X

THE SUPPLY OF WATER TO NEWCASTLE UPON TYNE AND GATESHEAD, 1680–1837

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DURING THE 17th century, and indeed earlier, the supply of water to the town of Newcastle was in the hands of the Corporation, which obtained it from various sources and made distribution to the inhabitants by means of numerous street fountains or "pants". In 1680, however, a proposal was laid before the Common Council by a Mr. Cuthbert Dikes (according to McKenzie both postmaster and town surveyor) to erect a water engine for supplying the town of Newcastle with water from the River Tyne, "for the convenience of brew-houses, victualling houses, etc."[1] and a Committee appointed to look into the matter fixed a place for it outside the Sandgate town gate, where works were afterwards erected on land extending from Thorpes Chare to the town wall. During construction, the ownership of the land was disputed but "Mr. Dikes, so far from being intimidated, carried on his structure, hence called The Folly, and a lawsuit at the same time. The latter, in which he was the defendant, cost him £2,000 though the claims of the Plaintiff were not established."[2] In 1712 an advertisement asked that "Whosoever would have the River Water convey'd to their houses at, or after, Lady Day next, must apply to Mr. Robert Crow at the Black Swan in the Flesh Market: or whosoever would Farm the Water House in the Sand-gate, must apply as aforesaid"[3] leading to the assumption that the works had, in fact, passed to Crow, possibly in 1691, at which time "Mr. Robert Crow (was leased) a messuage, key or wharf in the Ballast Hills"[4] although Dikes in 1736 sought to repossess them.

In Gateshead, the supply of water had not been the responsibility of the town authorities but had been provided, since 1615, by the Ellison family and a lease records that Robert Ellison granted to John London, Henrie Awlder and Thomas Arrowsmith

> on the behalf of themselves and the rest of the Burgesses and inhabitants of Gateshead ... two water springs rising and running on the East side of Gateshead moor, which heretofore runn to Heworth Millnes &c. for 41 yeares from 25th March 1656. Rent 6s. 8d.

[1] Newcastle *Common Council Minutes*, 4 October 1680.

[2] E. McKenzie, *A Descriptive & Historical Account of the Town & County of Newcastle upon Tyne* (Newcastle 1827), p. 724.

[3] *Newcastle Courant*, No. 96, 8–10 March 1712.

[4] Newcastle *Common Council Minutes*, 24 September 1691.

> If the rent be unpaid then Mr. Ellison his heires or asignes may devert the said springs to Heworth Millne againe.[5]

It would appear that the supply afforded by Ellison was discontinued in about 1700, the Vestry minutes recording on 22nd April 1701 that "the little bell now in the Belfry of the Parish Church of Gateshead be presented to Robert Ellison for the use of Heworth Chappel in liewe of the arrearages due to the said Robert Ellison for the Blew Quarries spring".[6] The termination of this supply was no doubt due to an undertaking formed at that time by William Yarnold who, in 1697, arranged a lease with the Common Council of Newcastle for "a piece of waste ground without the walls to erect cisterns for water with licence to break the towns ground and stones for laying pipes of lead and timber branches to convey water".[7]

Yarnold, described as a gentleman of New Woodstock had, before his appearance in Newcastle, made an agreement in 1694 with the Mayor and Bailiffs of the City of Oxford for the supply of water to that town. Made in conjunction with his brother John, the agreement described both men as being plumbers of the City of Worcester and both schemes envisaged the use of water wheels or forcing engines. Yarnold has also been described as originating from Holborn while his brother John obtained a patent in 1698 for the invention of an engine "very useful for draining mines, meres and marshes and for raising water for the supply of towns";[8] it is conceivable that it was with this application of pumping in mind that the agreement was made regarding the possible use of engines. Further to his work at Oxford and Newcastle, Yarnold was involved with the formation of the Ravensbourne Water Works, established in south-east London in 1701 to supply Deptford and Greenwich.

In addition to making an agreement with the Common Council of Newcastle, Yarnold obtained an Act of Parliament whereby a title for the supply of water to the town was obtained. The Act stated that water would be supplied at reasonable rates for a term of 300 years from the date of the agreement and sought powers enabling streets to be opened up for the laying of pipes and aqueducts; powers were also sought to give "Servants or Workmen free Ingress, Egress and Regress for the repairing, altering and amending or changing of all or any such Mains, Aqueducts and Pipes as shall be thought needful"[9] although no mention was made of the means by which Yarnold proposed to supply water, nor were any details given as to the lines of pipes. The Act, introduced by Sir William Blackett, received the Royal Assent on 5th July 1698; its passing was made conditional upon three inquisitions being held to ascertain the damages which had been incurred as a result of Yarnold's works. These inquisitions were subsequently held in Gateshead in December 1699, in Chester-le-Street in January 1700 and again in Gateshead in March 1700, all in

[5] Gateshead *Vestry Book Minutes*, 1656–7. (Transcript).

[6] C. C. Taylor, *The Church of St. Mary, Heworth* (Newcastle, 1922), p. 55.

[7] Newcastle *Common Council Minutes*, 11 October 1697.

[8] E. Hughes "The New River Water Supply for Newcastle 1698–1723". *Archaeologia Aeliana* (4th Series) XXV, 1947, p. 116.

[9] *An Act for better supplying the town of Newcastle upon Tyne with fresh water.* Anno 10 Gullielme 3rd. No. 91.

the presence of Charles Montagu, Sheriff of the County Palatine of Durham. They were concerned solely with assessing compensation and at the first of them the principal beneficiaries were the Bishop of Durham, Dame Elizabeth Gerard, John Hilton for water taken from springs on Great Usworth Moor, and Henry Johnson of White House for a further spring. The second inquisition resulted in payments to the Bishop of Durham, to Dame Elizabeth Gerard and to Thomas Owen for a Close and lands called High Pasture and Carrs Hill, while at the third inquisition Owen was paid for his lease at Homes Close and the Bishop of Durham and Dame Elizabeth Gerard received compensation for damages to lands through which the pipes or aqueducts passed.[10]

With the completion of the three inquisitions, a petition was submitted to Parliament by Yarnold

> setting forth, That, in pursuance of an Act of Parliament for the better supplying the Town of Newcastle upon Tine with fresh Water; and, by a Lease made by the Mayor and Burgesses, as expressed in the said Act; the Petitioner has, at great Expence, brought sufficient fresh Water to serve the said Town, from a Place called The Zeme, in the County of Durham, about Four Miles from Newcastle; and the High Sheriff of Durham hath held Three several Inquisitions to inquire what Damages the Owners of the Lands, through which the said Water is conveyed, have sustained thereby, as the said Act directs; which Damages the Petitioner hath fully paid and satisfied: And praying, That Leave may be given to bring in a Bill to confirm the said several Inquisitions and Lease, for the better bringing and continuing of the Water to the said Town, and ascertaining a due Satisfaction to the Owners of the Lands, through which the Water runs, for what Damages they may sustain.[11]

The principal provisions of this second Act, although it was not proceeded with, were that whereas the first had included springs at Heworth Common, other springs situated at the Leam had been found and it was desired that water from that source should be brought into Newcastle also; the second provision was that, at the insistence of the City Council, it was stipulated that the works should be completed within three years.

