

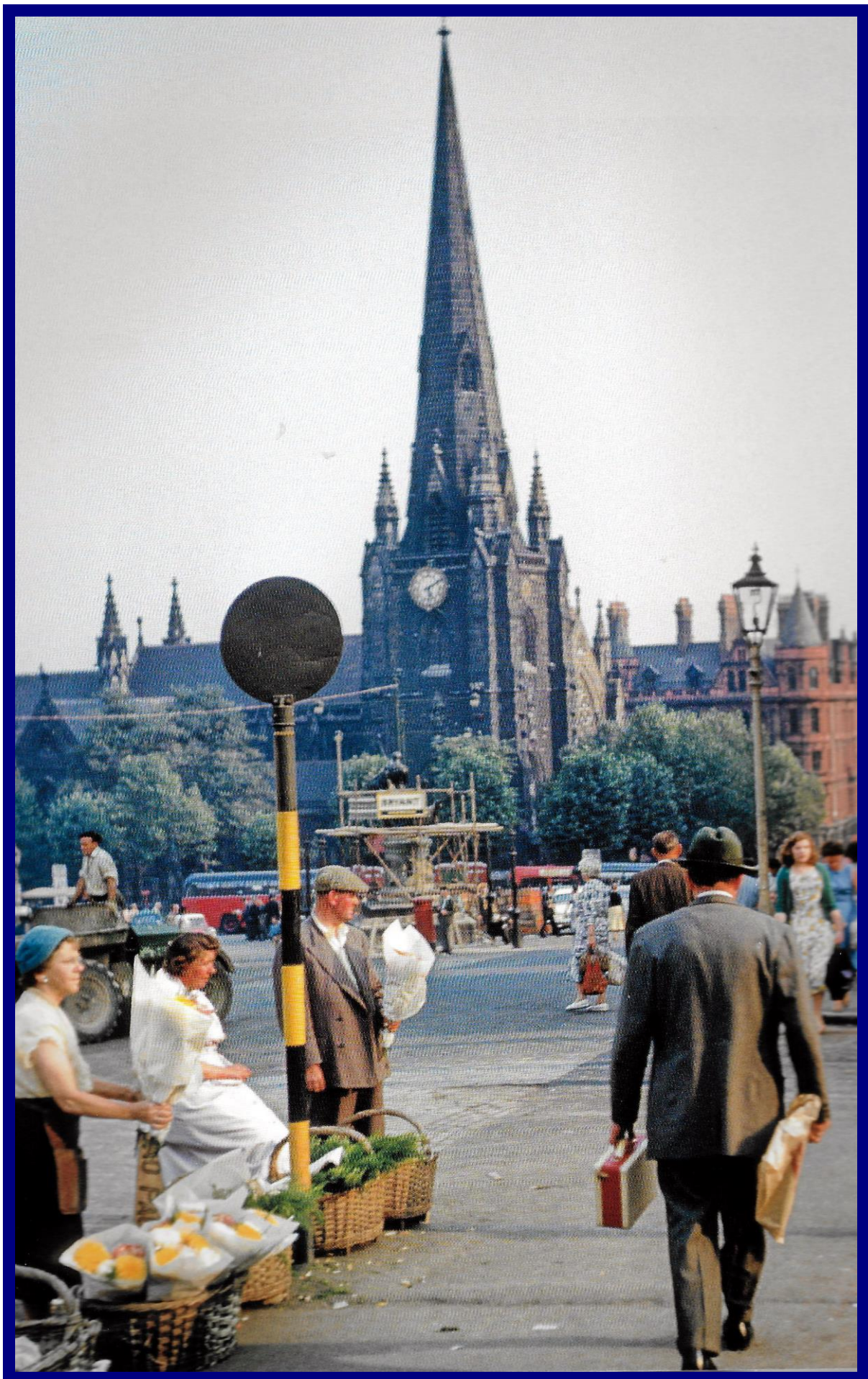


Victoria Law Court, opened by Queen Victoria in 1887.

HISTORIC CITIES

BIRMINGHAM GREAT BRITAIN

BRIAN ROBERTS



St. Martin's Church in 1959, with Lord Nelson's monument surrounded by scaffolding.



Great Western Arcade shown in 1939, was opened in 1876.

BIRMINGHAM CONTENTS

THE PROJECTS OF W.W. PHIPSON

THE PROJECTS OF HENRY LEA

HISTORIC BUILDINGS

In page order:

Victoria Law Courts, St. Martins Church, Great Western Arcade, New Street, King Edward School, Midland Bank, New Street Station, Paradise Street, Town Hall, Corbetts House, Chamberlain Square, St. Philips Cathedral, School of Art, Victoria Law Courts, Corporation Street, Old Square, General Hospital, St. Chads Cathedral, Market Hall, Fish Market, Baskerville House, Gas Street Basin, Curzon Street Station, Aston Hall, Lucas Factory, Green Lane Baths, Fort Dunlop, Botanical Gardens, Bournville Baths, Cadburys Bournville, School of Art.

THE BIRMINGHAM PROJECTS OF WILSON WEATHERLEY PHIPSON

From the Archives of The CIBSE HERITAGE GROUP

[PC/25] Testimonial Letter of 8 March 1865 from the Directors of the Birmingham Exchange

Dear Sir,

In accordance with your request, that you should receive from us, "our opinion of the Apparatus for Ventilation and Warming placed by you in the Exchange Buildings Birmingham:" it gives us pleasure to inform you, that the results from it are highly satisfactory.

The members of the Exchange have expressed their approval of the equable temperature maintained therein during the winter, and in the Concert Room the atmosphere has been constantly renewed and an agreeable warmth always preserved.

