Servicing the Houses of Bath 1714 – 1830: Ice, Coal and Fuel for Lighting

Alan Hardiman

Previous articles on '**Servicing the Houses of Bath**' have focused upon water supply and disposal of sewage and rain water. This final contribution concerns provision for control of the internal environment of the Georgian house.

Ice

In the 1830s a series of patents were taken out for machines which would produce cold: the first practical chiller dates from 1849. So from where did the people of Bath get there ice before 1850 and what did they want it for anyway?

There is little local information on the supply and distribution of ice in the city, in sharp contrast to the amount of information on the 'ice houses' which served houses on the fringes of Bath. Most of the information gathered on ice in towns is of a general nature, and it has not been possible to verify its application to Bath. Much has been written elsewhere about ice houses and there is a need for more research to understand better what role ice played in Georgian city life.

Local 'Dirty' Ice

Britain did not have a noticeably colder climate in the eighteenth century and rivers and lakes may only have frozen more frequently than now because they were relatively unpolluted. The recorded mean temperature in February of 1724 was 4.2°C, in Feb1824 4.7°C and in Feb 1924 3.3°C.

Information on ice-collecting would suggest that ice was considered profitable by the farmers of the eighteenth and nineteenth centuries particularly when they had relatively easy access to a large centre of population. In times of freezing weather ice would have been eagerly harvested from the lakes, ponds, ditches and rivers and stored away to be sold in the summer months. The quality of the ice would have left much to be desired and it was rarely clean enough to be taken internally.

Around London motley merchants, small carriers, greengrocers, fishmongers and others collected snow-ice from the Thames marshes. A cart load, typically 2cwt, would fetch from 2s to 14s depending on the severity of the winter, and the affluence of the purchaser. Some of the ice stored by the farmers and large estates would have been used on the farm in the summer, particularly in the dairy, but a good deal will have been sold to confectioners and fishmongers, and directly to some of the larger houses in the town. Around Bath there would have been many ice houses in the late eighteenth and nineteenth centuries and some still survive, albeit in a dilapidated condition, and may be found at Newton Park College, Prior Park College, Combe Hay Manor, Dyrham House.

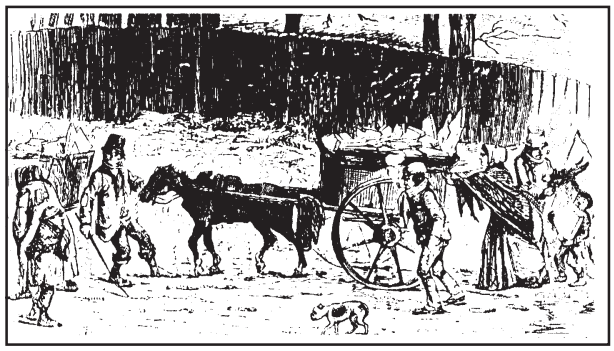

Fig. 1 Collecting and Transporting Ice 1850

Imported 'Clean' Ice

The desire for a constant and clean supply of ice could not be fulfilled in Britain and, consequently, supplies were sought elsewhere. The first cargo of ice set sail from Boston in 1806 and by the mid-nineteenth century ice was regularly exported from America. The crystal clear ice, particularly that from Lake Wenham in Massachusetts, became a great favourite with the upper classes. The ice was so clear and clean that it was advertised with a gentleman reading his newspaper through the ice! The first cargo of ice from Norway arrived in June 1822. It was held up so long at the port by customs officials, who couldn't agree on its classification, that it melted. After this the trade built up in competition with American ice. Although no evidence has been found to show that imported ice found its way to Bath, given the status of the city and its winter visitors it would seem most likely that Wenham Lake Ice would have graced the dining room tables of the finer Georgian homes.

Suppliers and Transportation

Ice traders in towns would have filled their substantial ice cellars through the winter months, and would be able to provide the confectioner with his daily supply, and deliver to other businesses and the houses of the city either by horse and cart or hand cart. The fishmongers and confectioners would also trade in ice supplying the smaller houses. The method of

transporting ice was to enclose each block in substances that are good non-conductors, such as chaff, straw, woollen cloth etc and if packaged put into a box an inch or two larger and wedged in with pieces of cork, this would be a still further security , when the quantity was small. Supplies of ice to Bath were sufficiently reliable by the mid-eighteenth century to ensure that ice creams were available for sale.

