The Warming & Ventilating of Victorian & Edwardian Churches

Section 3: Part 2

Manufacturers & Installers

Renton Gibbs & Co Limited, St James Works, Mill Street, Liverpool, prob.1890s
[Paul Yunnie Collection]
The London Warming Co

The London Warming & Ventilating Company Ltd, established 1854. Proprietors of "Gurney" stoves. Claim to have provided heating by warm air to 22 cathedrals and over 10,000 churches and other buildings (the number of churches is not given).

The London Warming Co. Ltd.
2 Percy St., Rathbone Place, London, W.1

The Kooksjoie Range
11 sizes. Prices from £10 10.00

Gurney Stoves
6 sizes. Prices from £5 10.00

Osobrite Stove
Open fire or closed stove at will. Prices from £3 11.00

Don Anthracite Stove
Heating capacity, 4,800 cu. ft. Prices from £3 7.60

For full list of Appliances, including Anthracite Stoves, ranging in price from £5 10.00, send for our 40-page list. Please mention Laxton's

Heritage Group Collection
The London Warming & Ventilating Co.

The London Warming & Ventilating Company Ltd, established 1834. Proprietors of “Gurney” stoves. Claim to have provided heating by warm air to 22 cathedrals and over 10,000 churches and other buildings (the number of churches is not given).

Gurney Stoves.

These Stoves are used in the Office of the Department of Science and Art, in St. Paul’s, York Minster, Llandaff Cathedral, St. George’s Chapel, Windsor, and twenty other Cathedrals; besides more than five thousand churches, government and other public and private buildings in England alone.

Special Stoves for Schoolrooms, Halls, &c.

Prize Medals Awarded:

London, 1862; Paris, 1867; Dublin, 1859; Beauvais, 1869.

From Kelly’s Directory, Staffordshire, 1884
The London Warming Co
The London Warming & Ventilating Company Ltd, established 1854. Proprietors of “Gurney” stoves. Claim to have provided heating by warm air to 22 cathedrals and over 10,000 churches and other buildings (the number of churches is not given).

The Gurney Stove
for even temperature throughout

The London Warming Co. Ltd

From catalogue dated July 1953, front cover
The London Warming Co

The London Warming & Ventilating Company Ltd, established 1854. Proprietors of "Gurney" stoves. Claim to have provided heating by warm air to 22 cathedrals and over 10,000 churches and other buildings (the number of churches is not given).

These two illustrations are of Ely Cathedral and are deliberately taken so that the stoves may easily be seen. Actually, as is also the case with most churches, the Gurney stoves are very unobtrusive.

From catalogue dated July 1953, page 2
THE LONDON WARMING Co
The London Warming & Ventilating Company Ltd, established 1854. Proprietors of "Gurney" stoves.
Claim to have provided heating by warm air to 22 cathedrals and over 10,000 churches and other buildings (the number of churches is not given).

THE GURNEY STOVE

FOR CHURCH HEATING

BASIC FACTS FOR CONSIDERATION

It must be remembered that in converting energy of one kind into energy of another there is invariably a loss during the process. For example, in converting the energy in coal to heat by means of electricity, it has first to be burned in boilers and converted into steam. The steam is used to drive the turbines, which actuate the dynamos. These dynamos produce electric current, which is fed along lines which in themselves cause resistance, and eventually becomes heat at the required point. The various stages in this process result in only 30 per cent or less of the heat originally in the coal being given out where it is required. Accordingly, the most economical way of heating a church would be the primitive method of lighting a fire on the floor, where all the heat energy contained in the fuel would be given out into the church, but this is obviously impossible.

NO LOSS OF HEAT

As in most things there are fashions in heating apparatus, and just because a stove represents one of the earliest methods of heating it is sometimes thought that newer methods are more economical and efficient. But that a stove is out of date, but this is delusion on the case. If we put a fire into a stove there is a certain amount of heat lost up the chimney, but no other loss.