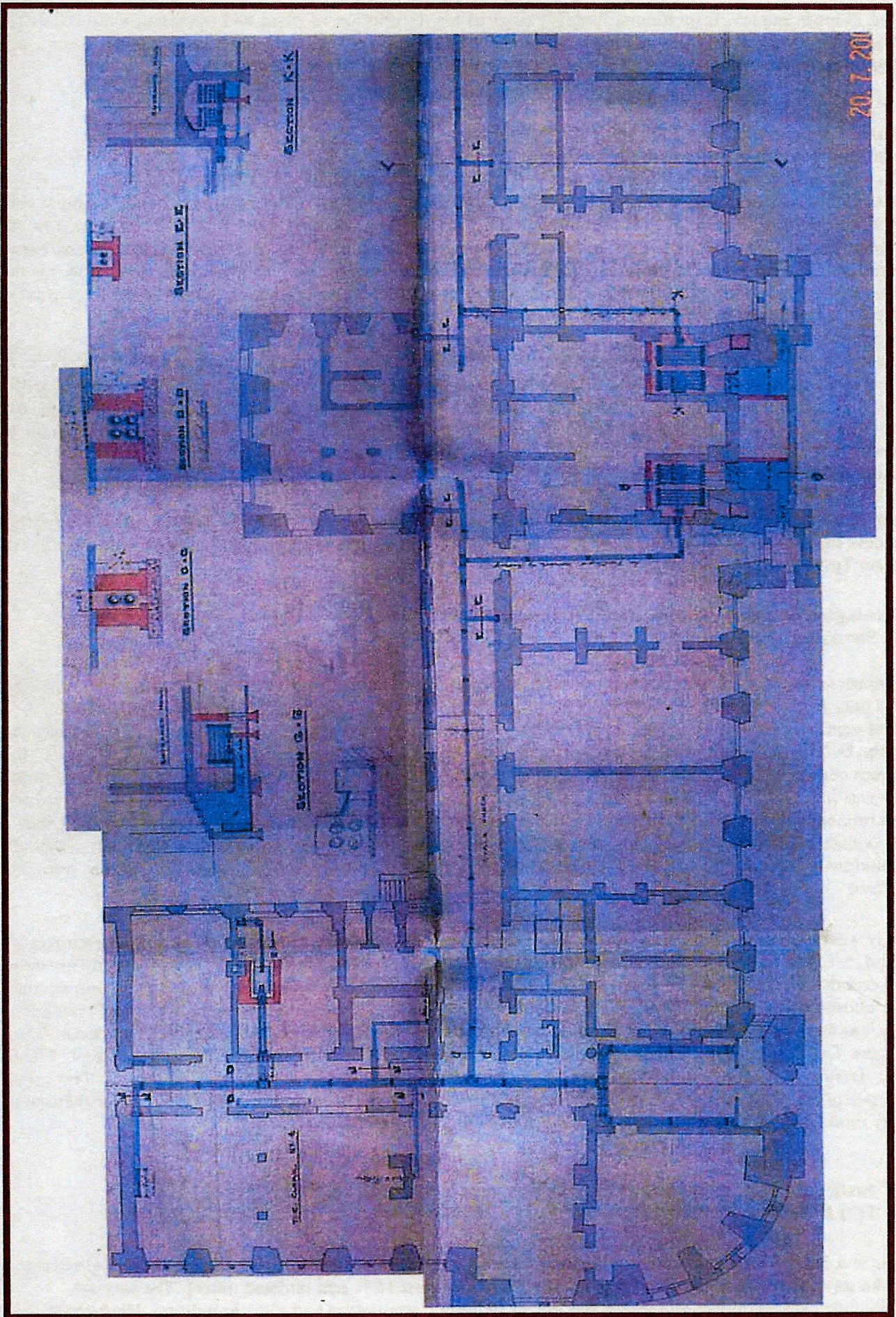
We consider the application as creditable to yourself and are glad to have been the means of introducing your system of Ventilation and Warming to Birmingham.

[The letter suggests that Phipson was acting as both designer and installer. Also, was what is described as his system, really that of Van Hecke, for whom he may have been acting as Agent at this time?]

Birmingham Council House, Museum & Art Gallery, 1874-9 & 86 Architect Yeoville Thomason

Research at the Birmingham Library & Record Centre has located reference to Phipson in connection with his contract for the above buildings [Record 1460/45.56]. These records include drawings of the heating and ventilation layouts for both the original building and the extensions built to house a Museum & Art Gallery, together with offices for the Gas Company [listed in Appendix-D]. The records show the Contractor as John Barnsley & Sons, and the Engineer as Wilson W Phipson. A further reference [TB.1878/215-9] confirms Thomason as architect and Barnsley as contractor, but makes no mention of Phipson. The project is referred to as Birmingham New Municipal Buildings, and the sponsor is named as Joseph Chamberlain. The building is described as "*decidedly Classical*" in character and in the "*columnar style*."

Phipson's drawings show the ventilation system was of the heat-assisted type. Cold fresh air was taken in at basement level, then passed over banks of cast-iron heating pipe-coils. The warmed ventilation air then rose through the building, the vitiated exhaust air being taken through ceiling ducts into the roof space and to atmosphere. The boilers circulated hot water by gravity to the coil-banks and to a few radiator-shaped pipe coils scattered around the building in the smaller rooms.



23. Birmingham Council House, Basement. Phipson's Scheme for Heating & Ventilation, 1875 [BLRC.45]

The Birmingham & Midland Bank, New Street/Stephenson Place, Birmingham, 1869
Architect Edward Holmes

Mid-Victorian times saw a dramatic increase in the number of municipal and commercial buildings erected in or near Birmingham's city centre. It has been said of the Birmingham developments of this period: "*The Banks were staunch advocates of the Italian palazzo. Down in New Street an impressive building was that of the Birmingham & Midland at a corner near the station. Started in 1867, with an Ionic porch, an array of Corinthian pilasters and half columns, and with an ornately pilastered banking hall nearly 100 feet long, it was and is more successful than its architect Holme's Gothic work.*" [BB, 27] In a review of the building [TB.1869/40 & 47] Phipson is credited as being responsible for the "heating by hot air", and Messrs J Cresswell & Sons is listed as the building contractor.

The Royal Exchange, Birmingham, c.1864
Architect Edward Holmes

In a review of the design for the Exchange Buildings (no Royal at this time) and "*About to be Erected*" [TB.1862/550-1] credits Messrs Haden (inventor) and refers to the heating system as using "*Haden's hot air apparatus.*" However, this building is listed as one of Phipson's projects [WWP, 10]. Phipson's involvement is confirmed in a handwritten testimonial of 8 March 1865 [PC/25] in which the Exchange Directors, "*are glad to have been the means of introducing your system of Ventilating and Heating to Birmingham.*" It appears that Phipson convinced the Directors to award him the contract, rather than Haden.

The Victoria Law Courts, Birmingham, 1886/91
Architects Aston Webb & Ingress Bell

The Law Courts at Birmingham are listed in Phipson's projects. [WWP, 10] His architect friend, Aston Webb, was probably responsible for Phipson's appointment. Of the Courts, it was said, [BB, 32-3] "*The Great Hall did obvious deference to Street's Law Courts in London. Their style, their materials and their decoration came as a late revelation to Victorian Birmingham...in general a brilliant success.*" Waterhouse, was one of the competition assessors and praised the choice of materials -terracotta and brick (having himself used terracotta on an unprecedented scale at the Natural History Museum).

Birmingham Library has records of the Law Courts architectural design competition held in 1886. Comments in *The Builder* (Saturday, 31 July 1886) refer to the five designs appraised by Waterhouse with his comment on the mechanical design ventilation being by a steam driven fan. It notes that fresh air is drawn in at low level and warmed in chambers, while positive pressure is achieved by the fan being installed on the supply system to obviate draughts being caused in the Courts by the opening of doors. Photographs of the interior show heating by various radiators all installed in recesses. [BLRC].

The announcement of Phipson's sudden death in the *Birmingham Daily Mail*, Tuesday 27th October 1891 refers to the success of his ventilation scheme for the Assize Courts [the article is reproduced under the description of Birmingham Town Hall].

The Town Hall, Birmingham, built 1831-35
Architects J A Hansom & E Welch, with C Edge

When young and relatively unknown, J A Hansom won the competition to design Birmingham's new Town Hall, beating illustrious architects such as Charles Barry and Thomas Rickman [BE/W, 113-4]. The building of the Town Hall was for the architect, Hansom (inventor of the Hansom Patent Safety Cab), a total disaster. The financial arrangements led (1834) to his bankruptcy. John Foster, a prominent Liverpool architect was then asked to supervise the work. Later (1835), Charles Edge was appointed architect and construction continued for many years (at least till 1849). A description of the building states: "*The Corinthian porticos and side colonnades have all the authority of pure classical architecture.*" [BB, 37]

According to Phipson's "A Memoir" (1892): *A quarter of a century ago Wilson Phipson proposed to remedy the bad ventilation of the Birmingham Town Hall. He was scarcely listened to. A few months ago he was solicited to undertake the work, just before the triennial music festival -it was his last work! According to a recent article in the Birmingham Daily Mail, the ventilation now, even when the Hall is crowded to excess, is absolutely perfect.* [WWP, 15]

