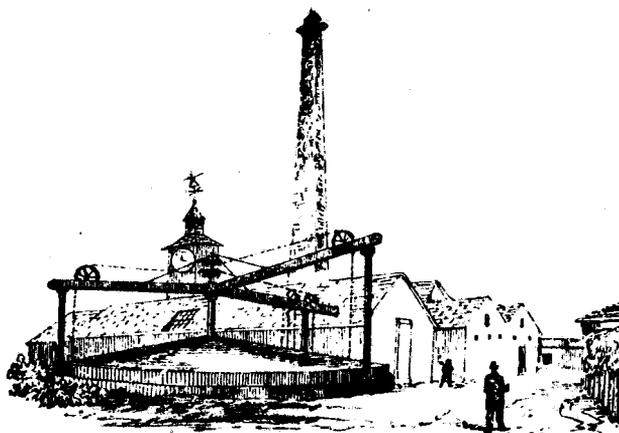


EARLY YEARS OF THE CHELTENHAM GAS LIGHT AND COKE COMPANY and the BEGINNING OF THE TEWKESBURY GAS LIGHT COMPANY

AMINA CHATWIN



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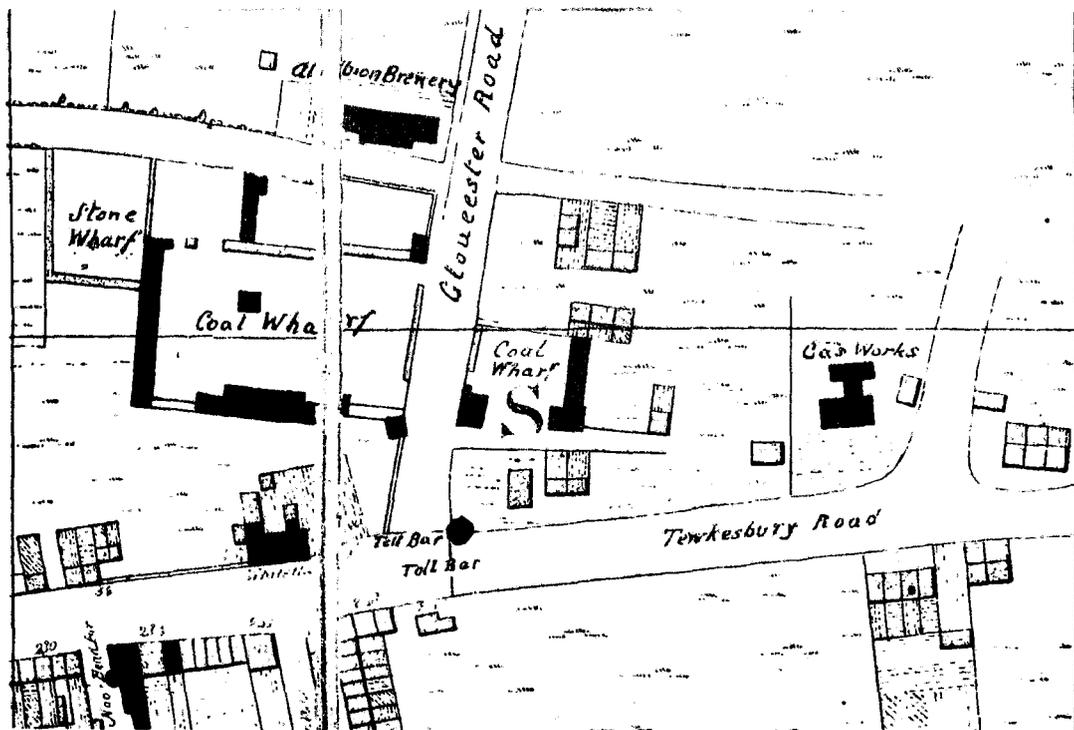
INTRODUCTION AND ACKNOWLEDGEMENTS.

There is undoubtedly much scope for research on the early gas works of the county. I first began to notice, almost against my will, the extracts on which this article is based, relating to the Cheltenham and to the Tewkesbury Gas works, while working on Cheltenham Ironwork and Tewkesbury Manufactures. As the material is not readily available, and many of the extracts not without a lighter side, they may possibly be of interest to members. Time has not allowed me to delve as deeply into the subject as I could wish and no attempt has been made to cover in detail more than the early years of the Cheltenham Company.

All dated extracts are from contemporary newspapers in the Cheltenham Reference Library, unless otherwise stated. The Minute Books, or Book of Proceedings of the Cheltenham Gas Light and Coke Company are housed in the County Records Office, Gloucester. (1) I have examined only the first volume in any detail, and am very pleased that another member of the Society is already taking up work on later years.

I should like to thank Roger Wilson for permission to reprint paragraphs from his copy of "The Tewkesbury Register", compiled by James Bennett; also David Bick for the loan of Goding's "Cheltenham", and for calling my attention to the minute books. My thanks also to Keith Gale for putting me in touch with John Allen. I am indebted to Mr Allen for kindly giving me details of Aaron Manby's connection with the early years of the Horseley Company. I should also like to thank the staff of the Cheltenham Reference Library and the County Records Office for their assistance, and Ray Peel for reading and commenting on the manuscript.

The diagram from Muspratt's "Chemistry" may help to clarify some of the references made to apparatus at the works. The drawing, figure 1, is from Rowe's "Cheltenham Guide" 1845; the map from the Post Office Map of Cheltenham 1820.



GAS MANUFACTURE.

Commencing on your right hand side of the diagram.

When coal is heated A to a very high temperature in closed vessels - Retorts B - the main products given off are coal gas, sulphuretted hydrogen, ammonia, and tar, leaving coke behind.

The volatilized ingredients pass to the hydraulic main H where the coarser impurities are deposited at E.

The gaseous product passes through condensers F, pipes immersed in cold water, where the lowering of temperature separates further impurities to G.

Then through Scrubbers I, towers filled with broken paving stones, sprinkled by water K which washes out ammonia and the remaining tar, which collects in the cistern L; the ammoniacal liquor floating on the tar.

Exhausters M, a later development, draw off gas and relieve pressure in the retorts. Neither I or M would have been used during the early years of the Cheltenham Company. The Tower Scrubber was invented by Lowe in 1846.