From catalogue dated July 1953, page 3
Some heat in the chimney is necessary to produce the draught through the stove, but if the stove is well designed with a large heating surface, not only is the temperature of the air passing over the stove not uncomfortably hot and dry, but also the minimum amount of air for chimney draught is allowed to pass away into the atmosphere.

In a hot water or steam installation there is the same loss of heat up the chimney, and in other ways it is similar to a fire in a stove, except that the heat is first transferred to water and then conveyed to the air in the building, resulting in additional loss and considerable time lag in the emission of heat from the installation.

With gas or electricity there are several additional transferences of heat, between the fuel (from which it is derived) and the heat in the chimney, each resulting in loss, and these methods must therefore be less economical.

Although our Gurney Stoves have been sold and installed for over eighty years (which is in itself a recommendation), we maintain that they are more efficient and economical than hot water, steam, gas or electric installations for churches and halls, and they have a number of other advantages.

There are a number of different kinds of stoves on the market, but not many large enough to heat churches and of suitable aesthetic design.

Bearing in mind that a stove is a fire contained in a box, we must consider how to take away as much heat as possible from that box and transfer it to the surrounding atmosphere before it can escape up the chimney flue. This heat depends upon the heating surface of the stove, and the speed of the air passing over this surface.

It will be seen from the illustration of the Gurney stove that it is surrounded by any number of gills or fins, all of which are part of the body of the stove, and these conduct the heat away from the fire. There are no firebricks inside the stove to interfere with the passage of the heat.

To take the case of the C-size Gurney stove, if this had no gills and were just the ordinary round plain-surfacde stove, the heating surface of the body would total 10\frac{1}{2} square feet. Now, if we add, to this the surface of the gills, we get a total of 77 square feet, almost eight times more heating surface on the Gurney.

These gills conduct the heat rapidly from the fire, and thus prevent the iron overheating and burning away.

ECONOMICAL, EFFICIENT, DURABLE AND SAFE

From catalogue dated July 1953, page 4
THE LONDON WARMING Co

The London Warming & Ventilating Company Ltd, established 1854. Proprietors of "Gurney" stoves. Claim to have provided heating by warm air to 22 cathedrals and over 10,000 churches and other buildings (the number of churches is not given).

This illustration shows the Gurney Stove fixed in a convenient position in the body of the church, with the flue pipe carried straight up through the roof. This position is sometimes used because it is more convenient and sometimes in cases where the Gurney replaces an old stove, which was previously fixed in that position.

From catalogue dated July 1953, page 5
The London Warming Co
The London Warming & Ventilating Company Ltd, established 1854. Proprietors of "Gurney" stoves. Claim to have provided heating by warm air to 22 cathedrals and over 10,000 churches and other buildings (the number of churches is not given).

Advertisements

The London Warming and Ventilating Company, Ltd.
105 Regent Street (The Quadrant), London, W.
Established 1854.
Contractors to H.M. War Office, Admiralty, Home Office, &c. &c.
A. P. Florence, Manager.

Proprietors of the
Patent "Jackson" and "Revertive" Open Grates.

Sold Agents for
Choubersky, "Salamandre" & Other Continuous Burning Stoves,
Salable for Entrance Halls, Corridors, Billiard Rooms, Saloons, &c. and specially adapted for burning most successfully Anthracite (Smokeless) Coal,
Effecting a saving in fuel of more than 50 per cent., with increased heat, and warmth under perfect control.

Illustrated Catalogue on Application.

Proprietors of "Gurney" Stoves for Warming Churches, &c., as specified by leading Architects, and as used in St. Paul's, Salisbury, Exeter, Gloucester, Lincoln, Llandaff Cathedrals, York Minster, St. George's Chapel, Windsor, &c. Twenty-two Cathedrals, and over 10,000 Churches, Schools, Government and other public and private buildings successfully warmed by our system.

