
GAS LIGHT

FROM

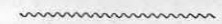
BITUMINOUS COAL.

Philadelphia, 1850.

GAS LIGHT

FROM

BITUMINOUS COAL.



THE subject of Gas Light daily attracts increasing attention in this country, and as a mode of illuminating streets, stores, dwellings, and manufactories, is gaining favour with the public. As an article of domestic comfort it has no superior in cleanliness, brilliancy, safety and convenience, and that manufactured from the best qualities of Bituminous Coal, bears a most flattering comparison with the Gas produced from any other material.

Numerous experiments have been made with other materials, but they have thus far all succumbed to the article of coal as cheapest and best. Rosin and oil, or grease have been thoroughly tested, and the failure which has successively followed every establishment, after three years operation, demonstrates the futility of attempting it further. Yet many claim for Rosin a future success, and by lessening the apparatus, always necessary to the manufacture of gas from any material, thereby reducing the cost of works, are entering towns and villages of size and wealth insufficient to support works of a permanent character. A universal desire for light, of course, will lead many to seek it in any practicable way, without reference to the future, or the ultimate effects of injudicious expenditure. Hence, small works, within sufficient apparatus and wholly inadequate to a successful establishment, are springing up on every hand, regardless of oft repeated failures. Millions of dollars in Europe and in this country have been

squandered in these experiments, and yet there are many to hurl more into the same gulf. Although Rosin makes a superior light, it is soon found unprofitable, and in a short period of time inflicts an injury on the works and pipes used for manufacture and distribution, from which they can never wholly recover. Instances have been known, where it has been requisite to thoroughly burn and scrape the pipes every fortnight, as the only means of securing a flow of gas. As there is no process known by which the offensive properties of Rosin Gas can be separated from it, so there are few or no efforts made in the erection of works to purify the article, and as a necessary consequence it escapes through the flame, and while it blackens with smoke the walls and ceilings of parlours and stores, its offensiveness of smell, as in New York city, makes it quite as objectionable as camphine oil. Beside this, rosin, with other material of like character, has been known to rise in price over one hundred per cent., in the short space of six months, and such fluctuations alone must ever prove a fatal hinderance to its use.

On the other hand, in the manufacture of gas from coal, a variety of improvements and inventions are now in successful use for the purification of the article, that when it reaches the place of ignition, all that escapes is effectually and entirely consumed. Neither smell or smoke (if proper burners are used) can possibly arise, where the gas is manufactured, purified and distributed in the most approved form of modern works. If any person will examine the refuse that may be separated from any material in use for this purpose, and then compare the difference in the mode of purification adopted in the different cases, they will be abundantly satisfied that Coal Gas Works should cost more than any other kind. We may add, indeed, that they will also see the reason of success that has always attended the one costing most, over those costing the least. We are free to say, that more money could have been made between 1844 and 1850, in the erection of Rosin Gas Works than manufactories of Coal Gas; but in 1850, the parties who built in 1844 would have lost not only the investment made, but with it their characters also as builders of Gas Works. It is not every where known that extracting the gas

from coal increases that coal as an article of fuel about seventy-five per cent., and thereby furnishes the fuel for its manufacture, while all other material furnishes nothing available. Some Gas Works yield in coke, tar, lime and ammonia, more than the original cost of the coal. This is only true where coal is cheap, and is the secret of the low price at which gas can be furnished in England.

The vast extent of the coal fields of England, Nova Scotia, and the United States, form a guarantee of permanence in the supply. English coals have been used principally in the eastern towns and cities; but we have on the banks of the Monongahela, Alleghany and Ohio rivers, and adjacent thereto, an abundance of coal superior to the English article. Every year opens new facilities of conveyance, reduces the cost, and of course is preparing the way to cheapen the price of gas.

Some portions of Virginia also possess almost exhaustless stores of the same material, and no possible contingency can effect any considerable advance in the cost of coal, from which gas is manufactured. We are persuaded that these considerations should lead every city, or town that can possibly afford to pay for the construction of a modern built Gas Works, to turn away from any other method of supply at present known, but an establishment for the manufacture of gas from bituminous coal.

It is only necessary to add the following extracts, from a Report made to the Councils of the City of Providence, R. I., by the Committee on Finance, who were charged with an investigation of this whole subject, and while it more fully sets forth the facts with reference to Oil Gas, every such exhibit is equally applicable to Rosin Gas.

“The manufacture of gas from coal, on a scale for public consumption, has been established in England about forty years; since which time it has come into general use throughout Great Britain, and is now manufactured and consumed to an immense extent. In the early stages of its introduction, it has generally met with a strong opposition; but its convenience and superiority have overcome all obstacles, and its history is a series of triumphs over prejudice.

"In this country, it was first introduced for public consumption about twenty-seven years ago, at Baltimore; and has since been established in Boston, New York, Philadelphia, and recently in several other cities.

"With regard to the economy or utility of lighting with gas, your committee need not enter into the practical details of its advantages; the fact, that in every place where it is established, it comes into general use wherever stationary lights are expedient, is sufficient to establish its superiority over all other modes of lighting.

"It has made its way, (even where its manufacture has been very imperfect, and it has consequently been filled with offensive odours,) against strong opposition, into the stores, manufactories, and public buildings, at all places within its reach. In its more perfect manufacture, it is consumed to a considerable extent in private dwellings. It is the history of gas works in this country as well as in Europe, that the demand for gas has generally much exceeded the highest expectations of the projectors of the works. Nowhere is there any retrograde in the demand; everywhere, it seems to be onward, gaining with the experience of consumers. These facts are conclusive as to the opinion of the consumers. That opinion, the result as it is of experience, is more valuable than any theoretical calculations.

"A cheaper article than oil, for making gas, exists in rosin. This article will produce about one thousand feet to one hundred weight. Its gas is manufactured with the same process, and in the same apparatus, with that made from oil, and is but very little inferior in its quality to oil gas. Several manufactories of rosin gas have existed in England, which have gradually yielded, and been converted into coal gas establishments. The gas establishment in the lower part of the city of New York, manufactures gas from rosin, which is distributed unpurified, through leaky pipes, and has filled the soil with offensive odours. It is understood that those works are about to be converted into a coal gas manufactory.

"The oil gas establishments in England have yielded to coal gas. A few extracts from authorities upon the subject, may be useful. From the *Encyclopedia Britannica* :

"Oil being decomposed at a loss of nearly fifty per cent., the conversion of it into gas, after a protracted but ineffectual competition with coal, has been gradually abandoned on the large scale, even in those places where, from the interest of the whale fisheries, there were the strongest inducements to foster the unfounded prejudices which prevailed for some time against the use of coal gas. The exaggerated advantages which it was pretended would be derived from compressing oil gas, and thus rendering it portable, served to prolong the gross delusion on the subject. * * * Nor were these delusions fully removed, until a demonstration was given of the failure of the scheme, in the decay of costly edifices and expensive apparatus, which, in defiance of all sober calculations, had been constructed for carrying it into effect.' Again, from the same authority:—'The capital expended upon oil gas establishments, is actually applied to reduce to the extent of thirty per cent., the intrinsic value of the raw material, which it was pretended to improve in an equal degree; add to this, the loss of gas in the main pipes, which is found to be fully twenty per cent., and it follows, that the light from oil gas is obtained at twice the expense at which it may be procured immediately from the oil itself.'

"From Parnell's *Applied Chemistry*:—'Several extensive oil gas establishments were erected at different places in Great Britain; but all these have gradually become converted into coal gas manufactories. Not a slight objection to oil gas, is the gradual liquefaction which its most valuable constituents undergo, on standing with exposure to moderate cold, to the great deterioration of the gas and the clogging of the pipes.'

"Peckston's *Practical Treatise on the Manufacture of Gas*, thus notices the statements that have been made by the advocates of oil gas, in favour of that article :

"If we admit these statements to be correct, we still fall short of the main point upon which any new branch of manufacture depends for success, namely: the manufactured shall be such as the manufacturer can afford to sell at a fair price to the public, and such as will at the same time afford him a remunerating profit for the money he may have invested. In the case of oil gas, it so happened that neither of these ends were

accomplished in any one instance; for the parties who used oil gas, found it exceedingly expensive, whilst those who had invested their money in works and apparatus for generating and distributing oil gas, after several years trial in many cases, and for a sufficiently lengthened period in all, to see whether any profit would arise, found invariably that they had not the remotest chance of realizing any dividend worth naming, by way of paying interest upon their investments.'