The remaining gas contains sulphuretted hydrogen which is removed in lime purifiers, the dry type are shown here O.

Station Meter P.

The gas is conveyed to a holder Q (which in the early years of the industry was known as a Gasometer) where it is kept out of contact with the atmosphere by inverting the vessel in a tank of water.

Governor R. Main S.

GAS MANUFACTURE.

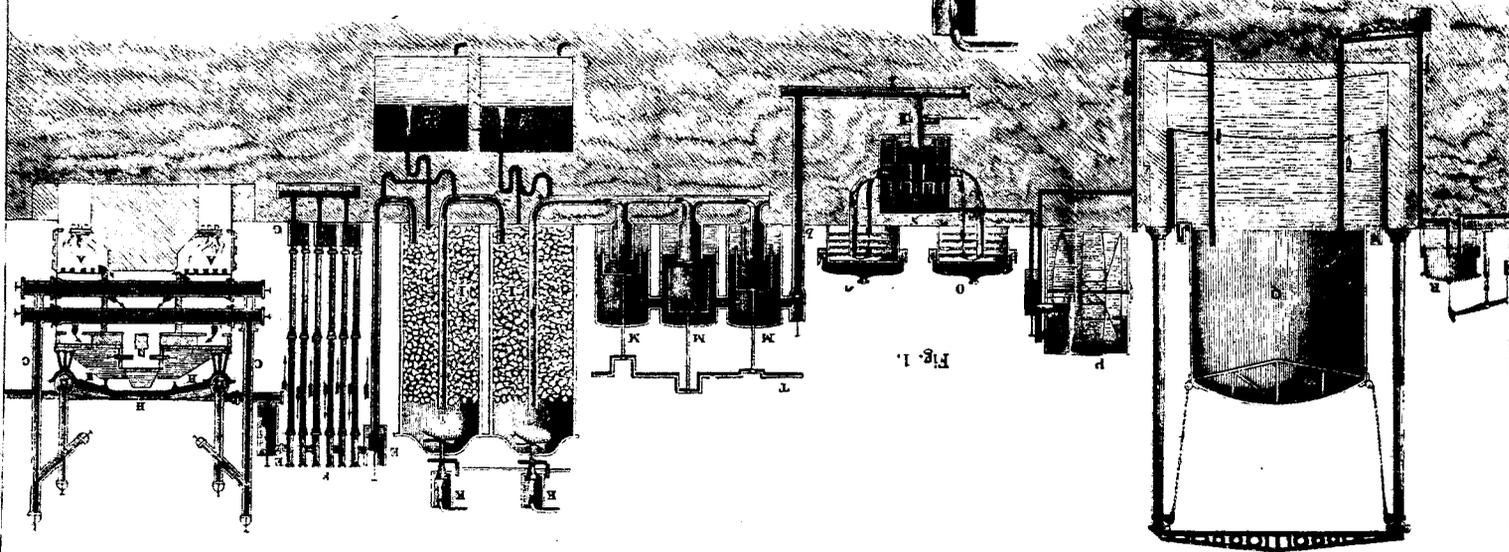


Fig. 1.

Fig. 8.



Fig. 7.

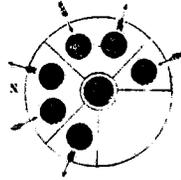


Fig. 6.

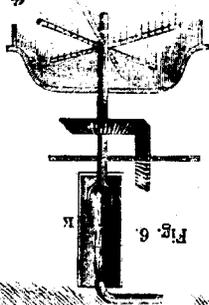


Fig. 5.

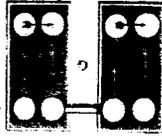


Fig. 4.

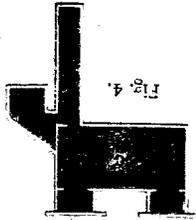
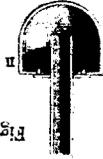


Fig. 3.



Fig. 2.



EARLY YEARS OF THE CHELTENHAM GAS LIGHT AND COKE COMPANY.

When tracing the early history of the Cheltenham Gas Light and Coke Company it must be remembered that it was very early on the scene, being one of the first gas works to be erected in the country.

The practical application of Coal Gas to lighting was first made by William Murdoch, when he was working for James Watt, de-watering Cornish mines. In 1792 he succeeded in lighting his house and office in Redruth, having built in his backyard, the first generating, water-washing, storing and distribution plants. (2)

MMurdoch became a brilliant mechanical engineer with the firm of Boulton and Watt, and in 1804 lighted their Soho (Birmingham) factory with gas. In the following year he lighted the large cotton mills of Messrs Phillips and Lee at Manchester.

Around the beginning of 1808 there was an exhibition of street lighting in Pall Mall and interest was generally being aroused.

It was in 1810 that the Act of Parliament incorporating the "London and Westminster Chartered Gas Light and Coke Company" was passed, but 1813 before Westminster bridge was first lighted by gas, to be followed by the lighting of several London streets. In this year Samuel Clegg, trained by Murdoch at Soho, was appointed engineer to the Chartered Gas Light and Coke Company, at the age of 32, and saved the company from bankruptcy. It was Clegg who introduced gas purification by means of lime, invented the first gas meter and governor, and developed the horizontal retort.

The Gas works in Cheltenham, situated on the left of the Tewkesbury Road on leaving the town, were the property of a joint-stock company established in 1818 and incorporated by Act of Parliament in the following year. In the words of Griffiths (3) "An extensive gazometer, with the usual apparatus, was built just beyond the Tewkesbury turnpike."

A meeting of the Town Commissioners was held on Feb.18th 1818,

".....for the purpose of receiving proposals for lighting the town with Gas, when the plan, proposition &c. of Messrs, Kelly, Bartley and Mandby (sic) were agreed to; and their public spirit id too well known to excite any doubt of

the style in which they will effectuate their undertaking."

May 14th.

"That promptitude which has so eminently distinguished all the improvements made by our spirited townsman, Mr J.D.Kelly, has doubtless influenced the measures adopted for lighting the town with gas - within the last few days, upwards of 30 tons of iron pipes, a gazometer, and a large quantity of Stourbridge bricks have arrived at the Railway Company's wharf. - This forwardness promises a fulfilment of the contract within the time specified - We understand that the Conductor intends to exhibit a gas light at the Manufactory, in the course of a few days."