As stated, at the time of the passing of the first Act, an agreement had been entered into between Yarnold and the Corporation empowering him to supply the town

> with good and wholesome Water by bringing the same in with main Pipes and Trunks into and through all and every one of the open Streets, Lanes and Places within the said Town ... and from the said Trunks and Pipes by smaller Branches the said Water may be carried into all and every Dwelling House or any outhouses or places whatsoever within the said Town and County where Owners and Occupiers thereof shall be willing to take in and pay for the same.[12]

[10] *Mickleton & Spearman Papers*, Vol. 61/21.
[11] *House of Commons Journal*, 25 February 1701.
[12] Indenture, 9 October 1697. *Watson Collection*, Vol. 75, p. 1.

The agreement also enabled Yarnold to build cisterns for the storage of water and gave him liberty to "set up, erect and build any Mill Waterhouse Wheel or forcing Engine ... for the conveying of Water to the said Cisterns".[13] He was, however, prohibited from carrying out any act which would

> annoy, stop ... or hinder the River Tyne or any of the Springs or Streams of Water that now do or hereafter shall lead to the public Pants, Conduits or Receptacles of Water now erected and built for the said Town of Newcastle or the Inhabitants thereof ... (or to) Mr. Cuthbert Dikes' waterhouse in Sandgate, Mrs. Isabell Ellison's Waterhouse in Pandon and the Street called the Broad Chare or other of them or to such private Cocks not exceeding thirty in Number as the Mayor, Aldermen and Common Council shall think fit to allow off and leading from such public Ponds, Conduits or receptacles of Water that belong to the said Mayor Aldermen and Burgesses.[14]

The Agreement continued by stating that all works were to be completed within three years and that any reinstatement of roadways following the laying of pipes was to be completed within four days. What was of greater importance, however, was the fact that the Mayor and Burgesses were enabled "in case of Fire or other accidents happening in any of the Houses or out-Houses or Buildings within the said Town & County to cut or break the said Main Pipes or any other Pipe conveying the Water to & from the said Cistern or Engine in a most convenient place (for) obtaining & getting Water to extinguish such Fire";[15] the lease restrained Yarnold from obtaining water from the Town Moor, Castle Leazes or Coxlodge. A petition was presented by Yarnold to the Common Council in 1700 stating that as work had begun he "would perform all matters incumbent on his part & would have frequent occasions for completing his work to bring lead pipes & other necessaries along the bridge & other places of this town for which tollers threatened to demand duty"[16] as a result of which he requested that his goods might pass without being subjected to tolls. At the same time he was given leave to build or reconstruct cisterns at the Cross in the Flesh Market and at the White Cross while, some six months later, he again petitioned the Mayor to the effect that an extension of time would be advantageous "to prevent all disputes which might arise from breach of covenant"[17] although work was proceeding well; it was ordered that the term be extended from Michaelmas 1700 to the following Lady Day.

From the evidence available it is probable that Yarnold did not long continue his association with the Company and a manuscript account of the works, probably written in 1755, stated that he "went to London dividing the business into Sixteen Shares; but at what price the Owners best know".[18] In spite of this, the wayleaves for the pipes and rents for the reservoirs have been recorded in his name in the Dean and Chapter records in Durham, in whose possession were the lands through which

[13] *Ibid.*, p. 3.
[14] *Ibid.*, p. 4.
[15] *Ibid.*, p. 7.
[16] Newcastle *Common Council Minutes*, 26 March 1700.
[17] *Ibid.*, 24 September 1700.
[18] *The Original Account Stated with proceeding circumstances Relating to the New Water Works brought to Newcastle upon Tyne* (1755?).

the pipes ran. The entry for 1701 reads "Gulielmo Yarnold Aro pro Aqueducto per terras Ecclesiae ab Heworth Quarries ad villam de Gateshead. Sol. 10 Jan. per Ro. Parkinson 13/4 Mart."[19] and continues in a similar wording until 1780, changing then to the name of Messrs. Arrowsmith and, in 1784, to the New Water Company. In spite of this, an indenture of 1706 providing for the use of the Leam Springs, incorporated in Yarnold's second Act, was made between "William Fawcett of Hedworth in the County of Durham, Gentleman, John Naylor of the Town and County of Newcastle upon Tyne, Gentleman, John Lodge of East Boldon in the said County of Durham, Yeoman (and others) of East and West Boldon in the County of Durham of the one part and John Douglas of the Town and County of Newcastle upon Tyne, Esquire, of the other part",[20] whereby for the sum of £200 paid by John Douglas and others concerned in supplying Newcastle with water they should be entitled to use springs on Great Usworth Moor for a term of 300 years at a rent of £3 per annum, and while "supplying and furnishing the Town with Fresh Water will not at any time divert or cause to be diverted any Water arising or flowing from any Borehole or Springs upon Usworth Moor or other places elsewhere from running to Boldon Mill aforesaid, but they shall continue to run in the same Course and Brook that they do now run into save the Springs that are now conveyed in Pipes, Aqueducts or Conduits to the Town of Newcastle upon Tyne".[21] The fact that this Indenture is not in the name of Yarnold would indicate that he was no longer interested in the works and his place had been taken by John Douglas who, in 1699, had been appointed Town Clerk in Newcastle, although he was succeeded in 1709 by Joshua Douglas, also believed to have had connections with the Company.

