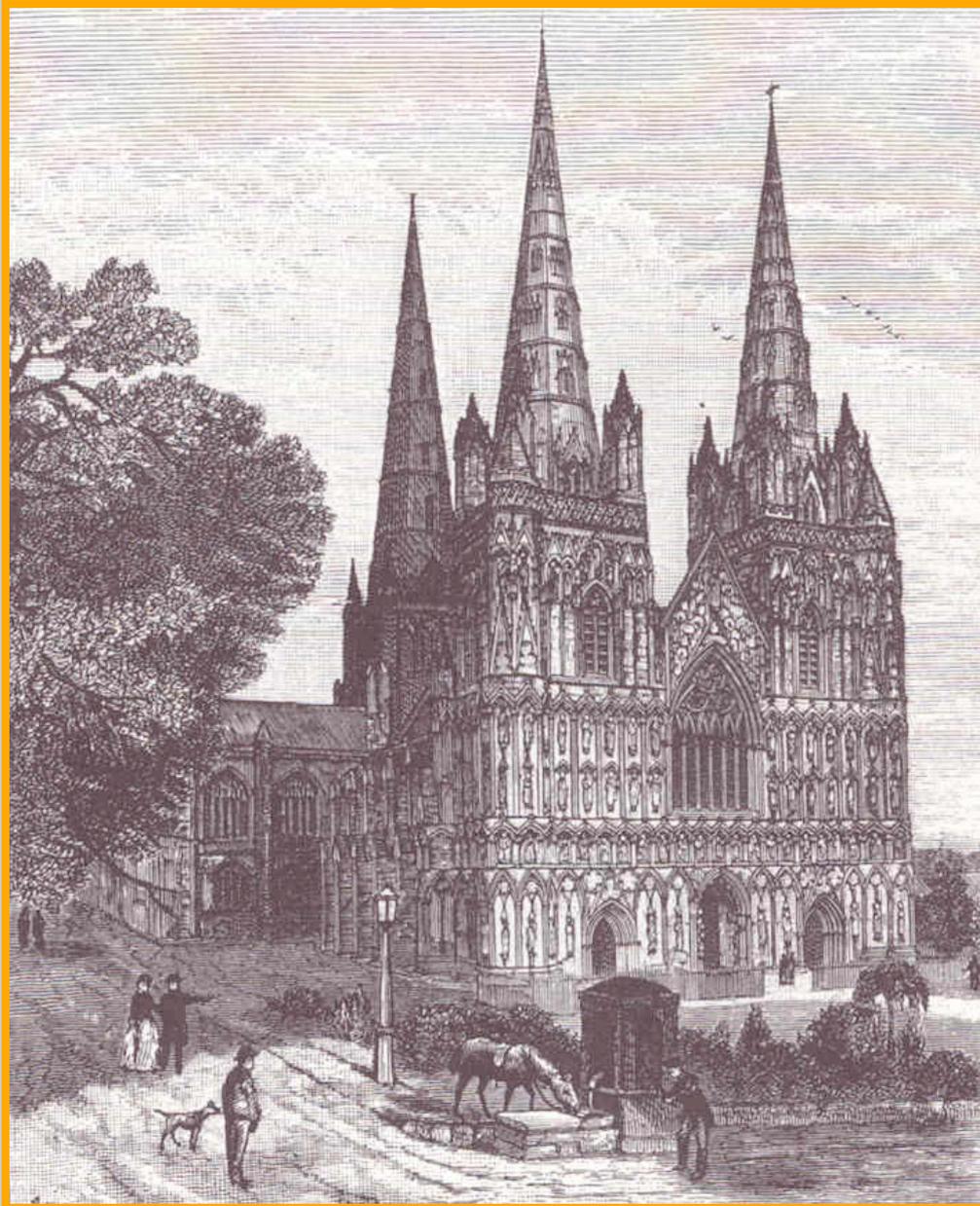
*The Bank of England, Threadneedle Street, City of London, 1921-37. Installation of panel heating by Rosser & Russell who received the order in 1926. The pipes were laid in shuttering before the concrete was placed, being mounted on ribbed rubber sheeting which provided a key for the plaster. Reinforcement was placed over the pipes, the beginnings of which can be seen in the immediate foreground. The Bank was remodelled and enlarged by Sir Herbert Baker who retained only the screen walls of the Soane original.*