Inevitably there was some opposition to the idea of gas lighting. Those responsible for the Gas Works did their best to allay the apprehensions of those inhabitants of the town who feared the gas would cause explosions. At the same period those in opposition to lighting the town of Brighton with gas, argued that its vapours would destroy the purity of the air, and that the "oily washing from the gazometer will poison the sea."

July 4th.

"On Monday last, began the laying down of our principal Gas pipes; upwards of 300 feet were completed on that day, and it is expected that the whole of this part of the work will be finished in about six weeks - much depends on the promptitude of shopkeepers, and other inhabitants, in giving orders for their communication pipes, if this be done immediately, we shall avoid the unnecessary annoyance of any future breaking up of the pavements and roads, it will also prevent an increase of expences, an important consideration with the principal part of our townsmen, who are mostly shareholders - It may be generally understood, that the Gas Company have agreed, that their prices shall not exceed the Metropolis terms. The superbe Iron Columns, which are to support the Gas Lamps, are intended to be fixed between the curbstones of the pavement, and the street gutters, in regular and graceful curve lines, calculated to display the brilliant effect of the Gas lights."

The main steet was first lighted by gas on September 29th 1818 when Messrs Kelly, Bartley and Manby fulfilled their contract to the Town Commissioners by brilliantly

illuminating the whole of the High Street. The commissioners obviously had some qualms about the success of the new innovation, for in the contract to have the town lit by gas for three years they stipulated that if an optional contract for a further five years was not entered into "the company should remove the gas, and substitute the oil lamps belonging to the commissioners." (Griffiths)

Oct. 1st 1818.

".... The shareholders were gratified on the 29th ult. by seeing the whole of the High Street illuminated by this beautiful light, which assumed its usual brilliancy towards midnight when the atmospheric air had escaped from the main pipes. On the second evening the increased purity of the gas, and the admirable dispositions of the lamps, produced a fine body of light, that created general admiration."

The Commissioners too were impressed and their cautious apprehensions forgotten -

Oct. 8th.

"We hear the Commissioners have appointed a Committee to fix on the places for erecting the gas lamps in the collateral streets and bye-roads within the limits of the town, the whole of which will be lighted with all possible expedition."

While the "liberal proprietors" of the Sherborne Well, the charming Spa built like the temple of Ilisus, on the site of the present Queen's Hotel, were "... actively employed in carrying a line of Gas pipes up to the Well, whereby its walks will be beautifully illuminated, and a delightfully pleasant and cheerful promenade established."

There seemed no end to the rosy future the inhabitants of Cheltenham dreamed for themselves, and the Cheltenham Chronicle reporting on the Season, waxed lyrical-

"...we have to notice the recent introduction of the Gas Light, the brilliant effects of which, give a new and captivating appearance to our town by night, and leave us scarcely a desideratum unsupplied."

Such success had not been achieved without certain problems arising, and considerable difficulties had been

experienced in completing the undertaking in the specified time, partly because-

"..... a combination among the journeymen ironworkers retarded, for a considerable time, the manufacture of the pipes, and when they were in readiness, the late drought presented another obstruction, the want of water in the Severn causing a considerable delay in the conveyance of the ironwork." (Oct. 1st.)

It seems probable that the pipes were brought from the Horseley Coal and Iron Company, a firm with whom the Company had many subsequent dealings.

The first problems had been triumphantly surmounted, but the more one looks into the early minute books, the more it becomes apparent that the whole affair was run in a decidedly hand to mouth manner and that all was by no means as well as outer appearance suggested.

One cannot help wondering if any of the members of the company actually resident in Cheltenham, had any experience of running a gas works; since it was one of the first in the country perhaps it is too much to expect that they had. The directors were John David Kelly, Joseph Cossens, Thomas French, Thomas Henny and Andrew Hingston. It was Henny who planned the Promenade, and John David Kelly had built the second Assembly Rooms, on the site where Lloyds Bank, High Street, now stands, in 1816, and continued to be associated with it until his death.

The man who was first made clerk and then manager for the company, at a salary of £150 per annum, was Benjamin Newmarch, who had been part owner of the Albion Brewery and had become bankrupt in 1813.(4) He left the Cheltenham Gas Light and Coke Company at the end of 1821 to become Lessee of the Gloucester and Cheltenham Railway Company, which involved supervising the collection of tolls and generally acting as agent. (5)

The one man who appeared to have any knowledge of the subject was Mr Manby, who seems to have spent most of his time in London, and to whom repeated calls for help were addressed. He was the connection with the Horseley Coal and Iron Company at Tipton, where there had been coal mines since the 1790's.

Aaron Manby, the first man to build an iron steamship, was born near Shifnal, Shropshire in 1776, the second son of Aaron Manby of Kingston, Jamaica. By 1815 he had joined Joseph Smith at Horseley, and became

the managing partner of the company. He was then responsible for the construction of their new fabrication works which is known to have been lit by gas.

The works developed into a substantial engineering factory with three blast furnaces and a foundry where castings were made including large iron columns for the London docks. Later they specialized in building locomotives and iron bridges.

The firm made marine engines and in 1821 Manby took out a patent and became the first man to commercially build and operate an oscillating marine engine. His interests took him to France and centred on the river transport of the Seine, where together with Charles Napier (later Admiral Sir) he formed a company to operate steam packets on that river.(6). In the same year they were building at Horseley the first iron steam boat, the Aaron Manby, which when complete was dismantled, sent to London in sections by canal, and re-assembled at Rotherhithe. The boat was a paddle steamer powered by a 30 Horse engine and Oldham patent revolving oars. It had the advantage of a very small draft. (7)

On Nov. 26th 1818 the Horseley Coal and Iron Company agreed with the Cheltenham Gas Light and Coke Company to keep the apparatus at the gas works in good repair for three years and -

".... to find and provide all necessary labour for working the apparatus, to wheel in the coal from the coal houses and deposit the cokes in the places to be erected to receive them but not receive the coals or to measure or deliver the cokes."

Further entries from the Book of Proceedings.

December 5th 1818.

