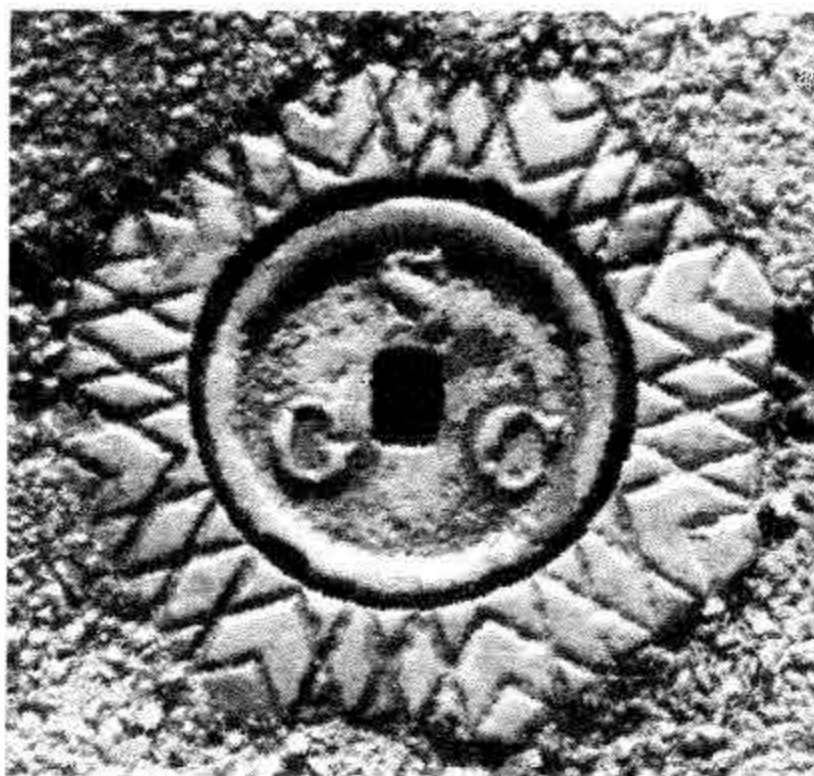


# **From Oil Lamps to Gas Lights**

**in**

## **Stratford Upon Avon**

The Stratford Upon Avon Gas Light and Coke Company



**John Brace**

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# FROM OIL LAMPS to GAS LIGHTING in STRATFORD - UPON - AVON

## SHILLINGS AND YARDS

*The text closely follows the expressions and values found in the source material. Thus 'monetary values' and 'land measurements' are expressed in 'Imperial' units. Although some of these have been expressed in modern, or simplified, form metric equivalents are not given in the text.*

*Land measurements were made in acres (a), roods (r), perches (p) and yards (y) where:-*

*one acre = four roods*

*one rood = forty perches*

*one perch = 30 1/4 yards [a square with sides of 5 1/2 yards (one perch, rod or pole)]*

*Thus one acre = 4840 sq. yd.*

*= 0.405 hectare.*

*In this can be seen the start of a great confusion for the perch (rod or pole) can be either a linear measure or a measurement of area. Likewise although the square yard was sometimes expressed as 'yards super' it was most often stated as 'yards'.*

*So land of three acres three roods and seven perches would be 3<sup>a</sup> 3<sup>r</sup> 7<sup>p</sup> but the text will be simplified to read 'about 3 3/4 acres'.*

*The currency was pounds (l), shillings (s) and pence (d) where :-*

*One pound = twenty shillings*

*One shilling = twelve pence*

*Thus a sum of three pounds ten shillings and two pence would be 3<sup>l</sup> 10<sup>s</sup> 2<sup>d</sup>. I have however throughout expressed these values in a 'modern' form so that 3<sup>l</sup> 10<sup>s</sup> 2<sup>d</sup> becomes £3: 10s: 2d. and 10<sup>s</sup> 2<sup>d</sup> becomes 10/2d.*

## INTRODUCTION

This is the story of the Stratford - on - Avon Gas Light and Coke Company (The Gas Company) from its inception, as a private enterprise, in 1834 until ownership passed to the Borough in 1880. As, however, a principal activity of the gas company was to 'light the streets' the content has been expanded to include the origins of street lighting in Stratford. The following paragraphs are included to provide the reader with a sufficient understanding of 19th. century lighting and the early gas industry to better follow the text.

Before the introduction of gas lighting, at the very end of the 18th. century, artificial lighting, if not simply the light of the fire, was, almost exclusively, obtained from candles or oil lamps. The candles, with which I include rushlights, mostly burnt animal fat (tallow) but the best were made from beeswax which gave a bright and inoffensive light. By comparison tallow candles gave a poor smoky light with much

foul odour. If however tallow candles were offensive rushlights steeped in fish oil were more so with the smell being, on at least one occasion, described as 'nauseating and persistent'. Other characteristics of simple tallow candles were spluttering, guttering and the need to for frequent snuffing - that is that the flame spluttered, that great quantities of unburnt fat ran away from the flame and that the wick had to be frequently trimmed both to stop the flame becoming excessively smoky and more fat than was otherwise necessary running away to waste. During the 18th. century a new type of candle fat 'Spermaceti' became available. Derived from oil found in the head cavity of Sperm whales Spermaceti candles gave a bright light and were considered second only in quality to beeswax. In the 19th. century candle production moved from a cottage industry into great manufactories and the quality of the product improved so much that by the turn of the 20th. century the best candles were bright, clean burning, inoffensive, didn't sputter or gutter and the wicks needed no snuffing - they were modern candles.

Although used in antiquity oils were, apparently, little used for lighting before the last half of the 18th. century except where fish oil was readily available. Otherwise vegetable oils were used in primitive oil lamps or to impregnate rushlights. Of the several oils available it is not clear which may have been used for lighting excepting that Henry VIII imported 'Salat Oil' (olive oil) to impregnate rushlights. In the 18th. century a new oil 'Sperm Whale Oil' (*Later advertised as 'Purified Sperm'*) was introduced as a lamp oil. As a lamp oil this was superior to vegetable oils and when used in improved lamps gave a clean bright flame requiring very little attention. These lamps came to be favoured for outside lighting and were the first to be adopted for the lighting of many towns. By the early 19th. century the pure sperm whale oil was sometimes adulterated - in the winter of 1812/13 Warwick was using equal portions of seal and sperm whale oil in its street lamps [1]. Paraffin lamp oil became available in the last half of the 19th. century. This was a much better lamp oil and by the turn of the century paraffin lamps were said to be found in the poorest houses. However before 'lamp oil' had become universally 'paraffin oil' there was a resurgence of interest in vegetable oils such as 'Colza' (oilseed rape) and 'Carcel' (of unknown origin) an oil so heavy that lamps included a clockwork mechanism to assist the flow.

Thus even before the introduction of the electric lamp the advantage of gas over other methods of lighting was being eroded.

The gas industry started towards the end of the 18th. century when gas was first used to light William Murdock's (*of Bolton and Watt fame*) house in Redruth, Cornwall. By the early 19th. century gas lighting was being used in many private houses and factories but each manufactured its own gas. In 1812 The Gas Light and Coke Company became the first utility to supply gas to the public. This was very successful and soon gas companies were set up in other towns and cities. Although early attempts were made to use gas for cooking gas was at first used almost exclusively for lighting. In the early years many different designs of gas lights were marketed, each claiming advantage over its rivals, but all using naked flames to produce a smoky, yellow and often flickering light. Later the light was improved by aerating the flame in so called Argand burners but these were considered too power-

ful for domestic use. *Gas Mantles, which gave a much improved light, were not introduced until after 1885.*

Crude gas was manufactured by heating coal in closed retorts but before it was fit for use it needed to be cleaned and purified. First 'Condensation' would remove much Tar and Ammonia then a 'Purifier' removed the Sulphur. All the early gas works, including the Stratford Works, used lime as the purifier. The desired chemical reaction was the conversion of Lime to Gypsum but many foul Sulphides were also formed. After purification the gas would be stored in a gasholder - basically an inverted tank floating on water and so guided and counterbalanced as to stop it falling over and to take most of the weight. Thus the gasification took place under some pressure which inhibited the process. By the middle of the century this problem was overcome with the introduction of mechanical exhausters in gas works.

Gas works were bad neighbours for not only did gas smell but many of the by-products were also foul. Thus gas works caused much nuisance not only directly by foul emanations from the works but also at greater distances if foul liquor or lime was discharged into a drain or watercourse. By 1818, at the latest [2], clauses were being introduced into new gas acts prohibiting the discharge of foul liquors into watercourses and in 1822 [3] a parliamentary bill was promoted 'To Prevent Washings, or other Substances arising in the making of Gas, being conveyed into any River, Brook, Stream or Waters'.

The principal by-products of coal gasification were Coke, Tar, Ammonia, 'Blue Billy' and Ashes but mention must also be made of the great quantity of Water in the gasholder tank which quickly became foul. Of these only the Coke and Ashes were innocuous. Coke was easily, and profitably, sold from the works and Tar also had some small value. However if the quantity of tar produced exceeded what could be sold the residue would often be burnt in the gas works furnace - a process that could result in the discharge of 'Tarry Smuts' or 'Blacks' from the chimney. Ammonia<sup>1</sup>, although later greatly sought after, could not be profitably disposed of when many works opened and if not sold would be evaporated at the works with the fumes passing out of the chimney. 'Blue Billy' was the particularly obnoxious residue removed from the purifiers after the lime was exhausted. It had some small value as an agricultural fertilizer but only after it had been long weathered to remove the poisonous sulphides. The Foul Water in the Gas Holder Tank only became a problem if the tank leaked or had to be drained.