*Glynn Mills Bank, Lombard Street, City of London, 1933.  
Invisible panel warming installed by Rosser & Russell  
with heating panels in the ceiling dome and in the floor.*



*Rosser & Russell oil-fired boiler installation.  
Location unknown, thought to be 1930s.*



*Cathedral of the Blessed Virgin Mary & St Chad, Lichfield, Staffordshire.  
Built during the 12<sup>th</sup> & 13<sup>th</sup> centuries, badly damaged in the Civil War,  
restored 1662-69, severe wall collapse averted late 1700s by James Wyatt,  
restoration 1842 by Sidney Smirke, continued after 1856 by Sir George Gilbert Scott  
and his son John Oldrid Scott. Unusual in having 3 spires and 2 pools, the Minster  
and the Stowe. According to the notes of E N Russell the tricky job of warming  
Lichfield Cathedral was by carried out by John Alfred Naylor (Alf) during the 1930s.*

## London Offices 1924-39

During this period the office moved from 37 Duke Street to Romney House in Marsham Street and then to 30 Conduit Street. The move to Duke Street was largely because the consulting engineer for the Bank of England, Oscar Faber, had taken a floor there, and it allowed for the detailed preparation of the necessary mechanical services drawings under the supervision of J Robert Kell of Fabers, a practice with which R&R had a close association. (The Rosser & Russell order was for £1,000,000, an enormous sum in those days).

Edgar Russell recalls that during this period he worked on the maintenance of various Perkins's high-pressure hot water heating systems (the last being replacement of a furnace coil at Maples in 1942). He also remembers working on one example of a Reck system (an accelerated hot water unit that used steam to promote circulation invented in 1902 by the Danish engineer Captain Andres Reck). Russell also worked on the original heating & ventilating systems in the Royal Albert Hall (designed by W W Phipson in 1867-71), recalling seeing steam-driven wooden (cased) fans.

Russell also recalls seeing various hot air stoves installations in churches and tells the following story: "On one occasion I was asked to inspect a system which had previously given satisfaction but which had suddenly failed to do so. I found that the external fresh air inlet was partially blocked with rubbish, but this did not explain the failure. I searched for the air inlet grating into the church and eventually found it. The vicar had not liked the appearance of the grating and had covered it with a rug."

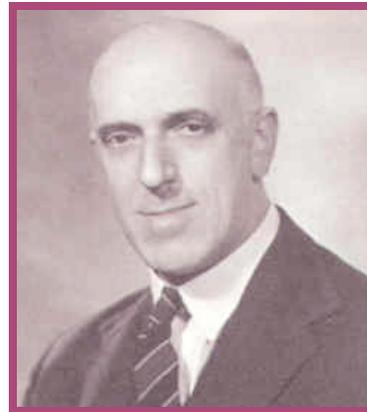
At Duke Street, Russell worked on gravity circulation heating systems, though circulating pumps were employed on larger installation. These used direct current or single-phase alternating current motors. In those days the latter had to be given an initial rotation by hand pulled ropes or similar means and were not popular. One large gravity heating installation was for the stove works of the Gas Light & Coke Company at Harwood Terrace in Fulham.

During the 1930s depression work was scarce and Nelson Russell tried to obtain the order for the heating and hot water supplies for Lord Curzon at Kedleston Hall. "He surveyed the building and spent a night there. He especially took slippers with him and used them during the survey to indicate to his Lordship that the firm would take similar steps with workmen so as to protect the carpets in the event of an order being given to the firm. Although Lord Curzon noticed and remarked on this his (£5000) order was not forthcoming."

In 1932 Rosser & Russell moved to new accommodation in Romney House. This had a Rayrad system of heating designed by Oscar Faber for which the order had been placed elsewhere. A number of overseas contracts were carried out during this period: a Seamen's Hospital in Malta, and installations for the Anglo Persian Oil Company's forts on their oil line. But the clouds of World War II had now appeared. Romney House was requisitioned and the firm moved to Conduit Street.