"Thus, the concurrent testimony of the authorities which have been consulted, has fully established, that the manufacture of gas from oil, as a source of profit, in competition with coal gas, has universally failed on a full trial.

"One of the advantages of the oil gas, is the less cost of the works. They say, that 'the works necessary for lighting any given district, will cost only from one quarter to one third the price of coal gas works.' This representation is widely at variance with the authorities on the subject of gas. Their cost in England were two-thirds the cost of coal gas works. It is believed to be more safe, to rely upon the experience of oil gas works, than upon mere representations of interested parties.

"Those of our citizens who have visited New York, are probably in the habit of estimating gas from the exhalations in the lower part of that city, of the miserable gas from the pavement, as it issues out of the leaky, slovenly laid pipes, with the odours of which the earth and atmosphere are contaminated, wherever those pipes are conducted. Such estimation does great injustice to coal gas as it is now manufactured in well-conducted works. Those exhalations proceed from unpurified rosin gas. The following extracts would seem to settle that part of the subject.

"From Ure's Dictionary of Arts, Manufactures, and Mines :

"After all, however, coal is much cheaper, and the gas from it is now so well purified, that oil and rosin are very little used in gas apparatus.'

"From the Encyclopedia Britannica :—'With respect to the smell of the two gases, they are so nearly the same, when the gases are properly purified, that it would be difficult to pronounce which of them is least unpleasant.'

"Believing that the interests of the City and the public con-

venience will be promoted, in giving the desired aid and countenance of the city to the introduction of Coal Gas, your committee recommend that the City Council authorize the City Treasurer to subscribe to the capital stock of the Providence Gas Company, with an understanding of a right to future subscriptions; and to contract with the Company for gas for city purposes; provided, such contract can be made on as favourable terms to the city, as other cities are supplied with gas."

The design of the following letters and articles is to present, in a portable and convenient form, the views of a large number of competent persons in regard to the mode of obtaining Gas Light from Bituminous Coal, as it has been developed in connection with the efforts of Messrs. Battin, Dungan & Co., to introduce this light in the cities and towns of the United States. All the works erected by our firm have been built under the immediate direction and management of Joseph Battin, Esq., who has introduced a large number and variety of improvements and inventions, a portion of which have been patented merely for the purpose of securing them to the works built by our firm.

Mr. Battin was connected with the Northern Liberties Gas Works in Philadelphia, from their commencement in 1838, until the Albany Gas Works were commenced in 1845. The following letter is from the President of the Northern Liberties Gas Company :—

OFFICE NORTHERN LIBERTIES GAS COMPANY,
October 26, 1844.

GENTLEMEN.—It gives me pleasure to recommend Mr. Joseph Battin, the Superintendent of the Northern Liberties Gas Company, as a skilful mechanic, and entitled to the fullest confidence. He has been connected with these works since 1838, and about three years since was unanimously elected the Superintendent of that institution, and has proved himself in every respect competent to meet any emergency in the operations of a work of this description. Although Mr. Battin's separation from us will occasion regret with myself and the rest of the company,

I cannot refrain from bearing my testimony to his competency to erect complete works for the manufacture of Gas, as well as to his integrity. It is my opinion that when our Board learn that they must lose his valuable services, they will give him any recommendation he may want.

Very respectfully,

JOS. REAKIRT.

The following preamble and resolutions were unanimously adopted by the Trustees of the Northern Liberties Gas Company, on Tuesday, December 10, 1844:—

Whereas a communication has been presented from Joseph Battin, tendering his resignation of the offices of Inspector and Superintendent—therefore,

Resolved, That while this Board accept the resignation of Mr. Battin, it does cheerfully bear testimony that, since his connection with this Company, he has given every satisfaction to the Board of Trustees, by constant attention to the interests of the Company, and by the faithful performance of the duties of the several offices he has filled.

Resolved, That this Board regrets the necessity that deprives them of the services of one so well qualified as Mr. Battin, to take the superintendence of works for the manufacture of Gas.

Resolved, That we do cheerfully recommend him as entitled to the fullest confidence, possessing great skill as a mechanic, and well suited to direct and manage an establishment for the manufacture of Gas.

Having been connected with the Northern Liberties Gas Works from its establishment until very recently, I have had an opportunity of becoming acquainted with the qualifications of Joseph Battin, who was employed on its first organization as Inspector, and until the Board of Managers were of opinion that his services as Superintendent would be more to the interest of the Company, and he was elected to that station, which he filled with great ability. He relinquished it to erect works for the manufacture of Gas in Albany, which was more to his personal

interest, much to the regret of the Managers of the Northern Liberties Gas Works, from whom he received the highest testimonials of his ability in the formation and management of Gas Works.

C. B. Dungan has been in the employ of the same Company, from its commencement, and now holds the important station of Treasurer and Secretary. I take great pleasure in testifying to the worth and ability of these gentlemen.

JOSEPH GRATZ.

Philadelphia, February 5, 1846.

The Albany Works were erected in 1845, and the following letters and resolutions relate particularly to those works.

OFFICE ALBANY GAS LIGHT COMPANY,

February 2, 1846.

Whereas Messrs. Battin, Lee & Dungan; the contractors for erecting and finishing the Gas Works of this Company, have nearly completed the same, and the works are now in full and successful operation. And whereas the committee appointed to examine the works have reported that they have performed that duty, and find that the works have been erected in a substantial manner, and that the same are nearly completed; and, whereas, in the erection of our said works, the members of this Board have had frequent occasion to examine the works during the progress of construction, and consequently have had much intercourse with the contractors, and especially with Messrs. Battin & Lee, and have at all times been gratified with the promptness and liberality manifested by them, and especially with the scientific knowledge evinced and carried out by Mr. Battin, under whose principal direction, as engineer, the works have been carried forward, and it is but just that some expression of the views of this Board should be communicated to said contractors.

Therefore, Resolved, That the members of this Board hereby express to Messrs. Battin, Lee & Dungan our unanimous ap-

probation of their conduct, faithfulness and liberality in the construction of our said Gas Works, and especially to Joseph Battin for his skill and talent in the erection of said works.

Resolved, That the improvement, in several particulars, made by Mr. Battin in relation to Gas Works, and which have been introduced into our works, are, in our opinion, of great value, and entitle him to great credit for his inventions, and their application to Gas Works, especially his improved burners, and a water seal valve to prevent the flow of gas, to enable repairs or improvements to be made.

Resolved, That a copy of these resolutions be presented to Messrs. Battin, Lee & Dungan, duly certified by the Secretary.

ALBANY, February 2, 1846.

To Joseph Battin, Esq.

MY DEAR SIR.—It gives me pleasure to learn that there is a prospect of your being interested in a contract for building and constructing Gas Works at ——. I have been closely connected with you for the last eighteen months, during which period you have been constructing the Gas Works here, and I am happy to say, that you have in every way answered the high expectations that I had of your very great cleverness as engineer, and as a man of high honour. For myself, (and I think I may say for each of the Directors of the Albany Gas Light Co.) I have found you worthy of *every confidence*, not only a gentleman of sterling integrity and most honourable feelings, but as one of the most practical correct engineers that we have ever known. The Gas Works constructed under your clever management at Albany, do great honour to your head, and to the great cleverness and practical knowledge as engineer, you have the full confidence of each of the Directors as you have of your many friends in Albany. I wish you every success, and shall be most happy to serve you in any way in my power. I am so unwell that these few lines are written in haste, and under every disadvantage.

Yours very truly,

H. L. WEBB,

President of the Albany Gas Light Co.

ALBANY, Nov. 20, 1846.

Joseph Battin, Esq.

DEAR SIR.—It is now just one year since I commenced the use of Gas in my dwelling-house, and I can freely say, that it has surpassed my most sanguine expectations as a beautiful, convenient, and economical light.

I have no hesitation in saying, that for the amount of light obtained, it is not more than one half the expense of oil or sperm candles.

I know it will give you pleasure to hear that our Works are in full operation. We have now about 350 consumers, with a consumption of not far from 30,000 feet of Gas in every twenty-four hours, and increasing daily. Our customers all express themselves well pleased with the light, and in fact, it is difficult to rent a store, unless the landlord will agree to put in Gas. We feel ourselves under great obligations to you, Sir, as the contractor and engineer, for the faithful and liberal manner that the works have been constructed. That after a year's trial, have, so far as we are capable of judging, proved perfect.

Yours truly,

H. PUMPELLY.

ALBANY, Nov. 20, 1846.