The article in question, taken from the *Birmingham Daily Mail* of Tuesday, 27 October 1891 [BLRC] is reproduced below. It deals more with the Town Hall ventilation than Phipson's death:

THE VENTILATION OF THE TOWN HALL
SUDDEN DEATH OF MR PHIPSON

There are many in Birmingham who will experience personal regret in learning of the painful sudden death of Mr W W Phipson. Mr Phipson was an engineer of standing and had become conspicuously known in connection with the ventilation of public buildings. It is but comparatively recently that there has been applied to our public institutions a method of ventilating other than the primitive one of opening a window or door. By the modern system of equally distributed injection and extraction we get a wholesome atmosphere without draughts. Mr Phipson who was a connection of the Phipsons of Birmingham was prominent in establishing an improved method of ventilation. He ventilated several of the theatres and public buildings of London and what is more immediately interesting to Birmingham people, he ventilated and heated the Victoria Law Courts and the Town Hall. Nothing could be better than the principle by which a cool and wholesome atmosphere is continuously preserved in the Assize Courts, no matter how packed they

may be, and this without the slightest draught from injected air. Some strictures have been passed upon the ventilation of the Town Hall. These may have been deserved so far as relates to the temporary control of them, but not to the construction. For last night when the hall was filled, the ventilation was admirable, which shows that when the apparatus is properly worked it is efficient and suitable for its purpose. By means of it two million cubic feet of air can be passed through the hall in an hour, and during the concert last night 1,800,000 cubic feet were forced through. Mr Phipson died of heart disease,

The Victoria Law Courts, Birmingham, 1886/91
Architects Aston Webb & Ingress Bell

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APPENDIX-D PHIPSON DRAWINGS AT THE CITY OF BIRMINGHAM ARCHIVES

Wilson Phipson was the heating & ventilating engineer for the Birmingham Council House (originally termed Municipal Buildings) built 1874-9, with extensions 1881-3. A Museum & Art Gallery was added 1886. The architect was Yeoville Thomason.

[Records 1460.45.56 contain the following drawings, scale 1/8" to the foot, or as indicated]

- 45/1 Building plans, elevations & sections, no services, June 1874.
- 45/2 Architectural details (various scales), 1875;
Basement, showing boilers & piping, coloured
Ground floor, radiator heating with fresh air connections & perforated cornices
1st, 2nd & 3rd floors
Section, showing heating & ventilation
- Services drawings all marked: Wilson W Phipson, Engineer
1 Salisbury Street
Strand WC
- 45/3 Folded set building plans & details (various scales) signed Thomas Barnsley (builder), July 1875.
- 45/4 5 drawings on linen, mostly of Council Chamber, no services, signed by Thomason, 27/8/1875.
- 56/1 4 drawings Gas Department & Art Gallery, no services.
- 56/2 Set of architect's drawings, no services, one dated 1883.
- 56/3 Set of architect's drawings, no services, signed by Thomason, one dated 1881.

There are other architect's drawings of the proposed extension, no services shown: 45/6, /7, /8; 56/4, /5 with beautifully coloured details, /6 & /7.

- 56/8 Heating & ventilating details, signed by Phipson with address and date:
- | | | |
|-----------------------|------------------------|-------------------------|
| (i) Sections, 24/5/82 | (ii) Sections, 24/5/82 | (iii) Basement, 10/6/81 |
| (iv) Ground, 24/5/82 | (v) 1st Floor, 24/5/82 | |

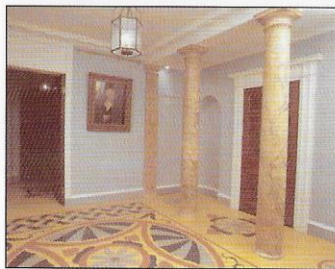
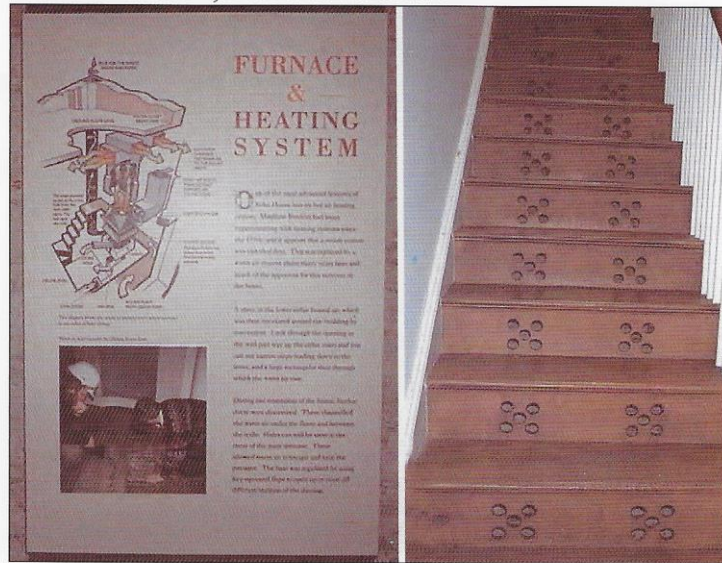
[The procurement of the Council House was overseen by the Estates Committee of the Municipality. The Minutes of this Committee were scanned for the period 1875 to 1887. No reference to Phipson was found. However, the day-to-day progress of building was entrusted by the Estates Committee to a Municipal Buildings Sub-Committee. The Minutes of the Sub-Committee do not appear to have survived, sadly.
J M Barber, June 2001]

SOHO HOUSE, BIRMINGHAM



Soho House

Heating system diagram and staircase hot air supply outlets in staircase risers (right)