*Dr Oscar Faber OBE  
President IHVE 1944 & 45*



*John Robert Kell  
President IHVE 1952*

## Second World War 1939-45

Rosser & Russell's position at the start of the war was difficult, as they did not know what contribution to the war effort the Government would require. Some directors and staff were called up; others were placed into reserve occupations.

A number of important contracts were carried out for the British Broadcasting Corporation installing not only traditional building engineering services but also providing transmitter valve cooling installations. The largest wartime contract was at the Ordnance Factory at Risley near Warrington. Others included the Ordnance Factory at Ruddington near Nottingham, an underground factory for the Ministry of Aircraft Production at Corsham, and work at the Handley Page factory at Radlett.

The greatest number of contracts was for Royal Air Force stations. One installation was for the fighter station at West Malling in Kent, but most was for stations in East Anglia including bomber stations at Downham Market, Bury St Edmunds, Seething, Snetterton Heath (which was to become a motor racing circuit), and fighter stations at Ludham and Earsham.

An unusual and important series of installations was carried out for some 8 Celestial Navigational Trainer buildings at Harwell in Berkshire. These buildings gave night navigational training in clear air and under temperature conditions that could be varied. "Each building was not very large, octagonal in shape, about 50 ft across and 40 ft high with a domed ceiling, the walls and ceiling being heavily insulated. At ground level there was a mock-up bomber cockpit with aircraft controls for the trainee pilot. Films of the night sky were then projected in darkness onto the domed ceiling." An attached building contained the Rosser & Russell heating, cooling and air filtration plant.

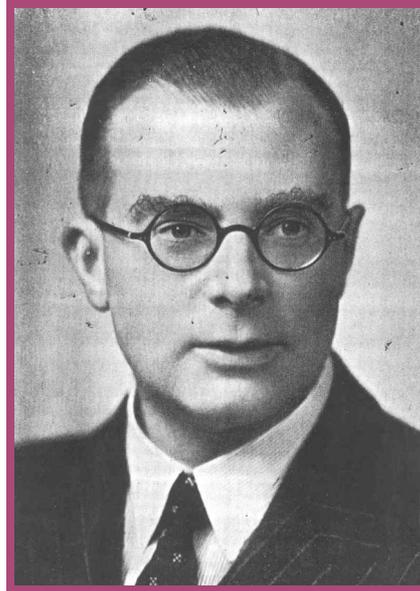
Other RAF work was carried out for the Directorate of Compressed Gases. The secret sites were hidden away in the woods. The plants produced compressed air, compressed oxygen (for high flying), compressed nitrogen (to seal aircraft petrol tanks) and compressed hydrogen (for barrage balloons).

Rosser & Russell also worked for the Ministry of Aircraft Production, installing services at White Waltham Airfield in Berkshire, for General Aircraft Ltd at Feltham (where invasion gliders were made), and at Shawbury in Shropshire (aircraft maintenance). Work was also carried out for Marshall's Flying Services at Cambridge (pilot training), Phillips & Powis in Reading (dope shop), the Royal Naval Air Station at Yeovilton, and for the Royal Army Service Corps depot at Ashchurch near Tewkesbury (a large high temperature hot water heating installation serving some 400 unit heaters).



*The Ordnance Factory site at Risley near Warrington.*

## **R Duncan Wallace** **President IHVE 1950-51**



Robert Duncan Wallace was born in London in 1901, the eldest son of a doctor, was educated at Emanuel School in Wandsworth, 1910-19, passing Inter BSc and winning a Dacre Exhibition. He then attended the City & Guilds Engineering College before joining the firm of Rosser & Russell Ltd in 1920, serving a three years' apprenticeship and at the same time continuing his technical education at evening classes, being awarded BSc (Eng) at London University in 1924. He then specialised in heating and ventilating with Rosser & Russell, being appointed a Director in 1929, Managing Director in 1945, and also Chairman in 1948. His grandfather, Joseph Russell, was the original Russell in the Company. His uncle, J Nelson Russell, was President of the Institution of Heating & Ventilating Engineers (IHVE) in 1902.