Storing Ice at Home

Some houses had ice cellars in which they stored ice in a similar way to the ice houses and these required a proper drain and trap in the lower floor.

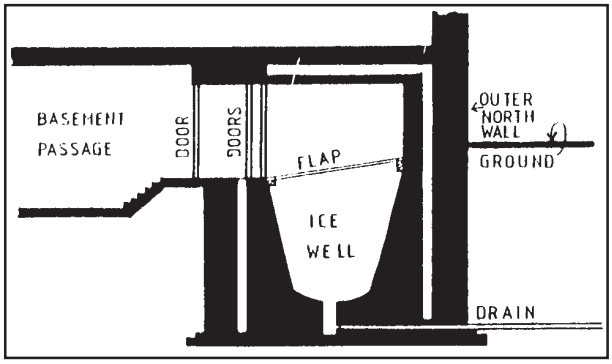

Fig 2 Ice well in the basement of a nineteenth century house

It would seem that the majority of homes purchased small quantities of ice regularly perhaps two or three times a week. Ice may have been simply put into a large tub in the cool cellar where it would have slowly melted.

An ice cooler, or safe, was considered a useful addition to a larder for keeping meat, fish, butter, or other things, very cool. It consisted of a strong chest having sides of thick wood, with a space of an inch between which may have been filled with a charcoal dust to make it a good non-conductor of heat. A quantity of ice would be laid in the bottom of the ice chest and a little above this. There would be an iron grating to lay the meat and other articles upon. The larger chests would have had two or more of these gratings and a wooden cover to shut over the whole. To carry off the water that formed there was a waste pipe. The chest would not stand immediately upon the floor but would be supported upon several small pieces of wood so as to isolate it from the heat of the floor.

An ‘ice box’ was patented by Thomas Masters in 1844. It was lined with orpholite, a substance whose composition Masters kept a secret. He suggested adding small quantities of ice to the box every two days, thus maintaining its low temperature almost indefinitely. Those not wealthy enough to purchase a special ice box could improvise one by lining boxes with hay or straw. Wine coolers designed to be kept in the dining room were often very decorative items disguised as elaborate urns and roomy enough both to be insulated with a charcoal lining and to hold ice.

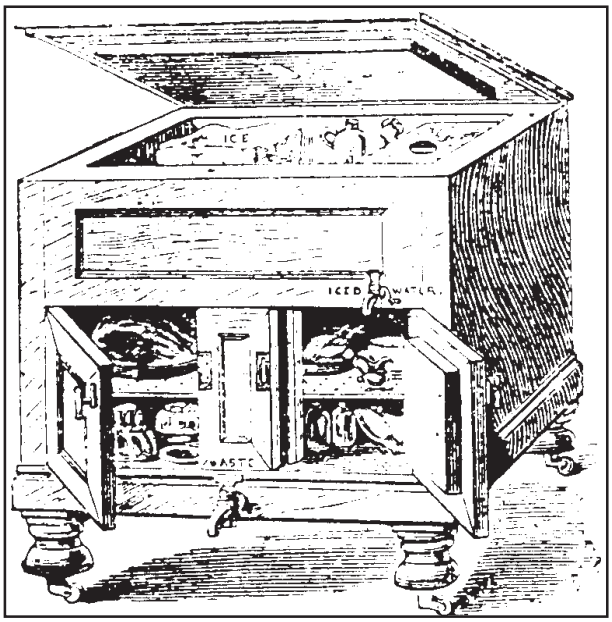

Fig 3 Ice safe sold by the Wenham Lake Ice Company Notice the taps for supplying iced water and for draining off melted ice

Uses of Ice

In the eighteenth century a greater repertoire of recipes came into common use, many following French fashions and included fromages (iced cream cheeses made with eggs), water ices, ice creams and neiges (a form of whipped ice cream). These dishes were formed in ice cream moulds and once filled would be stored and frozen in a container of ice, or ice box, which the French called a ‘cave’.

Ice water was drawn off to fill the glass bowls in which the butter floated. It was also used to set jellies and creams and chill the puff pastry, etc. On hot summer nights the finger bowls would have ice in them. Crushed ice filled the wine-bottle pail. Ice in drinking water was not common mostly because the supplies were rarely clean enough for consumption.

Fuel for Lighting

This section is divided into two distinct parts, one dealing with the era *before* and the other *after* the introduction of gas for lighting. For most of the Georgian period most houses relied on candles and oil lamps for all their lighting.