In 1712 a document prepared by J. Whitaker, possibly former treasurer to Crowley at Winlaton, detailed the several springs utilized for the supply of water and itemized the various lengths of elm, fir and lead pipes used, together with their diameters and condition. The report included mention of a "Conduit that comes from the New Blue Quarry Spring and so into the Main (while) a little above or on one side of the Spring there is a Receptacle for Stowage of Water and is of eminent Service to the Business"[22] and also remarked that "between the Park Dean and the Park Bank lay the 3 inch Furr pipe that I discovered"[23] possibly used earlier in Ellison's supply to Gateshead. The pipes conveyed the water to two reservoirs built in Holmes Close "where all our Water is Lodged in Order for serving Gateshead & Newcastle"[24] and from these ponds the water was carried by wood and lead pipes across the bridge into Newcastle where it supplied three cisterns (a further one, the Cale Cross, having been utilised by this time) before being distributed to the several streets and individual houses of the two towns. It is probable that this survey was made by Whitaker on his appointment, and after stating that the Company's profitability had been increased as a result of his stewardship, he concluded "Gentlemen, I cannot let you

[19] *Receivers Book, No. 70*, Dean and Chapter records, Durham.

[20] Indenture, *Middleton Papers*, 2MI, B8/111/2.

[21] *Ibid.*

[22] *A General survey of the present state and condition of the New Water brought from the Spring Head on Gateshead Fell to the Town of Newcastle upon Tyne, 1712.*

[23] *Ibid.*

[24] *Ibid.*

into a greater sight of your affairs than which I have here done by which you may every time you meet consider your whole work in a manner and Gentlemen, I will be bold to say that there is not such an account of any waterwork in England".[25] The account was such that it has enabled the line of pipe to be established with some accuracy and the reservoir at Carr Hill has remained continually in use from that time while the ponds in Holmes Close were used until the mid-nineteenth century, although their inadequacies were apparent even in 1712 when Whitaker wrote

> There are also two Ponds or Receptacles of about one Acre of Ground yt receive ye Water which comes from all ye Springs & out of ych ye Towne of Newcastle is served but they cannot be filled above 5 foot in water for they both runn out through ye banks if ye are filled higher ych is a great misfortune and 'twill cost a great Deal to make ym hold, could they be made to hold, ye Towne would be much better served, but there's no making bricks without straw.[26]

This deficiency was noted in respect of the Cotesworth estates, leading to complaints that "the water in this Bason or Pond very often breaks through ye Banks and overflows and damages other great parts of the enclosed Lands",[27] grounds for which Cotesworth had been responsible in reclaiming from the wastes formed by coal-working and returning them to agricultural use.

The lack of entries in the records of the deliberations of the Common Council from 1709 onwards, other than those concerning the shortcomings of the town's own supply, would lead to the inference that the Company was succeeding in its obligations although according to the accounts extant it would seem not to have been unduly profitable. A valuable source of information of this period is a manuscript account of the profits and losses made between the years 1728 and 1755. This account was prepared by another Whitaker who had, apparently, taken over the works in 1728 and it is accompanied by a further detailed description which, among other matters, noted pipes purchased by Yarnold from a "broke up water-works near London",[28] possibly an erroneous transcription of Broken Wharf Waterworks, which was founded in 1594 and supplied the western end of the City until about 1700. A further point noted is that of a lease with Ellison at £40 per annum concerning two mills at Heworth and the Dean and Chapter *Receivers' Book* for 1660 shows payments of £1.0.0d. per annum for "Corn Milnes of water in the Co. of Durham called Heworth Milnes ... now in the tenure of Robert Ellison ... for twenty-one years";[29] Ellison was to be responsible for repairs and was not empowered to sublet without the consent of the Dean and Chapter. The lease was transferred to Cuthbert Ellison in 1731 and to Mr. Mills in 1756 with a later note "Mem. On renewal of this lease to enquire whether £6 per annum are not paid to the proprietors of these mills from the Newcastle Water Works for a Pipe of water laid in to them. 7 May 1774."[30] Whereas the Ellisons leased the mills for £1 per

[25] *Ibid.*
[26] *Ibid.*
[27] E. Hughes, *op. cit.*, p. 122.
[28] *The Original Account, op. cit.*
[29] *Lease Register*, Dean and Chapter records, Durham.
[30] *Lease Renewals Book*, No. 4, Fol. 99. Dean and Chapter records, Durham.

annum, Yarnold was charged £40.0.0d. per annum, presumably having been forced into the lease of the mills by having taken the water used by them. He had, however, been able to sublet them, receiving some £15.0.0d. per annum, but Whitaker, writing in 1712, had stated that "Besides there are two corn mills which you pay £40 per annum for besides taxes—what is made of them I know not only that they are let for £20 per annum provided you find the water which is hard to be done in summer. They are at present both in good repair."[31] Possibly as a result of Whitaker's comments, the lease for the occupation of the mills was terminated in 1727 when the *Cotesworth Mss.* reveal that an estimate was received for repairs to be carried out to the mills prior to the lease being surrendered; on the 18th May 1727 James Langbourne estimated that repairs would cost £19.17.0d. following which the work was put in hand and an account later submitted for the sum of £19.7.1d. less 10/9d. The following month it was noted:

> Recd. of the proprietors of the New Water Company by ye Hand of Mr. John Whitaker the summe of Twenty pound being a summe by the Agents of the said proprietors agreed to be paid to Cuthbert Ellison Esq. the Landlord of Heworth Mills for putting the said mills into good Repair upon the expiration of a Lease heretofore granted of the said Mills in trust for the said proprietors ... Recd. by me Geo. Liddell[32]

and the fact that Yarnold had by this time relinquished the lease is confirmed by a further entry whereby "the said Geo. Liddell Doth Lett to farm to the above Henry Bell the two Corn Mills near Low Heworth from the 10th day of December ... yearly ... for the sum of thirty four pounds."[33]

The 1755 account of the works had stated that Yarnold, when prohibited from causing interference to the Folly works of Dikes, had entered into an agreement with Crow, who had by then become the owner, involving a payment of £40 per annum and had used them as additional source. These works were referred to in the Company accounts of 1714, quoted by the *Newcastle Chronicle*, where entries appear such as "Mr. Inchball cutt off water being short could not serve him, would pay noe longer than Midsummer so have laid him on to ye Folly at 10s. per ann. advance."[34] That the quality of river water was not good is shown by further entries for the same year, one such reading, "Thos Allen Keyside, ceased: Still continues on, but cannot be served till we have more water yt we can serve him. Will not have ye Folly water".[35] The fact that the pipes were removed following the frost of 1739 does not elicit any comment on the expense of replacing them.