R Duncan Wallace joined the IHVE as a full member in 1930, and was elected to Council in 1945. He served on many IHVE Committees, being Chairman of the Research Committee and Vice-Chairman of the Examinations Board in 1949. For many years, starting in 1943, he represented the IHVE on the Ministry of Works Drafting Committees for Codes of Practice and later the Building Standards Committee. In 1945 he wrote a paper for the IHVE Journal, "Unit heaters from the engineers' point of view." During his IHVE Presidency he was also a member of the Executive Committee for Codes of Practice for Buildings. He also served as a member of Council of the Association of Heating, Ventilating and Domestic Engineering Employers (now the Heating & Ventilating Contractors' Association or HVCA), was on the National Joint Industrial Council for the Industry, serving on the London Area Committee of the JIC from 1942, being Chairman in 1946. During his term as IHVE President the Summer Meeting was held in Folkestone. His Presidential Address was "Post-war activities of the Institution".

In 1955, R Duncan Wallace served as President of the HVCA. In 1966 he was awarded the IHVE Gold Medal, which at the time was only the 4<sup>th</sup> occasion that the award had been made. He continued as Chairman of Rosser & Russell until his death in 1970.

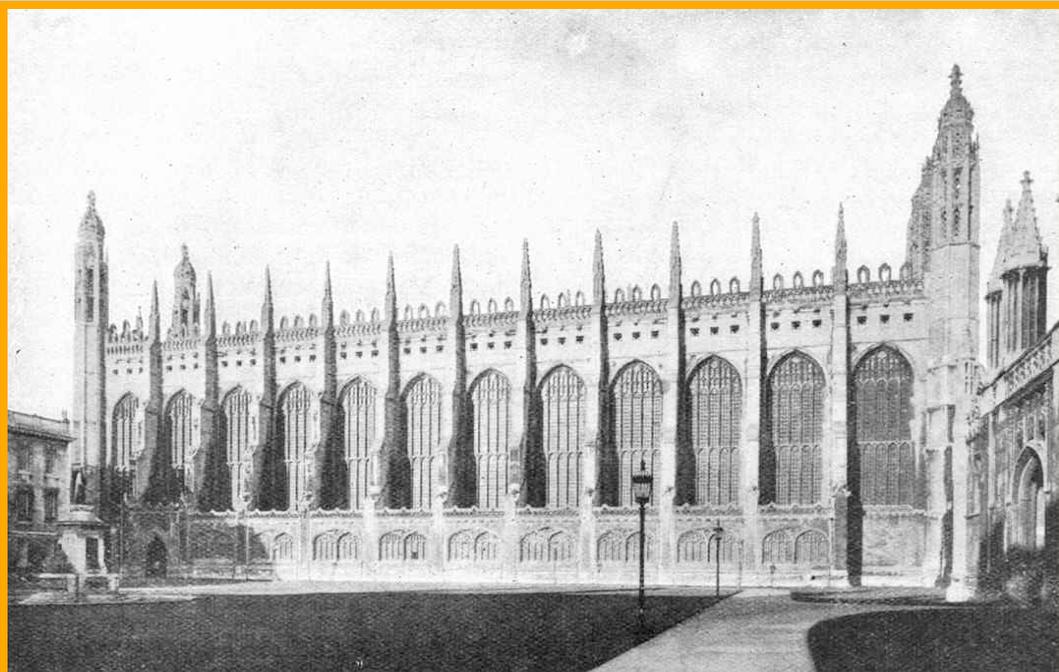
## Some Rosser & Russell Contracts

### SOME IMPORTANT CONTRACTS

Allders, Croydon  
Ampleforth College, Yorks  
W Asquith Ltd, Halifax  
Bank of England  
Barbican Redevelopment  
BBC Television Centre  
British American Tobacco Co, Southampton  
Carlton House Terrace, SW1  
Charing Cross Hospital, Fulham  
Coventry Cathedral  
Corby District Heating  
Doncaster Race Course  
Eton College  
D H Evans, Oxford St, W1  
Grosvenor House, Park Lane  
Hull University  
Imperial College, London University  
Independent Television Studios

King's College Chapel, Cambridge  
Lewisham Town Hall  
Lloyds Register of Shipping  
Madame Tussauds  
Nuffield Nursing Homes  
Oratory School, Woodcote, Oxon  
Paddington Technical College  
Perkins Diesel, Peterborough  
Pinewood Film Studios  
Princess Elizabeth Hospital, Guernsey  
Queensway Hotel, Gibraltar  
Reina Cristina Hotel, Algeciras  
Peter Robinson, Oxford Circus, W1  
Royal Society  
Sandoz Products Ltd, Horsforth, Leeds  
St Paul's Cathedral  
Textile Factory, Zamosc, Poland  
Whittington Barracks, Lichfield  
Henry Wiggins Ltd, Hereford