" The Committee on referring to the contract are of the opinion that the sinking of the Tar wells is the duty of Mr Manby and that an application be made to him requesting him to fulfill the same.

That Mr Newmarch write to Mr Manby requesting his immediate attention to the forwarding the lamp posts.

As it appears clearly that Mr Manby should place

shutters to the retort house that he be requested to do the same.

December 11th.

Ordered that Mr Newmarch do get the railway in the Gas yard completed as soon as possible. The plates for the same to be purchased of the Railway Company!"

Presumably Mr Manby declined to be responsible for the Tar wells and Mr Newmarch was directed to sink them on Dec. 18th. The need for a shed to put the coke in became urgent and Mr Williams erected one for £130. Things were not going well, and on January 22nd -

"....It appears that the lights went quite out... which could not have happened but through the neglect of Mr Manby's workmen.

That it is highly expedient that the second gasometer should be erected and that Mr Manby be applied to accordingly.

Resolved that it is expedient to obtain all possible information as to the process of making gas in order that the evils which have arisen may be obviated and that for such purpose Mr Manby be requested to give all the instruction he can.

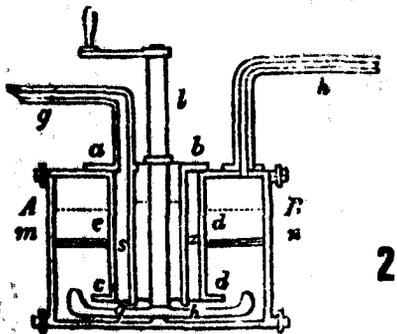
....It appears also that it is of importance that a man should be appointed to stir up the lime in the rectifier and keep the pump in repair near the Gasometer..... also that the new purifier should be erectedand that all possible exertion should be made not only to complete the public lamps but also the private ones and fittings up."

The outcome of all this consternation was that on Jan 26th Mr Manby -

".....consented that the men shall in future be under the control of the company, the committee giving directions to them in writing in a regular order book to be kept by Mr Newmarch for the guidance of Mr Jackson."

There are two possible explanations to the paragraph above requiring a man to 'stir up' the lime. It definitely indicates the use of wet lime purifiers at this time. Lime purifiers, used to remove sulphur compounds and acids from the gas, could be wet, where lime and water were mixed to a cream in tanks, through

which the gas passed, or dry, in which gas filtered up through layers of quick lime, barely slaked, spread on iron grids. The tanks of the wet lime purifiers had rotating paddles inside, usually worked by a waterwheel or steam engine, to agitate the mixture and prevent the lime from settling. These tanks were commonly arranged in banks of three with a cistern above the highest, and it could be that the man was needed to mix the lime, five bushels to 120 gallons of water, in the cistern, before it was fed into the tanks, as these were usually "furnished with an agitator worked by hand." (8)



An even more likely explanation is that, as the company were, at the time, waiting for a new purifier, it was this type that was expected, and that, at the beginning, they were using a simple form in which the paddles in the tank were operated by a winch handle from above, as illustrated in Ure. (9) Fig. 2.

In later years the Cheltenham works used the dry lime type of purifier, which came generally to be preferred, as ".... it does not cause nuisance by evolving a foul stench to the same extent as the other." (8)

The reference to "fittings up" referred to that part of the enterprise which had dealings with the public. From the beginning it had been -

"... the determination of the Directors to supply the town with burners, tubes, and all necessary apparatus and ornaments for lighting shops, houses, and all other places." (Sept. 30th Book of Proceedings.)

No wonder the public were getting impatient for it was the end of January before Mr Manby appointed a Mr Wilkinson - "...to attend to the fittings up and that he shall be at the room where the fittings up are kept from 12 to 3 every day." (Jan. 26th Book of Proceedings)

Once the novelty of the street lights had worn off people were no longer so contented and started wanting public lights put up all over the place. At the request of Mr Marshall a lamp was to be erected at Winchcombe Place, and lamps were to be "immediately

affixed" in North Street, Portland Passage and St James Street; the residents of Royal Crescent were not so fortunate and had an additional lamp fitted at their own expense.

Everyone wanted their buildings lit by gas, though it was later to transpire that not everyone wanted to pay for it. The system seemed to necessitate individual contracts and haggling with each subscriber. A contract was made with Mr Watson, the manager of the theatre (then in Cambray) for forty lights for seventy - eight nights at 100gns a year for three years. It was decided that Portland Chapel could be lighted on the same terms as those proposed to Mr Snow (who was minister at Highbury Chapel then in Grosvenor Street) namely one third of the usual prices for two nights in the week. Mr Bettison (who had a library) requested, but was not allowed, a reduction on his lights.

Mr Newmarch was instructed to propose to a Mr Crisp that the company would light 67 Argand lamps not exceeding No.6 (Argand referred to the burner and 6 to the size) for 78 nights upon the London terms. A year later Mr Crisp had not paid his account and was to be charged £1.3s per night for the last year for the lights he had used. Possibly he was connected with the Assembly Rooms who were in arrears in May 1823, when the Company threatened that the lights would be discontinued in seven days time.

Private subscribers paid 4gns a year for a lamp size No 6 or 2gns for No 2. The inhabitants of Oxford Street were offered three street lights at a similar 4gn price.

Whereas Mr Newmarch dealt with the day to day problems at the works and handled the relations with subscribers, there were occasions when it became imperative that Mr Manby himself should put in an appearance. On May 28 1819 we find ominously in the minutes "Mr Manby states that he will call upon the persons who have objected to his charges for fitting up."

His presence was undoubtedly needed as only a month before it had been resolved "... that it is the wish of the Directors that Mr Newmarch be requested to go to London to obtain every information possible for the better management of this undertaking."