The description of the works prepared in 1712 does not specifically refer to reservoirs having been constructed at Carr Hill although the presence there of a pond is noted; the value of this storage facility was such, however, that in 1757 Whitaker entered into an agreement with the Dean and Chapter regarding

[31] *A General Survey ..., op. cit.*
[32] *Cotesworth Mss.*, 24 October 1727.
[33] *Ibid.*, 10 November 1727.
[34] *History of the Water Supply of Newcastle upon Tyne* (Newcastle 1851). Reprinted from *Newcastle Chronicle*, p. 8.
[35] *Ibid.*

> two Acres of Ground or thereabouts and the same more or less being on the west side of the said Common upon which said piece or parcel of Ground is collected a body of water which is from thence conveyed to the town of Newcastle together also with full and free liberty in through over or along any part or parcel of the said Moor or Common for the laying of pipe or pipes for the more effectual conveying of the said water to the said Town of Newcastle ... for the term of twenty and one years ... paying the Dean and Chapter ... the sum of thirteen shillings and fourpence,[36]

the presence of this reservoir being confirmed by the Act for enclosing the Moor in 1766 which referred to "a Parcel of Ground upon the west side of the said Fell, Moor or Common, towards the said Great Roman Way (where) a great Body of Water is collected and a Watercourse from thence made towards the Town of Newcastle upon Tyne".[37]

In the two towns, water was available on one day per week, except when plentiful, in which case it was supplied on two. Even so, the times at which it could be obtained were for periods of some few hours only and the supply was such that the cistern at the Cale Cross, holding some 10,200 gallons, was filled over a period of twelve hours and the daily supply to the two towns has been calculated as having been 12 to 15,000 gallons, or 50,000 gallons per week. The cisterns at the Cale Cross and the Flesh Market were of lead, and the latter contained 11,500 gallons while the cistern at the White Cross, of unknown capacity, was constructed of masonry. The mains leading from the cisterns were principally of lead from ½ inch to 3 inches in diameter and they were controlled by wood or brass stopcocks, in addition to which small brass cocks controlled the private supplies, 161 in number, to consumers living in Quayside, Sandhill, Close, Pilgrim Street, Dog Bank, Butcher Bank, Flesh Market, Side, Westgate and Gateshead.

From records extant, it is possible to compare the state of the undertaking in 1712 with that of 1769, the last year for which records exist; in 1712 individual consumers numbered 161, of whom 20 lived in Gateshead, while in 1769 the comparable figures were 224 and 28 respectively. Between the two dates revenue increased from £111.12.6d. for the half-year to £292.3.6d. for the full year while the minimum rentals rose from 10/- to 15/- per annum and the maximum fell from £4.10.0d. to £3.10.0d. The early accounts record no details as to expenditure but those covering the years 1749 to 1769 do indicate what expenses were incurred: the Grieve of Boldon received £3 per annum as compensation for water taken from Heworth; the Dean and Chapter 14/- per annum for the aqueduct on Heworth Common; John Colville £6 per annum for pipes passing through land at the White House; and Newcastle Corporation 13/4d. per annum for the liberty to supply water to the town. In addition to these payments, William Mills was, from 1755, paid £6 per annum for water taken from his Heworth Mills; although the lease of the mills had been relinquished by the undertaking, this sum compensated him as tenant for water taken from the upper reaches

[36] *Lease Register*, Dean and Chapter records, Durham.

[37] *An Act for dividing and Enclosing the Moor, Waste or Common in the several Towns, Villages and Hamlets of Upper Heworth and Nether Heworth in the County of Durham* (1766).

of the stream and subsequently used to supply the town. Rentals paid to Cuthbert Ellison of £21 per annum for Cleanly Mills ceased in 1755 and Richard Hylton of Hylton Castle was paid £4.10.0d. per annum for the use of Leam Springs until 1754 after which payments were made to Lord Ravensworth and George Bowes for these same privileges, the Hylton Estates having been dispersed in 1750. Whitaker was paid a salary of £40 per annum and wages were disbursed to labourers at the rate of 1/4d. per day. From 1729 to 1745 the Company operated at a small profit and in 1747 a sum of £100 was paid to "Robert Douglas Esquire in conformity to the Proprietors' Letter & for their Use".[38] The undertaking continued its profitability until 1755, further payments totalling £423.8.8d. being made to Douglas and leaving, in 1755, £322.14.6½d. in Whitaker's hands. After this time and until 1767 the profits of the Company were paid into an account held with Hoares Bank in London by John Whitaker; at the end of this 12 year period the accrued profits totalled £1,611.16.5¾d.

During the years over which Yarnold's works were in use springs were used to supply the public pants of the town, the Corporation itself being responsible for their operation and maintenance. Shortages of water had been reported as early as 1675 and were attributed to the fact that mining had caused the drying up of the springs supplying the town's pants. In addition to the provision of water for domestic purposes, the Corporation appeared to have some responsibility for fire-fighting due to the fact that in 1700 it was ordered that "small engines for fire to be got and 100 buckets if the Mayor & Aldermen think convenient",[39] and it was a shortage of the public water which had led Yarnold to supply the "Town House" in 1700 at the request of the Common Council. Some 30 years later there was a further shortage with the result that it was ordered that pipes should not be laid into the house of any private person and, following further complaints, a survey was undertaken in 1737 which found that several public pants within the town were much out of repair and "a scarcity (was found) chiefly occasioned by several persons having private pipes laid to their houses (and it was) ordered that the public water shall not be conveyed into the house ... of any persons whatsoever except of the right worshipful the mayor, recorder, aldermen, sheriff & town clerk"[40] although for the latter this privilege was granted only during his tenure of office. In 1747 a notice was published in the *Newcastle Journal* regarding the supply obtained by the town from the grounds of Quarry House under which John Hodgson of Elswick wished to commence the extraction of coal. After maintaining his right to carry out such mining he concluded by stating that the public should have water without charge to the Corporation but a year later a further notice, referring to the period which had now elapsed, informed the inhabitants of the town that, not having been offered terms, he assumed that alternative sources could more easily be utilised and therefore proposed to begin mining. Having thus given the town time to make other provisions, a reservoir was

[38] *An Account of the Newcastle New Water Works Profit and Loss ... from 1728 to 1755*, Northumberland CRO, ZAN.M17.