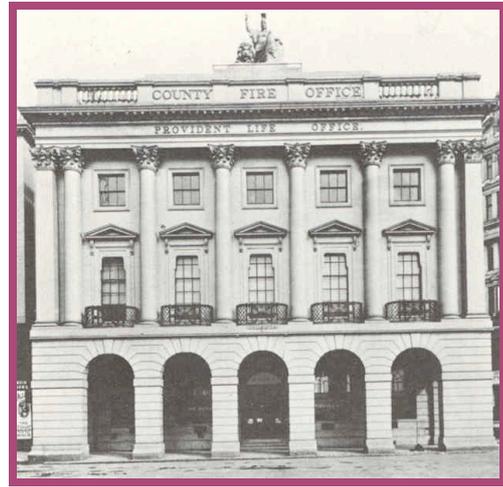
*A listing from 1974.*



*King's College Chapel, Cambridge.*



*St Paul's Cathedral*



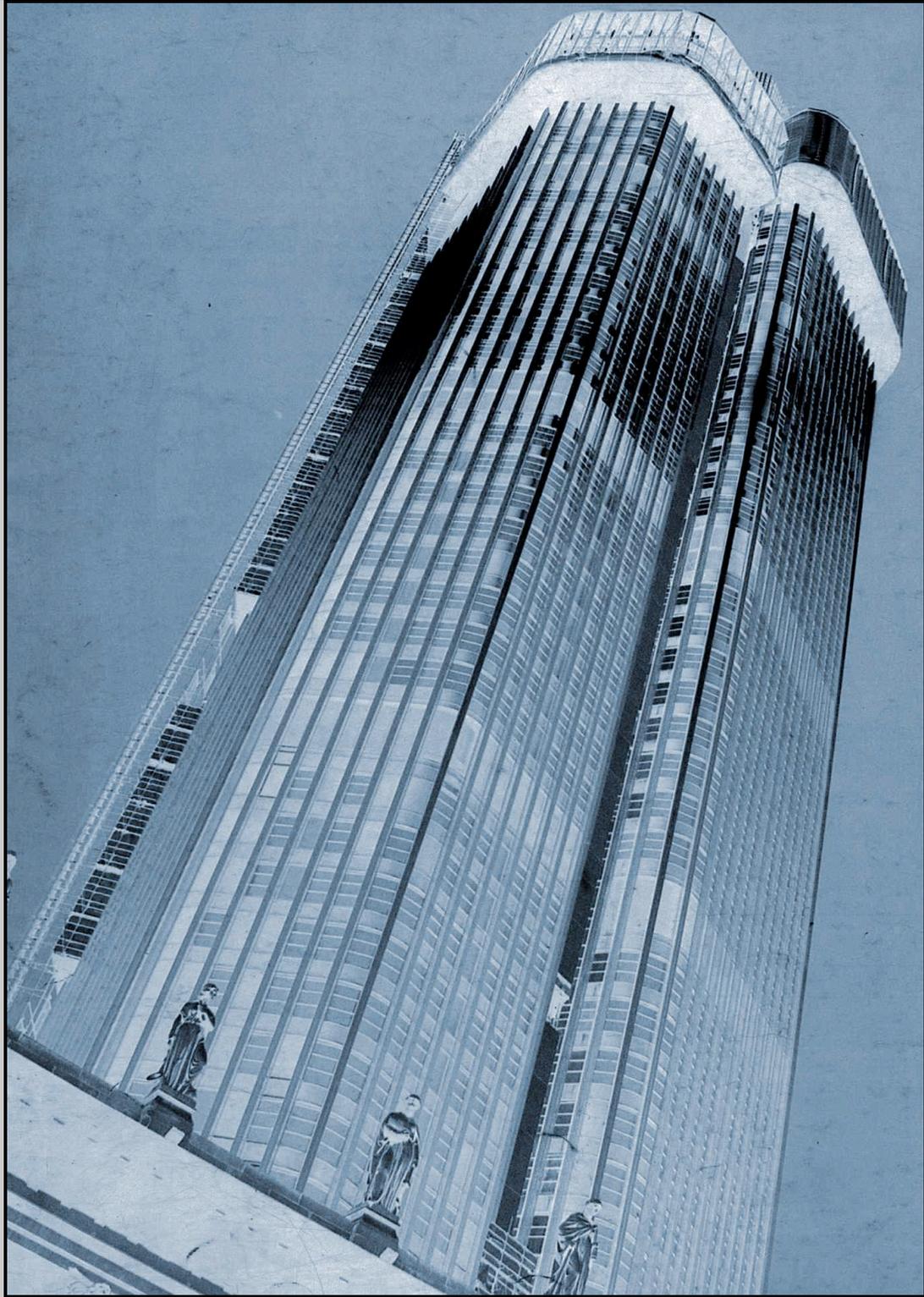
*County Fire Office, Regent Street*



*Coventry Cathedral*

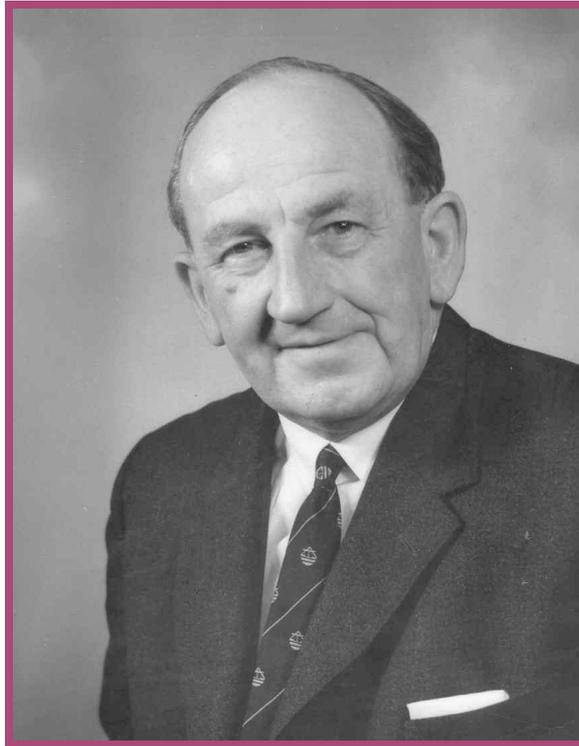


*Charing Cross Hospital, Fulham*



*NatWest Tower, Bishopsgate, London 1971-80.  
Rosser & Russell carried out the £11 million building  
engineering services installation. At the time the 193 m high tower  
was the tallest in London. The office air conditioning comprised  
a 4-pipe perimeter induction system with a VAV interior system. The building  
was extensively refurbished after terrorist bomb damage in 1993.*

**Ian H Duff TD**  
**President IHVE 1968-69**



Ian Duff was born in Clifton in 1915 and educated at Berkhamstead School, Nautical College, Pangbourne and the University of London. He was a nephew of Frank Russell and joined Rosser & Russell in 1937.

He served in the Hertfordshire Yeomanry and Royal Artillery 1939-46 in France, North Africa and Italy, attaining the rank of Major, A/Lt-Col. He was mentioned in Despatches and was later awarded the Territorial Decoration.

He rejoined Rosser & Russell in 1946, became a Director in 1948, Deputy Managing Director in 1965, Managing Director in 1969 and Chairman in 1970. Ian Duff joined the Institution of Heating & Ventilating Engineers in 1937, became an Associate Member in 1947 and a Member in 1953. He served on the Technical Policy Committee, the Benevolent Fund and as Chairman of the Papers and Reception Committees. During his Presidency the Summer Meeting was held in Amsterdam & Copenhagen. His Presidential Address was "Quo Vadis?" in which he asked whither goest thou of the Institution. He took a keen interest in the Heating & Ventilating Research Association (HVRA, later the Building Services Research & Information Association or BSRIA) from its inception and was Chairman from 1962-64.