J. Battin Esq.

DEAR SIR.—Although your residence in our city was but short, and my acquaintance but of a limited period, yet I can assure you the high opinion I formed of your moral character, and the skill you manifested in your business, has been greatly strengthened since you left, by the opinion of others. All our citizens speak in the highest praise of your works, which you commenced and completed with such haste, that before some of our citizens knew your work was in progress, they found our streets brilliantly illuminated with gas. I can say that since my residence in Albany, which is near forty years, no work has been commenced and completed, which has given such universal satisfaction as the light which you have given

us. I rejoice to hear you have been equally successful at Newark. I should be happy to see you in Albany.

Yours truly,

FRIEND HUMPHREY.

ALBANY, Nov. 20, 1846.

To whom it may concern,

Joseph Battin Esq., (now of New Jersey,) was for some time a resident of this city, having been engaged while here in the construction of the Albany Gas Company's Works.

While with us Mr. Battin obtained the respect and confidence of all who came in business contact with him, and the superior character of the works he erected here furnish good evidence of his skill and capacity as an Engineer, and of his promptness and despatch as a contractor. (The works having been finished within the limit of his contract,) we take pleasure in commending him as in our opinion worthy of confidence and respect.

In relation to the comparative convenience and comfort between *Gas Light* and that furnished by oil or candles, we have no hesitation in expressing our decided preference for the former, and we believe it to be cheaper, safer, and more cleanly than any other manner of lighting with which we are acquainted.

WATTS SHERMAN.

ERASTUS CORNING.

ALBANY, Nov. 22, 1846.

Joseph Battin, Esq.

DEAR SIR.—It affords me pleasure to bear testimony to your skill as an engineer, and your faithfulness and integrity as a contractor, as to the entire planning and execution of our Gas Works. I do not know a director or stockholder that is not entirely satisfied with them, and with your management and conduct, in all respects. Our citizens are delighted with Gas. It is thus far found impossible to keep up with the demand

for pipes, &c. We are now burning 30,000 feet per day. Every body is taking it. It is found not only a much more brilliant light, but cleaner, more convenient, and not one half or two-thirds the expense.

Yours very truly,

JOEL RATHBONE.

ALBANY, Nov. 30, 1846.

Having been informed that Mr. Joseph Battin is negotiating with the citizens of ———, for the erection of Gas Works in that place, and that it would afford satisfaction to said citizens to be apprised of the opinion entertained in this city of the comparative merit of that mode of lighting public lamps, and of Mr. Battin's capacity to construct the necessary works, it affords me much pleasure to state that the works erected in this city were built under his superintendence, and I have never heard the slightest complaint from any stockholder or any citizen arising therefrom.

Prior to this city entering into a contract with the Albany Gas Co., I was instructed by the Common Council to visit Philadelphia and New York, with a view of obtaining such information as might enable the city authorities to act understandingly on this subject. I devoted much time to the investigation of the subject, as well by visiting various works, as by the study of approved authors, and on my report as chairman of the special committee raised for that purpose, a contract was entered into by the city with said company, which has given entire satisfaction, as I believe, to every citizen.

Many of our streets are now lighted by means of Gas, and as fast as the pipes are extended additional lamps are located.

I have no hesitation in saying that our streets are far better lighted and at less cost, when the wastage of oil is taken into consideration, and other matters taken into account, which it is needless to specify, but which all who have had any experience with lighting a city by means of oil lamps, will at once

call to mind. I am perfectly satisfied that, in a purely economical point of view, lighting by means of Gas is far preferable.

Very Respectfully,

ROBT. H. PRUYN,

Chn. Lamp Com., Albany Common Council.

OFFICE OF ALBANY GAS LIGHT COMPANY,

27th December, 1849.

GENTLEMEN.—Yours of the 24th inst. came duly to hand. I would say, in reply, that the works erected by you for this Company, were completed agreeably, with the fullest terms of the contract, and that I consider you fully competent to construct Gas Works on the most scientific and economical principles, and to give entire satisfaction in everything relating to their erection, and the fulfilment of contracts, which may be made with you for that purpose.

Very respectfully,

H. PUMPELLE, *Prest.*

To Battin, Dungan & Co.

The works at Newark, New Jersey, were constructed in 1846, and at the end of the first year paid a dividend, which has been continued regularly semi-annually, with gradually increasing profits, since that time.

NEWARK, January 8, 1847.

Mr. Joseph Battin,

DEAR SIR.—It is with no ordinary degree of pleasure I take this opportunity of congratulating you upon your entire success in the construction and completion of our Gas Works. And when I take into consideration the short space of time (less than seven months) that has been consumed in the prosecution of the work, I think no person at all acquainted with its details and the difficulties that have to be encountered generally, can fail to award you the highest meed of praise.

In conversation with several gentlemen of my acquaintance, some of whom have visited the principal Gas Works in our country, (*viz.*) Philadelphia, Baltimore, New York, Boston and Albany, and upon whose judgment I should rely, pronounced

our works, taken in every respect, the most perfect of any they had seen, particularly as it regards the neat and condensed arrangements of the various buildings, the substantial manner in which they have been erected, and the perfectly tight manner in which the pipes have been laid, thereby preventing any loss from the escape of Gas, and consequently any unpleasant smell. In fact the best testimonials of your skill and ability in the erection of Gas Works, in my opinion, would be a reference to the Newark Gas Works.

Since I have had the honour to preside at the meetings of the Board of Directors, (and I have attended all save one,) it gives me great pleasure to state that but one opinion has prevailed there, as well as among the stockholders generally, that in the performance of your duties as contractor and superintendent, the strictest regard has been paid to the interest of the company, in the convenience and durability of construction in every minutiae, whether actually embraced in the contract or not, and I feel that the company have been benefited by that provision in the contract which allowed you to make any slight alterations from the plan suggested, if, in your judgment, they were considered an improvement.

I have just learned that you contemplated a visit to Charleston, for the purpose of considering an application to build Gas Works for that city. I regret that I have no particular acquaintance there to whom I might introduce you, as well as bear testimony in your favour. Should it be of any service to you, you are at liberty at any time to refer to me as to integrity of character, and entire ability as a Gas engineer.

With sentiments of the highest respect, I remain, yours, &c.,

JAMES KEENE.

The undersigned, Directors and Stockholders in the Newark Gas Light Company, being desirous to bear testimony in favour of Mr. Joseph Battin, the engineer and contractor, take great pleasure in stating that the works have been erected by him in such a manner as to meet our unqualified approbation; and that in the erection of the same, he has displayed a skill and judgment which shows him to be a perfect master of his business.

We believe our works to be one of the best in the country, and constructed in proportion to their size at a less cost than any within our knowledge. Mr. Battin has introduced some important improvements, peculiarly his own, and which are not to be found in other works of the kind. The pipes have been laid with great care, so as not to suffer the least escape of Gas, the whole work, during its entire progress, having been under the immediate supervision of Mr. Battin.

JAS. KEENE, <i>Prest.</i>	} Comprising all the Directors residing in the city of Newark.
SAML. MEEKER,	
J. C. GARTHWAITE,	
BEACH VANDERPOOL,	
ISAAC BALDWIN,	

Newark, February 4, 1847.

The undersigned, Stockholders in the Newark Gas Light Company, residing in Newark, also bear willing testimony to the foregoing commendation of Mr. Joseph Battin, as an engineer and contractor. We believe him capable, faithful and successful.

JOHN TAYLOR, *Prest.*, N. Banking and Ins. Co.,
 JOHN I. DARCY, *Prest.*, N. J. Rail Road Co.,
 W. A. MYER, *Prest.*, Mechanics' Fire Ins. Co.,
 WHITFIELD NICHOLS, M. D.,
 WM. B. KINNEY, Editor, Newark Daily Advertiser,
 JOSEPH N. TUTTLE,
 J. D. VERMILYE, Cashr. Newark Bkg. and Ins. Co.,
 FRED. T. FRELINGHUYSEN,
 W. H. MOTT, Cashier State Bank at Newark,
 PETER JACOBUS,
 JOEL W. CONDIT, V. *Prest.*, Morris and Essex R. R. Co.,
 MATT. W. DAY, Cashier Mechanics' Bank,
 E. VAN ARSDALE, *Prest.*, State Bank, Newark.

WASHINGTON, February 9, 1847.