[39] Newcastle *Common Council Minutes*, 26 March 1700.

[40] *Ibid.*, 25 April 1737.

constructed in Castle Leazes in 1750 and the following year "water being greatly wanted at the Mayor's house, it is ordered that ... (it) ... be ... conveyed into (it) ... at the expense of the Corporation",[41] this in spite of Yarnold's supply having previously been utilized and, in fact, the Corporation paid for this water until 1749.

The availability of a supply of water from Coxlodge was first noted in the *Common Council Minutes* in 1746 when an order was made for a committee to view a spring of water in the grounds of Coxlodge belonging to John Stephenson. According to Brand, this was "in consequence of a great want of water, repeatedly complained of, for the supply of the inhabitants of Newcastle at the common pants".[42] At this time the Coxlodge estate was bounded by the Ouseburn at its northern limits and by the Town Moor to the South, the spring alluded to rising in the vicinity of the Three Mile Bridge and probably being that which Yarnold had been precluded from using by virtue of his agreement with the town. In 1768, a report was submitted by William Brown, a colliery viewer; Brown's involvement with the Corporation in matters concerning water supply had been in evidence when, in 1764, he had submitted proposals for erecting an engine near the Skinnerburn to pump water to a reservoir, holding approximately one million gallons, which was to be situated "near the Westgate or highest part of the Town from which (the water) may be dispersed to any part in case of Fire".[43] He estimated that this scheme would cost £2,230 and its magnitude was probably the reason why the Corporation, in 1768, looked to the cheaper source of Coxlodge in order to augment supplies. Brown proposed alternative schemes for the utilisation of the Coxlodge water; the first comprised a line of pipes running south-eastwards from the Three Mile Bridge and skirting the west side of the Ouseburn as far as Jesmond before turning south-west and delivering the water into a reservoir at Barras Bridge and the second was to pump the water to a reservoir from which it would gravitate to a further reservoir constructed on the Town Moor. Due to the drawing prepared by Brown having deteriorated, this line of pipe cannot be determined, except for the fact that it ran to the west of the North Road. Brown estimated the cost of this first scheme at £800 and of the second £1,225, this figure including £300 for an engine to raise some 16,000 gallons per hour, "no other machine being so certain";[44] although additional annual charges of £122.10.0d. were envisaged, it would appear to be this plan which was eventually adopted, albeit not by the Corporation.

In 1769, a petition was presented to the Mayor of the town, John Baker, by one Ralph Lodge "acting on Behalf of Himself, and other the Proprietors of the Undertaking for supplying the Town of Newcastle with good water".[45] The petitioner stated that he had

> at a very great expense caused surveys to be made of the country adjoining the town

[41] *Ibid.*, 20 June 1751.

[42] J. Brand, *The History and Antiquities of Newcastle upon Tyne* (Newcastle 1789).

[43] Report from William Brown to Newcastle Corporation, 25 June 1764, *Watson Collection*, Vol. 75.

[44] *Ibid.*, 15 December 1768, Vol. 75, p. 52.

[45] *To the Right Worshipful John Baker, Esq., Mayor ... The Humble Petition of Ralph Lodge ...* (1769).

> of Newcastle, for several miles, and hath discovered many springs and streams of the best and most wholesome water, sufficient to supply every inhabitant of the town, upon all occasions and emergencies, in the most ample manner ... (and he asked that) a lease for a long term of years of the fountains, springs, reservoirs, pipes and other premises specified in the proposals hereto annexed[46]

be granted to him so that the undertaking could be completed. In more detail, his proposals were that he "enlarge the present undertaking, and, in the most ample manner, ... supply every part of the Town, within and without the walls, with good and wholesome water, by laying pipes through every street, lane and alley thereof".[47] He proposed to take over the town's public fountains, and the springs and reservoirs supplying them, and to lease this property of the Corporation; "in consideration thereof, and of an allowance of such annual sum as the Corporation at present expend in supplying the fountains with water, (he undertook) to supply in the most effectual manner all the fountains in the town, and to keep in repair all the said fountains, reservoirs, pipes, &c. during such term as shall be granted".[48] The foregoing events are clarified by an excerpt of a letter later written to the Mayor, John Baker, by Dr. John Rotherham. In it he complained of the ill-treatment which he had received from the Council and outlined the events which had led to the formation, or taking over, of a company by Lodge.

> A company of undertakers, catching at this opportunity, attempted to smuggle from the Corporation a Lease of all the public springs, fountains and Reservoirs of Water then remaining; the proposed conditions of which were that they should not only be paid the average annual expense of keeping them in repair but have the sole direction and management of them; by which means they might have appropriated the whole, and compelled the Inhabitants to have taken every drop of spring water, which they used, upon such terms as they should have thought proper to prescribe.
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> But fortunately you had then some honest men in your Common Council who discovered the plot; and the public alarm given in a letter to the Inhabitants, happily defeated the shameful scheme. You will probably remember this transaction, as it passed during your mayorality, in the month of March 1769; and not very long after your memorable conversion. The same company having then taken a Lease of some Coal Water, which came up from a bore-hole at Coxlodge, undertook to supply the Town with it; and your successor in the Mayorality, Mr. Forster, from whom I have the honor of being employed as Physician, desired my opinion of the wholesomeness and goodness of this Water.[49]

These facts were confirmed by the report of a Committee appointed by the Council in 1785 to investigate the question of water supply. On the matter of the formation of Lodge's Company the report indicated that the foregoing events had, in fact, occurred and the "then Common Council after much deliberation rejected the proposal and with happy discretion resolved that the public pants and fountains and

[46] *Ibid.*
[47] *Ibid.*
[48] *Ibid.*
[49] Letter from John Rotherham, M.D., to John Baker, 27 April 1779, *Watson Collection*, Vol. 75, p. 115.

the springs and reservoirs supplying the same should not be parted with or granted out of the power of the Corporation"[50] as a result of which Lodge and his partners, in 1769, resolved to carry into execution and complete their own undertaking independent of that which related to the public fountains. Lodge had offered, also, to supply the Corporation pants and informed the Council of an agreement made with Henry Stephenson for several springs on his estate and would thus seem to have adopted the proposals made by Brown concerning the supply of water from Coxlodge. In order to begin operations and to eliminate competition, Lodge in 1769, purchased the works of Yarnold and as a consequence the accrued profits of that Company, held by Hoares Bank and totalling £1,611.16.5¾d., were withdrawn by Lodge in seven instalments between October 1769 and June 1770; the purchase price has not been ascertained.