In the early 19th. century all gas undertakings were privately owned. They fell into two distinct categories 'Statutory' and 'Non Statutory'. A Statutory undertaking would be empowered by parliament to supply gas in a town or other geographical area. In return for the legal right to build a gas works, lay pipes and take land by compulsion its operations would be constrained in ways that would vary as the century progressed. The Non Statutory undertaking had no such legal powers or constraints and was free to do as it pleased, or as it could get away with, and had to make its own arrangements with the local highway authority to lay pipes. As the parlia-

mentary process to form a Statutory undertaking was long and expensive many gas companies chose to be Non Statutory. However a court action of 1853 [4] caused many of the Non Statutory companies to reconsider their position. In this action it was determined that in law highway surveyors, or commissioners, did not have the power to grant gas companies the right to dig up the streets and lay pipes. Thus all the Non Statutory companies were at once liable to prosecution by any disgruntled householder. Thereafter many sought conversion to statutory status. Later a third category of undertaking arose 'The Municipal Gas Company'. This would either be incorporated within the 'Local Board of Health' or 'The Borough'. These companies were expected to give consumers a better deal and return a profit for the relief of the rates.

There was very little competition within the gas industry for to offer consumers a choice of supplier necessitated laying two, or more, gas pipes in the street. This lack of competition was re-enforced by many of the statutory companies having exclusive rights to supply gas in a particular town. Locally only Chepstow is known to have experienced competition between gas companies but whether this was to the advantage of the consumers is uncertain. *Visitors to the local museum will find an interesting display detailing the shenanigans that took place with claims of gas being stolen and competitors pipework being dug up.* There was thus little incentive for the gas companies to improve efficiency, to improve the quality of the gas supplied or to cut costs and there was a widespread belief that the customers were being ripped off. Thus statutory means were sought to protect the consumer. The first of these was to include a clause in the act establishing the company setting the maximum price at which gas could be sold. This was crude, and probably ineffective, for in a world of generally falling gas prices it would very quickly become irrelevant and yet was only likely to be reviewed if the company petitioned for revised powers such as to increase its capital. Later parliament also placed restrictions on the dividends that could be paid to investors. As interest rates varied so would the parliamentary restraints. Thus companies returning to parliament for permission to increase their authorised capital would find that not only would different rates be set with each parliamentary approval but also different rates for every class of share e.g. ordinary or preference. Again this was of limited value to the consumer for it certainly did not encourage efficiency or the lowering of gas prices - companies were simply run so as to ensure that investors received the maximum return allowed. The final variation on the statutory control of prices and dividends was to include a mechanism by which dividends could rise only if the price of gas was reduced. The quality of the gas supplied also came to be set by parliament. With almost all gas sold for lighting the standard adopted was based on the luminosity of the naked gas flame in a standard burner. Gas companies would declare the power of their gas, say 14 candles, and then be required to test and keep records to prove that this standard was maintained.

An important use for gas was for street lighting but often if a town was minded to provide street lighting it would find itself without the funds or legal powers to do so. One remedy was to petition parliament for powers to appoint commissioners for this purpose, or more likely to add this

<sup>1</sup> Apparently gas works liquor had some medicinal use. Children with a heavy cold would be taken to the works to breath from a bucket of such liquor.

power to acts promoted for other public works e.g. drainage and paving. However this was cumbersome and would deter all but the most prosperous and determined towns. The problem was much eased by an acts of 1831 [5] and 1833 [6] which enabled parishes to take powers for 'lighting and watching' and to meet the cost by way of a local rate. Later these powers were to be exercised by Local Boards of Health, Borough's etc.

Finally some explanation is required of the curious hours that street lamps were lit. Not only was it usually considered unnecessary to have lighting after midnight but also unnecessary to have lighting in the summer months or when a full, or nearly full, moon was up. Thus although lamps were lit at dusk they would be extinguished as the moon rose on several nights of every Lunar Month (28 days). As the moon rises later on successive nights so the time that lamps were extinguished also became later.

## THE LIGHTING OF STRATFORD

Historically many attempts were made to light the streets of towns at night with more, or often, less success. One difficulty was the lack of a good light which needed to be bright, inexpensive and to burn all night. Such a light became available in the 18th. century with the result that many towns were lit for the first time. The new light was an improved oil lamp burning Sperm Whale Oil. From 1812 gas came to be the preferred fuel for street lighting but it was still many years before all towns were lit at night. Stratford upon Avon was one such town and remained very poorly lighted until 1828. In fact the present researches have uncovered no reference to any street lighting before 1816 in which year the Parish Vestry decided to apply a small annuity of £24:10s to the lighting of the town [7]. Whether this was carried into effect at that time is unknown but the sum available was too little to provide more than a few lamps. The next reference to lighting appears on the 1st. January 1821 when the Bridge Commissioners required the Canal Company to light the foot-path where the canal passed under the bridge approach [8]. Whether the bridge was otherwise lighted at that time is unknown but by the end of 1823 there is clear reference to two lamps at the Stratford End and an intention to provide two more lamps at the other [9]. These were all to be 'lit at the expense of the commissioners' and at a cost of £1 per lamp 'till the end of March.' (*This might only be the cost of lighting for a 1/2 year*). Whether the lamps at the Stratford end refer to those called for in 1821 is not clear and later references to both four and six lamps on the bridge do not help. In no case is the type of lamp or hours of lighting stated.

In 1828 the Parish Vestry greatly benefited from the sale of part of the Bankcroft to the canal company and resolved to apply the proceeds, together with the first annuity, to the lighting of the town [10]. A Lamp Committee was established to oversee the work having at its disposal some £400 for the provision of street lamps and an annual income of £104:10s. to keep them lit. Clearly they already had a very good idea of what was required for the balance between capital and income had been established but one of their first actions was to measure the streets to find the number of lamps required if

they were to be 30 yards apart [11]. The committee intended to use oil lamps but before any commitments had been entered into a Mr. Bradley proposed to light the town with gas. For this purpose he proposed to established a Limited Liability Gas Company with a capital of £3,000 (*exclusive of land*) to be raised by the issue of £20 shares payable £1 down and monthly instalments of £2. Then, in return for the exclusive right to lay gas pipes in the town, he offered a seven year contract to light 40 gas and 25 oil lamps from dusk to 3 o'clock, excepting the seven nights of the full moon when the lamps would not be lit. For this he asked £110 annually. The lamp committee was to purchase and erect the lamps whilst although a site for the gas works had been selected, on the Bankcroft, the company was to be free to move this elsewhere. The streets to be lighted with gas were Bridge Street, Henley and Wood Street, the High Street, Chapel and Church Streets, Sheep and Ely Streets, and part of the Rother Market as shown in Fig.1. Mr. Bradley's proposals were put before a Town Meeting on the 28th. May 1828 but did not find favour [12,13,14]. The committee subsequently ordered 100 oil lamps (later to be increased to 102) 50 of which, at £4:4s:6d., were to be on pillars (lamp posts) and the others, at £2:2s:6d., to be on brackets fixed to buildings and variously between 2 and 6 feet long [15,16,17,18]. Later arrangements were made for the provision of a cistern at the 'poor house' for the storage of the lamp oil and 5 hogsheads of oil were purchased [19]. We have no account of the final cost of these works but at the end of the first season the Lamp Lighters had been paid £24:13s:6d. and £74:4s:4d. had been spent on oil [20]. Thus assuming that at least some of the oil would not have been used the expense was comfortably within the annual income<sup>2</sup>.

## THE STRATFORD UPON AVON GAS LIGHT AND COKE COMPANY

The Stratford - on - Avon Gas Light and Coke Company was formed by Deed of Co - Partnership dated the 17 March 1834 [21,22]. As envisaged by the promoters this was not to be very different from that put forward six years earlier in that the capital was to be £3,000 raised by the issue of £20 shares with the gas works built on the site earmarked for that purpose in 1828. However having a gas works on The Bankcroft did not suit some residents and a new site was found in Chapel Lane [23]. Things then moved very quickly, the company obtained the approval of the town to dig up roads and pavements for the laying of gas pipes so long as they were made 'good as before', they received tenders for all the necessary works and the capital was secured [24,25].

Unlike the 1828 proposal the new company intended to lay gas mains throughout the town with an extension to Lucy's Mill but not then having permission to lay pipes in the Parish of Old Stratford the company's first detailed proposals were confined to the Borough and Clopton Bridge as shown in

<sup>2</sup> The expenses of the first year equate to an expenditure of 19/5. per lamp. For comparison the lighting of oil lamps in Warwick cost 16/6d in 1812/13 [1].

Fig. 1 [26]<sup>3</sup>. When, subsequently, the town proved reluctant to convert the street lighting to gas the company thought to omit laying some of the pipes [27]. However this was soon rescinded and by July 1834 the company had not only arranged to have the gas works built and pipes laid but had also contracted to supply gas to Lucy's Mill and to light and maintain four lights on Clopton Bridge at a charge of £4 per lamp per year [28,29,30,31].