Candles and Rush Lights

The Georgian age was almost innocent of pollution by oil lamps. It was still an age of candle and of rushes dipped in mutton fat called rush lights. Despite the importance of candles for artificial light they were

far less efficient than the candle of today. Cheap candles known as dips were sold in pound bunches tied by the wicks and looking like bananas. They burned no worse than the more expensive moulded candles. Candles had the advantage of being portable and were mostly made of either wax or tallow.

Fig 4 Candle Light

Even the smelly tallow lights were considered too expensive for some labourers who relied on rush lights. In Gilbert White's day (1784) eleven rush lights, each burning for half an hour, cost a farthing. Careful housewives would save all their mutton dripping to make their own rush lights. Mutton tallow was greatly favoured as it was both white and hard; beef tallow was not as good. Bath was in an area with access to a community with wool as the staple trade, which abounded in mutton fat for rendering into tallow. The 1791 Bath *Directory* lists six tallow chandlers within the city which gives a good indication of the importance of this form of lighting:

Thomas Coleman (High Street)
Thomas Cottle (Kings Mead Square)
Robert Coxhead (Guinea Lane)
William Harris (Cow Street)
James Large (Broad Street)
William Maxfield (Saw Close).

Candles were available in other substances like beeswax, and Spermaceti which is an inflammable substance which occurs as a spongy, oily mass in the head of a species of whale. Beeswax and sperm candles needed less attention and were particularly useful in chandeliers. The drawing rooms of even the better Georgian terraces in Bath would have only rarely been brightly lit by a large quantity of beeswax or sperm candles, being far too expensive to use except on special occasions. In 1847 sperm candles were 1s 11d per pound, the cheapest tallow 6d a pound, Price's pure white, snuffless candles 1s and beeswax a little more. Throughout the Georgian period the beeswax candle remained relatively expensive so tallow candles, which were no less foul-smelling, were burned in ordinary settings but with the increasing supplies of whale oil simple oil lamps were becoming quite common. It was not until the 1860s that paraffin wax began to usurp the position of tallow for candle making.

The *London Sunday Times* 23 April 1854 claimed that '*filthy tallow candles and stinking oil lamps have been nearly rendered obsolete by the introduction of gas*'. The introduction of gas lighting, whereby one could perform the astonishing feat of illuminating a room with several sources of light at the turn of a small tap, raised expectations and provided a challenge to the makers of other lighting devices. Many inventions relating to candles and oil lamps were filed, and so the level of illumination in rooms after dark was generally increased. One of the drawbacks of gas lighting was that it made some colours look sickly and it was not all that flattering to the complexion, so candle light was not completely abandoned.

Fig 5 The Argand Lamp

The Argand Lamp

The invention of the Argand lamp in the 1780s had a profound effect on the way rooms looked at night and even affected the way rooms were used. The illumination which this new from of light produced was so much stronger than that given by a candle; several people could therefore quite easily benefit

from it together and this encouraged the use of the round table about which one could read, sew or play cards. The Argand lamp was in use by 1800 but wax candles remained the main source of lighting for the remainder of the Georgian period in all but the grandest of houses.

Gas

On 20 April 1815 the *Bath Chronicle* reported:

> '*We understand that a Gas Light Company is now forming in Bath, and that, next season, this elegant city will be enriched with this splendid and agreeable light, which reflects no painful glare, but possesses all the advantages of a brilliant illumination without the eye experiencing the least inconvenience. It forms the best protecting medium in the streets where it is employed; and, independent of these recommendations, it merits serious attention, it being more conducive to health than the combustion of tallow or oil, by which the atmosphere is considerably deteriorated'*.

The Bath Gas Light and Coke Company opened its works in May 1818 near to Locksbrook in Weston Parish, which in 1864 the Rev G.N. Wright described as '*A judicious site, both for the discharge of foul water and evaporation of effluvia, at a sufficient distance from the city'*. The production of gas from coal was considerably cheaper in Bath where the price of coal in 1820 was one third that in London.

At the Bath Gas Company teams of stokers would work eight-hour shifts due to the continuous nature of the process. In the early days gas holders were not in general use; many gas works preferred to discharge any excess gas to atmosphere during periods of low off take, i.e. mainly in daylight hours as gas was used largely for illumination. Between about 1816 and the turn of the century a variety of gas holders were devised almost all of which required water to act as a seal between the separate sections of the holder. This was a problem as it meant the gas had to be dried before distribution and there was the further complication of disposal of the contaminated water. It was many years later before waterless holders were introduced. It is interesting to note that original gas holders were graduated so that the volume of gas contained therein could be calculated.