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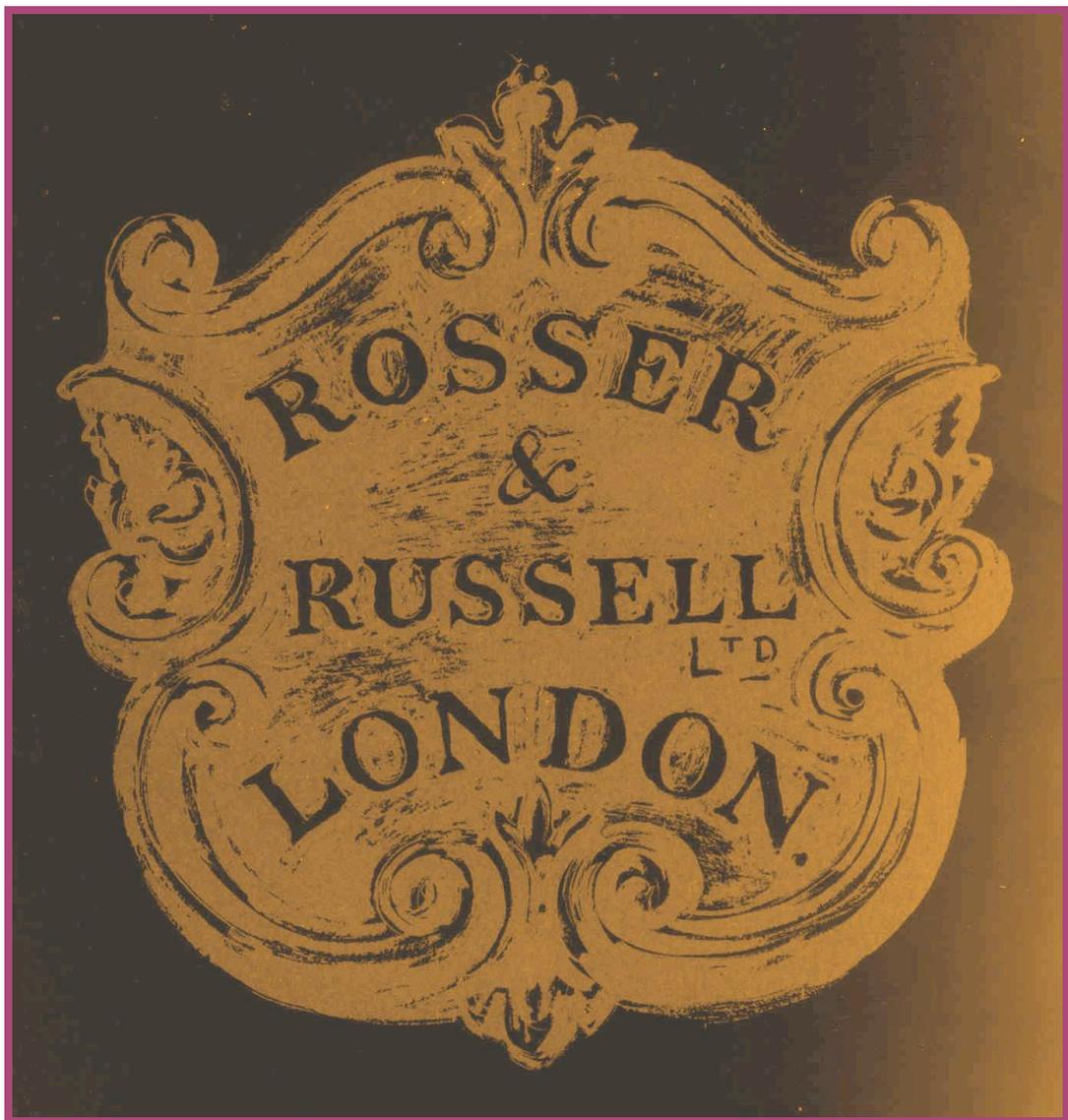
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*Advertisement from Year Book of the Heating and Ventilating Industry 1948. A Directory issued in collaboration with the Association of Heating, Ventilating and Domestic Engineering Employers (now the HVCA) of which Rosser & Russell was a Founder Member in 1904. When the AHVDEE asked the firm to supply a schedule of employees' pay and conditions Joseph Russell replied "We do not propose to do this as we keep quite an independent position as regards these matters with our workmen, and wish to continue to do so. Rosser & Russell resigned from the Association in 1910, rejoining in 1922.*



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