Economical, Efficient, Cheap, Durable, Safe.

Many Prize Medals Awarded.

Particulars and Estimates Free.

From Dye 1897
It is therefore obvious that the Gurney stove must be many times more efficient and economical than any ordinary type of stove.

The other advantages of a stove against some other methods of heating are that the first cost of installation is considerably less, it gives out heat immediately the fire is lit, and the heat is distributed evenly all over the building.

In the case of most churches it is usual to let the fire out during the week, and if a stove is fitted no pipes can freeze and burst, leading to an expensive breakdown at the very time when heat is most wanted.

Another fact for consideration is that when air is heated, its capacity for absorbing moisture (or dewpoint) is raised, and the air will therefore absorb moisture from any available source, notably the skin and mucous membranes. This is liable to cause discomfort to the people present.

 Provision is made for this on the Gurney by fitting a water trough at the base of the gills, and in consequence the air is moistened before leaving the stove. A certain amount of heat is needed to evaporate the water, and this heat has a definite value because it is given out again when the air is reduced in temperature, and thus helps to keep the temperature even in distant parts of the building.

The stove automatically brings the heated air up to the correct moisture content, and the water, by constantly creeping up the heated gills, prevents the immediate surroundings of the stove from becoming too hot. In case of epidemic a pleasant smelling disinfectant may be introduced.

 Provision is also made with Gurney stoves for the installation of a fresh-air inlet to the base of the stove, and this method should be used wherever possible. Not only is this healthier than re-heating vitiated air, but also it ensures an even distribution of heat all over the building. Also as fresh air is introduced at this point, there is no tendency for it to enter under the doors, etc. and so draughts are prevented.

It may be thought that when heating a building with a stove, the heat would be localized, but with the Gurney stove with water trough the heat is evenly distributed, and there is rarely a difference of more than two or three degrees between one end of the building and the other, whatever the shape.

ENSURES A HEALTHY ATMOSPHERE

From catalogue dated July 1953, page 6
The London Warming Co

The London Warming & Ventilating Company Ltd, established 1854. Proprietors of "Gurney" stoves. Claim to have provided heating by warm air to 22 cathedrals and over 10,000 churches and other buildings (the number of churches is not given).

This illustration shows the manner in which the asbestos fibre pipe can often be fixed so that it is almost entirely hidden. It will be seen that it runs up in the excess formed by the difference in size between the chimney and the nave, and it terminates above the nave roof.

Below:

The picture shows a Gurney stove fixed against an outside wall and it need not interfere with the roof. This is used in cases where there is already a suitable space, thus avoiding the removal of pews. Asbestos fibre piping is used which is of a neutral colour and which harmonises with the stonework. This fibre pipe is carried vertically up the outside in frames at the ridge of the roof, or if not convenient it terminates about three feet above the eaves.

From catalogue dated July 1953, page 7
The London Warming Co

The London Warming & Ventilating Company Ltd, established 1854. Proprietors of "Gurney" stoves. Claim to have provided heating by warm air to 22 cathedrals and over 10,000 churches and other buildings (the number of churches is not given).

Gurney Stoves have been fixed in the offices of the Department of Science and Art, in St Paul's, and the following cathedrals:

Chester, Chichester, Durham, Ely, Exeter, Gloucester, Hereford, Lincoln, Llandaff, Rochester, St Asaph's, Salisbury, Winchester, Worcester, Beverley Minster, Southwell Minster, York Minster, Romsey Abbey, the Catholic Church of St John the Baptist, Norwich, and in about ten thousand churches, schools, government and other public and private buildings.

From catalogue dated July 1953, pages 8 & 9 and detail from page 11
THE LONDON WARMING CO

The London Warming & Ventilating Company Ltd, established 1854. Proprietors of "Gurney" stoves. Claim to have provided heating by warm air to 22 cathedrals and over 10,000 churches and other buildings (the number of churches is not given).