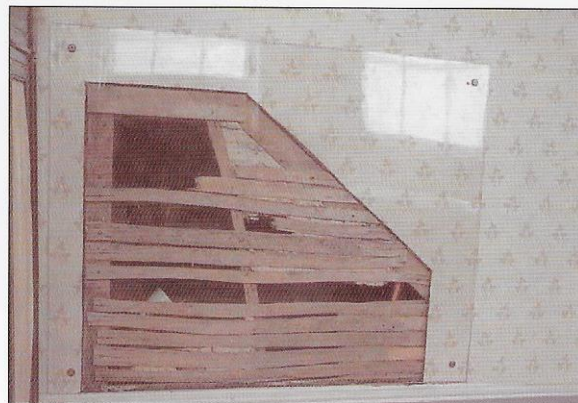
The Hall



Matthew Boulton

Soho House, Handsworth, Birmingham, 1766

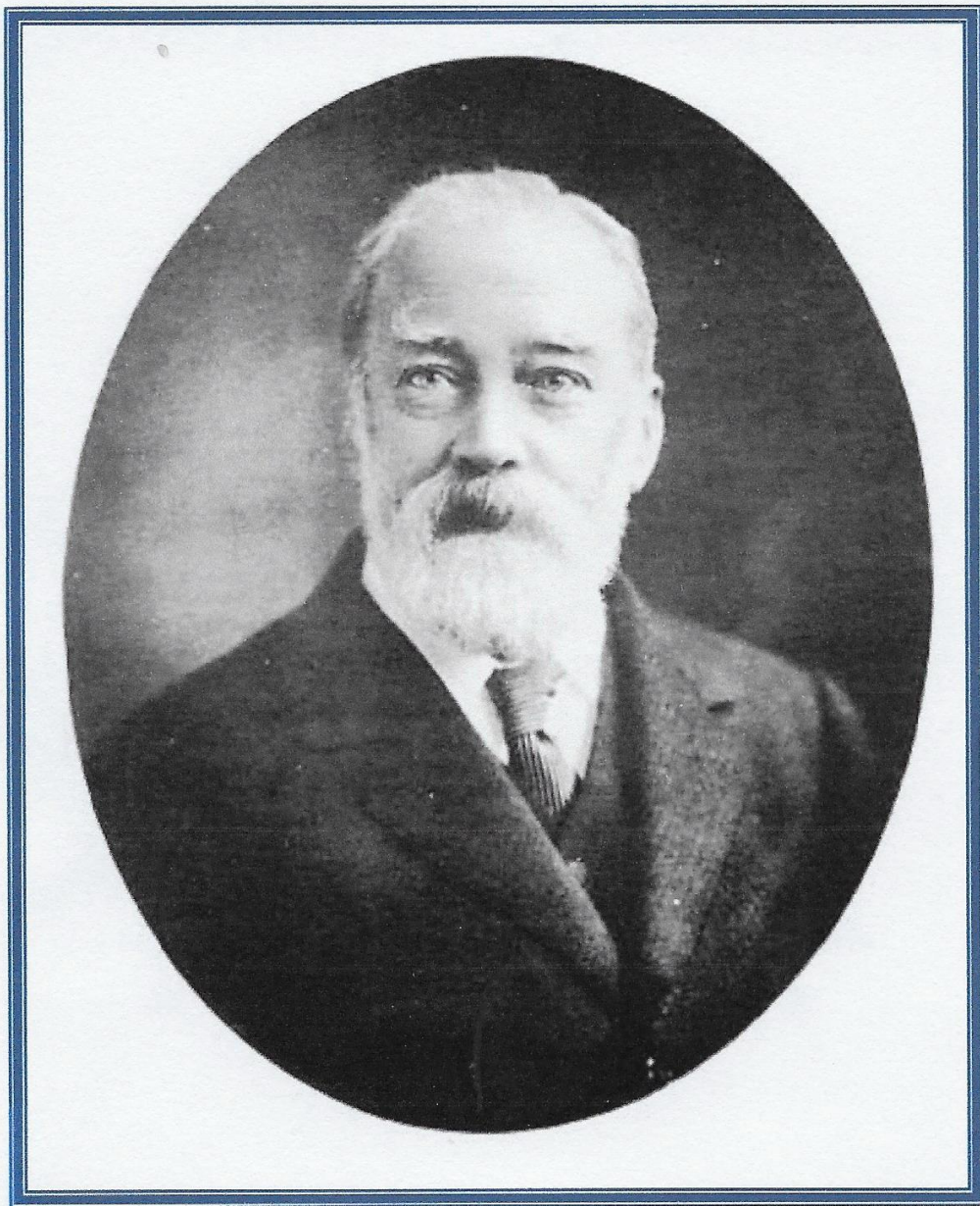
This house was the elegant home of the industrial pioneer Matthew Boulton who lived here from 1766 to 1809. His business became world-famous after the formation of his partnership with James Watt in 1774 when Boulton & Watt began the manufacture of steam engines. The nearby Soho Foundry was opened in 1796. In 1784 Watt used steam to heat a metal box radiator in his office. Boulton used a similar device in his manufactory and in 1789 used steam to heat his bath at Soho House. But warm air had more success than steam in early systems and used an iron *cockle* inverted over a fire. Air was passed over the external surface of the cockle before rising in ducts to the room to be heated. Boulton used this system when redeveloping and extending Soho House. Distribution ducts were either built into brick walls or were beneath the wooden floors of rooms; airflow was regulated by a series of butterfly dampers. This possibly makes it the first centrally heated house since Roman times. An interesting fact is that George Haden Sr was an employee of the firm and it was this connection that in 1816 led to his sons setting up in business as G & J Haden in Trowbridge to act as Boulton & Watt agents for the erection of steam engines in the West Country.



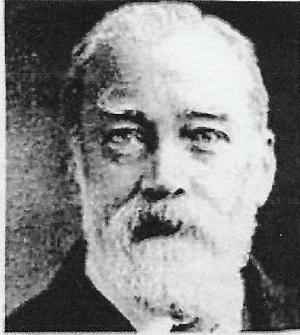
Cut-away wall section with hot air duct behind

THE BIRMINGHAM PROJECTS OF HENRY LEA

**From the Archives of
The CIBSE HERITAGE GROUP**



The first Consulting Mechanical Engineer

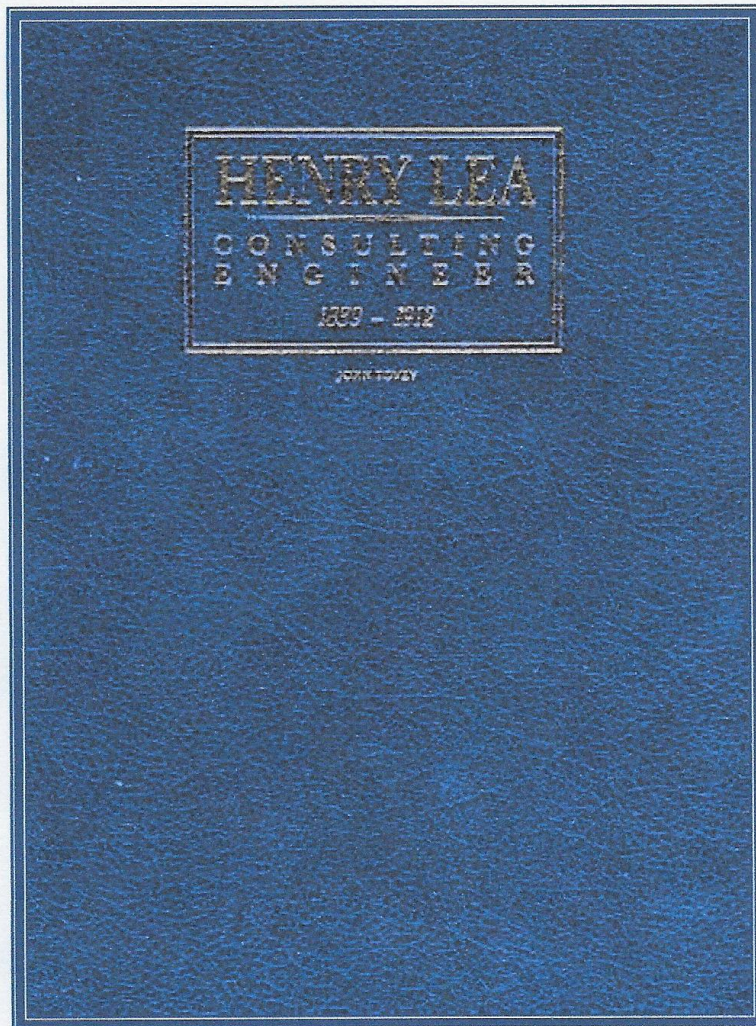


[208] Henry LEA

1839-1912

English consulting engineer whose expertise ranged widely over the civil, mechanical, and electrical disciplines. Opened an office in Birmingham (1862) and issued a circular letter, "Henry Lea begs leave respectfully to announce that by the advice of many gentlemen well acquainted with his qualifications and experience, he has commenced practice as a Consulting Mechanical Engineer." He may have been the first in the field to describe himself thus, though Phipson [203] was also active around this time. Lea was a pioneer of electric lighting but also introduced new methods of artificial ventilation based on the plenum system of Key [98]. Used it with notable success at Birmingham General Hospital (1893). Then at the Royal Victoria Hospital, Belfast (1903), where, "A sprinkler system, used to moisten the filters through which the fresh air passed, was regulated on the basis of regular readings of wet- and dry-bulb temperatures. This conscious control of humidity gives the Royal Victoria Hospital a place among pioneering air conditioning systems."