Distribution and Laying of Pipes

The conveying of gas from the point of manufacture to private houses and public lamps was one that the founders of the industry found difficult to solve. Fear of explosions, risk of leakage and uncertainty as to the size pipes required to maintain a constant pressure at long distances from the works, resulted in many mistakes in the early years of the company's history. With a persistence that is deserving of praise, these pioneers plodded on, gradually enlarging the mains and extending the area of supply.

Early gas pipes were made of wood, but there is no evidence that such pipes were used in Bath, where lead and iron pipes were probably the first to be used. An important contribution from Germany was the development of the Mannesmann process for the manufacture of seamless steel pipes. These pipes were suitable for high, by the standards of that time, internal gas pressures and replaced over time the pipes that were first laid.

In the early years the pressure of gas at consumers meters was very variable. One of the duties of the Company's inspector was to keep a 4in measure and to regulate the height of the flame from the consumers' burners and report any found to be burning unfairly.

Supplies to Customers

In the early years gas was only supplied in the hours of darkness and it was not until 1845 that consumers were allowed to have gas throughout the day so long as they had a gas meter installed. When it was first installed the Company contracted to provide alternative lighting (candle perhaps?) if the supply were interrupted.

By 1817 there were 142 customers in Bath paying £1,800 per annum. In fixing terms for private consumers, the undertaking first followed the practices of the London companies by taking account of the size of the burner and expected hours of usage. Eventually the price was fixed at 15s per 1,000 cu ft. All customers were to take gas for the period of one year minimum and pay half a year in advance.

In order to prevent gas being used during hours not covered by the contract, the gas companies employed inspectors to prowl the streets throughout the hours of darkness. To assist the work of these inspectors it was the practice in the early days to fit burners only in the front rooms of houses. If a household was discovered using gas half an hour after the stipulated time, he had to pay the rate appropriate to the following hour. The other common infringement with which the company had to contend was that of enlarging the hole in the burners. For this offence the penalty was to cut off the supply. The price of gas

was 12s per 1,000 cu ft dropping to 10s in 1837 and 9s in 1841.

Minutes of the meetings of the Bath Gas Light and Coke Company highlight some of the problems which they had to deal with in these early days of gas supply:

> '*decided to turn off the gas from Mr. Fox's premises he having persisted in burning with larger burners than agreed for.'*
> *'gas was found burning in St. Michael's church 2 hours before the commencement.'*

Gas Meters

The first known patent for a gas meter was by Samuel Clegg in 1815 and the Clegg and Crossleys meter first appeared on the market in 1819. Records indicate that the metering of gas did not come into general application until the very end of the Georgian era in the 1820s and 30s. In 1822 the consumption by meter was under 9% of the total used by private consumers. The original meters had a rotating drum operating in a bath of water and these caused problems, either because the water froze in winter or evaporated in the summer. Until the general adoption of the meter as a means for measuring the quantity of gas used by consumers the bulk of gas was sold by contract,p1- customers paying according to the number of fittings they had and how many hours they were permitted to use them. Such an arrangement meant having inspectors out and about checking to see who was using gas outside of the hours contracted.

Gas for Lighting

In the early days of gas lighting very considerable amounts of gas were needed to provide even moderate amounts of light; as a result gas was expensive and problems with smells and heat made it unsuitable except for open air thoroughfares and large rooms such as Bath Abbey first lit by gaslight in 1822.

The heat and smell of gas lighting encouraged high ceilings which only the introduction of electric lighting changed and ceiling heights began to fall. When gas lighting was installed in private houses the fumes were to some extent directed into zinc boxes set in the ceiling void directly over the gas fitting, concealed by a wooden frame with gauze cover, and then ducted to the outside through zinc pipes of around 2in diameter. These poorly jointed zinc pipes are often found in the floor voids of Georgian homes in Bath.

The early gas lamps relied on the flame itself for illumination; the gas-mantle had not yet been invented. It was found that a slit produced a fan-shaped or 'bat's-wing' flame which was more efficient than a mere hole which made a straight jet or 'rat-tail'. A modification of the bat's wing was the 'fish-tail'. The charge for each 3 holed burner was £4 for the winter and £2 for the summer.