THE UNDERGROUND GURNEY STOVE

This illustration shows two Gurney stoves fixed in an underground chamber with the warm air rising up through a large grating in the floor of the church. In addition to the fresh air supply to the base of the chamber, there is a return warm air duct brought from the rear of the church so that not only the warmed air is heated, but also a more even distribution of the heat is ensured. The stoves themselves are fixed within the chamber so that there is no difficulty in making them.

From catalogue dated July 1953, page 10
THE LONDON WARMING CO
The London Warming & Ventilating Company Ltd, established 1854. Proprietors of "Gurney" stoves. Claim to have provided heating by warm air to 22 cathedrals and over 10,000 churches and other buildings (the number of churches is not given).

"It (Gurney's Patent) consists of a stove with a plain interior cylinder, and a series of perpendicular radiating wings... The stove is placed in a pan of water... regulated to produce the required amount of evaporation. The vapour... passed in conjunction with an ascending column of air, over the external surface of the stove, rising up between the wings, and by this means prevents the stove from overheating, the air from being "burnt" or overdried, and, under the laws of convection, causes such a rapid intermixture with the atmosphere in the apartment that it is kept at a uniform temperature even when the stove is placed at the extreme end of an oblong room, while the healthy freshness of the air is such that it must be breathed to be truly appreciated... The Stove can be made to introduce any amount of fresh air, and it thus contains within itself the means of promoting a perfect ventilation."

Gurney Stoves have been fixed in the offices of the Department of Science and Art, in St Paul's, and the following cathedrals: Chester, Gloucester, Durham, Ely, Exeter, Gloucester, Hereford, Lincoln, Lichfield, Rochester, St Asaph's, Salisbury, Winchester, Worcester, Beverley Minster, Southwell Minster, York Minster, Ramsey Abbey, the Catholic Church of St John the Baptist, Norwich, and in about ten thousand churches, schools, government and other public and private buildings.

Upney Roadway, Wimbledon.

Dear Sirs,

Now I have seen why the domestic Gurney stoves are so used in this country. Would it not be possible to pass on to the other ten thousand clergy and churchmen who are interested in the maintenance of churches, the innumerable information that has been compiled over so many years on the use of such stoves? The writer believes that a modern heated church could be installed within two days by an independent Gurney stove.

For many years the congregation has been reduced. Since the recent installation of the Gurney stove complaints have been nil, and there is immediate prosperity that through the winter months the church will be filled.

From catalogue dated July 1953, page 11
THE LONDON WARMING CO

The London Warming & Ventilating Company Ltd., established 1854. Proprietors of “Gurney” stoves. Claim to have provided heating by warm air to 22 cathedrals and over 10,000 churches and other buildings (the number of churches is not given).

THE CARDINAL

For Small Churches, Church Halls, Workshops and Factories

PATENTED FIRE-BRICK REFLECTOR

The patented reflecting fire brick ensures that the heat generated is transferred equally over the whole casing of the heater.

SPECIFICATION:

The construction of this continuously-burning stove is of cast iron with fire-brick lining around the fire box. The design is such that the sides, top and base interlock, avoiding the use of any retaining bolts and nuts.

Two doors are supplied, one for fuelling and the other for ashes.

The flue nozzle, in which a control damper is fitted, issues vertically from the top with dimensions suitable for a 5-in. cast-iron flue pipe.

Normal coke consumption at full load, 8 to 10 lb. per hour.
Heating Capacity: 25,000 cubic feet.

ONE SIZE ONLY
60 in. high × 18½ in. wide × 10½ in. deep.
Over-all projection of fire door, 3 in.

The Price: see separate list.

From catalogue dated July 1953, page 12
**THE LONDON WARMING CO**

The London Warming & Ventilating Company Ltd, established 1854. Proprietors of “Gurney” stoves. Claim to have provided heating by warm air to 22 cathedrals and over 10,000 churches and other buildings (the number of churches is not given).