The works were to open on the 1st. September 1834 and the company sought to use the opening as an opportunity for promoting the use of gas. Probably for this purpose the company had resolved to purchase 40 three light lanterns, 4 six light lanterns and one 20 light lantern in July although exactly how these were to be used is not known [29]. However the opening celebrations are well recorded in *The Warwick Advertiser* of 13 September 1834. On the first night an illuminated transparency of *The Bard* was to be seen in front of the Shakespeare Hall, at the Market Square a Star and at the North end of the Hall an Illuminated Crown and Royal Initials. On the second the good and the great dined at the Falcon Inn on food mostly cooked by gas<sup>4</sup> whilst some 80 or 90 of the men supped at the station (gas works).

Very little is known of that first winters operation - we know neither the number of consumers or the quantity of gas manufactured. What is known is that parts of the Parish of Old Stratford adopted the provisions of the General Act for the Lighting of Parishes [6] so that gas lighting could be provided in John St., Payton St., part of Warwick Rd., Old Town and College St [32]. That a Thomas Gill was appointed as Superintendent of the Gas Works [33], that the annual charge for lighting an unmetred street lamp was £4 [34], that the price of gas to ordinary consumers was reduced from 15/- to 12/6d. per 1,000 cubic feet in December of 1834 [35], that water leaked from the Gas Holder Tank [23] and that a dividend of 10/- per share (2½%) was paid in 1835 [36].

In 1834 the impediment to converting the towns street lighting to gas appears to have been that of cost - the income set aside by the Vestry for street lighting was insufficient for the conversion. Additionally the Borough, at that time in the process of reformation, was unwilling to become involved. These problems were overcome at a Town Meeting held on the 31 Aug. 1835 [37] when the Town agreed to take over responsibility for the street lighting within the Borough so long as the Church Vestry agreed to pay the income presently set aside for this purpose to the Borough. How the shortfall was to be met is not recorded but it was most likely to be from the Borough's discretionary income and not from a rate levy. In any event the meeting agreed that the expenditure should not exceed £260 in the first year. Soon after contracts were entered into for the conversion of 62 oil lamps to gas at 17/- each and for the lighting and maintenance of those lamps for £189. Thus the number of street lights within the Borough seems to have been reduced from the 102 in 1828 to only 62 in 1835 [38].

<sup>3</sup> Somehow the company, or its contractors, got the measurement of the streets seriously wrong. When remeasured the streets were often one quarter longer than before e.g. Chapel St. and High St. were originally believed to be 220 yds. but when remeasured found to be 275 yds. [24]

<sup>4</sup> Gas was not much used for cooking until the late 19th. century.

The year to 24 June 1837 saw the gas company trading very profitably and producing up to 80,000 cubic feet of gas per week using four of the five retorts installed at the works. The works was managed by a Superintendent with the only other employees being a fireman and a lamplighter [33] who saw their pay increased from 15/- to 17/6d. and 12/- to 15/- per week respectively [39,40].<sup>5</sup> That year the company realised £739 from the sale of gas of which £505 was by meter, £174 from the Borough contract for street lighting, £32 from the Parish contract for street lighting, £16 from the Bridge Commissioners, £12 from three unmetred lights paid for by private persons and £1 from the corporation. The company's receipts also included £238 from the sale of coke and £27 from the sale of lime, tar and ashes. With expenses of £395 and charges for improving the works (enlarged coal and coke stores, a failed attempt to provide better drainage and the construction of a brick store) about £300 the profit for the year was also some £300 or 10% of the capital [41]. However finding itself beleaguered by complaints of nuisance, and threatened by court action, no dividend was paid that year.

## THE COMPLAINT of JOHN HIGGINS AGAINST THE PROPRIETORS of the STRATFORD GAS WORKS

The winter of 1834/35, the first that the gas works was open, saw the start of a dispute between John Higgins and the gas company that would continue until the gas works was moved from Chapel Lane in 1837.

Mr. Higgins lived in a considerable property at the bottom of Chapel Lane fronting the Bankcroft. This he had purchased in 1828 for £1,200 in the full knowledge, it was to be claimed, of the proposal to build a gas works almost opposite the house. When the new scheme for bringing gas to Stratford was hatched in 1834 the promoters at first intended to build their works on the 1828 site. This did not please Mr. Higgins and when the promoters were persuaded to locate their works elsewhere they were profusely thanked for their consideration by a Mr. Charles Hunt, brother in law of Mr. Higgins, and one who frequently acted on his behalf.

The new site was to the North of Chapel Lane, where the Union Club now stands, and thus close to several properties not least that of the same John Higgins. Thus very soon after praising the promoters for their consideration in moving the gas works from the Bankcroft a Mr. Hunt was joining with others in serving a 'Notice of Intent -- to proceed against the proprietors if they cause a nuisance'. To be fair the proprietors made some effort to minimise such problems by having a tall, 65 feet, chimney and arranging for the ammoniacal liquor to be evaporated within the works with the fumes going up the chimney. However much nuisance was to be caused by the discharge of foul liquors into the drain passing by Mr. Higgins house and a lessor nuisance from

<sup>5</sup> In 1850 the Alcester Gas Light & Coke Co. had only one employee, a stoker, who was paid 12/- (60p) a week. It was not until 1863 that the stoker's pay was raised to 14/- (70p) [108].

keeping the waste from the lime purifiers at the works. The practice of burning that tar which could not be profitably sold within the works also caused problems for unburnt tarry 'blacks' fell on Mr. Higgins property. Further great annoyances were to be caused in 1835 and again in 1836 when the gas holder tank was drained for repairs for not only must the open tank have been very foul but the very considerable quantity of liquor (upwards of 40,000 gallons) in the tank was almost certainly emptied into the Chapel Street Drain on each occasion.

Mr. Higgins first complained of bad smells in his house directly to the superintendent of the gas works in 1835 but to little effect. Some time later Mr. Higgins made a further and more detailed complaint of smells coming from the ash pit in his kitchen. On investigation it was found that rats had burrowed from the ash pit into the town drain. Believing that the smell complained of came from gas works effluent in that drain the proprietors resolved to build a new drain that would bypass Mr. Higgins property. Work on this was started in February 1836 but stopped after 184 yards of new culvert had been built owing to the refusal of Mr. Hunt to allow this to cross his property.

Events took a turn for the worst on the 16 May when the proprietors drained the tank for a second time. On this occasion the smell in Mr. Higgins stables, which was almost certainly also connected to the drain, was so bad that he had the horses 'taken to livery'.

By the 19th. his solicitors had prepared a summons for the proprietors to appear before 'The Court of the Kings Bench at Westminster' to answer the complaints made against them and by the 11th. June a claim for damages totalling £3,070, including £20 for the 'disorder of wife' and £50 for 'horses rendered of no value', had been prepared. Unfortunately it is not clear whether this summons was served or answered but by February 1837 the legal process was proceeding towards trial at 'The Warwickshire Lent Assize'.

The trial, before a full jury, took place on the 28th. March 1837. Mr. Higgins complained of the smell in his house and stables, of 'blacks' that fell on his house and dirtied his laundry and that the poor health of his wife was caused by the smell. In all over 20 witnesses gave evidence many travelling for the day from Stratford but others coming from greater distances, one from Kent, and claiming expenses for both lodging and travel. Curiously neither the plaintiff, his wife, nor any of the defendants, the proprietors of the Gas Works, gave evidence at the trial. In the case of the former it transpired that Mr. Higgins was at that time detained in a Lunatic Asylum and that he had been so detained on previous occasions. As for the defendants although some had early claimed that they could not be called to account for they were only investors and had nothing to do with the running of the works no explanation for their failure to appear has been found. With the proprietors declining to give evidence the defence relied very heavily on the testimony to be given by Mr. Thomas Gill - who although superintendent of the gas works was to acknowledge, under cross examination, his trade to be that of wine merchant.

The trial was a curious affair in that, despite the earlier clear intent of Mr. Higgins to seek considerable damages, no such claim, or any other explicit claim, was made at the trial. Clearly the presiding judge, Lord Abinger, found this perplex-

ing for at the conclusion of the plaintiffs case he found it necessary to enquire what the objective was. This was apparently only 'to seek a protection for the future'. Thus whilst finding in favour of the plaintiff the jury awarded only one shilling in damages - the minimum required by law for costs to be awarded against the defendants [23,33].

It was clearly impossible for the company to continue the manufacture of gas in Chapel Lane and the proprietors sought to find a new site well away from troublesome neighbours.

## THE MOVE to 'ONE ELM BRIDGE'

The new gas works was to be erected on the Birmingham Road just North of One Elm Bridge where the Company paid £75 for exactly two roods, or one half acre, of land [42,43].

During the summer of 1837 the gas company moved everything that it could from the old works to the new - they certainly intended to take roofs, doors, window frames, the suspension frame for the gasholder and gates to the new works [44] - but they somehow managed to leave behind sufficient of value to be sold for £225 [45]. A five inch pipe connected the new works to the town and within the built up area many of the original pipes were taken up, and new ones laid, to both accommodate the new circumstances and to serve additional properties [46].