DEAR SIR.—In answer to your communication of the 3d inst.,

in reference to the Gas Works at Newark, recently erected and put in operation by you, I take much pleasure in saying, 1st—I am an original Stockholder in that Company; made frequent examinations of the work whilst in progress, and it is but an act of justice to you, to add, that the whole has been completed in the most scientific and durable manner. 2d—I have visited most of the Gas Works in the United States, and can most unhesitatingly say that the Gas made at the Newark works is equal, if not superior to any there is in this country. 3d—I have heard but one opinion expressed by our directors, stockholders, and citizens, in reference to this work, and that is entire satisfaction. The excellent and prompt manner in which you have executed the contract, merits for you the approbation of all; and it gives me much pleasure, in conclusion, to say that the work promises to be as profitable to the stockholders, and useful to the city, as it is creditable to your skill and enterprise. With my best wishes for your prosperity, I am, Sir, your very obedient servant,

WM. WRIGHT.

NEWARK, Dec. 26, 1849.

Messrs. Battin, Dungan & Co.

GENTLEMEN.—Your favour of the 22d inst. was duly received. It affords me much pleasure to bear my testimony to the promptness and faithfulness exhibited by you in all the progress of the construction of the Gas Works in this city. The novelty of the enterprise attracted much attention on the part of our citizens, and but one feeling of approbation seemed apparent, and the stockholders of the company have united in expressing their gratification both with the contractors and the works, and I know I speak their views in saying, that the longer the works are used, the more are we all satisfied of your competency and faithfulness; although among the first works erected by you, we have seen occasion for no change, and my own confidence is greatly increased by a comparison of the perfect operation of these works as compared with those of our sister city. Your novel experiment of securing perfect freedom from leaks in the

main pipes, must meet the hearty approbation of all where you are called to build.

I trust you may be successful in securing the contract you are seeking, as much for the reason that a badly constructed Gas Works in any city must be a terrible nuisance, as from gratitude for constructing for us a work so free from objection. Although we have not yet averaged more than 10,000 feet per night, our profits at this time will produce nine or ten per cent. upon our capital invested.

I remain sincerely your obt. servt.,

SAMUEL MEEKER,

President Newark Gas Works.

PATERSON, Jan. 14, 1850.

Messrs. Battin, Dungan & Co.

GENTS.—Your favour of the 10th inst. was duly received, and in reply thereto, I take great pleasure in stating that the Paterson Gas Light Company entered into contract with you on the 26th day of October, 1846, for the erection and entire completion of the Gas Works in this town for said company, at and for the consideration of \$100,000. That you, with no unnecessary delay, commenced and prosecuted the work to its completion, to the entire satisfaction of the President, Directors and Company, and the works taken by them from you as having been completed in a good substantial and workmanlike manner, according to contract. That in laying down the pipes about three miles through the different streets of the town, great care was always observed in proving them by hydraulic force before the ditches were filled in, to prevent the leakage of Gas, and such was the care and skill pursued, that I have not known of a single case of leakage since the works have been completed and in operation. I have no hesitation in stating, (and I know that the Board of Directors agree with me,) that from my knowledge of our works here, and those that you erected in the city of Newark, compared with some other Gas works elsewhere, that I have seen, that if we were now about to contract for new works, or those we have were to be built over again, that we would give you the preference over all others by fifteen or

twenty per cent. more, rather than run the risk of not having them completed in such a satisfactory manner as we know these have been.

I am, with respect, your obt. servt.,

A. PARSONS,

President Paterson Gas Light Company.

OFFICE OF THE CHARLESTON GAS LIGHT COMPANY,

June 9, 1848.

We, the undersigned, the Building Committee of the Charleston Gas Light Company, having been requested by the Board of Directors, on the application of Mr. Alfred Sabbaton, agent, for Messrs. Battin & Dungan, to examine the works, and if found to be in conformity with the contract, to receive them from their hands:

REPORT,

That we have carefully examined the buildings, machinery, and appurtenances, and find them to be not only in strict, but liberal accordance with the contract. For style, simplicity, and harmony of construction, we think they will compare favourably with any works of similar capacity in the United States, and we find that a particular regard has been paid to the economy of working. Having been already in operation more than two months, the best test to the efficiency of the works, and the best quality of the Gas, is found in the entire satisfaction expressed by consumers as well as proprietors.

Your committee have therefore found much pleasure in receiving the works from the hands of the contractors.

Respectfully submitted,

JOSHUA LAZARUS,

T. LEGER HUTCHINSON,

O. MILLS.

OFFICE OF CHARLESTON GAS LIGHT COMPANY,

March 22, 1848.

The undersigned, members of the Board of Directors of the Charleston Gas Light Company, having been requested by Mr.

Joseph Battin to give expression to our feelings with regard to the construction of the Gas Works under his care, feel no hesitation in stating that the works in this city have been conducted to our entire satisfaction, and for neatness, permanency, and adaptedness, we believe will compare favourably with any in the United States. The contract, now nearly completed, has been faithfully executed in workmanship and materials; in the progress of them great care and despatch have been exercised, which has given confidence and satisfaction to the community. Much is to be attributed to Mr. Battin's personal services, his energy and equanimity.

The machinery all works well, and the Gas produced is of the best quality. A large patronage has already been secured, although but at its commencement. We therefore feel a thorough conviction, that any contract for Gas Works made with Mr. Battin, will be faithfully and effectually executed.

Very respectfully,

JOSHUA LAZARUS, *President,*

GEO. S. CAMERON,
THOS. J. ROGER,
T. LEGER HUTCHINSON,
H. W. CONNER,

H. GOURDIN,
O. MILLS,
M. C. MORDECAI.

OFFICE CHARLESTON GAS LIGHT COMPANY,

December 31, 1849.

Messrs. Battin, Dungan & Co.

GENTLEMEN.—I note with much pleasure that the city council of Richmond intend erecting their own Gas Works, and that you would probably offer for the contract. If I had a voice in the matter, I would not deliberate long in giving you my preference over any others who might present themselves; not that there are not as good men and true, but from the experience I have had of the efficiency of your works, which, since being left in our hands, have given no trouble or anxiety, other than what is incidental to a rapid increase of demand. Had the work not been so faithfully executed, and thoroughly adapted to the object, removed as we are from a ready access to me-

chanics practised in that line, we should not have been able to supply, so uninterruptedly, what has been required of us. The short experience I have had, has shown me how much easier it was, by untiring vigilance, to guard against errors in the outset, than to have corrected them after getting into operation. I don't know what I would not rather encounter than the importunities of a community, on a subject so important and so indispensable as good light. I may venture to say no enterprise has enjoyed a greater share of popularity, or been better patronised, than ours. We have not been yet two years in operation, and we have the satisfaction of seeing our stock the most sought after, and at the highest premium of any in our market. The par \$25, is now worth \$32, equal to 28 per cent. advance. Our private list numbers 885, we light 550 street lamps, and have laid 30 miles street mains; are now extending our benches and gasometer to double the original capacity, all which we have accomplished without increasing our original capital, \$200,000. We have found great advantages from the simplicity of construction, and the economy of working. Our Board have often congratulated themselves that our contract had not fallen into worse hands, and it is but justice to say, that every suggestion arising under the latitude of our contract, has been so readily and generously met on your part, and that the closing of our accounts has been as pleasurable and satisfactory as the opening of them.

I need not add that the excellence of your works, and the very satisfactory manner in which our extensive and complicated negotiations have been conducted, as well as personal respect, entitle you to my services, which I trust you will not hesitate to command.

Very respectfully, yours,

JOSHUA LAZARUS.

OFFICE CHARLESTON GAS LIGHT COMPANY,

Charleston, January 3, 1850.

Messrs. Battin, Dungan & Co.

GENTLEMEN.—Your favour of 31st ult. is just received. You will, by this, have been in possession of mine of same date to

you, which has anticipated, to a considerable extent, the desire you have expressed. I have also volunteered an opinion of you and your works to Mr. Boshier and to Mr. G. A. Myers. I would only add your manner of laying the street mains, and proving them by hydraulic pressure, has been entirely successful, at once precluding any escape of gas or effluvia. In passing our streets no one would know that gas pipes are running through them, unless by the carelessness of the lamp-lighter, a burner may be left open. I take much pleasure in stating that the work you have done for us has given the highest satisfaction to our Board, as well as to the community. It is not saying too much, when I venture my opinion, that the works are not excelled by any in the United States, for neatness, permanency, and efficiency, as well as simplicity and economy of working: the best testimony of which is found in the uninterrupted success in our operation. Your compliance with the contract, and throughout our various negotiations, have given the greatest satisfaction. I enclose a memorandum from Dr. F. Y. Porcher, one of our most respectable citizens, and next door neighbour. I trust, for yourselves, as well as for the community of Richmond, the contract may fall into your hands.

If certificates would avail you, I do not hesitate to say you can obtain one from any resident of the city.