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**DIMENSIONS OF GURNEY STOVES**

<table>
<thead>
<tr>
<th>Sizes</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approximate consumption of coke per weekend</td>
<td>3½ cwt</td>
<td>2½ cwt</td>
<td>1½ cwt</td>
</tr>
<tr>
<td>Diameter of base</td>
<td>46 in</td>
<td>37½ in</td>
<td>29½ in</td>
</tr>
<tr>
<td>Extreme height</td>
<td>69</td>
<td>64</td>
<td>50</td>
</tr>
<tr>
<td>Exterior diameter of body</td>
<td>38</td>
<td>31</td>
<td>25</td>
</tr>
<tr>
<td>Height, floor to centre of flue nozzle</td>
<td>56</td>
<td>52</td>
<td>41½</td>
</tr>
<tr>
<td>Approximate heating capacity</td>
<td>120,000 c. ft</td>
<td>70,000 c. ft</td>
<td>25,000 c. ft</td>
</tr>
</tbody>
</table>

For Prices see separate leaflet

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**SPECIAL FITTINGS**

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From catalogue dated July 1953, page 13
THE LONDON WARMING CO

The London Warming & Ventilating Company Ltd, established 1854. Proprietors of "Gurney" stoves. Claim to have provided heating by warm air to 22 cathedrals and over 10,000 churches and other buildings (the number of churches is not given).

From catalogue dated July 1953, page 14

Religious buildings are: Shaftesbury Abbey, Gloucester Cathedral, Exeter Cathedral, Romsey Abbey, Hereford Cathedral
THE LONDON WARMING CO

The London Warming & Ventilating Company Ltd., established 1854, Proprietors of “Gurney” stoves, claim to have provided heating by warm air to 22 cathedrals and over 10,000 churches and other buildings (the number of churches is not given).

‘On the advice of Lord Palmerston, Prime Minister of England (who also contributed £10, 0, 0, to the cost), Gurney Stoves were installed in 1861 in Romsey Abbey, and have given continuous service without repairs for over 90 years.’

The floor area of Ely Cathedral is 48,000 sq. ft., and it is the third largest Cathedral in England. Of the seven Gurney Stoves installed over 50 years ago, only five are ever lit at one time, and a temperature of 50 degrees to 55 degrees is maintained throughout.

‘We have two Gurney Stoves in Tewkesbury Abbey, the second largest Parish Church in England, and they keep this huge building comfortably warm. The upkeep of the Stoves appears to be nil.’

THE GURNEY STOVE

The Gurney Stove is the best when it is desired to combine economy in use, efficiency, cheapness, durability and safety, and the practical test of years has proved its complete success and reliability.

The quantity of fuel consumed by the Gurney to secure the requisite heat in a building is much less than by any other heating apparatus.

The atmosphere obtained is the most healthy and agreeable one which can be produced.

The temperature is practically the same in every part of the interior of the building of whatever shape.

Simplicity in management and freedom from all danger of fire and draughts are valuable features of the system.

They have in many cases replaced hot water and other expensive systems which in actual use often do not give the benefits claimed for them.

From catalogue dated July 1953, back cover
LONGDEN & CO.
PHOENIX FOUNDRY, SHEFFIELD.

SOLE MAKERS OF
THE "SUNBEAM" PATENT RADIATORS.
Prepared either for steam or hot water.
All joints are screwed.
No India-rubber or other packing used.
10,000 Radiators of our make in use in Great Britain.
Made in circular and other forms.

LONDON OFFICE: 447 OXFORD STREET, W.
These Radiators are used in the following places:—
New Town Hall, Sheffield; National Portrait Gallery,
Edinburgh; Natural History Museum, South Kensington;
New Assize Courts, Birmingham and Nottingham; Guild-
hall, Gloucester; Hove Town Hall; Ventnor Royal Hospital
for Consumption; Polytechnic Institute, Regent Street,
London; St. Paul's Schools, West Kensington, London;
Coats' Memorial Church, Paisley; and many other public
and private edifices.