(Mini-biography from "The Comfort Makers," Brian Roberts, ASHRAE, 2000)



(CIBSE Heritage Group Collection)

Offices, 33, Waterloo Street,
Birmingham.

Henry Lea begs leave respectfully to announce that, by the advice of many Gentlemen well acquainted with his qualifications and experience, he has commenced practice as Consulting Mechanical Engineer.

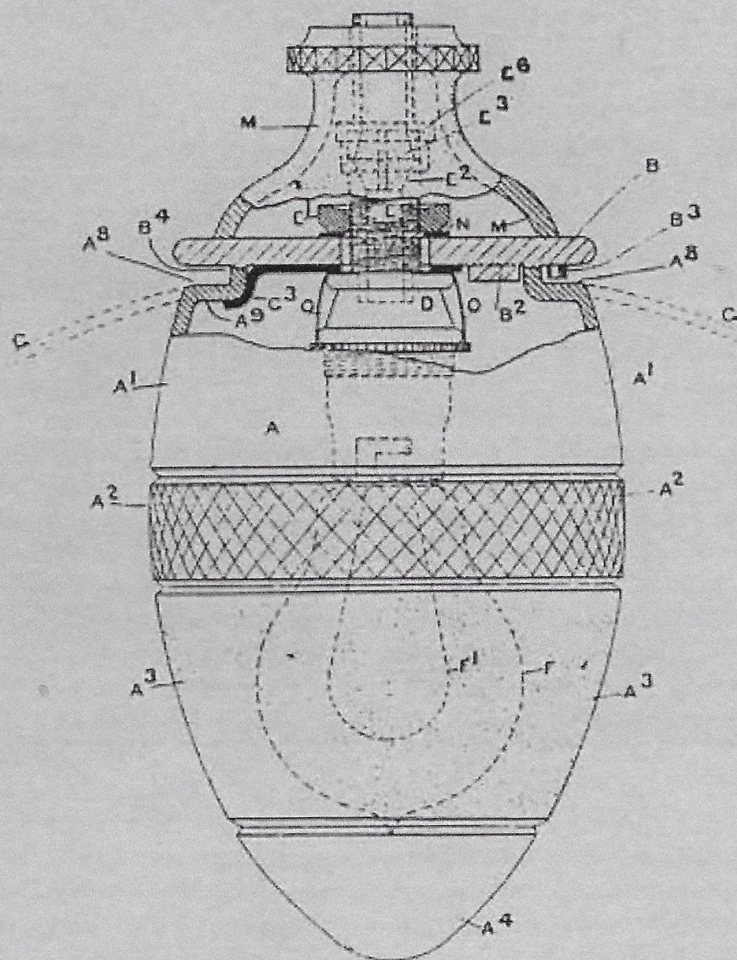
He takes this opportunity to inform his friends and others requiring the services of one of his profession, that he is prepared to undertake to make Drawings and Specifications for Steam Engines, Millwork, general Machinery, Roofing, Bridges, Girders, and Iron Constructions of all descriptions, also the practical Inspection of Contract work, the Valuation of Machinery, and the preparation of Bills of Quantities and of Estimates for Iron work.

H. L. knowing from experience that very many Steam Engines in Birmingham and the neighbourhood are consuming excessive quantities of Coal, is ready to undertake the examination of Engines by means of the Indicator, to superintend alterations and repairs, and to furnish designs for Boilers and Boiler settings with a view to ensure the prevention of smoke and a greater economy in the expenditure of fuel.

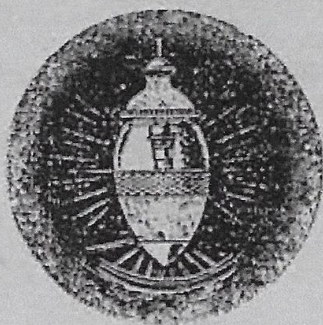
References - Messrs Walter May & Co., Engineers Birmingham, and Westminster, Walter Williams Junr., Esq., Tipton; William Dredge, Esq., C. E. Bridge St. Westminster, and Nathaniel Lea, Esq., Bennetts Hill, Birmingham.

November 1862.

The letter sent out by Henry Lea to announce commencement in practice as a Consulting Mechanical Engineer.

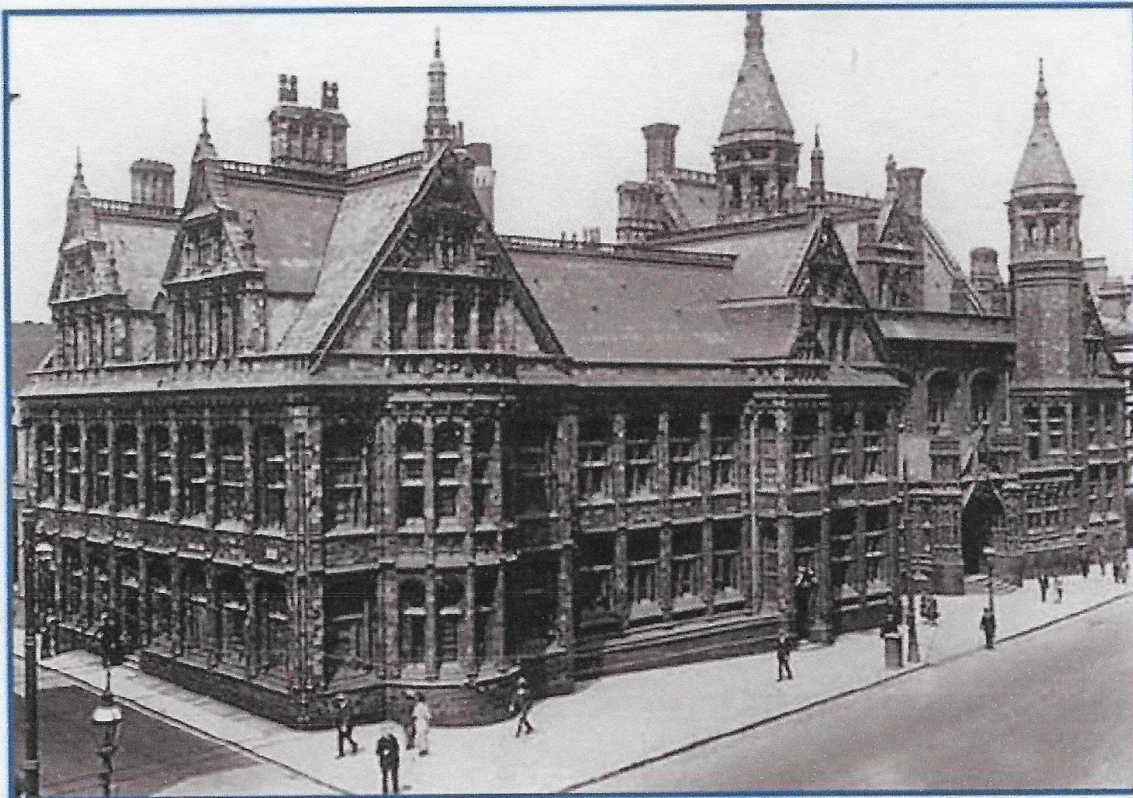


LEA'S ORNAMENTAL GLOBES FOR INCANDESCENT LAMPS.