Although the new works was contracted to open on the 1st. September 1837 it is not known if this was achieved. However by June of 1838 the company felt itself sufficiently secure to declare its first dividend since 1835. In round terms Mr. Higgins action had cost the company £500 and the move to the new site £1,200. These costs had been partly borne by retained profits, partly by the disposal of the Chapel Lane site and partly by borrowing £1,200. Despite all this the company was able to show a net profit of £1,205 [45].

## EXPANSION

During the Winter of 1836/37 the Chapel Lane Gas Works was producing up to 11,000 cubic feet of gas a day [33]. This was close to the maximum that the works could produce and the proprietors appear to have enlarged the Chapel Lane Works in the year ended July 1837 [41]. Unfortunately, as we have no technical description of the new works, as built, it is not possible to say whether these were larger than the first. By 1845 the works was producing up to 16,000 cubic feet per day and it was time for expansion [47]. The company engaged to install new retorts and to install a second, and larger, gasholder, apparently some 36ft. in dia. and 12ft. high, in 1845 [48,49] and the retort house also appears to have been enlarged in 1849 [50]. It is this enlarged works that appears on the Public Health Map of 1851 and which is shown in Fig. 2.

In 1853/54 the company acquired a small triangular piece of adjacent land measuring only 37 yards super [51].

All gas works used a furnace to heat the retorts. This could be fired with anything that would burn including gas coke. However until 1856 the Stratford Gas Works chose to fire its

furnace(s) only with coal but in that year started to convert to the use of coke. The reason for the change is uncertain but it may have been that the works was now producing more coke than it could profitably sell.

Between 1846 and 1856 annual gas production quadrupled to 5,215,000 cubic feet [52,53] and expansion was again necessary. This took place between 1858 and 1862 [54] with the company obtaining an additional 1288 yds. of land from the Stratford on Avon Railway [55,56]. Only part of this new land was used to expand the works for the company also built a house for the superintendent. Once again we have very few details of the expansion but this certainly included the installation of a third, and very much larger, gasholder. This was, apparently, of a semi - telescopic design, 47ft. in dia. and 15ft. high, that would allow the capacity to be doubled at some later date [57].

The Hatton Railway opened in 1860 and with the Stratford terminus next door to the works the gas company very soon sought to have a siding brought into their works [58,59]. When this was undertaken is uncertain but a siding is shown on a plan of about 1872 [60] and which is again shown in Fig. 2.

By 1864 annual production had risen to 6,196,000 cubic feet [61].

The third gasholder was enlarged, probably by adding a second lift, some time before 1875 when we have the first detailed technical report on the works [62]. As described the works had 35 retorts, 30 square and 5 round, each having a capacity of 3,600 cubic feet per day. With peak production reaching 106,000 cubic feet the retorts were almost at full stretch. The condenser, a set of 10in. vertical pipes, was found to be of sufficient capacity for several years to come but the three brick built lime purifiers, each 8ft.x 6ft., were at their full capacity. The three gasholders then in use had a combined capacity of 70,000cubic feet

The works superintendent made four costed recommendations as below:-

1. To provide an Engine Driven Exhauster that would increase the capacity of the works to 160,000cubic feet per day at a cost of £600 including Engine House, Boiler and Connections.
2. To install a scrubber to remove ammonia, assist condensation and relieve the purifiers for £100.
3. To provide either four new brick purifiers of 10sq.ft. or two of iron (he did not recommend brick) for £100.
4. To install a fourth gasholder of 150,000cubic feet capacity for £3000.

The directors readily agreed to the purchase of an exhauster but all else was left to stand over.

The One Elm Gas Works was now ending its life as a private undertaking but in 1877 the directors apparently entered into contracts for the erection of a fourth gasholder which was to be 80ft. in dia. and 26ft. tall [63,64]. Unfortunately it is not known whether this last gas holder was completed under private ownership only that a very large new gasholder is shown on the 1885 survey and also shown in Fig. 2 - a survey which also records the loss of the original and second gas holders.

## THE DEVELOPMENT of STREET LIGHTING in STRATFORD

In 1834 the Bridge Commissioners [31] and parts of the Parish of Old Stratford [32], adopted gas lighting. From the outset the Bridge Commissioners paid £16 annually for the lighting of four lamps whilst the Parish paid £31:10s. for an unknown number of lamps in the year to July 1837 [41]. In 1835 the Borough contracted to convert 62 oil lamps to gas at a cost of £53 for the conversions and an annual payment of about £200<sup>6</sup> for the lighting and maintenance of the lamps [38]. It is not until 1840 that we have any further details when, in circumstances that are far from clear, a town meeting was called to improve the street lighting [65]. Unfortunately the petition appears both confused and to contain inaccuracies that are not resolved by the inadequate record of the proceedings. The petitioners claimed that The Borough spent £104 annually on lighting 65 lamps 25 of which were lit all night and the others only to 12 pm. It was also said that any number of additional lights could be lit between 1st. Sept. and 30th. April for £3 annually or £2 if lit only between 1st. Oct. and 31st. March. Believing that an additional sum of £80 annually was required to light the town properly the petitioners called for the Borough to take powers under section 88 of the Municipal Corporations Act to improve the lighting. Although the Borough took these powers on the 24th. December 1840 there does not appear to have been any early improvement in the lighting of the town for the new lighting contract, of February 1841, [66] was as before :-

To light 25 lamps from dusk to one hour before sunrise until the 30th. April except for ten open nights in each month (five before, the day of and four days after the full moon except that the lamps were to be lit on the last four nights until the moon rose) at 30/- per lamp.

To light 40 other lamps until the 31st. March from dusk until midnight, with the same open nights as before, at 20/- per lamp.

Although two gas lamps are known to have been lighted on the Tiddington Turnpike from 1846 [67] nothing further is known of the towns lighting until 1849 when it was said to be 'badly lighted -- at an annual cost of £156 of which sum £100 is derived from some common land sold to the canal company' - these details almost certainly excluding lamps within the Parish of Old Stratford [68].

By 1857 the Borough was lighting 69 Public Lamps in the streets and clocks in the Guild Chapel and Market Place [69]. For this it would now pay £3:2:6d. annually for each lamp but the hours of lighting had been increased and several other changes made to the contract so that the lighting times were now to be :-

April, August, September and October	½ hour after sunset until 3 am.
March	½ hour after sunset until 4 am.
November, December, January and February	sunset until 5 am.
May	from 9 pm. until 2 am.

<sup>6</sup> The first years payment to the Gas Co. is confused by a sum of £19 being deducted for the lamps not being lit for part of the year.

There was to be no lighting on the four nights preceding the full moon. On the said night the lamps were to be lighted at sunset, when this was before 5 pm., and extinguished at 7 pm. On the following two nights the lamps were to be lit from sunset until 9 pm. On the third night until 10 pm., on the fourth night 11 pm. and on the fifth 12 pm. The public clocks were to be lighted every night from sunset to sunrise and were to be charged at double the rate for street lamps. The 'lighting up' was to be completed within one hour.

The Local Board of Health took over responsibility for street lighting within the Parish of Old Stratford not later than Sept. 1858 [70] and for lighting within the Borough in 1860 [71]. In 1858 there were only 69 street lights in the Borough [69] and 15 in the Parish [70] which was little different from the number in 1835. However by 1860 the total had increased to 102 [71]. In subsequent years the total number of lamps varied, 99 in 1861 [72] rising to 119 in 1873 [73] whilst the annual cost for lighting and maintenance fell from £3:2s:6d. per lamp in 1860 [71] to £2:15s. in 1870 [74] before rising again to £3 in 1873 [73]. As for Tiddington and Alveston although it may be presumed that the streets were lighted soon after gas was brought to these villages in 1865 [61] nothing is known of the details.

Finally there are many references to a gas lamp at the junction of Guilderpit and Warwick Road. Unfortunately no description has been found but it seems to have been something rather special.

## THE JOINT STOCK COMPANY

After the crises of 1837 the gas undertaking was always profitable and with increasing demand for gas was able to combine increasing returns to its shareholders with falling gas prices (See Some Statistics). The first notable event in the companies affairs, after 1837, was its conversion from a partnership to a joint stock company in 1845 [75]. So far as can be seen this conversion had little or no affect for the company continued as before.

Until 1850 the capitalisation remained at £3,000 with all new investment paid for by retained profits, borrowings or, in a small way, contributions from consumers towards the cost of laying pipes. This was to change in 1850 when the company raised a further £750 by the issue of 150 new quarter shares [76,77]. By 1856 the company was in need of further capital and, like many other non statutory gas undertakings about that time, decided to seek parliamentary powers under the gas act of 1847 and two acts of 1845 regulating public undertakings [53,78]. This was not an automatic process for the company had to show that it was in the towns best interest for this to be granted. One easily made comparison that could be used either for the support or objection to the process was the price of gas compared with other towns.<sup>7</sup> Thus it is of no surprise that the company found itself able to reduce this from 7/6d. [53] to 5/10d.[79] per 1,000 cubic feet

that year - a price that compared favourably with that in the much larger town of Warwick [80]. However not everyone agreed that it was in the public interest for the company to convert and the Town Council, supported by the Local Board of Health, raised a counter petition opposing the passage of the bill. The towns case was formalised in a pamphlet 'The Gas Question' [79] published in February of 1857. In it the town claimed that parliamentary powers were unnecessary, the expense too great, that it would create a monopoly against the best interests of the town, and that the present cost of gas was too high. In support of these contentions it obtained depositions from supposedly respected authorities amongst whom was a Mr. Atkins who although having been engaged on the construction of 37 such works claimed never to have found it necessary to seek parliamentary powers. The town also produced a detailed costing of the operation of a small gas works showing it to be profitable with gas sold at only 5/- per 1,000 cubic feet and contended that the lighting and maintenance of street lamps should not cost more than £3 per lamp annually. Unfortunately many of the claims were ill-founded with most being refuted within the week[81]. In particular it was easy to show that many of the works that Mr. Atkin had been engaged on charged more than 5/- for their gas, that the estimates given by the town made no allowance for leakage or other losses and that the Stratford Gas Co. charged only £2:9s. annually for lighting street lamps. In the event the objections were overcome and the Act to Incorporate the Stratford upon Avon Gas Company [82], with the right to supply gas in Stratford, Bishopton, Shottery, Luddington, Bridgetown, Tiddington and Alveston, was passed in 1857.