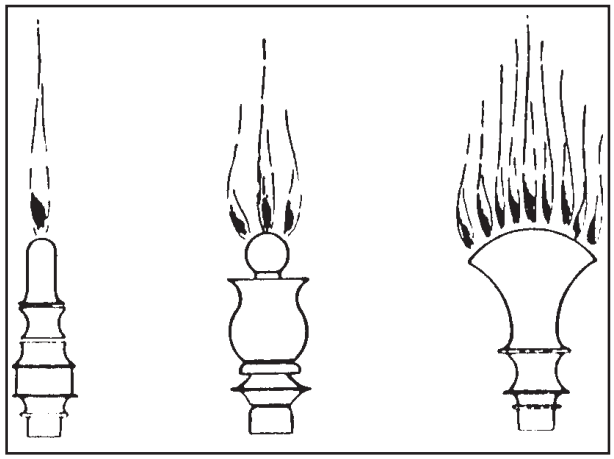

Fig 6 Rat tail, etc.

By 1830 gas chandeliers were available that could be lowered or raised; they had a counterbalance system with the gas supply coming through telescopic tubes sealed with water at the joints. By the late 1830s some chandeliers had a table lamp with rubber tubes connecting it to the chandelier, probably very dangerous.

Although outside the period being studied here it may be worth noting that the general introduction of the electric dynamo began in the 1870s.The incandescent mantel was not invented until 1880. In 1836 the use of gas for cooking was first introduced but I have found no records of cookers being used in Bath at this time.

Coal

Looking at the skyline of Bath today one could not fail to notice the thousands of chimney pots. Two hundred years ago nearly every pot would have been belching out a thick smog of smuts and smoke, which hung over the city, and gradually turned all its honey coloured buildings matt black. Fireplaces and ranges mostly burnt coal.

The Coal Mines

For the early part of the eighteenth century, most of the coal burnt in Bath homes would have come from the local coal mines, which were generally situated to the south of the city. In 1850 there were 23 collieries at work in the area served by the Somerset Coal Canal and the various tramroads connecting with it. The Somerset Coal Canal relied almost entirely on these coalfields for its financial success. To

the west of Bath exploration for coal in Batheaston proceeded, but with little success. In 1809 the younger William Smith became manager of the Batheaston Coal Co. and remained there until the search for coal was abandoned in 1813.

The building of the short section of canal under the supervision of John Wood meant that, for the first time, large barges could navigate from Bristol to Bath. Soon coal from Shropshire and South Wales found a market in Bath, but such was the demand that the local coal mines still flourished, peaking in 1920, when nearly 1.75 million tons of coal were raised.

Quality of Coal

Somerset pit-coal was, despite the claims to the contrary, a dirty coal and much of the black coating to the creamy limestones of Bath Georgian terraces was a direct consequence of burning this coal in great quantity from the eighteenth to the first half of the twentieth century.

Distribution

All the coal coming into the city would have initially come by road, but with the construction of the canals the majority came by barge and was offloaded at one of the coal wharfs in the city.

The prospects of an increasing trade for coal caused the Somerset Coal Canal to advertise, in February 1807, for an active person, to provide horses carts and wagons, and to undertake the delivery of coal from the company's wharf at Sydney Gardens, Bath to customers' houses. By early 1808 satisfactory arrangements had been concluded, as noted in the *Bath Journal* of 26 January:

> '*The Somerset Coal Canal Company having, by the erection of a powerful Steam engine, secured in their Canal a regular and constant supply of Water, beg leave to inform the inhabitants of the city of Bath, that they have thought it expedient to establish a Coal Wharf, near Sydney Garden, and the Public may now, and at all seasons of the year, be supplied with the Best Coals, for 11d per Cwt, at the Wharf; and, if conveyed to the consumer's cellar, the carriage will be charged from one shilling the cart load, or two shillings per wagon load, and upwards, according to the distance and extra trouble.'*

Within a few weeks the price of coal at the wharf went up to 11½d per cwt. and rose further in August to 13d per cwt. This trading venture did not, however, enjoy success and in August 1810 the Somerset Canal Company disposed of its interest in the retail coal trade to Messrs R. Carpenter and Co. The *Bath Guide* of 1815 extolled the virtues of burning coal:

> *'Coal is excellent for its durability burning cleanly and clearly and brought in profuse abundance from numerous pits south of the city mostly Timsbury, Camerton, Radstock, Paulton, Dunkerton and the adjoining pits. Supply to the inhabitants is by cart and waggons having come by canal to a wharf near Sydney Gardens. The price is 13d per cwt. In the winter there is an advance of 1d or 1½d plus the cost of conveyancing and porterage.'*

From the coal wharfs the coal was loaded onto carts, pulled by horses, and which could carry around 25-30 cwt of coal, or in much smaller quantities by hand cart. These coal carts must have been particularly noisy and residents objected particularly when they were trundling by late at night. In 1757 an Act of Parliament forbade coal waggons to pass along Stall Street, Cheap Street or the Market Place after 10pm, and restrictions were placed as to what route carts could take after 10pm.