Very respectfully, your most obedient,

JOSHUA LAZARUS, *President.*

My residence is next door to the Gas Works, and I have as yet experienced no annoyance from its proximity—either from the smell of the gas, or from any noise made during the night, in conducting their operations. At the same time I can state, that owing to the great care used in fixing up the pipes in the houses, and by testing their tightness by means of hydraulic pressure, no escape of gas takes place, to the annoyance of the occupants—the whole plan and great success of these works, reflects great credit on the skill and assiduous attention of Messrs. Battin & Dungan.

F. Y. PORCHER.

Charleston, January 3, 1850.

CHARLESTON, *January 3, 1850.*

I have been Secretary and Superintendent of the Charleston Gas Light Company since their commencement, and take pleasure in bearing testimony to the excellence of the works, every part of them having answered the purposes intended; and I have found great satisfaction and facility from the manner in which the street mains, and other parts of the works have been proved before they were put in use. It is only justice to Messrs. Battin, Dungan & Co., to say that their works for the Company have been faithfully built, and that I believe them, in every respect, to be faithful and reliable men.

JOHN R. HERIOT,
Sec. and Supt. Charleston Gas Works.

NEW HAVEN, *Nov. 24, 1849.*

Messrs. Battin, Dungan & Co.

GENTS.—I have the pleasure to inform you that our Board of Directors have declared a dividend of three per cent., payable on the 2d proximo. We think we have earned eight per cent. during the past year. Our success is quite equal to our expectations, and I desire to express to you our thanks for the faithful, manly, and honourable manner in which you have executed your contract with us. Should you have occasion hereafter to refer to us in any future negotiation, you have full liberty to do so. We shall not hesitate to say that the utmost confidence may be placed in your skill and integrity as contractors for Coal Gas Works.

Very truly, your friend and servt.

W. W. BOARDMAN,
President New Haven City Gas Light Company.

The following letter, from Benjamin Silliman, Jr., Esq., Professor of Chemistry in Yale College, New Haven, was given while connected with the Louisville University, after having participated in the enterprise at New Haven, from its commencement to completion:

LOUISVILLE UNIVERSITY, December 29, 1849.

Messrs. Battin, Dungan & Co.

GENTLEMEN.—The Gas Works at New Haven built by you have now been in successful operation for over a year, and I feel authorized, from my intimate knowledge of all the details of their construction—which, from the first outlines of a charter to this time, have been perfectly familiar to me—and I may add, *gratified* to affirm my great satisfaction, both in the success of our experiment and in your skill, fidelity and efficient zeal as the engineers. It is very possible that there are other parties who may be as capable of erecting efficient, neat, and economical works as yourselves, but I am not acquainted with them, and have not seen the results of their labours. Had I again to select contractors for building another Gas House and its appendages, I should with pleasure hand the proposals to your firm, with entire confidence in a successful result.

Very respectfully and truly,

B. SILLIMAN, JR.

Board of Aldermen, Rochester.

RESOLUTIONS BY ALD. SCRANTOM.

Whereas, the introduction of Gas into our city has been attended with signal success, furnishing an economical and safe method of lighting our streets, stores and dwellings, unequalled in brilliancy and cheapness, reflecting the highest credit upon the projectors and company, for which our citizens cannot feel too grateful; and whereas, in the accomplishment of a project so much desired, we recognize the zeal, energy, and perseverance of our present efficient city executive, under whose faithful and successful administration the work has been commenced and terminated; and whereas, the symmetrical and elegant manner in which the buildings have been arranged, the permanent and workmanlike style in which the entire works have been constructed, thereby introducing an important acquisition to our city improvements, has called forth the most cordial expressions of gratification from our citizens generally, and merits the hearty approval and commendation of this body:

Therefore Resolved, That the thanks of this Board be, and hereby are tendered to the "Rochester Gas Light Company" for the spirit and enterprise manifested in the consummation of this valuable city improvement—to his Honor the Mayor, for his untiring and active exertions in projecting and urging forward to completion, a work of so much importance to the city—and to Messrs. Battin, Dungan & Co., the gentlemanly contractors, under whose supervision, the whole works have been constructed—and that the clerk of this Board be requested to transmit a copy of this resolution to the President of the Gas Light Company, and to Messrs. Battin, Dungan & Co. Adopted.

ROCHESTER, Dec. 29, 1849.

Messrs. Battin, Dungan & Co.

GENTLEMEN.—Your favour of 15th November was received in due time, but in consequence of the pressing demands upon the time of the superintendent, Mr. Parsons, arising from the increasing demand for Gas, he has been unable until now to put his accounts in a state to show the condition of our operations.

We have just had a meeting of the Board, and have declared a dividend of five per cent. payable the 2d of January. The net profits of our operations have been to this time $8\frac{1}{2}$ per cent. The unfortunate though commendable design of patronising our own mechanics by having the first retort made here, has materially diminished our profits—as we have been compelled, in order to keep up the supply, with limited number of retorts in use, to turn out much of the coal when but about three-fourths of the Gas was expelled. It will be recollected that we were not ready to commence lighting till 13th December, 1848, and therefore obtained but a limited number of patrons up to the time of lighting the shops in the fall of the present season. We commenced with only 94 subscribers—the 2d quarter ended with 178, the 3d with 286, the 4th with 389, and we have now over 400. The average daily consumption, the first month including Sundays, was less than 5,000 feet, that for the month of November, just ended, 25,000. The maximum 31,000.

The quality of our Gas is thought by those of our citizens, who have recently been abroad, and have thus had opportunities of comparing, to be superior to that to be seen in *any other*

place. All things considered, we have much reason to be gratified with the success of our undertaking, and especially to congratulate ourselves with having had the good fortune to make the acquaintance of Messrs. Battin, Dungan & Co., and to secure their experience, energy, and skill, in the erection of our works.

Mr. Parsons will in a few days send you an account in detail of our operations.

With much respect, your obt. servt.,

L. BROOKS,

President Rochester Gas Light Company.

Report of the Committee, consisting of Judges Darling and Richards, appointed to examine sundry Gas Works, by order of the Board of Directors of the Reading Gas Light Co.

The Committee appointed to visit and examine Gas Works, for the purpose of obtaining information necessary to enable the Directors of the Reading Gas Company to contract for the erection of Gas Works in Reading,

REPORT,

That they have visited the Works at Albany and Newark, and obtained valuable information in relation to works in Paterson, N. J., Charleston, S. C., Northern Liberties, and the city of Philadelphia. The works at Albany were completed in 1845, they are built on three sides of a square of about 200 feet. The buildings are a retort house, purifying house, extensive coal sheds, lime house, carpenters' and smiths' shops, stable and office. The gasometer is about 50 feet diameter; the amount of gas daily manufactured has increased from 10,000 cubic feet, to about 50,000. The number of consumers is 530. The works cost, in 1845, \$138,000; improvements have since been made which cost \$27,000, and the company is now engaged in enlarging and extending their works. Every facility was afforded your Committee in examining the works. The information was full and satisfactory. The officers of the company answered all the inquiries propounded frankly; exhibited the books of the company, showing the results of their operations, &c.

The works at Newark, N. J., were completed in November, 1847. They are very neat and compactly built, and in their construction several improvements have been introduced, which have proved successful and beneficial. The retort house contains five benches, of three retorts each, where 40,000 cubic feet of gas can be made daily. The buildings are substantial and well arranged. These works cost \$100,000. All the information the Committee required was freely communicated by one of the officers of the company, and copies of their rules and regulations furnished them for the use of the Directors of this Board.

The works at Albany and Newark are constructed on the most approved plan, and in the best manner. The Gas is remarkably pure, and very little effluvia arises from the process of manufacturing it. No defects in the construction of these works, no leakage of pipes, have occasioned expense or trouble to the company, or hindered the introduction of gas into dwelling houses, &c. The Committee cannot include in their Report information received from gentlemen of high standing, in relation to the Gas Works in Charleston, S. C., and other places, as to their cost, construction, productiveness, &c. From all the sources of information which have been accessible to the Committee, the conclusion is forced upon them, that those who wish to establish good works, must depend very much, not only upon the mechanical, scientific, and pecuniary ability of the contractor, but also on his *honesty* and *fidelity*. In some places Gas Works have been unproductive to the stockholders, and in disfavour with communities, in consequence of the manner in which they have been constructed, and the quality of the gas manufactured. No company, in a small city, can afford to make experiments, or incur unnecessary and hazardous risk for an apparently possible gain, or saving of cost in the construction of their works. It is not the province of the Committee to express any opinion in relation to the several offers made by different companies and individuals to build and construct Gas Works in Reading. They are, however, of opinion that the Directors should require some things to be done which are not provided for in either of the offers made to this Board. In Albany, lamp posts have been put up by the company, at the

expense of the city. In Newark, lamp posts, to some extent, have been put up by the company. In Reading, at least four lamp posts should be put up in each square through which gas pipes may be laid. This should be provided for in the contract. The Committee are also of opinion that the works proposed now to be constructed, should be so arranged, that the manufacture of gas might at any time be increased sufficiently to meet the demand of our growing city. The Committee feel bound to say, that all those with whom they conversed, in relation to Gas Works, bore uniform testimony to the ability of Messrs. Battin, Dungan & Co. to construct Gas Works, and their promptness and fidelity in the execution and fulfilment of their contracts.