When Mr Manby arrived he decided to try out one bed of square retorts immediately "in order that the experiment may be tried whether they are superior or otherwise to the round ones." The best form for the body of the

retort for obtaining a large quantity of gas in the shortest time, was long a matter of discussion. (10) That shape of retort would be best which would bring the whole charge into connection with the red hot sides. (8) The original round form of retort was soon superseded by the elliptical one, but later became kidney or D shaped. Square retorts are not mentioned by Ure, Tomlinson, or Muspratt, but are discussed at some length in the earlier, c.1823, Jamieson, who speaks of them as a patent by Maiben of Perth. (11)

There is a further rather mysterious passage in the same minutes -

" Mr Manby proposes to erect a bed of retorts on Mr M--ons patent plan in a lime kiln - and that if it succeeds the Company shall have the patent right free - that if it does not succeed Mr Manby will take the retort again without any charge. The Company paying for the brick work and setting"

Whether these two experiments are one and the same, or whether they refer to two different beds of retorts, is difficult to say. The name of the patentee is very indistinct but appears to be Milton rather than Maiben. The Book of Proceedings does not record the outcome of these experiments.

Shortly afterwards there was a complaint respecting waste water going into the brook, the river Chelt runs close to the Gas works land, which resulted in Mr Manby being asked to prepare evaporation pans for the works.

Mr Manby was seldom left in peace for long, and in November he was "requested to compleat his contract by putting down the pipes for lighting those parts of the town and limits now lighted with oil, with gas."

He had already been applied to with a demand to increase the height of the chimney "... so as to prevent any annoyance to the persons residing in the neighbourhood."

A very large stock of coke was in hand though the price had been falling ever since the enterprise began. Originally selling at 10d a Bushel delivered and 9d at the works, in January 1821 it dropped to 7d a bushel, and shortly afterwards to 4d a bushel delivered, and 3d at the yard.

There also seems always to have been a problem in keeping pace with the amount of tar produced. On October 15th 1818, it was resolved "that 100 tar barrels be immediately provided. Two months later

Mr Newmarch sank his tar wells, and in the following spring he was told to sell it at the highest price he could get. By 1822 the subscribers were allowed whatever tar they wanted free and the new manager was sent to Merthyr "for the purpose of disposing of as much of the tar as he possibly can." The ammoniacal liquor also seems to have been a difficulty, and in 1821 the problem of disposal was solved by Mr Richard Davies being allowed to have the liquor produced at the works" he carrying the same away at his own expence!"

Mention is made of a steam engine on Feb. 16th 1821 when Mr Newmarch communicated with the directors from London to the effect that -

"Mr Manby considers himself entitled to charge him a hundred guineas for the steam engine ordered, that before any such sum be paid, the opinion of an able engineer be taken as to its value, the committee having understood that the former committee had agreed to the engine at £100."

Two years later the manager was directed to "dispose of the steam engine upon the best terms that he can." This could refer to an earlier engine, or if the new one was not suitable, this could have accounted for an apparent growing disharmony between the Cheltenham Gas Light and Coke Company and the Horsely Coal and Iron Company. There were also difficulties with the Town Commissioners as the date for the renewal of the contract for lighting the town approached, but a further contract for one year was made on Sept. 29th 1821.

A few days earlier Mr Newmarch "gave notice of his intention of resigning his situation as manager of the works on Dec. 24th." The question was raised whether it might be best to let the whole concern, but the resolution was not carried; six of the committee resigned.

It was resolved on Dec. 14th, and passed at the Annual General Meeting on Jan. 10th 1822, that Mr Thomas Spinney be appointed Clerk and engineer at £250 a year. He moved into Ragley cottage, a house rented by the company at, or near, the works, probably the house marked on the 1820 map as fronting the road, within the works area. Mr Newmarch had lived there previously, and it was part of both men's contracts that furniture, heating and light were provided. Mr Spinney seems to have been a highly efficient manager and ran the place for many years. With his advent one gets the impression that for the first time there was someone at the Cheltenham works who knew what they were doing. The Directors were soon

able to take a firm line with the Horseley Coal and Iron Company, and Mr Spinney was so successful in his negotiation with them that he saved the company over £1000 and was rewarded with a gift of £50 for himself.

The works were continually enlarging, a Lime House had been built by Mr Fisher at a cost of £23.15.0., and now Mr Spinney completed the Smith's shop. He seems to have lost no time in reorganising things and in April was directed -

"..... to go to Horseley and procure 8 or 10 retorts if the company there have any which would answer his purpose and if they have not, then he is directed to go to Stourport and obtain them there."

In August he was buying four retorts from Messrs. Baldwin and Co.

It was at this time that a local ironmonger, Mr Marshall, comes into the picture, when he is asked to renew all the lamp heads at the gas works. Marshalls, now R.E. and C. Marshall, were for generations the largest ironmongers in the town and at least supplied, if they did not produce, much of the ironwork, for Cheltenham's Regency buildings. Their name can be found cast into urn shaped railing finials outside the Municipal Offices and in many other parts of the town.

Staffordshire coals were being supplied at this time, though Forest of Dean coal had previously been mentioned, and after 1825 large amounts were coming from the Park End Coal Company. On Sept. 8th 1821 an order was made for "Three tons of High Delph from Mr Mushett in order to try experiments thereon."

At this time David Mushet was at Coleford (12) and the reference to "High Delph" would be Coleford High Delf, the most important seam in the lower coal measures of the Forest of Dean, averaging a thickness of upwards of 5ft and extending over an area of 16,000 acres.(13)

Evidently the three tons were followed by more as £62.6.9 was later paid to Mr Mushet.

During 1822 cheques for various sums including £2000 and £730 were given to Mr Manby, though it is clear that he is no longer taking any active part in organising the works; indeed it was around this time that he severed his connections with the Horseley Company. He had already launched his iron steamship and was spending much of his time in France where he opened a works at Charenton, Paris. The Cheltenham

Company made a further payment of £500 in August on account of the Horseley Co. bill, but even in the following year the affair with the Horseley Company was still not settled.

In November 1823 Mr Spinney went to Tipton to tender £1500 to them in full discharge of all claims upon the Cheltenham Gas Light and Coke Company. At a meeting in December he reported that -

"He had attended on Mr York of the Horseley Company - but in consequence of their charge for interest and their objecting to all the sums claimed on the part of the Gas Co. no settlement was come to It appearing to the Committee that the interest charged is most unreasonable but that it is nevertheless desirable that the account should be settled."

It was decided that if Mr Spinney could get the Horseley Company to agree to the accounts the Cheltenham Company would also pay a further £155 being one half of the interest the Horseley Company wished to charge them.