From Dye 1897
LIST OF SPECIALITIES

Winter Gardens
Conservatories
Vineyards and all other kinds of Fruit Houses.
Forcing Houses
Orchid Houses
Plant Houses.

Verandas

Garden Pits and Frames, Sashes, &c.
Fruit Rooms, Potting Houses, Mushroom Houses, &c.
Iron and Slate Staging, Tank Plant Tubs, Orchid Baskets, Garden Chairs, Fountains, Chimneys.
All kinds of Horticultural Wire Work, Blinds for Shading, Vases, Tile Floors, Kerbs, &c.

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Pavilions for Cricket, Golf, Tennis, Bowling, &c.
Swimming Baths, Summer Houses, Wooden Shooting Lodges, Cottages, &c.

Band Stands

Hot-Water Heating for all kinds of Horticultural Buildings.
Hot-Water Apparatus, High and Low Pressure, for Heating all kinds of Public Buildings, Churches, Schools, Mansion-Houses, Villas,
Works, Warehouses, Harness Rooms, Dairies, &c.


Gas Heating Apparatus

Atmospheric and Mechanical Ventilation for Buildings.

Steam Cooking Apparatus, Stable Fittings, Railings, Gates, &c.

Edinburgh, Glasgow, & London.

Catalogue 1900 [Heritage Group Collection]
MESSERER & COMPANY

ADVERTISEMENTS.

MESSERER & COMPANY,
HEATING ENGINEERS,
LOUGHBOROUGH, LEICESTERSHIRE.

LONDON OFFICE:
96a Victoria Street, Westminster, S.W.

Plans and Estimates prepared for Heating
Public Buildings, Churches,
Residences, Conservatories, &c., by
Hot Water or Steam, upon
the most economic and efficient principles.

Being Founders of Hot-Water Pipes and all Connections,
MESSERER & CO. are able to quote the lowest prices.

MESSERER & Co.'S ELASTIC JOINTED PIPES.

Now generally used in place of cement joints, being easier to fix or renew, and
perfectly rigid.

Pipes, per yard
4 in. 2/-
3 in. 1/6
2 in. 1/-

Joints, each
" 1/4
" 1/2
" 1/-

MESSERER & Co.'S RADIATORS

Are scientifically designed to combine Ventilation and Heating. They admit fresh air to the building in which they are
used all the year round, and in winter the air is warmed by
passing over the heated surface.

Several other Designs. Complete List on application.

Sole Makers of the Celebrated LOUGHBOROUGH BOILER, of which
thousands are in use in all parts of the country.

From Dye 1897
JOHN METCALF

ESTABLISHED 1871

JOHN METCALF,
HEATING ENGINEER,
ARCADIA WORKS,
PRESTON.

John Metcalf,
HEATING ENGINEER,
ARCADIA WORKS,
Preston.

PLAN.

Dampers. Pipes fixed on a level with the floor in Chartham, etc., with solid grating top.

SECTION.

Catalogue c.1900 [Heritage Group Collection]
MUSGRAVE & Co

MUSGRAVE'S "ULSTER" STOVES,

FOR WARMING AND VENTILATING PUBLIC AND PRIVATE BUILDINGS OF EVERY DESCRIPTION.
FREE FROM DUST AND ALL UNPERSUADING SMELL.
EASILY FITTED, EASILY MANAGED.
WILL RUN FROM 6 TO 24 HOURS WITHOUT ATTENTION.
DELIVERED FREE TO PRINCIPAL STATIONS.

MUSGRAVE'S PATENT HOT-AIR HEATING APPARATUS.

MUSGRAVE'S IMPROVED HOT-WATER HEATING APPARATUS,
ON THE SMALL PIPE AND LARGE PIPE SYSTEMS.
SUCCESS IN EVERY CASE GUARANTEED.