With the passing of the new act the old company was wound up with the shareholders receiving shares, of equal value, in the new carrying a maximum dividend of 10%. For new capital the company was authorised to issue up to £3,000 of new preference shares with a dividend that was not to exceed 5½%. It was also authorised to, subject to some constraints, to borrow up to £600 and to acquire up to two acres of land. On the debit side the maximum price at which gas could be sold was set at 5/6d. per 1,000 cubic feet and the minimum power of the gas was set at 12 candles. The residual assets of the old company, the reserve fund, was then distributed to the shareholders by way of a special dividend of £6 (30%) per full share and proportionally less for the quarter shares [83].

The opposition to the companies petition cost the corporation some £600 [84] whilst the parliamentary expenses of the gas company were, at £934 [85], almost as much as the company derived annually from the sale of gas. Subsequently the directors were to ruefully note that it had cost only £210 to pass The Willenhall Gas Act [86].

One of the first actions of the new company was the introduction of meter rentals, effectively a standing charge, on a scale that varied from 1/-d. per quarter for a 3 light meter to 5/-d. per quarter for a 20 light meter [83]. This was no doubt intended to recover the revenue lost by the enforced reduction in the price of gas.

The new company did not immediately seek to raise further capital and it was not until 1859 [87] that it was decided to issue new preference shares. These were in partly paid form with the last payment not called until January 1862 [88].

<sup>7</sup> The latest Parliamentary return on Statutory Gas Companies gave the price of gas in Warwick as between 5/4d and 6/3d. per 1,000 cubic feet

In 1860 negotiations commenced on the supply of gas to Alveston. In order to defray the great cost, £800, of laying gas pipes to the village the company asked the parish to contribute £200 towards the cost and enter into a five year contract to light 30 public lamps at £127.10s. annually [89]. This was not immediately accepted and nothing more is recorded of this for several years.

1864 was the tercentenary of Shakespeare's Birth and the town planned a great celebration focused upon a temporary pavilion, or theatre, that was to be built on the Bankcroft. To cover the cost subscriptions were sought from all quarters and the gas company offered free gas, during performances, if the tercentenary committee met the cost of laying down and taking up some 850 yards of new 4 in. gas main to the pavilion [90]. *If this seems a little unusual it was not so at the time for redundant gas mains were often recovered and used for another purpose.*

The pavilion lighting was certainly extravagant, a chandelier had some three hundred gas jets arranged in two rings one above the other and six star burners, there were forty five shadowless footlights with shades, Argand burners, wing and batlight fittings [91].<sup>8</sup> Many of these details can be seen on one or other of the several surviving drawings of the pavilion [92,93,94 and Figs. 3], of which [94] is of particular interest as it shows the chandelier in the course of erection.<sup>9</sup>

When the celebrations were over the gas main was taken up and used in the laying of a new gas main to Alveston. Nothing is known of what arrangement had been reached with the parish about street lighting or other matters but Sir Richard Hamilton certainly contributed £200 towards the cost [95]. However the consumers of Tiddington and Alveston were to always pay a premium for their gas over and above the price of gas in Stratford [96].

In 1867 the company again returned to parliament for increased powers. A new act doubled the capital from £6,750 to £13,500 whilst increasing the power of the gas to that of 14 sperm candles [97,98]. Although now authorised to issue either new ordinary shares carrying a maximum dividend of 7% or new preference shares at 6% only preference shares were subsequently issued. The company, which had been trading very profitably for the past several years, also chose this year to make up the shortfall between the dividend actually paid since 1857 and that which had been authorised by parliament by means of a bonus to the shareholders [99]. *By my calculation this amounted to £1 on the £20 shares with proportionally less to the others.*

<sup>8</sup> An Argand burner was a powerful gas light with an aerated flame. Wing and batlight fittings were simple gas jets that spread the flame into a fan shape.

<sup>9</sup> If the pavilion lighting for the tercentenary celebrations appear extravagant those laid on in St. James Park (1814) to celebrate the defeat of Napoleon were altogether on a different scale. Some 20,000 gas burners, each said to be the equal of three oil lamps, were provided. Unfortunately, owing to a mishap during the preceding firework display the pavilion burnt down and the gas was never turned on [109].

## THE DEMISE OF THE STRATFORD GAS LIGHT AND COKE COMPANY

In 1875 the company concluded that further substantial improvement and enlargement of the works was necessary [62]. The cost of this was initially met from its own resources but by 1877 it was preparing to seek parliamentary approval to increase its authorised capital to £17,500. The town saw this as no more than another opportunity for the shareholders to line their pockets and led by The Local Board of Health resolved to take the company into public ownership [84]. This was initially not well received by the directors [100] but the terms offered were so favourable as to be irresistible and the sale was agreed by the 1st. March 1878 [101]. The Head of Agreement [102] provided for :-

1. The payment of a sum in annuities equal to the maximum presently permitted or, at the discretion of the gas company, a gross sum calculated at 25 years annuity.
2. The Local Board to take possession as from the 1st. Jan 1878.
3. The gas co. to carry on the undertaking at the risk of the board.
4. The Local Board to pay 4½% interest on the purchase money, if a sum in gross be adopted, from the 1st. January to the date of payment. If paid in annuities also to be paid from the 1st. January.
5. The companies application for a provisional order (to increase the authorised capital) was to be withdrawn.
6. £950 was to be paid in compensation for the costs and expenses incurred by the company.
7. The reserve fund, of £700, was to be retained by the company.
8. The servants of the company were to be taken over as officers of the Local Board.
9. The board was to use its best endeavours to pass the necessary bill in the next session of parliament.

Thus the shareholders were to receive a perpetual income equal to that which they presently enjoyed or the option of a generous cash payment. Secondly although not yet being the legal owners The Local Board agreed to be responsible for the actions of the company from 1st. January 1878 - a date almost three months before the purchase was agreed and during which time the company had been acting in its own interests.

The parliamentary process both refined the Head of Agreement and laid down new constraints but was, however, much complicated by the impending changes to the Borough which would see its enlargement and the demise of both The Local Board of Health and The Bridge Commissioners. Thus the Stratford Upon Avon Borough Act of 1879 provided both for the immediate purchase of the gas company by the Local Board and the subsequent transfer of all the assets to the Borough when the Local Board was wound up on the 25th. March 1880. Under the new act the price of gas was not to exceed 5/6d per 1,000 cubic feet, the power was not to be less than 14 sperm candles and the gas pressure was not to be less than 6/10 ths. of an inch from midnight to sunrise or 8/10 ths. of an inch from sunset to midnight - that is that the gas pressure could be reduced after midnight and, apparently, turned off during the day. The Act also permitted the cor-

poration to increase the land occupied by the gas works (presently 1<sup>a</sup>3<sup>r</sup>1<sup>p</sup>) to five acres. The consideration could be taken as a perpetual annuity or as a lump sum or partly as an annuity and partly as a lump sum. Annuities could be redeemed at any time for a payment equal to 25 years income. Further the Local Board was to take over the company's mortgage, which stood at £2,500, but was not to be responsible for any action taken by the company after 1st January 1878 that had not been approved by them.

The cost of taking over and improving the works was estimated as £40,000

## IN CONCLUSION

The subsequent affairs of the Gas Undertaking are not part of the present story but a few details may not come amiss.

When the gas company sold out to the Borough the shareholders received a perpetual annuity which they could at any time surrender for cash. It appears that most shareholders preferred to keep their annuities for by the 31st. December 1881 the capital value of the outstanding annuities remained at £12,443. In that year 28,373,000 cubic feet of gas was manufactured from 2,880 tons of coal, the number of consumers stood at 1075, the number of public lamps lit 204 and the annual receipts £6,973 [103].

Gas continued to be manufactured at the Stratford Gas Works until 1962/63 after which gas was imported, by pipeline, from the Leamington Gas Works [104]. In 1969 [105] the town was converted to Natural Gas. Today the site of the gas works has largely been re-developed and soon the only visible evidence that there was ever a Stratford Gas Company will be a few valve cover plates such as the one illustrated on the front cover.