All went well with the negotiations and the Cheltenham Company was saved expenditure of more than £1000, and as has been previously noted Mr Spinney was in high favour.

Several balloon ascents were made from Cheltenham and there was an unusual use of the town gas made on July 30th 1822 when Mr Griffith ascended with the aeronaut Green in his balloon. This was the first balloon inflated in Cheltenham with the common gas. (14)

On Dec. 20th following the committee of management of the gas works directed Mr Spinney - "to apply to Mr Green for the amount due for the Gas used on the ascent of the Balloon." Even if the day of reckoning came, it was perhaps an easier process than that employed by Mr Sadler in 1813 when gas for inflating his balloon was obtained from sulphuric acid and iron filings - "but although 35 cwt. of the former, and a ton and a half of the latter were consumed, the gas produced was found insufficient to bear Mr Sadler's weight, when his son, a youth of 16, took his place, and effected the ascent. The Balloon descended safely the same evening at Chipping Norton. (14)

Mr Green's bill, at all events, must have been paid, for he remained on good terms with the manager of

the gas works, for Mr Spinney was himself one of the group who were airborne when the Royal Vauxhall Nassau Balloon made its first ascent "outside the metropolis" from Montpellier Gardens on July 3rd 1837.

Back at the works a purifier was erected in October 1822, and another "large purifier" the following June.

Firms the company were having dealings with, apart from the Park End Coal Company, were Baldwin and Son and Company, for more retorts; Messrs Montague and Church for bar iron, and the Toll End Furnace Company, (Toll End was adjacent to the works of the Horseley Company).

At the end of 1824 Mr Spinney's salary was raised to £300 a year for a further seven years.

In 1825 Gas light was taken to the Montpellier Spa, with its newly added dome by Papworth. Messrs Duffield and Weller's first Soiree Musicale took place on July 25th, when -

"The Pump Room was lighted by magnificent chandeliers of the most elaborate and costly description, and the longwalk by elegant Gothic lamps of frosted glass we understand that many other embellishments in additional lamps and c&c are in progress, and will be brought forward at an early period."

No doubt this was why on Dec. 28th the directors of the Gas Company ordered -

"....that a five inch main from the new opening opposite North Street to Thompson's fields be laid down and that the retort house be enlarged."
(Book of Proceedings.)

The Montpellier Spa was built and laid out by Henry Thompson and his son Pearson Thompson, and at the time much of the area was fields. What is now Montpellier Gardens was once known as Red Acre Field and also as Trafalgar Field; the reference to Thompson's fields indicates that the main was to be taken to Montpellier. According to the minute books, in 1836, it was costing the proprietors of the Spa £30 a year to light the ballroom and £48.6.9 for the walks.

Gas lights extended gradually to all parts of the town and in January 1862 reached Leckhampton, when -

".... the event was celebrated by a public dinner of the inhabitants on the night it was illuminated. The rector of Leckhampton, the Rev.C.B.Trye presided and upwards of 400 parishioners were present."

During the years 1826-27 there was some litigation between the Cheltenham Gas Light and Coke Company, upheld by four other gas companies, including the Birmingham Gas Works, and Messrs. Phillips and Holdsworth, who held that their patent had been infringed. Messrs Phillips and Holdsworth evidently proved their claim as the Cheltenham Company, in December 1827, were ordered to pay -

"£200 by four equal yearly installments until discharge of all claims and that in consideration thereby the company were to be empowered to use the patent free from any charge whatever."

In 1828 the chimney at the works was found to be insecure and another was put up. The following year William Moles, whose name had not previously appeared, was paid £26.12.4 for lamps.

Rowe's drawing (Fig.1) shows a clock tower near the chimney at the works and Goding tells us that -

".....the clock in a tower rising from the centre of the Company's works, illuminated by gas during the night..... is of great public convenience to the locality, mostly occupied by the humbler classes."

The clock must have dated from 1829 when, in November, Mr Spinney reported that a clock with an illuminated face was available and was directed to make the purchase at an expense not exceeding £40.

The Company could now afford to be philanthropic, their dividends having risen from 2½ and 3% in 1824-6 to 6% in 1828.

Although prices for lamps fluctuated slightly they were not changing much over the years and in 1824 still stood at very similar prices to those at the company's commencement.

No. 8	£5.8.0 for 313 days.
No. 6	£4.8.0	
No. 4	£3.8.0	

Little is heard from the Commissioners during these years, but on March 1st 1833 they -

"Ordered that the commissioners Clerk do write to the clerk of the Gas Co. to represent and complain of the defective state and uncleanness of the public lamps and to request immediate attention of the company thereto."

To which the company very reasonably replied requesting "particulars of district or place of which they have reason to complain in order that the same may be either explained or amended." (B of P)

In October Mr Spinney convened a special meeting -

"..... for the purpose of reporting that it is absolutely necessary that a new Gasometer capable of holding thirty thousand Cubic feet of Gas should be procured and that it is very probable an early rise in the price of iron will take place!"

The Committee having taken the subject into consideration ordered that Mr Spinney was to procure such a gasometer upon the best terms he could. It was supplied by J.P.Horton.

In January 1834 Mr Spinney was paid five shillings for the use of his patent valves for the last year.

Two years later a new iron roof for the retort house was needed and provided.

A new development arose in March 1837 when Mr Spinney proposed, and was accepted, to become lessee of the gas works. He offered to supply the same quantity of gas as used in the preceding year for the sum of £3240. The contract ran for its full fourteen years, but had been terminable at 5, 8, or 11 years.

The following year Mr Spinney offered to supply gas to the Parish Church for their evening services free of charge, which the company continued to do until the church was temporarily closed in 1859. The company also supplied gratuitously the gas lamps over the canons taken at Sebastopol, opposite the Queen's Hotel (of which now only one base remains, the canons having been removed for scrap during the last war.) (15)

By 1845 Cheltenham was said to be one of the best lit towns in the kingdom (16) with 670 public lights, the High Street now being lit by "upwards of one hundred gas lamps constantly burning from dusk till dawn the whole year through." (14) The average nightly consumption of gas, during the winter being about 100,000 feet. By 1849 a telescopic gas holder was in use.