Such was the controversy regarding the purity of water supplies during the years 1769 and 1770 that the Council, in an effort to determine which source should be developed, advertised to the effect that enquiries would be welcomed from men able to submit analyses of samples submitted to them for testing. One of those who subsequently carried out the requisite tests was Dr. John Rotherham of Newcastle who later described at length his experiments; he concluded that water from the Tyne was preferable to that from Coxlodge although other chemists opposed his views. Analyses were also submitted by Mr. James Tytler, a chemist eminent in Gateshead; Dr. Black, Professor of Chemistry at Edinburgh; Dr. Saunders, Lecturer in Chemistry at London; Dr. W. Lewis, of Kingston upon Thames; and Dr. Hall, acting in collaboration with Dr. Wilson. The samples were taken from three pants situated respectively in Sandgate, at Sir Walter Blackett's house and in Newgate; from springs in Pipewellgate and the Ropery; of Gateshead New Water (Yarnold's supply); from Felling; and from Coxlodge. By present-day standards, the tests were meaningless and showed principally the relative hardness of the water and its general analysis but all chemists, other than Rotherham, agreed that Coxlodge offered the finest source, so leading to its use in 1770.

In order to allow his work to proceed Lodge had, on 19th September 1770, entered into an agreement with the Common Council which granted him the use of land at the south end of the Town Moor to enable a reservoir to be constructed. Lodge was required to provide 100 fire plugs placed as the Common Council should direct and "to make a proper pipe trench and lay and keep pipes therein for the conveying of good and wholesome water only from Coxlodge grounds through the Town Moor ground to the said reservoir and from thence into the said town in order to supply the inhabitants and the said fire plugs with sufficient quantities of such water".[51] The Common Council agreed to pay the proprietors £50 per annum for the fire plugs and 10/- per annum for each additional plug; the lease of 227 years covered the unexpired portion of Yarnold's original lease with the Corporation. Surveys carried out by Thomas Bell in 1790 and by J. H. Fryer in 1808[52] show works on a site near

[50] Newcastle *Common Council Minutes*, 10 October 1785.

[51] *Ibid.*, 19 September 1770.

[52] *Watson Collection*, Vol. 25, Nos. 2 & 5.

the Three Mile Bridge although the date of construction has not been ascertained; this additional supply to Newcastle must have been brought into use prior to the Tyne flood of 1771 at which time the bridge was destroyed and, for a period, Gateshead separated from Newcastle. No record has established the severance of the water supply between the two towns.

The water supplied to Newcastle by the Corporation still caused some concern to the Council and in 1777 it was resolved that "Mr. Richard Brown, colliery viewer, and John Fenwick, Town Surveyor, do proceed in the necessary work and business for conveying the water from Spring Gardens into this town for the use of the public at large agreeable to the particulars and estimate of the work now produced by Mr. Fenwick".[53] The Elswick estate had, at this time, been acquired by George Stephenson from the Hodgson family, who had during their ownership supplied water to the town. At Stephenson's request, an investigation of this source had been made by Dr. John Rotherham who, in 1777, reported back to Stephenson and who, in turn, offered the water for the use of the town. Following a request made by the Council, Brown had submitted to them a report on his investigations on their behalf in October 1777 and this was followed by an estimate of £288 the following month after which the Council, in December, agreed that Stephenson's offer should be accepted. Misunderstandings between Stephenson and the Council apparently ensued in that in February 1781 Stephenson memoralised the Mayor to the effect that the Corporation had taken water from under his grounds without his knowledge. This matter was discussed at a meeting of the Common Council held on the same day when it was resolved that "the Common Council were and are sensible of the generosity of Captain Stephenson's offer of that water for the general benefit of the inhabitants of this town"[54] but felt that the fact that the works were under execution was "proof of their acceptance of it and it is with concern that they now find there has been any misunderstanding of the matter".[55] It was also decided to meet Stephenson in order to ascertain the quantity of water involved; this matter was again discussed some two years later when the Council expressed itself in agreement with the sum which had been asked for by Stephenson, and in December 1785, the Council resolved that Stephenson be paid £40 per annum while in 1795 it was agreed that £20 per annum be paid to his widow for the rest of her life as recompense for the water obtained.

In October 1785 the Common Council ordered that a Committee be appointed to enquire "into the state of the supply of water afforded to the inhabitants of Newcastle by the proprietors of the Coxlodge works and to consider of the most practicable mode of bringing to the town a plentiful supply of good and wholesome water".[56] The matter was considered at some length by the Committee which later reported to the Council that it was "fully convinced that the inhabitants of Newcastle labour under most serious inconveniences from the scarcity of water and the badness of its

[53] Newcastle *Common Council Minutes*, 18 December 1777.

[54] *Ibid.*, 20 February 1781.

[55] *Ibid.*

[56] *Ibid.*, 10 October 1785.

quality and that the Coxlodge proprietors have failed in performing what was the basis of all treaty or agreement with the Corporation, by neglecting to bring to the town a plentiful supply of good and wholesome water".[57] The necessity of compelling the proprietors to fulfil their contract or to relinquish it to the Corporation was evident and the Committee reported as to the negotiations which had led to the formation of the undertaking owned by Lodge and his partners and remarked on Lodge's resolve that the town "should be the best supplied with the best water of any town in England".[58] In spite of this, however, it was found that

> these transactions appear to your Committee to give no exclusive right to the proprietors of Coxlodge water works of supplying the town with water, unless they shall fulfil the covenant entered into by Yarnold, by affording an abundant supply of good water; and much less do they impose the necessity upon the inhabitants of deriving their only supply from those springs which Yarnold was restrained from bringing to the town in the original grant; and your Committee therefore recommend that the proprietors be immediately called on to perform that contract made by Yarnold which they, as standing in his place, are bound and have pledged themselves to perform or to relinquish it entirely.[59]

In conclusion the report recommended that, should Lodge not fulfil his obligations an immediate application be made to Parliament to annul his powers and "to possess the Mayor Aldermen & Common Council with powers sufficient to enable them to bring to the inhabitants of Newcastle a plentiful supply of good & wholesome water".[60] The Town Clerk was instructed to write to Lodge to this effect and ordered to communicate his reply to the Committee, although the fact that no further references are made to this question may be taken as meaning that the Council found matters much improved.