Coal was sold to the Bath Gas Light and Coke company at 3s 4d per ton at the pithead and up to 11s 7d delivered. Transportation was by horse and cart.

Purchasing and Storing Coal

The Bath directory of 1791 lists a number of Coal Merchants operating in the city:

William Attfield (Gay Street)
Thomas Batchelor (Horse Street)
John F Croome (New King Street)
Farndon Groom (Grove Street)
John Nash (Walcot)
John Prynn (Saw Close)
James Racey (Walcot Street)

Coals were sold by weight. The price was dependent not only of the quality of the coal but also the distance it had to be carried from the coal wharf to the customer. An unscrupulous merchant would not be beyond putting a bit of 'slack' or stones in the bottom of the sacks in which the coal was delivered to 'make up the weight'.

In the better houses in Bath the cellars under the pavement and road were ideal storage places for coal and stone covers were provided in the footpath or road to allow the coal to be shot down directly into the cellar. The ubiquitous cast iron coal hole covers are of Victorian origin, and only a few of the earlier stone covers remain in Bath. For those houses without a cellar the coal would have to be carried down to the

basement or kept in the back garden, or even under the stairs.

When coals are shot down into the coal cellar, through the aperture in the pavement, or stall-riser, they form a conical heap under it. As is always the case with loose materials the largest pieces roll farthest down on the outside of the heap, the smallest occupying the top. Were the coals to be used from this heap as it is formed the result would be that all the large pieces of coal would be used first, and towards the last there would be only small coals. To prevent this inconvenience a person called a 'trimmer' is sent by the coal merchant, whose business it is to mix the small and large coals together properly by throwing the whole into the end of the vault. Unless the trimmer is watched carefully he is very apt to neglect doing this properly, his only object too often being to keep them within the door of the coal cellar, without caring whether they are mixed or not although this is of much consequence to their burning well. This man is paid 3d per ton by the coal merchant.

For those who could not afford to buy coal there was firewood and cinders. The poor were often to be found sifting through the ashes from the 'big houses' and taking out the cinders.

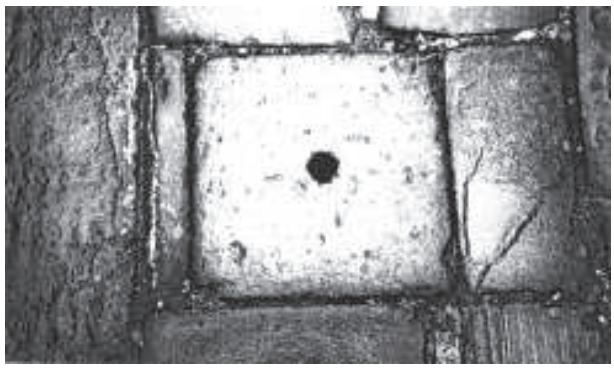

Fig 6 A stone coal-hole cover in Gay Street, Bath

Sources

Air Conditioning and Refrigeration News (March, 1988)
An Encyclopaedia of Domestic Economy (1844)
Bath Chronicle
Beamon, S., & Roaf, S., The Ice Houses of Britain, (1990)
Buxbaum, T., Ice Houses (Princess Risborough, 1992)
Hartley D., Water in England, (1964)
O'Dea W.T., The social history of lighting, (1958)
Woodforde, J., Georgian houses for all, (1977)
Nabb, H., The Bristol Gas Industry 1815-1949
Williams, J.C., Those Were the Days
The Historical Origins of the Gas Industry
Ellery, S., The Bath Gas Light and Coke Company - some notes on the history of the company 1818-1918 (1918)
Girouard, M., The Victorian Country House.
Thornton, P., Authentic Decor
Clew, K.R., The Somersetshire Coal Canal and Railways (Newton Abbot, 1970).
Wright L., Home Fires Burning

Plate 1 Snuffer for extinguishing rush torches known as link snuffers. The Royal Crescent, Bath
Mike Chapman