Messrs. Fowler, Lancaster and Co. are introducing a globe for enclosing incandescent lamps, which is represented in the adjoining figure. Of course, the object of such an attachment is to conceal the filament itself from the eye, while intercepting the light as little as possible. Both the globe and its cover are made entirely of glass, and there are no metallic rims or screws to work loose, the connection being of an elastic character. The method of attachment adopted relieves the electrical connections of the lamp-holder from the weight of the globe. So far as can be judged from the figure, this globe will probably strike most of our readers as being particularly well designed from the aesthetic point of view.

Globe designed by Henry Lea for enclosing incandescent lamps. Apart from concealing the filament itself from the eye whilst refracting the light for distribution effect, the globe received universal acclaim as being particularly well designed from an aesthetic point of view.



*Victoria Law Courts, Corporation Street, Birmingham 1886-91.
Designed by the architects Aston Webb and Ingress Bell.
Henry Lea's appointment covered the installation of the dynamos, the boilers and engines.*

P.

30th November 1898.

Dr. Fergusson
Hydropathic Establishment
Gt. Malvern.

Dear Sir,

Confirming our conversation with you on the 24th inst, we beg to say that we will examine, test, and report upon your electric light installation on the terms of One Guinea per hour for Mr Henry Lea, Five Shillings per hour for Mr Fred M. Lea, and assistants at our usual rates.

We are

Yours faithfully,

Henry Lea

Letter from Henry Lea dated 30 November 1898 to a Dr Fergusson of the Hydropathic Establishment at Great Malvern in which he sets out his rates for carrying out tests on the electric lighting installation.

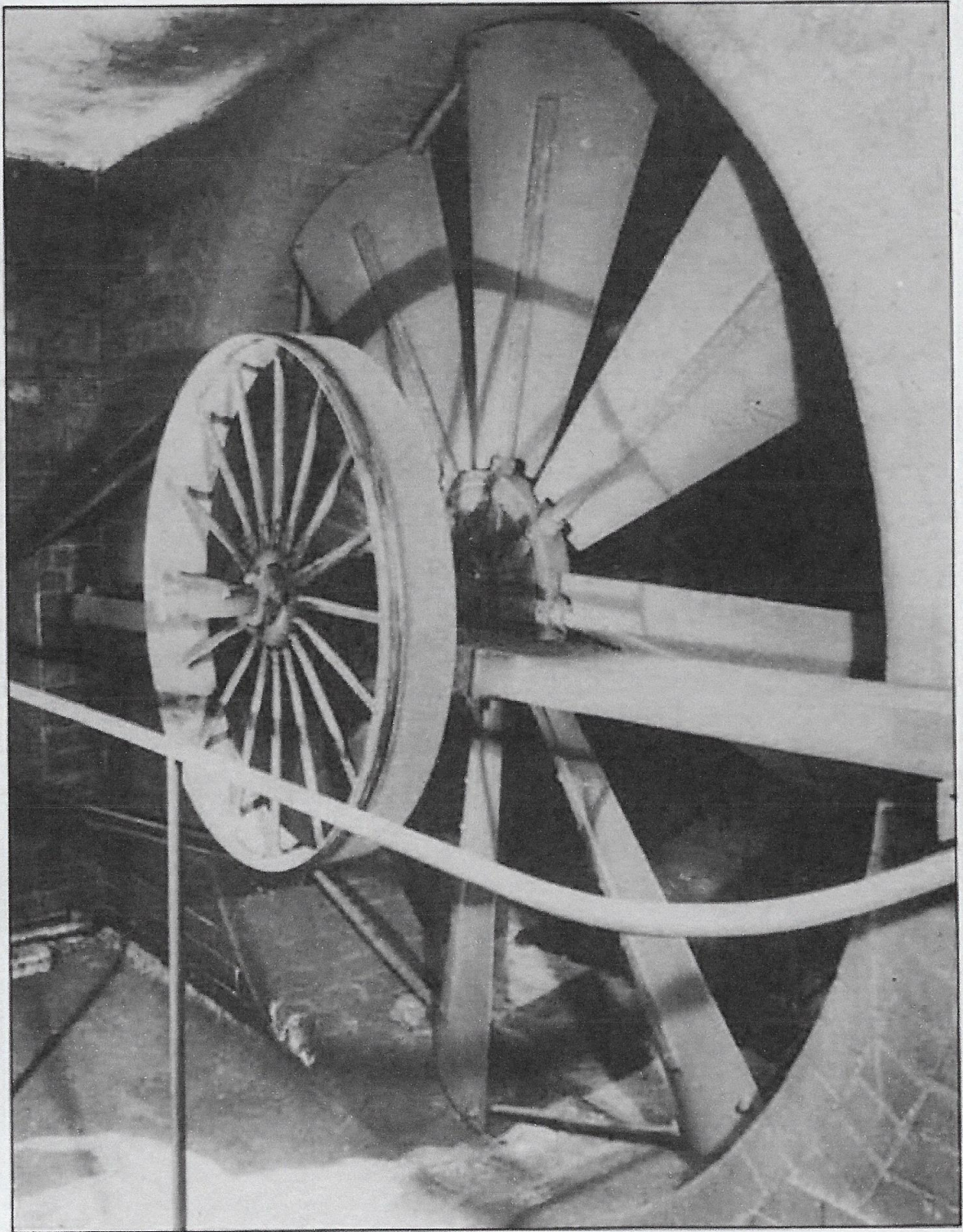


*The Town Hall, Victoria Square, Birmingham, built 1831-49.
The architect was Joseph Hansom (inventor of the Hansom Patent Safety Cab), but
the financial arrangements led his bankruptcy. In 1835 Charles Edge took over as
architect and construction continued until about 1849.*



*Opening of the new buildings of Birmingham General Hospital in 1897
by HRH Princess Helena of Schlesweig-Holstein*