## Appendix 'A'

### SCHEDULE of OIL LAMPS

to be

CONVERTED to GAS 28 Sept. 1835

#### The First District

Old Town	1 Lamp
Church St.	4 Lamps
Chapel Lane	2 Lamps
Scholars Lane	2 Lamps
Chapel St.	3 Lamps
Sheep St.	4 Lamps
High St.	4 Lamps
Wood St.	5 Lamps
Henley St.	5 Lamps
Windsor St.	1 Lamp

#### The Second District

Ely St	3 Lamps
Bridge St.	5 Lamps
Rother St.	7 Lamps
Waterside	4 Lamps
Guilderpits	5 Lamps
B'ham Rd.	3 Lamps
Greenhill St.	3 Lamps
Union St.	1 Lamp

*Minutes of the Street Lighting Inspectors SBTRO DR 165/558/97.*

## Appendix 'B'

### THE VALUE OF LAND ABOUT STRATFORD

The present research has uncovered several land transactions the details of which may interest some readers.

The first two transactions are purchases of land on The Bankcroft by the canal company. In both the owners were the Lords and Ladies of the manor but the land being used by the people of the town compensation had also to be made for the loss of their rights e.g. grazing and the collection of fuel. The compensation was paid to the Parish Vestry who then largely, if not wholly, applied it to light the town.

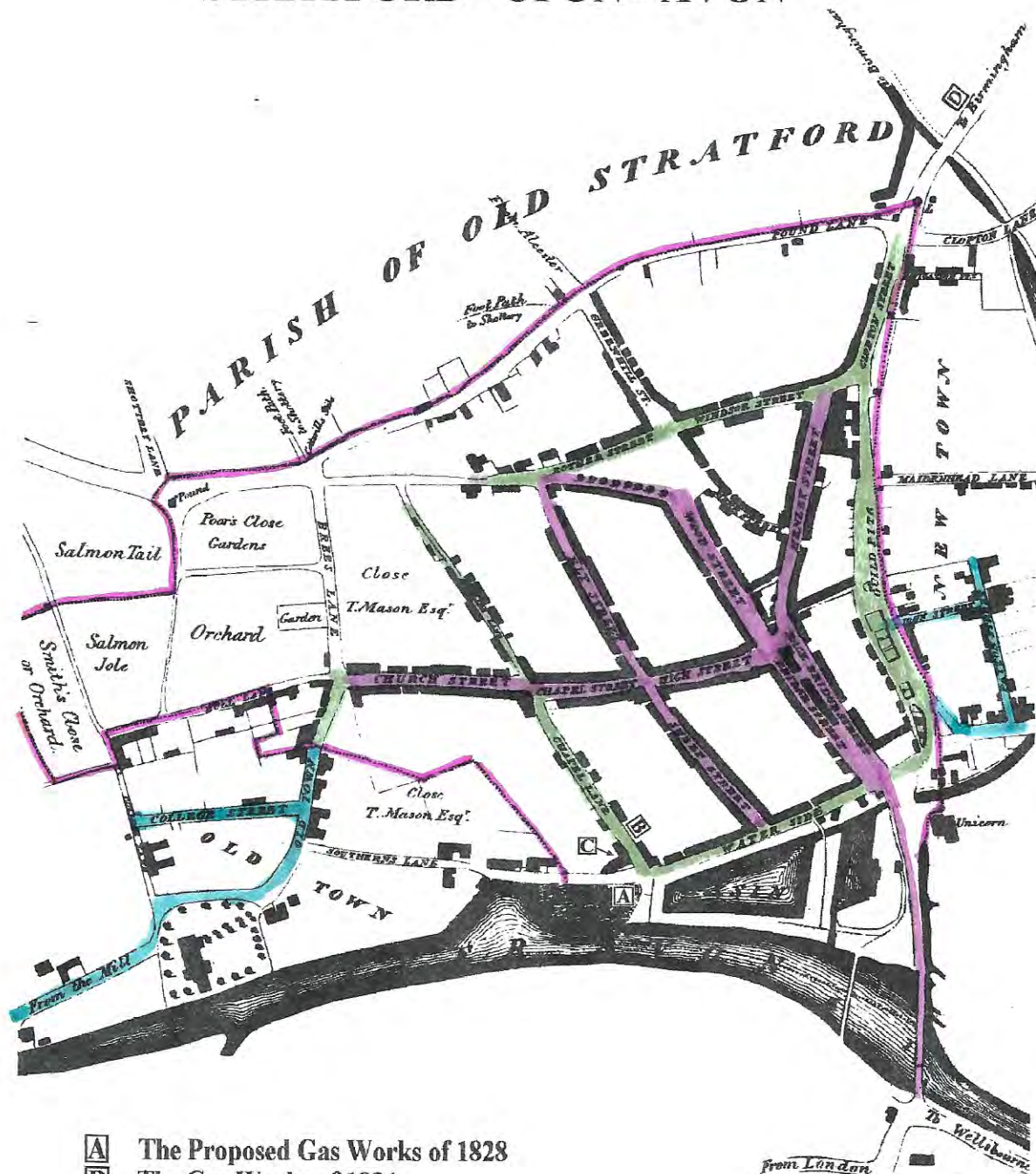
The first sale took place in 1823 when about 3½ acres, not all of which was common land, was sold to the canal company. The full details have not been found but the Parish Vestry found itself able to invest sufficient to produce a perpetual income of £24:10s [106].

The second sale took place in 1827 when the canal company purchased about 3¾ acres of the Bankcroft all of which was common. In this case the Lords and Ladies received £1327:16s. for the land and the Parish Vestry £2465 in compensation [107]. Thus, incredible though it may seem, the canal company paid about £1,000 per acre for poor and frequently flooded land - it was clearly a sellers market.

In 1837 the gas company purchased one half acre of land on a green field site just North of the town where it would build the new gas works. For this it paid only £75 [42,43] and if, as it seems, no other significant costs were incurred this land was valued at little more than one seventh that on The Bankcroft.

Finally in about 1860 the gas company purchased about ¼ acre of land in which to expand the works. The works now being adjacent to the new railway terminus land values had greatly increased. The company paid the equal of £600 per acre for this [56].

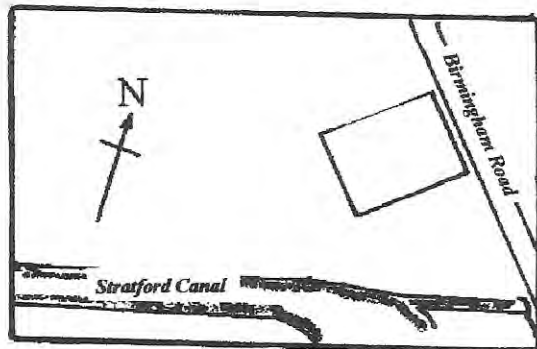
**Figure 1**  
**THE FIRST STREETS TO HAVE GAS**  
**IN**  
**STRATFORD - UPON - AVON**



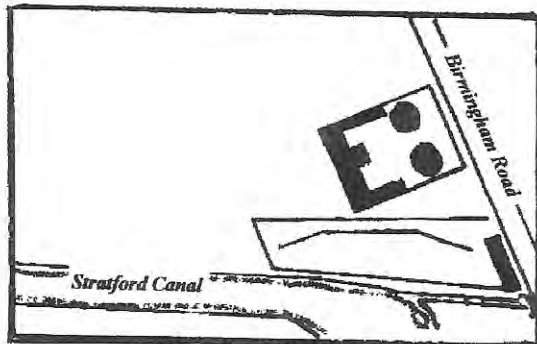
- A** The Proposed Gas Works of 1828
- B** The Gas Works of 1834
- C** The House of Mr. Higgins
- D** The Gas Works of 1837
- The Old Borough Boundary
- The Streets which were to have Gas in 1828
- The Additional Streets Included in 1834 Proposal
- Early Extensions to Lucy's Mill and The Parish of Old Stratford

Figure-2-

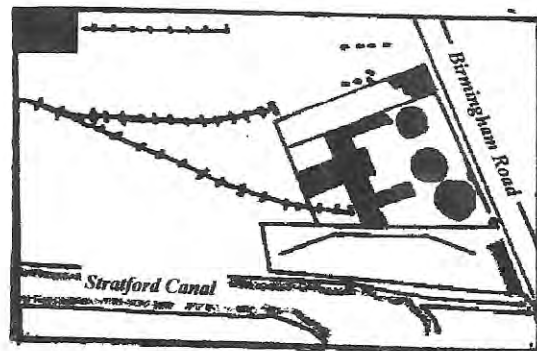
# The 'ONE ELM' GAS WORKS 1837 to 1888.



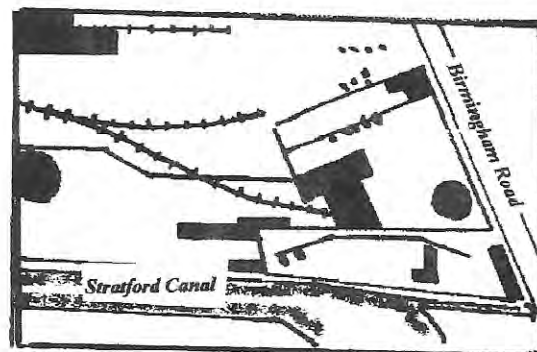
The One Half Acre Plot purchased for Stratford's Second Gas Works in 1837.



In 1851 'The Works' has Three Gas Holders whilst nearby a 'Stone and Lime' works has been built.



In 1872 'The Works' are much larger and includes Three Gas Holders and a House for the Superintendant.