The works constructed and operated by Lodge and his associates continued until, in 1797, they were purchased by the proprietors of the Newcastle Fire Office, first established in Newcastle in 1783. As an insurance company the Fire Office maintained fire engines at a station in the Manors while, in the absence of fire-fighting provision by the Corporation, other insurance companies and several manufacturers did likewise. In its capacity as a water undertaking, the Fire Office is not mentioned in the *Common Council Minutes* until 1817, leading to the assumption that the service which it provided was giving satisfaction to the town, in spite of the fact that, according to a notice published in May 1801, water was supplied to the several streets only on two days of the week and to this end the town was divided into three areas; the eastern portion, with Gateshead included; the central and northern section; and the western area, although the times of supply were not stated. In order to augment the provision of water to the town the Fire Office, according to Welford, purchased a field to the east of the Grandstand on the Town Moor, and put down "a shaft forty-eight feet to some abandoned colliery workings there, and (erected) a windmill ... to pump water across the Moor".[61] Although Welford gave a date of 1805, it should

[57] *Ibid.*, 20 December 1785.
[58] *Ibid.*
[59] *Ibid.*
[60] *Ibid.*
[61] R. Welford, *A History of the Parish of Gosforth* (Newcastle 1879), p. 55.

be viewed with suspicion as a manuscript report dated 1798 detailed the works then in progress "to open the communication between the Reservoir near Barras Bridge and the great subterraneous reservoir which discharges its Water at Hogs Well in Coxlodge Grounds".[62] Of the total length of aqueduct, some 1,920 yards had then been excavated and a 12-inch diameter brick conduit built but, at the northern end, gravel had been encountered which rendered impossible the construction of that section in drift and necessitated a return to open trench working; a sketch of later date shows the well with a seam of coal at a depth of 45 feet and a tunnel leaving the shaft eight feet below ground level. In order to abstract the water from this disused shaft a windmill was erected which worked a pump capable of supplying, in $7\frac{1}{2}$ hours, some 73,000 gallons of water, this figure having been later ascertained as being the daily consumption of the town. The water from Hogs Well passed through the brick conduit to a reservoir 134 feet square at the foot of the Town Moor and although its date of construction has not been ascertained it was delineated by Oliver on his *Plan of Newcastle* of 1830.

In order to augment the supply of water to the town, the Fire Office commissioned John Watson, a colliery viewer, to investigate further sources and on 15th February 1822 he submitted a report to William Woods, the secretary of the company, outlining the steps which had been taken; old colliery workings in the vicinity of Spital Tongues had been investigated but were found capable of yielding only some 600 gallons per hour, in addition to which the water could not be brought naturally to the surface and so collected in the Catch Ponds. Searches were then made on the east side of the Moor but again the water could not be brought to the surface without pumping and further investigations were instituted with respect to water used by a corn mill at Spital Tongues, a proposal later rejected. The Fire Office had, at this time, been responsible for two innovations in Newcastle; in 1817 the *Common Council Minutes* recorded that "the Proprietors of the Fire Office and Water Works ... contemplate establishing the necessary works for lighting this town with gas...."[63] following which further steps were taken which led to a supply being provided, one of the earliest in England; in 1819 a further minute stated that "it is ordered that as owners of the soil of the Town Moor ... leave ... is granted to (the Fire Office) to lay a metal pipe alongside the present lead pipe from their reservoir on the said Town Moor as far as the Barras Bridge",[64] this being the first recorded use of iron pipes in the town, their use having become compulsory in London under the *Metropolis Paving Act* of 1817.

Complementary to the works of the Fire Office, the Corporation was also involved at this time in efforts to improve the supply of water to the public pants and in 1826 a report was submitted, again by Watson, to the mayor and aldermen in which he detailed investigations made as "how best to supply the several pants in the event of their being deprived of the waters which now supply the same from North Elswick

[62] "State of the Water Works on Newcastle Town Moor" (24 August 1798), Ms. report.

[63] Newcastle *Common Council Minutes*, 20 January 1817.

[64] *Ibid.*, 5 March 1819.

property".[65] He was of the opinion that water could be obtained from old coal workings in the vicinity of the Barracks and conveyed to a reservoir on the southern boundary of Castle Leazes and, in a later report, stated that some 1,260 gallons per hour would be available, double the quantity then being obtained, although there was a risk of interfering with the supply to the Barracks. The water was analysed by Rev. Wm. Turner and Mr. John Daglish who submitted a report which indicated, however, that its quality was not consistent with that already being supplied. The results of the analyses were commented on by the Mayor, Archibald Reed, in a letter to Watson and in it he urged Watson to proceed further with his investigations, the results of which were communicated to Reed. In this report, Watson referred to a feeder of water in Spring Gardens "which I have no doubt is the one Dr. Rotherham discovered in these grounds"[66] in 1777 and mention was made also of water "passed down a drift .... which was driven (by order of Mrs. Hodgson) for the express purpose of diverting the water from its ancient channel so as to deprive the inhabitants of the Town of the use of it",[67] this having been done as the result of a dispute concerning payment between the Hodgsons and the Corporation. Watson recommended this source for future use and stated that a small tank and valve house should be provided with two cisterns, one in Darn Crook and the other in the Butter Market; he estimated also that 60,000 gallons per day would thus be made available to the town while, in order to reduce the wastage of water at the pants, he recommended that "stopvalves (be) fixed therein, so that the water may be only drawn off when wanted"[68] and suggested that the system of distribution to the various fountains be reviewed, while the pants themselves should be repaired. The major works proposed were immediately put in hand and Watson announced initial success in locating water in October, 1827, in spite of the fact that its quality had received but scant approval from Daglish who advocated the use of river water on account of its softness; the matter was brought to a satisfactory conclusion when Watson reported virtual completion of the works in September 1828 and was invited to accompany the Committee to view the new reservoir at the Head of Gallowgate the following April. Further documentation concerning this period is scarce; the date at which Lodge's works at the Three Mile Bridge were discontinued has not been established although Welford wrote that after the commissioning of the works at Hogs Well, Lodge's works "were removed, the huge elm pipes were taken up, and nothing left but the ponds to mark the site of a great enterprise",[69] presumably calling upon the somewhat romanticized description given by the *Newcastle Chronicle* in 1851. Doubts are raised by McKenzie who wrote in 1825 that at the Three Mile Bridge "excellent water is produced with which Newcastle is supplied. It is conveyed in pipes through (Coxlodge) and accross the Town Moor to the new water pond"[70] leading to the supposition that the pumps were thus still in use.