Mr Spinney's contract as lessee ran out in 1850 and in June the preceding year he was wanting to renew it for three years. The company would not agree to this, neither would they pay him, as manager, engineer and

bookkeeper, the salary he requested. It is rather sad to find that he finally returned to the company's pay roll at £350 a year, just £50 more than he had been receiving fifteen years earlier. He did however have the help of an under manager, Mr Carr, who only remained two years.

Goding's "Cheltenham" 1852 gave an account of the company's works existing at that time.

"The gas works on the Tewkesbury Road, occupy an enclosure of two acres. The chimney, so prominent all around the vicinity, is 113 ft. in height. Forest and Welch (sic) coals are used in the manufacture of gas. The works contain a retort house, where there are thirty two ovens, or retorts. There are ten dry purifiers, whose united area is 370 feet; there are three times this number of superficial feet on which the lime lies two inches in thickness, each of the purifiers having three tiers. The four gasometers severally contain 28,000, 24,000 15,000 and 15,000 cubic feet. or together 82,000 cubic feet. During the year, the average of coal used is 3,313 tons, from which 28,962,200 cubic feet of gas are obtained. There are now 786 lamps in the streets of the town, supplied by this company with gas, at the public expense. They are the property of the commissioners acting under the Town Improvement Act, who contract for lighting the same, and charge the amount upon the borough rate. Independent of these, there are lamps attached to estates and residences. The number of private consumers is nearly one thousand!"

A new Act to extend the Company's powers was obtained in June 1856. Two years later it was stated at a commissioners meeting that the company's capital was £56,000 and that they received £4,200 annually for gas supplied to the public lamps. By 1862 the number of lamps had been increased to more than 800 and the cost risen to £4,600. The value of the company's shares greatly increased, a £100 share realised £190 at auction in 1857 and four years later the same shares sold at £196 or nearly double the original cost. The average interest paid to shareholders for many years was eight per cent, plus a bonus. (15)

By 1863 the works, then under the management of W. Esson, who had previously been in Scotland, had doubled in size and power.

"The area covered by the works is nearly five acres. The carbonizing power is equal to 500,000 cubic feet of gas per day, with arrangements for more

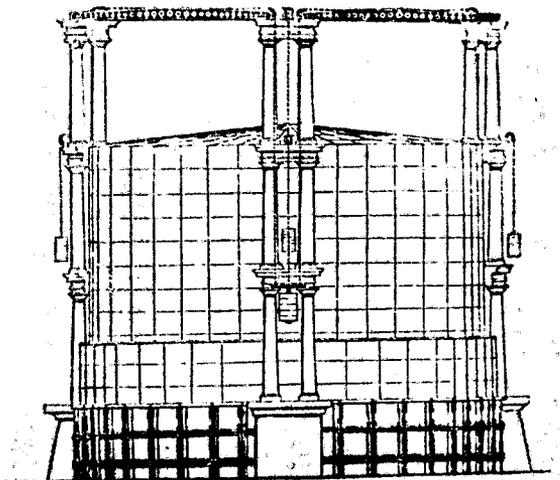
than double that amount. The condensing, washing, and purifying capacities, are proportionate to the carbonizing power, and permitting of corresponding extension. The present storage or gas-holding capacity, is 400,000 cubic feet, and is being enlarged to fully double that quantity. The distributing power of the street mains is equal to the demand, and is constantly being enlarged and extended." (15)

Early Gas Holders were formed of sheet iron plates riveted together, and coated with tar on both sides. The holders were at first suspended in a water filled tank. The large area of water was inconvenient in frosty weather, when steam had to be introduced to prevent freezing, and later gave way to a base with a core of masonry surrounded by a narrow ring of water.

The holders were suspended from above, by means of counterweighted chains passing over pulleys, attached to the top of pillars. Either on each side, as seen in the diagram from Muspratt or on three pairs of pillars equally spaced around the circumference.

The first space saving telescopic gas holders, with more than one moving section were built in 1826, and these were suspended from the centre. The larger ordinary holders, being of a considerable circumference, commonly had some eight or twelve supports around the edge, and "being decorated in the style of ancient amphitheatres are often imposing in appearance." (10)

Certainly by 1860 Ure in his "Dictionary of Arts, Manufactures, and Mines" was illustrating elaborate gas holders supported by three tiers of doric columns. In the words of George Dodd (17) "Great indeed is the change since the time when secondhand brewer's vats were used as gasometers!"



One of the most intriguing pieces of information to come to light on the Tewkesbury Gas Light Company is that it utilised, unfortunately for only a very short space of time, a

"Cast iron Chinese suspension bridge, designed to be an ornamental support of the two gasometers", and was itself upheld by "three beautiful clustered columns." I have found no illustrations of any such similar bridge, and can only suppose that it was a more elaborate form of suspension bridge as shown in Muspratt's diagram, but forming either a straight or V shape across two adjacent gas holders. It's history is recounted in Bennett's "Tewkesbury Register."

THE BEGINNING OF THE TEWKESBURY GAS LIGHT COMPANY.

The Tewkesbury Register.

September 12th 1832.

"Mr W. Morley Stears, engineer, of Leeds, having, on the 20th of August, contracted with the commissioners of the streets to light the public lamps of the town and precincts with gas, for a period of 21 years, at £2.18s per lamp annually, and agreed for the purchase of a piece of ground, at the upper end of the Oldbury Field, for the erection of a suitable gasworks, for the purpose of supplying private as well as public lights, - the foundation stone of the gasometer was this day laid by John Sadds, esq., with proper masonic ceremonies, in the presence of the principal shareholders and a numerous company of highly respectable ladies and gentlemen. The proprietary deed was executed on the 20th October, and recites that the capital required for the erection, completion and carrying on of the gas-works, and for the purchase of the land, is estimated to be £4000; that the undertaking is to be divided into four hundred shares of £10 each; and the shareholders to be formed into a company, to be denominated "The Tewkesbury Gas-Light Company."

January 21st 1833.