Birmingham General Hospital



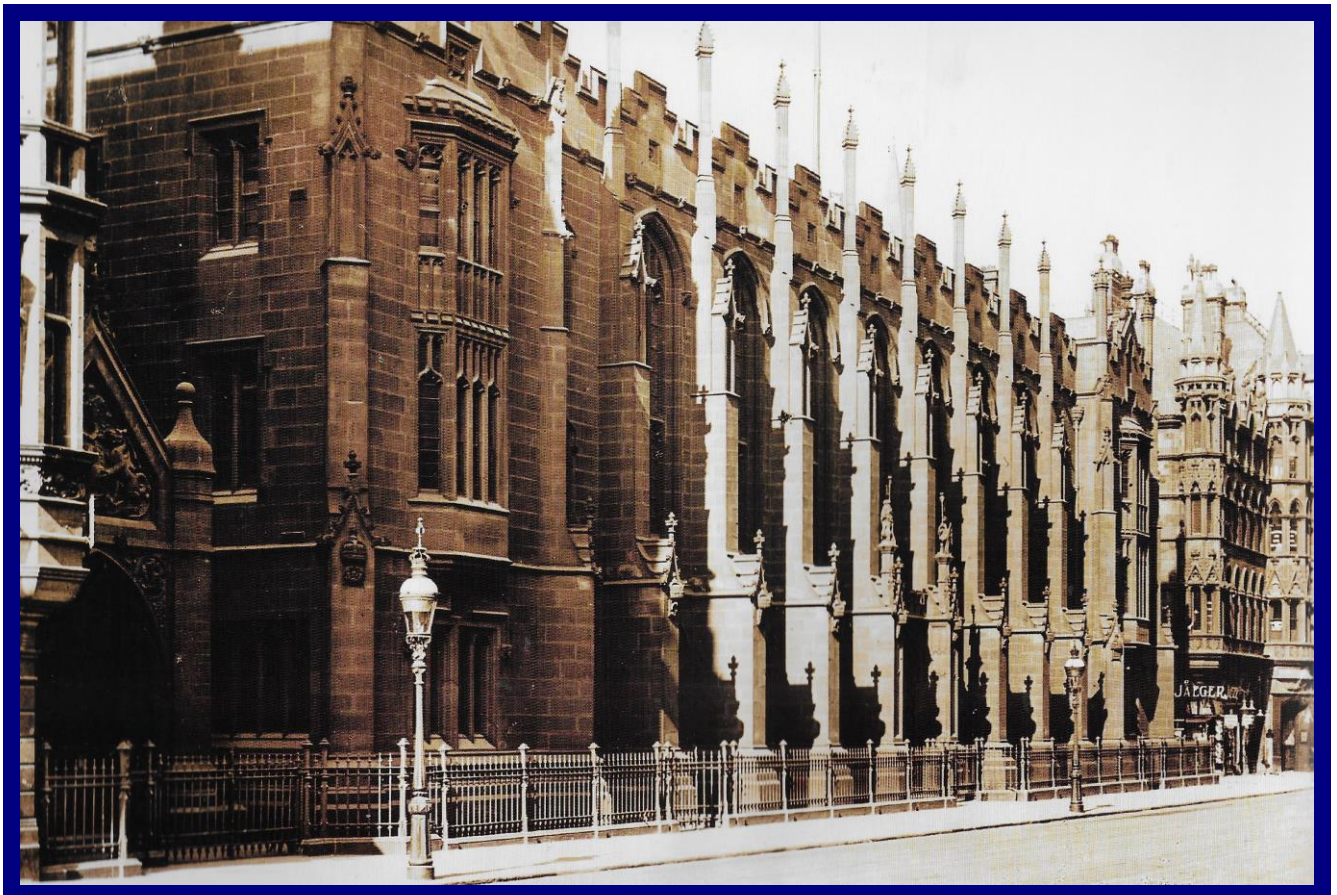
The 8ft. fan for plenum ventilation at Birmingham General Hospital 1893.