WILLIAM DARLING,
MATTHIAS S. RICHARDS,
Acting Committee.

Reading, June 26, 1848.

READING, December 27, 1849.

Messrs. Battin, Dungan & Co.

GENTLEMEN.—Your note of the 22d inst., apprising me that you designed applying for the contract to build Gas Works at Richmond, and desiring me to state my knowledge of you, and the manner in which you executed your engagements in building the Reading Gas Works, has come to hand. At the outset of our works we took great pains to inform ourselves on the subject generally, and came to the determination not to entrust our capital in the hands of any contractors who had not given ample proof of their *success*, as well as scientific skill. Our attention was early called to your firm, and our inquiries, together with personal inspection of the works you had erected, happily led us to employ you. I can bear testimony to the very liberal and skilful manner in which you fulfilled all the terms of your contract. The Reading Gas Works are not only in every respect satisfactory to the public and stockholders, but are justly regarded here as the model works in this part of the country. The quantity of Gas now consumed per day is about

8,000 cubic feet, which will enable us to make a dividend at the rate of 6 per cent. per annum, in March next, the end of the first year. New consumers are constantly coming in. Not the slightest accident has occurred to any part of the works since they have gone into operation, to cause a moment's loss to the consumers.

It seems, from your note, that proposals have been invited for building the Richmond Gas Works. No doubt you will have to contend there, as here, with a host of competitors, well provided with recommendations—however incompetent in skill and experience, as well as pecuniary responsibility, for so important an undertaking.

Hoping that you may meet with the encouragement you deserve, I am, gentlemen, respectfully, your obedient servant,

ISAAC HIESTER,
President Reading Gas Company.

OFFICE HARTFORD CITY GAS LIGHT COMPANY,
Hartford, December 24, 1849.

Messrs. Battin, Dungan & Co.

GENTLEMEN.—Your favour of the 22d inst. is received, in which you ask me to state what I know of your firm, and of the manner in which you have executed your contract to erect Gas Works in this city. This I do very cheerfully. My information, derived from various sources, enables me to answer all *inquirers*, that those who compose your firm possess the capital, the skill in their business, the integrity and the fairness, which, in my judgment, entitle them to the entire confidence of those who may wish to employ them in the construction of Gas Works. As to your second inquiry, I can only say, that I have heard of no complaint from any one. I have been so occupied on our rail road the past season, that I have not been able to give much attention to our works as they progressed; but from several inspections I made myself, and from the remarks of Directors, who have had them more particularly under their eye, I think I am justified in saying that no reasonable expense or pains have been spared to make the works as perfect as possible.

We have not yet had time to *test* everything in relation to

the works, but so far, there is every indication that they will prove satisfactory in every respect. I will only add that I have had no intimation from any quarter that your contract with this company has not thus far been faithfully fulfilled.

Very respectfully and truly yours,

A. M. COLLINS,
President Hartford City Gas Light Co.

To all whom it may concern,

This will certify that Messrs. Battin, Dungan & Steever did, say twelve months since, contract with the "Hartford City Gas Light Co." to erect Gas Works, lay four miles of pipes, &c., &c., all of which they have done to the perfect satisfaction of the stockholders and our citizens generally. That from inquiries of other Gas Companies at various cities, I am well satisfied that the Gas Company who use coal, are the best, that the works erected by Battin, Dungan & Co., are much cheaper at the price they ask, than those erected by other parties, that is, taking into account the durability and manner of workmanship.

That as a citizen and holder of real estate, I am perfectly satisfied that we, (citizens and consumers,) are better off by having given Battin, Dungan & Co. \$100,000 for the works we have, than to have contracted with others who offered to give us the same works and capacity for even \$20,000 or \$30,000 less, and this I state from having seen other works in operation. I will also say, that I am the owner of only ten shares \$250, and have only interested myself in the company as a citizen and for the *public good* of our city.

DANIEL BUCK, JR.

HARTFORD, Conn., Dec. 27, 1849.

HARTFORD, Jan. 12, 1850.

SIR.—Permit me to introduce to your acquaintance Messrs. Battin, Dungan & Co., who have recently erected Gas Works here under a contract made with some of our citizens. I am interested in the contract, and have been led to observe closely how the work has been performed from time to time, and for

myself as well as our citizens generally, *I can say that we are entirely satisfied.* Messrs. B. D. & Co., have done all they agreed to do so far, and in a very thorough workmanlike manner, so that I have not heard of a single leak being detected in any of their pipes, and the Gas which is being, as rapidly as fixtures can be procured, introduced and used in our stores and houses, gives general satisfaction. While at Utica in October last, I examined the Gas Works there, erected by other parties, and the contrast between the Utica Works and those erected by B. D. & Co. here and at Syracuse, was *very greatly* to the credit of these gentlemen. Should your citizens contract with Messrs. B. D. & Co., I can safely say from our own experience that you will find them ready to perform all they agree to do, and if any doubt arises, to do more rather than less. We have found them men of character, *safe* and *reliable*, with a high reputation which they value, and which they seem determined to maintain by deserving it.

Any attentions you may be able to show these gentlemen, will oblige.

Yours truly,

JAMES M. BUNCE.

SYRACUSE, December 26, 1849.

In answer to the request of Battin, Dungan & Co., for an expression of my opinion in relation to the Gas Works in this city erected by them, it affords me great pleasure to say, that the works erected, and in the course of erection by them here, have afforded me the highest satisfaction. Although unacquainted with the construction of works of this character until they came to this city for that purpose, so far as my observation extends, and from the opinion of others of much experience and judgment on the subject, I am happy in saying that in despatch, neatness, general workmanship and materials, we are highly pleased and fully satisfied.

Their energy, liberality, and gentlemanly bearing in all their intercourse with us, have gained our highest respect and regard.

Our works but partially completed—owing to the lateness of

the season—were, from the start, in admirable condition, producing an article of Gas of the best quality, affording entire satisfaction to the consumers, thereby securing to us a daily increasing consumption, and the approbation of our citizens.

M. D. BURNET, *President.*

SYRACUSE, Jan. 12, 1850.

Messrs. Battin, Dungan & Co.

GENTS.—In answer to your favour of the 9th inst., requesting my opinion as to the character, &c. of the Gas Works, recently erected by you in this city, I cheerfully reply, that the works above referred to, have been erected within the time required, and of the most substantial and satisfactory character—indeed, having been one of the committee appointed by the Common Council of the city to examine this subject before entering into a contract for the erection of Gas Works, and in this way having had occasion to visit a great number of Gas Works, among which were those of Philadelphia, New York, Albany, Troy, and Rochester, and having since seen many others, I have no hesitation in saying, that in my judgment, our works are superior to any that I have seen, and I greatly doubt whether they are excelled by any other on this continent, either in reference to the character of the works, or to the quality of the Gas. My late examinations had reference to an investment in the stock, and so well satisfied was I of the superior character of these works, that I have recently made a large investment *in the stock of the Company*. Perhaps it would not be amiss here to state, that at the time of entering into a contract with you, there were several other applications pending before our Board, one from a gentleman in Cincinnati, one from a Company in New York, and one from a Company in Troy.

These applications were all carefully considered by the committee, (consisting of Aldermen Lawrence and myself,) and also by the Common Council, and the result was, that you were preferred; and it is now, and ever since has been a matter of gratulation to our citizens, that you were so preferred.

In every thing connected with this subject, you have fairly and fully met the expectations of the Common Council and of

our citizens, and I deem it but a just tribute to merit, to say that I know of no individual or firm on this side of the Atlantic with whom I would so readily contract for the erection of Gas Works as with yours. There are two points or considerations essential to be considered by all persons about to embark in an enterprise of this description. The first is the character of the works, (that is,) the material out of which the Gas is to be manufactured, whether coal, grease, or rosin—and, second, the integrity, skill, and intelligence of the individual or individuals, with whom the contract is or shall be made.