Illustrated Catalogues, Estimates, and every information free on application to—

MUSGRAVE & CO.,
LIMBURG,
97, NEW BOND ST.,
LONDON, W.
40, DEANSCATE,
MANCHESTER:

From Dye 1891
THE PATENT OLMSHEAD STOVE MANUFACTURING COMPANY

[Advertisement from Shrewsbury Chronicle, 16 October 1840]
PERKINS' PATENT HOT-WATER

HEATING APPARATUS.

OF HOT-WATER HEATING.

The following are a few of the thousand, where Perkins' Patent Steam Oven has been employed:

- St. John's Church, York
- St. Patrick's Church, Dublin
- St. Mary's Church, Liverpool
- St. Paul's Church, London
- St. Peter's Church, Manchester
- St. George's Church, Edinburgh
- St. Andrews Church, Glasgow

For further particulars apply to

A. M. PERKINS & SON

45, REGENT SQUARE, GRAYS INN ROAD, LONDON, W.C.
THOMAS TREDGOLD

THE

PRINCIPLES

OF

WARMING AND VENTILATING

PUBLIC BUILDINGS,

DWELLING-HOUSES, MANUFACTORIES, HOSPITALS,

HOT-HOUSES, CONSERVATORIES, &c.

AND OF CONSTRUCTING

FIRE-PLACES, BOILERS, STEAM-APPARATUS, GRATES,

AND DRYING-ROOMS;

WITH

REMARKS ON THE NATURE OF HEAT AND LIGHT,

&c. &c. &c.

BY THOMAS TREDGOLD,

CIVIL ENGINEER, &c.

THIRD EDITION.

TO WHICH IS NOW ADDED,

AN APPENDIX,

BY T. BRAMAH, CIVIL ENGINEER,

COMPRESSING

OBSERVATIONS ON HEATING BY MEANS OF WARM WATER, WITH
DESCRIPTIONS OF VARIOUS APPARATUS IN USE.

LONDON:

H. TAYLOR (NEPHEW AND SUCCESSOR TO THE LATE J. TAYLOR),

1 WELLINGTON STREET, STRAND,

PRINTED FROM THE ORIGIN.

M.DCC.CXXXVI.

Textbook 1836 [Paul Yennie Collection]
USEFUL HINTS
ON
VENTILATION;

EXPLANATORY OF ITS LEADING PRINCIPLES,
AND DESIGNED TO FACILITATE THEIR
APPLICATION TO ALL KINDS OF
BUILDINGS.

BY W. WALKER,
ENGINEER.

MANCESTER:
PRINTED AND PUBLISHED BY J. T. PARKES, MARKET STREET.

LONDON:
SOLD BY SIMPKIN, MARSHALL, AND CO.,
AND ALL BOOKSELLERS.
1850.

Textbook 1850 [Heritage Group Collection]
T. C. WILLIAMS & SONS

Heating and Ventilating Engineers.

Estimates and Plans for Warming all descriptions of Public & Private Buildings, Churches, Mansions, Swimming Baths, &c., &c.

High or Low Pressure Hot Water, Warm Air, or Steam Heating.

MAKERS OF PLAIN AND ORNAMENTAL VENTILATING RADIATORS.
The most perfect System of Warming and Ventilating at the same time. Supplying Warmed Fresh Air in Winter and Cool Air in Summer.

T. C. WILLIAMS & SONS
IMPROVED FURNACE FRONT.

For

Ordinary or

Flued Saddle

Boilers.

Made for all size

Boilers, Durable, Strong, Compact, Cheap, the Best in the Market.

MAKERS OF ALL DESCRIPTIONS OF COILS, VALVES AND HOT WATER APPARATUS.

T. C. WILLIAMS & SONS,
London Street Iron Works, READING.

From Dye 1897