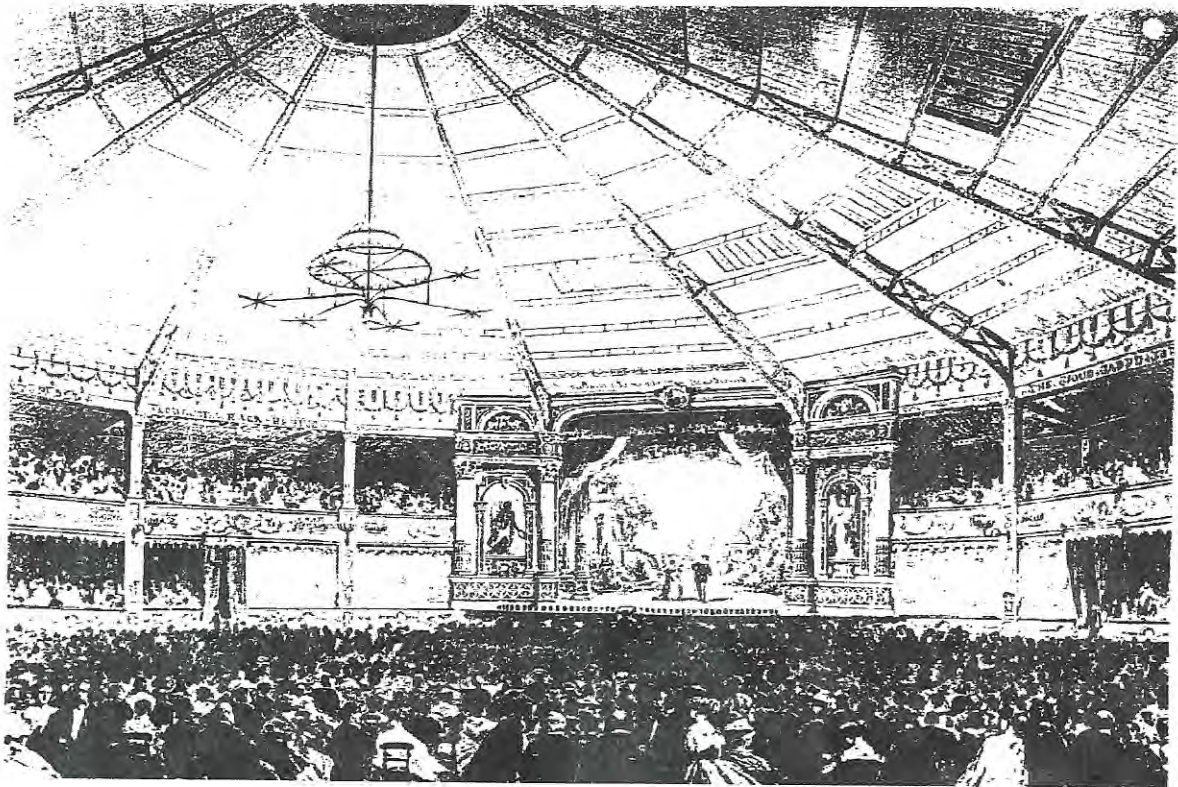


Before 1888 'The Works' had been greatly extended to the West. Many new buidings and a Forth Gas Holder have been built but the Two Earliest Gas Holders have been lost.

**Figure 3**

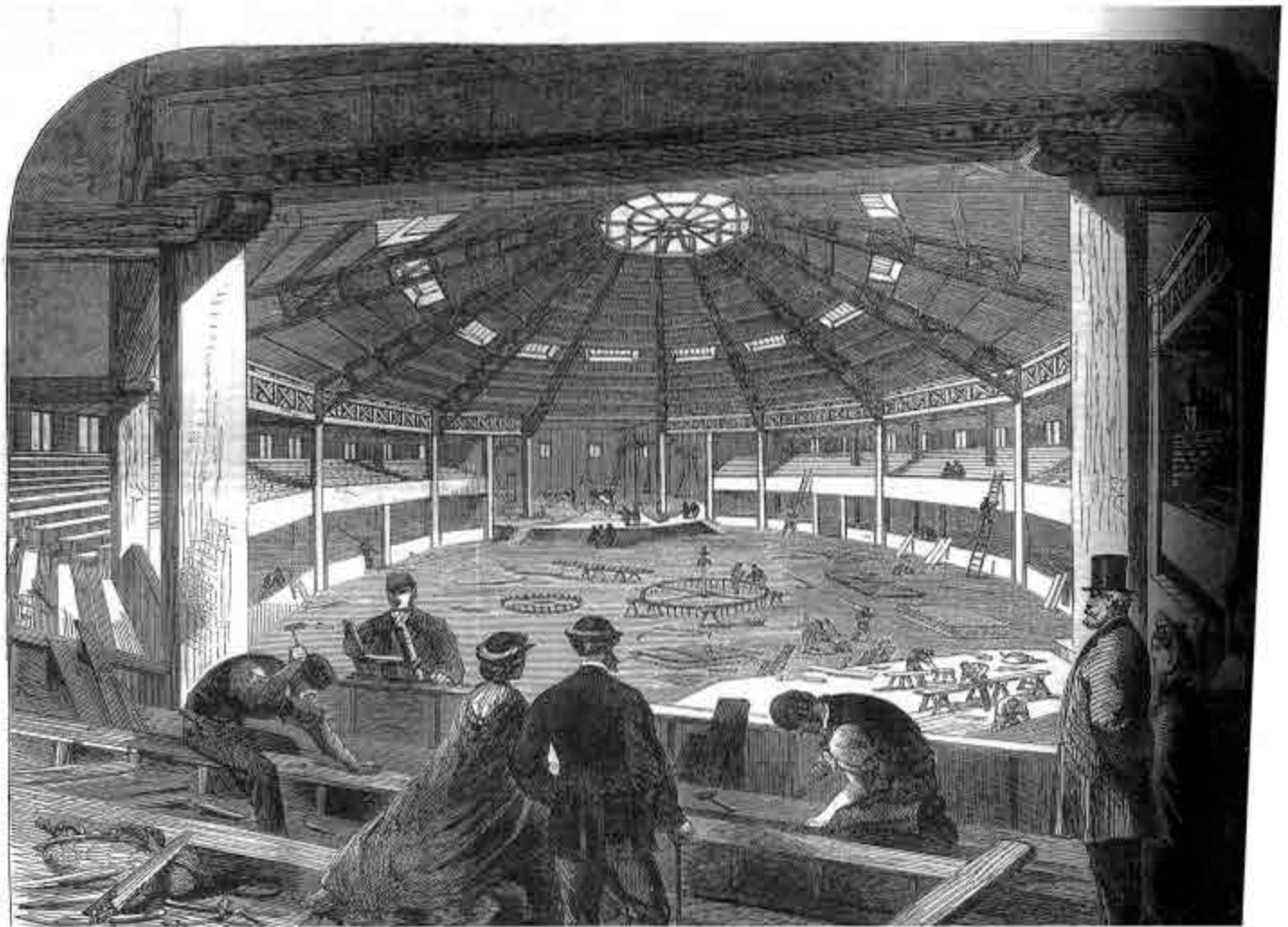
**A PERFORMANCE  
AT THE  
1864 SHAKESPEARE PAVILION**

Note the GAS LIGHTS. Chandelier, Stage Footlights and House Lights



**FIGURE 4**

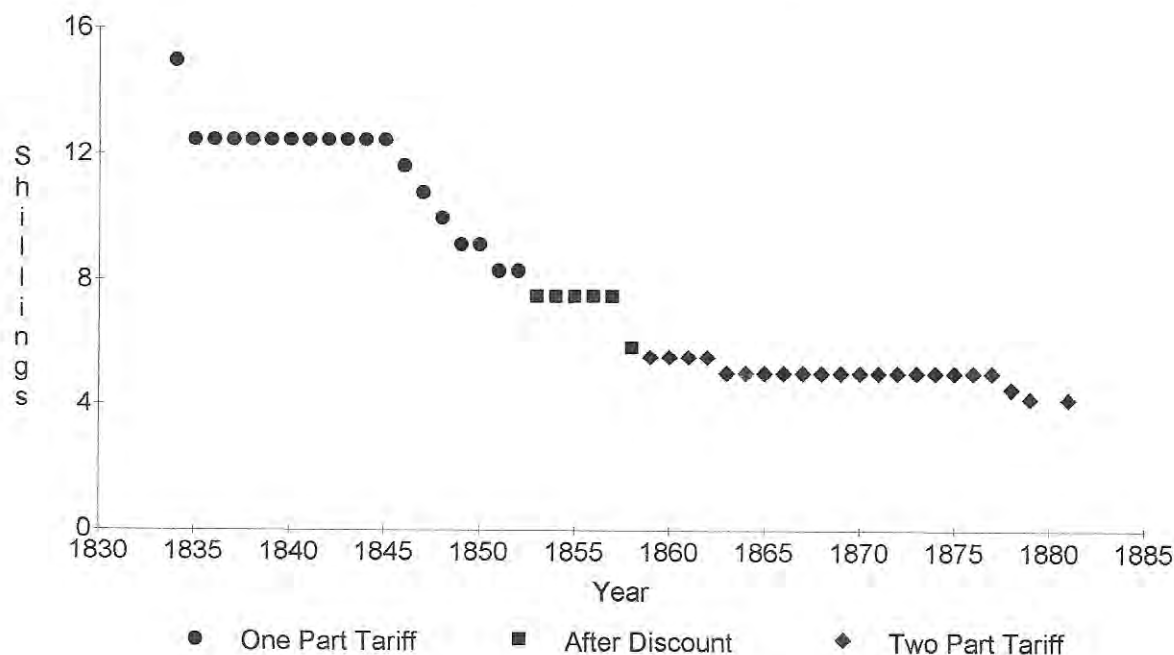
**THE TERCENTENARY PAVILION UNDER CONSTRUCTION**



Note. The Gas Chandelier Being Assembled And The Temporary Gas Light On The Stage