In both of these we have been most fortunate. What discoveries are to be made as to substances out of which Gas is to be manufactured, time will demonstrate, but at present I am entirely satisfied, that for lighting large towns nothing is so cheap and reliable as coal, and from all the examinations which I have given this matter, I do not believe there is a concern in the United States who understand the whole subject in all its details as well as yours, or who will more fairly carry out their engagements.

In haste, and with great respect your obt. servt.,

H. BALDWIN,
GARDNER LAWRENCE.

P. S. Mr. Lawrence is absent from town, or would no doubt unite with me in this communication.

H. B.

Jan. 14. Mr. Lawrence has since returned, and adds his signature to mine.

H. B.

From the Newark Daily Advertiser, October 2, 1846.

NEWARK GAS WORKS.

Our citizens generally will be gratified to learn that the NEWARK GAS LIGHT COMPANY, recently formed under a charter from the State Legislature, are making rapid progress in the construction of their works. They are now, we are gratified in being able to say, in such a state of forwardness as to warrant the belief that they will be in operation within ninety days. Feeling that this is a subject which interests in a high degree the people of the city generally, we have taken an opportunity

to visit the works, in order to ascertain something of the character, objects and circumstances of the enterprise, and inquiry authorizes the conviction that it will prove mutually satisfactory to the city and the company. The most ample arrangements are now in progress to furnish the means of lighting the city with Gas of the purest kind, and to meet all probable demands to supply stores, factories, shops, public buildings, and private dwellings, within the period mentioned.

The works are located on the corner of Market and Congress streets, near the river, on a lot 193 feet by 123, fronting on Market street. The character and dimensions of the buildings are as follows, viz.: A RETORT HOUSE—30 by 50 feet, entirely fire-proof, being covered with iron rafters and slate-tiling—a PURIFYING HOUSE, WORK SHOP, COAL SHED, and OFFICE, all built in the best manner of brick, and in a way to afford security from fire: a large CISTERN or TANK, 52 feet diameter and 20 feet deep, constructed entirely of the best hard brick, laid solid in Hydraulic Cement to render it perfectly water-tight. In this Cistern the GASOMETER or GAS HOLDER is suspended, guided by stands, and so arranged as to rise and fall with the ingress or egress of the Gas. This Gasometer is constructed of the best *American Tank* iron, No. 14 wire gauge, and is of course entirely air tight. It is supported by a wrought iron frame work inside—and is throughout of American manufacture.

The main pipes to conduct the gas through the city will be four miles in length, and workmen are now employed in laying them. The contractor and engineer, Mr. Joseph Battin, whose skill and enterprise have been demonstrated in the erection of the Gas Works at Albany—now in successful operation—is obligated to put the entire works in order, so that they will be capable of supplying daily 40,000 cubic feet of Gas, at a cost of \$100,000; and the company confidently expect to be able to furnish light by the 1st of January, 1847. The works and machinery are so arranged that they can be extended to double their present capacity at a comparatively small expense, and without deranging their symmetry. Mr. Battin has made an important improvement to regulate the flow of the Gas through the pipes, and the company pledge themselves to furnish it to burn without any smell whatever.

The company we understand will adopt Mr. B.'s patent

burner, which will effect a saving to the consumer over the burners generally used in our cities. By this method the public lamps can be lighted for one third of what it formerly cost the corporation, with the advantage of a brighter and better light. Present appearances indicate a large demand for it, and those who wish to avail themselves of the benefit of this means of lighting, would do well to give their orders immediately, as otherwise the demands at the time of commencing operations may make delay in putting up the necessary fixtures unavoidable. Believing it to be altogether the best and cheapest artificial light now in use, we shall introduce it ourselves at the earliest moment. The Albany papers speak in the most unqualified terms of the success of the enterprise there. The *Evening Journal* says that no enterprise has been introduced by capitalists which promises greater usefulness, and, ultimately, a better return for capital invested, and adds this testimony of experience:

“And, now that we enjoy the pleasant light which these works furnish, it is a matter of general regret that we had not sooner secured their establishment among us. Our streets, stores, mechanics' shops, offices and public edifices, all bear brilliant testimony to the superiority of gas over all other lights, and render written compliments to either the material itself, or the works, or the excellent engineer, Mr. Battin, quite unnecessary. Like a clear-headed, logical, eloquent debater, the lights speak for themselves. They furnish the most fitting eulogy of their real merits, and satisfy the public that all that is done by the company or its agents, is well done.”

From the Newark Daily Advertiser, Jan. 14, 1847.

NEWARK GAS WORKS.

We take great pleasure in congratulating the town that this desirable and important improvement is so far completed, that the company is now furnishing the citizens with Gas of a very superior quality.—And we feel authorized to add, that those who have introduced it into their dwellings and stores, are gratified beyond their expectations with its use. No one who has passed along the streets in the evening could have failed

to be impressed by the brilliancy of this light; and the attainment of so desirable an improvement is, we believe, the subject of universal congratulation. When the books for subscription to the stock were first opened, it was looked upon by many amongst us as a chimerical scheme; and they not only stood aloof from the enterprise, but dissuaded others from embarking in it. But, as the work progressed, steadily and uninterruptedly, (under the immediate direction and superintendence of Mr. Joseph Battin, the contractor and engineer), its practicability became more and more apparent. The stock was not only all taken, but sought after; and we have authority for saying, that a premium, together with interest on the stock, has been offered and refused for it since the works have been in operation. Several public-spirited citizens, who have introduced the light into their dwellings and places of business, have ordered lamps placed on their side-walks; an additional testimony of their sense of the beauty and value of this mode of illumination. The Works have been built in the most perfect and substantial manner; and some valuable improvements, which experience suggested to the mind of the engineer, have been introduced, that are not to be found elsewhere. We are assured that the President and Directors of the Company, as well as the Stockholders and the community at large, are entirely satisfied with the skilful manner in which they have been constructed and put into successful operation.

The Gas was furnished, for the first time, on the 5th inst., to an unusually large number of consumers; and such has been the call for it since, that it has been wholly out of the power of the gas fitters to supply the demand for fixtures. Judging from present appearances, it will be taken universally (with, perhaps, scarce an exception), along the entire line of pipe, of which there have been laid about three miles—leaving one mile yet to be laid, to complete the contract.—This would have been done by the first of December last had there been no disappointment in the receipt of pipes.

The time allowed for the completion of the works was eighteen months; and our friends abroad will, perhaps, be surprised to learn, that all that has been done has been accomplished in a period short of seven months. An entire finish would have been made of the works within that period but for

the reason just referred to. To those who know something of the length of time usually taken to construct works of this kind, this may seem strange; but those amongst us who have been attentive observers of the progress of the enterprise, ascribe the accomplishment of the work, thus far, in so short a space of time, solely to the zealous and untiring exertions of Mr. Battin, who, in addition to his other duties, has performed much of the work with his own hands—he being emphatically a working man. But the works themselves furnish the most fitting eulogy he could possibly have.

As to the comparative cost and value of gas-light, we are tempted here to repeat the testimony of the United States Gazette:

“LESSON FROM EXPERIENCE.—GAS AND TALLOW.—Gas has been introduced into the city of *Newark*, (N. J.) and the editor of the *Daily Advertiser* is trying to convince his fellow-citizens that it is much cheaper than tallow candles, lard, or oil; and he sets down the difference per hour. We suppose he is right, or he would not have asserted what he does; but he forgets, or has not heard tell of, *one* evil in the use of Gas, viz:—where it has once been used, oil, tallow, and lard will not answer. The metre failed one night in our office, and we supplied each compositor with candles, to give nearly twice as much light as was customary before Gas was introduced; but they complained, and the work was scarcely performed. Gas costs, generally, less than one-half of oil-light, or tallow-light, of equal brilliancy; and, instead of the sickly circles of candle glimmerings, or the fading brightness of lamps, Gas illuminates throughout, burns on steadily and brightly, asking no aid from snuffers, no recruiting from the oil-pot. This is the experience of library, parlour, and printing office.”

From the *New Haven Daily Herald*, April 21, 1847.

We have been favoured with some extracts from a letter of H. G. LUDLOW, Esq., superintendent of the Albany Gas Works, to a gentleman in this city, in reference to the works in that city, and the proposed establishments in Paterson, N. J., and in Charleston, S. C., both of which are to be started under the supervision of Mr. Battin, formerly of the Northern Liberties

Gas Works, Philadelphia, who constructed the works in Albany and in Newark. From this we learn, that "The charter of the Albany company was granted in 1840, but for some time was not carried into effect. Albanians," says the writer, "knew little of the probable results of such an investment. A large part of the stock was subscribed in Philadelphia, where the individuals named resided, they themselves taking heavy amounts. The contract price was \$138,000, the Gas Company furnishing location, the contractors to complete the establishment and lay about four miles of pipe.