HISTORIC BIRMINGHAM

NEW STREET c.1934



KING EDWARDS GRAMMAR SCHOOL



MIDLAND BANK



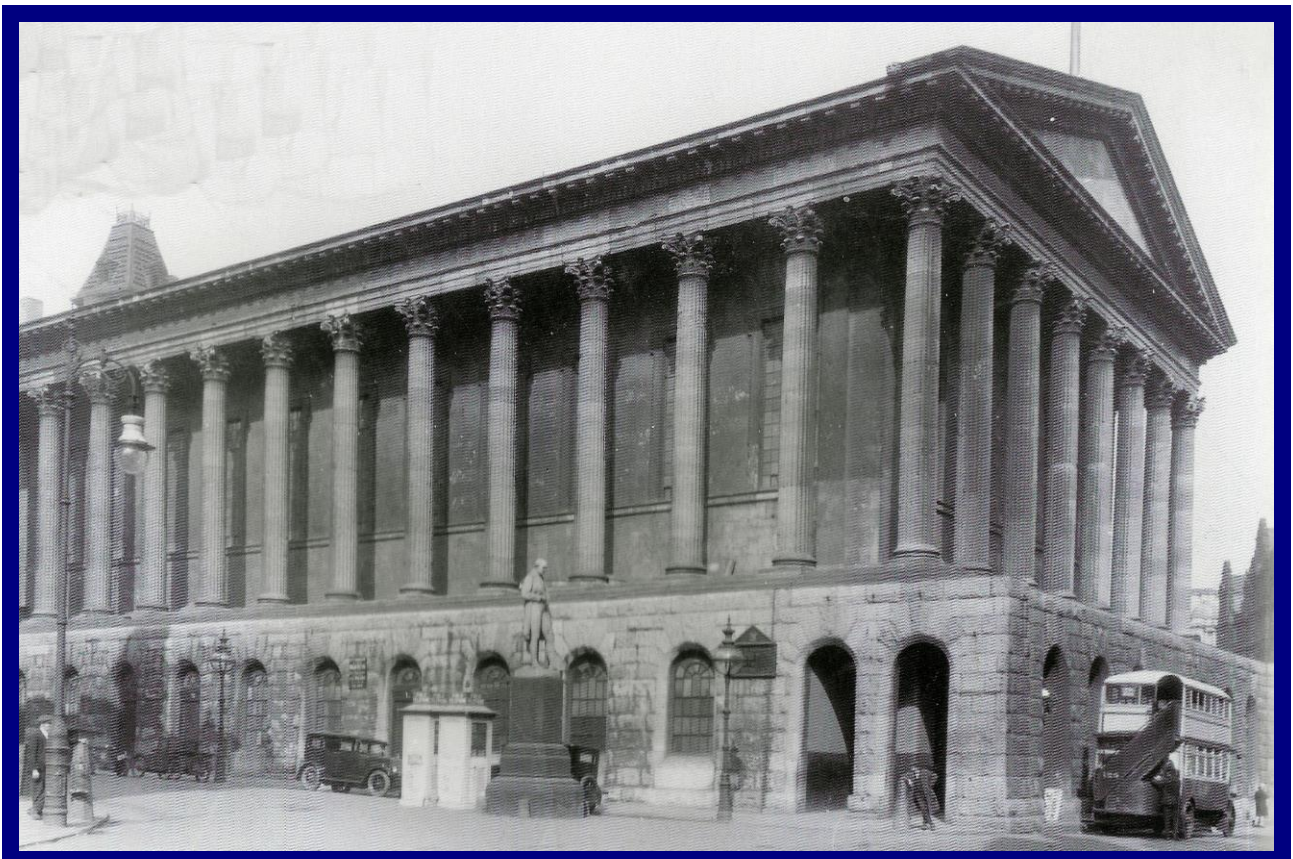
NEW STREET STATION c.1910



PARADISE STREET 1890



TOWN HALL c.1925



CORBETT'S TEMPERANCE HOTEL 1887



CHAMBERLAIN SQUARE c.1900



ST. PHILIP'S CATHEDRAL c.1905



BIRMINGHAM SCHOOL OF ART c1900



VICTORIA LAW COURTS



CORPORATION STREET



OLD SQUARE c.1900



GENERAL HOSPITAL 1897



ST. CHAD'S CATHEDRAL c.1963



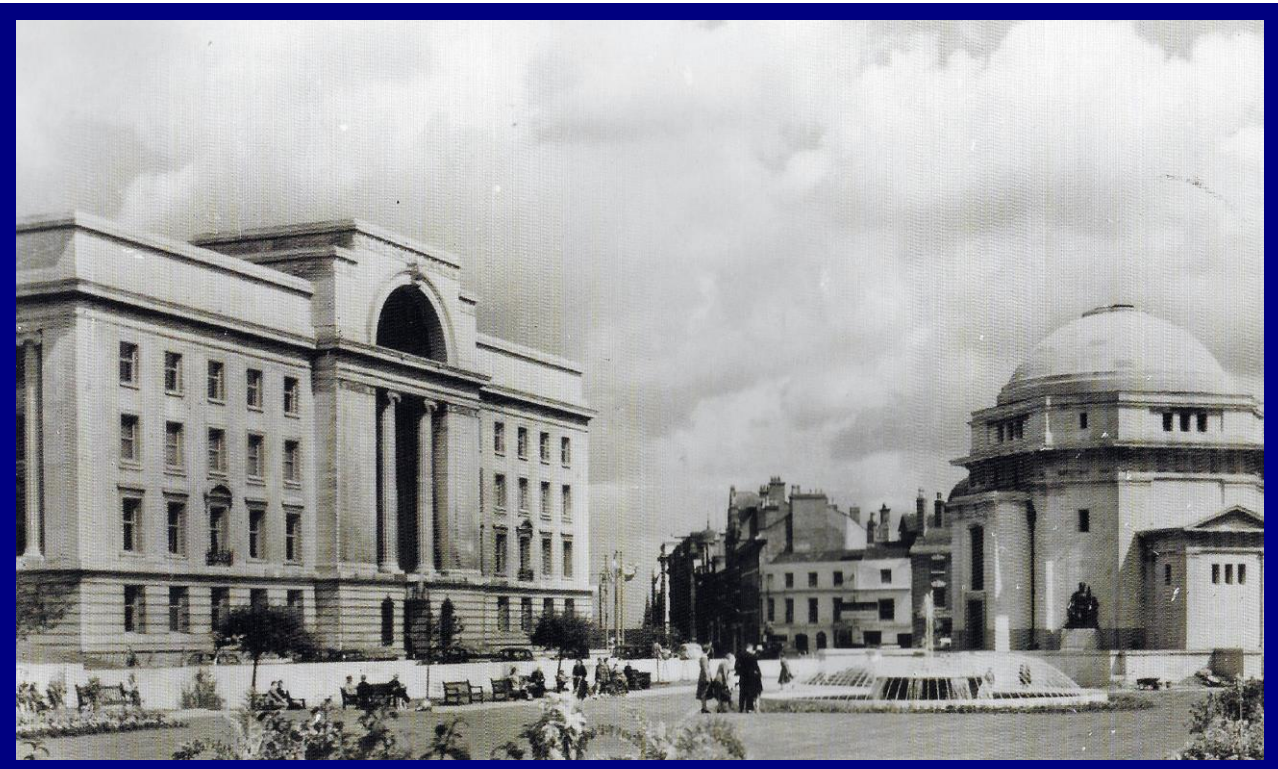
MARKET HALL 1901



FISH MARKET c.1960



BASKERVILLE HOUSE c.1947



GAS STREET BASIN c.1955



CURZON STREET STATION



ASTON HALL



LUCAS FACTORY 1936



GREEN LANE BATHS & LIBRARY



BIRMINGHAM UNIVERSITY 1939



QUEEN ELIZABETH HOSPITAL c.1938



FORT DUNLOP



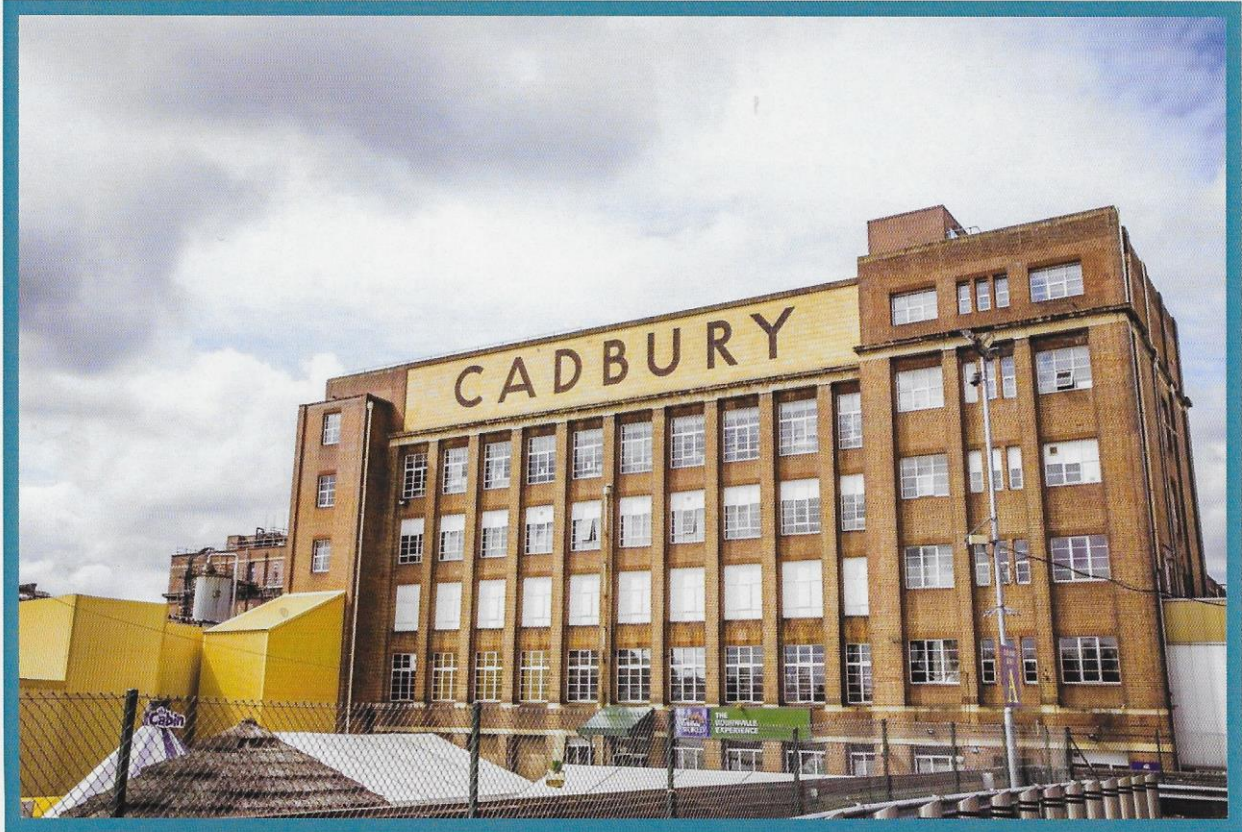
BOTANICAL GARDENS



BOURNVILLE BATHS



CADBURY OFFICE BLOCK, BOURNVILLE



During the 1960s, new types of comfort air conditioning systems and equipment were being developed, one example being the variable air volume (VAV) type. An early application was at the new Cadbury Head Office in Bournville, near Birmingham, in 1966. The 6-storey block of some 100,000 sq.ft was converted from an existing factory building. The floor-to-ceiling heights were exceptionally high and the windows large. The width of the building required that the air conditioning was able to cater for two external zones, two internal zones and a central corridor.

The decision was taken to treat external areas with a Hi-Jet induction system and use a Barber-Colman Jetronic high velocity all-air system for interior zones. The interior zone system used constant volume induction boxes mounted in the false ceilings, mixing a cold air stream from the central plant with warm air extracted through longitudinal slots in the custom-made Atlas integrated air-light fixtures. The interior zone supply and combined internal/external zone extract operated in VAV mode, having fan inlet guide-vane control. Although designed for full air conditioning the refrigeration plant was omitted.



The Birmingham School of Art dates from 1881-85.

HISTORIC CITIES BIRMINGHAM

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- 2000 Henry Lea: John Tovey: Hoare Lea & Partners.
- 2003 Building Services Heritage, Brian Roberts, CIBSE Heritage Group/Paul Yunnie, Andrews Water Heaters.
- 2006 Wilson Weatherley Phipson: Victorian Engineer Extraordinary 1838-91, Brian Roberts, CIBSE Heritage Group/English Heritage.
- 2013 Birmingham: Then and Now, Alan Clawley, Batsford, London.