In October 1831, cholera was reported in Sunderland resulting in several pamphlets

[65] Letter John Watson to Archibald Reed, 10 April 1826, *Watson Collection*, Vol. 76.
[66] *Ibid.*, 10 July 1827, *ibid.*
[67] *Ibid.*
[68] *Ibid.*
[69] R. Welford, *op. cit.*, p. 56.
[70] E. McKenzie, *op. cit.*, p. 473.

being written on the subject by Newcastle doctors; Dr. T. M. Greenhow, senior surgeon at the Newcastle Infirmary, wrote in November 1831 of the "contagious nature" of cholera and, in fact, forecast its incidence in that "if, unhappily, the Cholera should show itself in Newcastle, in all probability it will be in some of the crowded and confined situations, such as the Sandgate, or the Chares running from the Quay".[71] At the time of his writing, the town authorities had "very properly enforced a thorough cleansing of the narrow streets and lanes in the town and recommended attention to cleanliness and ventilation in the private houses, especially of the poor ...",[72] but no mention had been made of the possibility that water could be a cause of infection and, apart from the fact that it was used to wash the streets by means of leather hose attached to the stand pipes of the Water Company,[73] its influence was ignored completely. The epidemic spread to Tyneside and persisted from December 1831 to March 1832, leading to 306 deaths in Newcastle and 234 in Gateshead; its incidence was highest in the Sandgate area of the town in spite of the streets there having been recently cleaned and the houses and alleys whitewashed to the roofs[74] while in Gateshead it was in similar areas that the disease was most virulent. It has not been possible to ascertain the effect upon the epidemic of the water supplied to the two towns although it is more than likely that the outbreak was exacerbated by the fact that pumping from the Tyne appears to have taken place at this time. In the early months of 1831, dry conditions caused the well at Coxlodge and the reservoir at Carr Hill, still supplied by the several springs in that area, to dry up. "In this emergency the Company was reduced to the necessity of erecting an engine for pumping water from the river and it is said that no fewer than 120 water carts were employed daily for six weeks in leading the unfiltered water of the Tyne to the Company's Tenants"[75] and McKenzie had recorded in 1827 that a steam engine was used for raising water from the river. The dates between which pumping took place have not been recorded although the use of pumps to raise water from the river, if only for the comparatively short period of time during which the company's resources were stretched, and even if only for the period of six weeks alluded to above, put the inhabitants of the two towns at great risk, especially in view of the fact that at Newburn, upstream from them, the cholera mortality in a population of 550 totalled 55, with 320 having exhibited symptoms of the disease.

After the epidemic, in November 1832, the Proprietors of the Fire Office published a notice in which they regretted "extremely that their Friends & Customers should latterly have sustained any inconvenience from an irregular supply of water".[76] The notice went on to state that the lack of water could be attributed to two years with little rain combined with "an accident at the Well in the Coxlodge grounds .... which renders the sinking of a new Shaft necessary"[77] and it continued that in addition to forthcoming extensions "Machinery shall be prepared which, connected with the powerful Engine now in use, will allow the Means (in Case of any particular

[71] T. M. Greenhow, *Cholera–Its Contagious Nature* (Newcastle 1831), p. 13.
[72] *Ibid.*
[73] *History of the Water Supply, op. cit.*, p. 17.
[74] J. A. Lawrie, *Essay on Cholera* (1832), p. 23.
[75] *History of the Water Supply, op. cit.*, p. 18.
[76] Unidentified newspaper cutting, November 1832.
[77] *Ibid.*

Emergency) of throwing the Water of the Tyne to the remotest Parts of the Town ..."[78] thus giving the impression that Tyne water, on a permanent basis, had not been used formerly. Tenders were also sought for the sinking of a well to a depth of 120 feet in clay, at a point two miles north of Newcastle, presumably as a replacement for Hogs Well; tenders were also sought for a steam engine capable of pumping from a similar depth, possibly from the old engine shaft of Kenton Colliery, at Causey End,[79] a means of supply mentioned by Welford as having been used after the cholera epidemic to pump to the windmill. Its use has not otherwise been confirmed. The sinking of the well was a "complete success .... (obtaining) water .... of excellent quality for general purposes (which) will require no filtration whatever"[80] thus providing a valuable addition to the Company's resources, strained in an effort to supply a population, in Newcastle, which had risen from 34,092 to 54,991 between 1801 and 1831; even so the supply still continued to be periodical, being limited to three days in the week while the estimated quantity of water consumed daily was between 70,000 and 80,000 gallons.

Soon after the cholera epidemic the monopolistic position of the Fire Office was challenged, in November 1832, by the publication of a prospectus for a rival water undertaking, to become the Newcastle Subscription Water Company. This company obtained an Act of Parliament in May 1834 and proceeded to construct a pumping station at Elswick abstracting and filtering water from the Tyne and pumping it to a reservoir at Arthurs Hill from which it gravitated into the towns' mains. The formation of this new company led to bitter feelings between Henry Armstrong Mitchell, promoter of the new company, and Matthew White Ridley, one of the proprietors of the Fire Office, during which time the old company continued to supply its consumers; mains were extended, the reservoir at Carr Hill was enlarged and improvements were made for the supply of water in case of fire. What was of greater interest to the consumers, however, was the fact that water rates were reduced, an immediate benefit resulting from competition. Competition, however, did not last for long; at the Annual General Meeting of the Subscription Company, held in April 1837, it was noted that the old company's works had been purchased but such had been the terms agreed that the Fire Office was entitled to nominate two directors to the board of the Subscription Company, to survive only until 1845 before being purchased, in turn, by what was to become the present Company.[81]

[78] *Ibid.*
[79] R. Welford, *op. cit.*, p. 56.
[80] *Newcastle Journal*, 7 June 1834.
[81] R. W. Rennison, *A History of the Water Supply to Newcastle upon Tyne and Gateshead in the 19th Century* (1976). Unpublished M.A. Thesis, University of Newcastle upon Tyne, pp. 23 to 32.