"The agreement was entered into or signed, November 20, 1844, and about the middle of the same month, the ensuing year, we commenced to supply Albany with gas. In the erection of these works, Mr. Battin was the engineer and practical man. On our Gas Works, some \$150,000 or \$160,000 have been expended, and I know not of a man in the city who would sell his stock. The original capital was \$100,000; the books were opened October 21, for an increase of \$35,000, and in about fifteen or twenty minutes, all but \$1,500 were taken up. At the expiration of the hour, some \$4,700 were down, and I know of more that was to have been.

"We have now some three hundred and seventy-five customers, besides street lamps. If the superiority of Gas is anywhere evident, it is in the illumination of public thoroughfares.

"Our receipts for September, October, and November, exceed \$7,000. December, January, and February, the bills footed up between \$8,000 and \$9,000. We shall probably make a dividend in July of $3\frac{1}{2}$ and possibly 4 per cent., the works having been in operation only a year last November. Our directors are highly pleased with our prospects, and I think have much reason for so feeling."

In conclusion, we may remark, that so far as our experience extends, there is not a Gas establishment in the United States which does not yield its proprietors handsome dividends.

The facilities which Gas affords for lighting either streets or houses—its cleanliness—its brilliance—its safety, compared with camphene—and more than all, its cheapness, render it very desirable for a city like our own, where certainly the thoroughfares need illumination, and cannot be lighted to any extent without its aid.

We have conversed with numbers of our merchants and storekeepers, all of whom seem anxious for its introduction; and we believe, that could the project be once fairly started, our citizens would carry it out triumphantly, and that stockholders would never regret having engaged in the measure.

From the New Haven Palladium, January 28, 1848.

GAS WORKS.

The effort to organize a Gas Company in this city has been successful, even beyond the expectation of its most sanguine friends. From the commencement of the effort to fill up the stock, no delay or unexpected difficulty has been met with, and the large number (about one hundred and forty) among whom the stock, has been distributed, ensures it a strong and friendly influence. It is understood that the Board of Directors have already closed a contract for the erection of their works with Messrs. Battin, Dungan & Co., of Philadelphia, and that the business of construction will be commenced at an early day,—as soon as the earth is in a proper state to be opened. The contractors have earned a well-deserved reputation for ability and integrity, in every place where they have hitherto been employed. We have again lately had the opportunity of examining one of the works constructed by them, and heard with pleasure the high encomiums bestowed by stockholders and others upon the builders of the works, for the skill and ability with which they had discharged their trust. The terms of the New Haven contract give us the advantage of every improvement made in the construction of Gas Works, and require that ours shall be second to none before constructed in this country or England, of like capacity. It is presumed that with ordinary success, we may confidently expect to have our works ready for operation in about eight months, or in all, the month of October next. The stock of all the works with which these gentlemen have been connected, has been in brisk demand, and in the case of the Albany works, cannot be had on any terms. We have every reason to anticipate a like favourable result here, and we advise all who wish to hold a portion of this stock, to secure such as they may be able to find while the works are in progress.

Our population and business is every day on the increase, and this increase will be more rapid and more substantial during the next five or ten years than in any former period of our history, and with it the demand for all these comforts which the requirements of city life have rendered necessities, will also increase. Among these a cheap, abundant and convenient supply of light and water may be reckoned most important. The light we have already provided for, the water demands our next attention, and will no doubt receive it.

From a Correspondent of the Hartford Daily Courant, New Haven, January 10, 1849.

MR. EDITOR:

* * * * *

I see by your papers that a Gas Company has been at last organized in your city, and that Messrs. Dungan, Battin & Co. are to erect the works. Our people are all delighted with the result of their experiment. The company had some considerable difficulty in obtaining a site for their works, on the ground, that the manufacturing would prove a nuisance to the neighborhood where it should be located. How well founded this was, may be judged from the fact, that land opposite the works, which, before their erection, was offered for ten dollars a foot, is now held at fifteen. Almost all of our churches are introducing the fixtures, and many of our most influential citizens have introduced them into their residences. An interesting series of experiments were made a few days since, illustrative of the advantages of Gas over any other mode of obtaining artificial light. The experiments were made at the request of Joseph Battin, Esq., by Benjamin Silliman, jr. I give you the result as furnished by the gentleman who made the experiments.

The method of determination adopted was by the equality of shadows produced from the lights; compared by a simple arrangement first used by Count Rumford. The shadows are directly as the intensity of the light, and the sources of illumination are inversely as the square of the distance between the light and the surface illuminated. The burners were carefully

rated by a register meter, made by Colton & Code, of Philadelphia, to determine the amount of gas burned by them per hour.—The spermaceti candle employed was one of six in the pound. The gas is estimated at \$4 per thousand cubic feet:

Kind of Burner.	Consuming per hour.	Costing per hour.	Quantity of light comp'd to spermaceti.
Common fishtail	2 $\frac{3}{4}$ cubic feet.	1 cent 1 mill.	4 9-10 to 1
Single batwing	5 "	2 "	10 $\frac{1}{2}$ to 1
Cornelius' Arg'd	6 $\frac{1}{2}$ "	2 " 6 "	12 31-39 to 1
Patent batwing	6 "	2 " 4 "	21 13-14 to 1

The gas was burned under a pressure of 2 $\frac{3}{8}$ inches of water, which is rather above the usual pressure.

It appears from the foregoing, that it would cost about 22 cents per hour to make, from sperm candles, the same *quantity* of light which can be had from Battin's Patent Burner for 2 cents and 4 mills, or about ten times as much. The sperm candle costs, as nearly as can be estimated, about one cent an hour. It is an expensive mode of illumination, but was selected as the subject of experiment on account of the steadiness of its light, and the fact that one sperm candle burns quite like another of the same weight, while lamps of all kinds vary remarkably in their power of illumination. A glance at the table will afford the means of many useful comparisons. Comparing *equal quantities of light*—gas is undoubtedly, at the price at which it is sold here, much the cheapest mode of lighting in use. But people who use gas will not be content without the effulgence of noon-day, and of course they must be prepared to pay for it. The shop which has ten gas lamps, burning each five cubic feet an hour for five hours, will be consuming the amount of one dollar per night for light—which is certainly very unreasonable—but let it be remembered that the same light from sperm candles would cost nearly ten times as much. The shop that should nightly exhibit the array of two-hundred sperm candles, would justly be regarded as beyond all bounds of reason; and yet the light would not exceed that from ten large gas lights with Battin's Patent Batwing-burners.

Those experiments were made in presence of His Honor the Mayor, and of Messrs. Elliott, Graves, Bishop, Baldwin, and

Gilbert, a committee of the Common Council of the city, and of a number of other gentlemen, who were well satisfied that the comparisons were just, and the results conclusive.

From the Philadelphia North American.

PHILADELPHIA GAS AND GASWORK BUILDERS.

The New York Day Book commends, contrasting advantageously with the inferior and fetid article furnished to consumers in New York, the excellent Coal Gas supplied to the citizens of New Haven, from the newly erected works of the New Haven Gas Company.

“By careful management, and the application of chemical science to the business,” says the Day Book, “the New Haven Gas Company have succeeded in furnishing their fellow-citizens with a pure carburetted hydrogen, inodorous, and burning with a clear strong light, which is employed in private houses in preference to any other mode of illumination. It is quite surprising to a New Yorker to find in New Haven a gas factory without any disagreeable vapour in the neighbourhood, and a constant supply of gas to all parts of the city without a complaint from any one.

“The people of New York would do well to send the managers of their gas companies to New Haven, that they may learn, if possible, what *is* genuine carburetted hydrogen. Certainly none of them have ever yet produced a specimen of it. If they can at the same time take a few lessons in common honesty, this suffering, cheated community, will be greatly profited by the introduction of that novelty into the gas business of New York.”

As the excellence of the gas is attributable to the excellence of the works, it is but fair to refer the credit to the Philadelphia builders—who could they be but Philadelphia builders? Messrs. Battin, Dungan & Co., to whom are due so many other equally successful establishments in different parts of the country; for example, those at Reading, Pa., Charleston, S. C., Paterson and Newark, N. J., as well as those at Syracuse, N. Y., and Hartford, Ct., now in course of construction.