**CHART 1**

**THE COST OF GAS**  
(Shillings per 1,000 Cubic Feet)

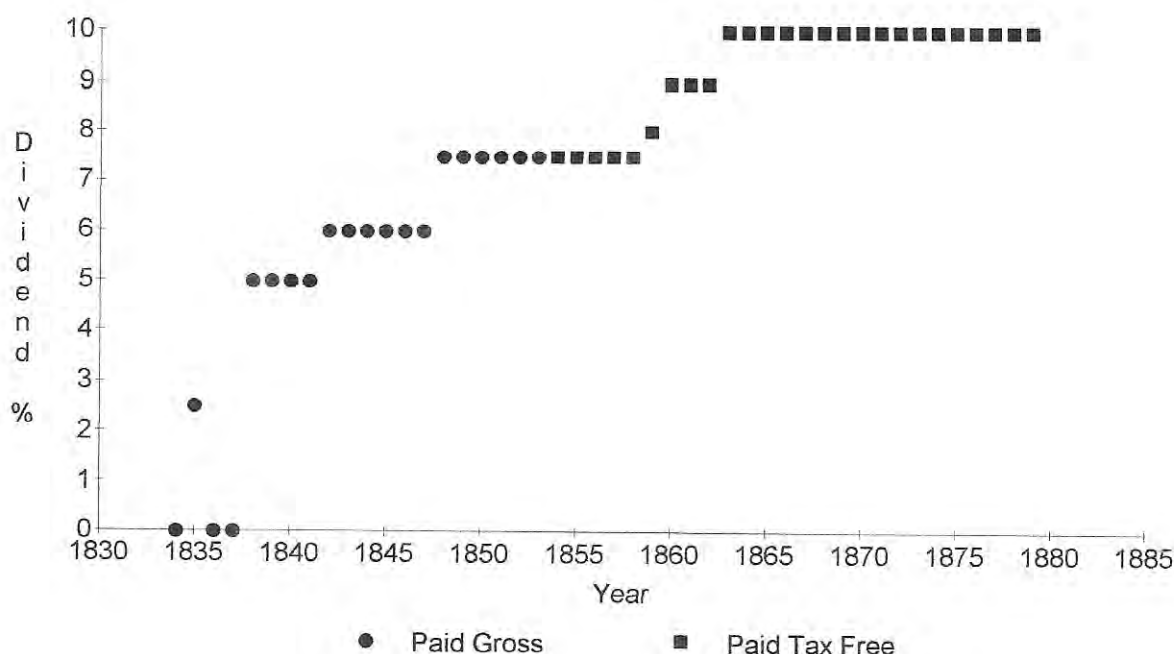


**Notes.**

1. This chart is an interpretation of the often unsatisfactory record of the cost of gas to small consumers in, and immediately about, Stratford upon Avon. Large consumers, those taking over 200,000 cu. ft. annually, paid less and consumers in Tiddington and Alveston paid more. Usually changes in the cost of gas came into effect in September. This chart shows the cost of gas in June and therefore usually that paid the previous winter.
2. Discounts for the prompt payment of accounts were introduced for the winter of 1852/53. For most consumers the discount offered was 10% if paid within 21 days.
3. A two part tariff with a standing charge, or meter rent, was introduced from the winter of 1858/59. The charge increased with the size of the meter. For that winter the charge for a 3 light meter was 1/- per quarter whilst that for a 20 light meter was 5/-.

## CHART 2

### DIVIDENDS PAID ON THE ORIGINAL TWENTY POUND SHARES (%)

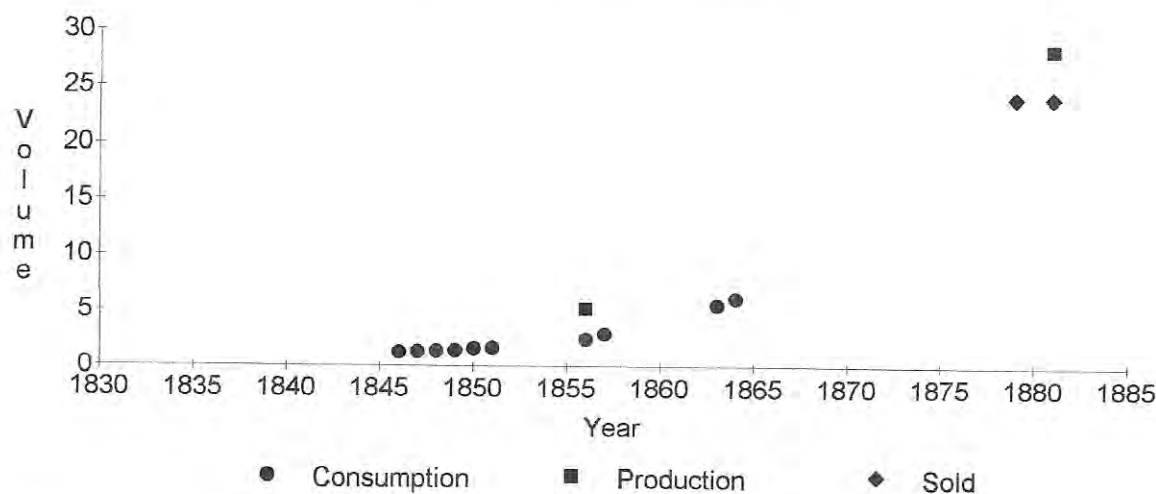


#### Notes.

1. This chart is an interpretation of the dividends paid to holders of the original £20 shares in the Stratford upon Avon Gas Light and Coke Company. Dividends were declared in June and paid in two instalments.
2. From June 1854 dividends were paid 'free of income tax'. However it has not been possible to determine whether the declared dividend was gross or net of tax.
3. Following the formation of 'The Stratford upon Avon Gas Company', in 1857, the reserve fund of the old company was paid to the shareholders - holders of the original £20 shares received a bonus of £6 per share.
4. In 1867 the company paid a bonus, in addition to the annual dividend, to bring the total paid to shareholders since the act of 1857 up to the maximum permitted by that act. By my calculation this amounted to £1 on the £20 shares.
5. Before the company was wound up it was intended that the residual assets, principally the reserve fund, would be distributed to the shareholders. Unfortunately no record of this distribution has been found and it would be imprudent to draw any conclusion as to its value from the fragmentary information available.

**CHART 3**

**ANNUAL GAS PRODUCTION AND METERED CONSUMPTION**  
(Millions of Cubic Feet)



**Notes.**

1. This chart is an interpretation of the fragmentary, and often inconsistent, record of gas production at the Stratford Gas Works.
2. Consumption refers to Metered Consumption only. Production is that measured at the works whilst the exact meaning of 'Gas Sold' is unclear.
3. The discrepancy between Production and Metered Consumption is due to several factors. Firstly that gas used for street lighting was unmetered. Secondly that some gas was used at the works or provided free of charge e.g. to the engine house (fire station). Thirdly losses arising from leakage, and lastly by a variety of metering problems. On only one occasion is there a comprehensive record of the years production. This appears to have been prepared in 1855 or 1856 and includes the following details:-

Item	Volume (cu.ft.)
52 Street Lamps at 9,000 cu.ft. (Lit all night)	468000
39 Street Lamps at 6,000 cu.ft.	234000
A Three Burner Lamp with Pilot	35000
One Public Clock	52000
One Public Clock Lighted Gratuitously	52000
Gas for Engine House (Fire Station) - No Charge	9000
Estimated Non-Metered Consumption	<b>850000</b>
Private (Metered) Consumption	<b>2558000</b>
Total of Losses + Condensation + Gas Used at the Works + Gas Used at the Residences of the Sec'y & Manager.	<b>1792000</b>
<b>Total Production</b>	<b><u>5200000</u></b>

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- [36] Minutes and Accounts of The Gas Co. 2 July 1835. SBTRO BRT 6/1.
- [37] Meeting of Ratepayers under New Act. 31 Aug. 1835. SBTRO DR 165/558/97 (Note back of volume 'Street Lighting Inspectors').
- [38] Minutes of The Street Lighting Inspectors on various dates from Sept. 1835. SBTRO DR 165/558/97.
- [39] Minutes and Accounts of The Gas Co. 24 Oct. 1835. SBTRO BRT 6/1.
- [40] Minutes and Accounts of The Gas Co. 20 Oct. 1836. SBTRO BRT 6/1.
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- [43] Contract for the purchase of the One Elm Bridge Site. 25 Nov. 1837. SBTRO DR 165/558/15.
- [44] Contract for New Gas Works 10 July 1837. SBTRO DR 165/558/12.
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