"The gas-works having advanced far towards completion, the greater part of the town was, for the first time, brilliantly illuminated, to the gratification of the inhabitants at large; who, as well as the committee of management and the proprietors, had much reason to admire the excellent quality of the gas, the elegant forms of the columns and lamps, the beautiful and novel appearance of the bridge for suspending the gasometers, and the very neat and skillful structure of all the buildings and apparatus. - There are 82 public gas lamps

paid for by the commissioners of the streets, and 10 which are lighted at the expense of the trustees of the turnpike-roads. The 82 street lamps cost the town £237.16s annually, independently of £5.19.4d the amount of interest, at five per cent. on the expense of laying down such of the branch pipes as are upwards of fifty yards from any main pipe. Before the introduction of gas, there were 120 public oil lamps, the average yearly expense of which was somewhat more than £70; but the inhabitants may consider themselves fully compensated for the additional cost, by the superior protection to property afforded by the present brilliant lights; by the improved appearance of the town, and the convenience experienced by all who have occasion to pass along the streets by night; as well as in the great accommodation given to individuals who have introduced gas-light into their shops and dwelling-houses."

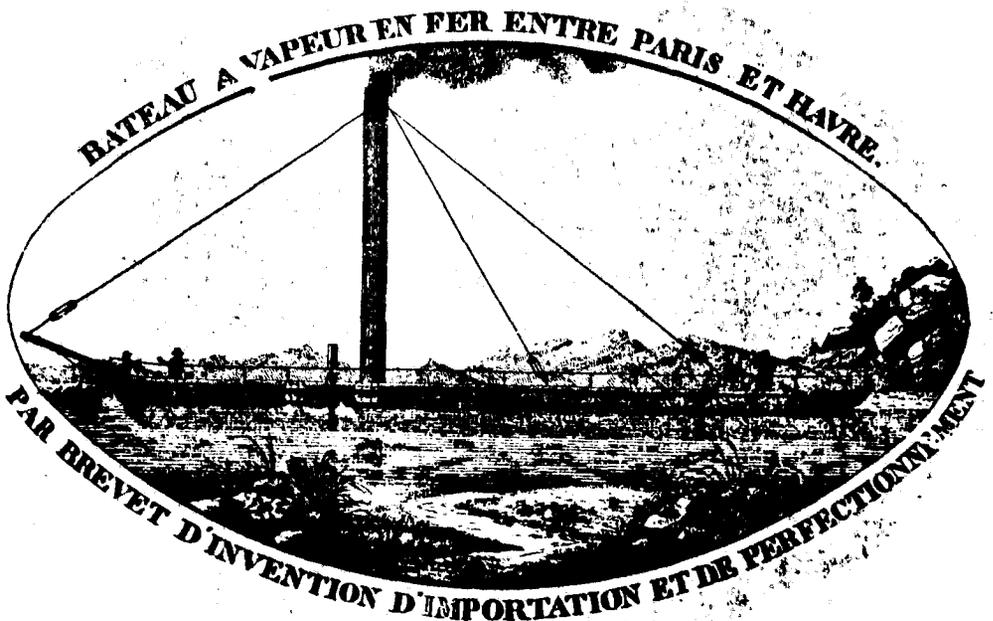
February 10th.

The gas-works, which had not yet been completed, suffered greatly from an accident, which might have been attended with very disastrous consequences. At two o'clock in the morning, many of the inhabitants of the borough were alarmed out of their sleep by a most tremendous explosion, which shook the houses at the upper end of the town, and in some instances shivered the windows to pieces; the noise was heard for several miles round, and created much consternation and speculation, until it was ascertained to have been caused by the bursting of one of the gasometers. The accident is said to have arisen from the negligence of one of the engineer's workmen, who about two o'clock in the preceding afternoon, having occasion to adjust some of the ironwork, applied a red-hot spanner to a nut attached to the gasometer, the ignition of the contained gases did not take place till about twelve hours afterwards. All the lamps were of course immediately extinguished; the cast-iron Chinese suspension bridge, designed to be an ornamental support of the two gasometers, was blown down, and some of the materials carried into a meadow on the other side of the Carron brook; the three beautiful clustered columns, which supported the bridge, were broken to pieces; the tank on the south was materially injured by the fall of one of the capitals. The engineer, not having finished his contract, was liable to the principal part of the loss, which would have amounted to several hundred pounds, had the proprietors insisted upon the terms of their contract, according to the estimates of the original plan and design: they however considerably allowed him to erect four irregular brick pillars,

capped with free-stone, to support each gasometer; and if these pillars are less ornamental and expensive, they are more simple and effective, than the filagree suspension bridge which was destroyed."

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The Aaron Manby.



NOTES

- 1 Gloucestershire Records Office, Shire Hall, Gloucester. D 2516 1/1 - 13.
- 2 "Engineering Heritage" Vol. II Institute of Mechanical Engineers. p54.
- 3 S.Y.Griffith. "Historical Description of Cheltenham."(1826)
- 4 D.E.Bick "Gloucester and Cheltenham Railway"
- 5 Ibid. p15. For further mention of Newmarch see D.E.Bick "Old Leckhampton" p.14.
- 6 The particulars of the life of Aaron Manby are from an unpublished typescript of the History of the Horseley Company by John Allen F.I.C.E., Weld.I.
- 7 For further information see W.H.Chaloner and W.O.Henderson "Aaron Manby builder of the first Iron Steamship." XXIX Trans. Newcomen Society.
- 8 Muspratt "Chemistry".
- 9 Andrew Ure "Dictionary of Arts, Manufactures, and Mines". (1860 ed. Longman)
- 10 Charles Tomlinson "Cyclopaedia of Useful Arts".
- 11 Jamieson "Dictionary of Mechanical Science".c 1823
- 12 D.E.Bick "Darkhill Ironworks and the Mushets". G.S.I.A. Journal 1971.
- 13 H.G.Nicholls "The Forest of Dean". (Murray 1858)

- 14 Henry Davies "Cheltenham in its past and present state". (Montpellier Library 1843)
- 15 John Goding "History of Cheltenham."(1863 ed.)
- 16 "Rowe's Illustrated Cheltenham Guide." (1845)
- 17 George Dodd "Days at the Factories" (Knight & Co. 1843) p 418

Illustration below: Charles and Roberts' Balloon being filled with hydrogen gas formed from sulphuric acid and iron filings, as mentioned on page 25 . Green was the first to use coal gas in 1820 in his ascent from St.James's Park, at the Coronation of George IV.

