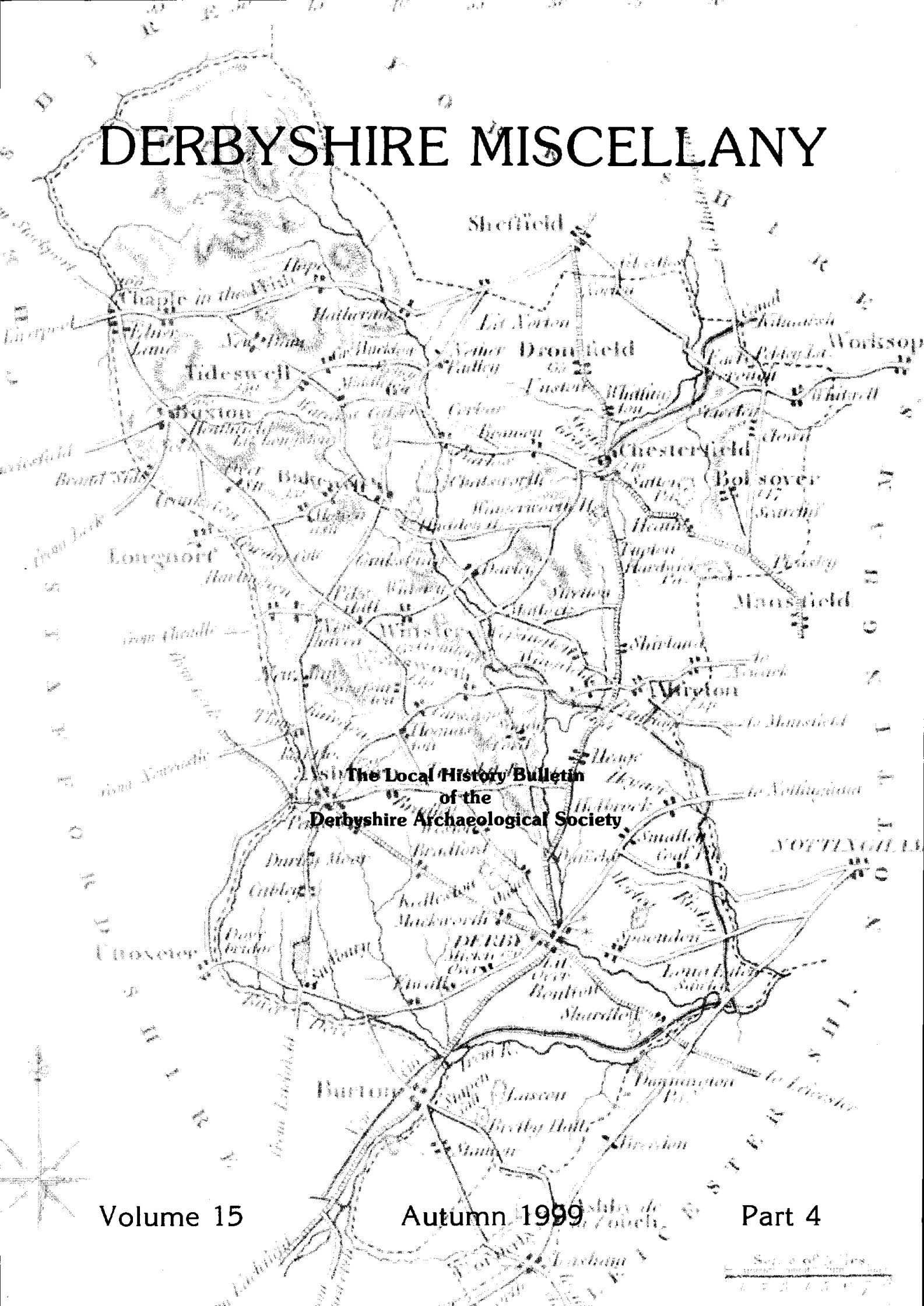


DERBYSHIRE MISCELLANY



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NOTES ON THE SUPPOSED ROMAN BATHS AT BUXTON

(by J.T. Leach)

1. Introduction

Situated at an altitude of 300 metres above sea level Buxton lies on the northern edge of the Carboniferous Limestone outcrop. The valley of the River Wye at this point has a large number of springs which issue from the limestone, and the sandstones and shales which form the valley sides. The great majority of these springs are cold ones but in four separate locations water issues at an appreciably higher temperature. Between the George Hotel and the river, and at the west end of Cavendish Circus chalybeate springs issue at 12.5°C, and at the south end of Burlington Road another spring issues at 18°. The most important are the celebrated springs at the foot of the Slopes and now underneath the Old Hall Hotel. These, amongst numerous cold ones, issue continuously at 27.5°C.

It was these latter springs which seem to have determined the Roman name of 'Aquis Arnemeze' for this location. Arnemeze or Arnemetiae was a minor Celtic goddess associated with a sacred grove, indicating perhaps an early awareness of the special nature of the waters. The first element Aquis or Aquae was applied to only two Roman settlements - Buxton and Bath in Somerset (Aquae Sulis); notably the two warmest thermal springs in Britain. That bathing was an important aspect of Roman social life is well known and so the existence of baths at Buxton, similar to those found at Bath, is considered to be a fair postulation. The absence of known fortifications and the discovery of a votive coin hoard from the site of the warmest springs suggests a civilian settlement which existed from circa 70-80 AD to the Roman withdrawal from Britain.

Unlike other Romano-British sites in Derbyshire few structural remains have been discovered in Buxton and those that have were in an antiquarian context. These and a number of small finds and road sections were described in the *Victoria County History* (1905) and by Tristram (1916)¹. Only the sites at Dukes Drive² and Pooles Cavern³ have been studied archaeologically. Consideration has been given to the Roman settlement by a number of twentieth century writers. Their comments vis-a-vis the baths will be discussed in section 6 below.

Due to the late development of Buxton, particularly at the foot of St. Anne's Cliff (modern day Slopes), a number of very early baths and associated structures survived to a time when antiquarians and early topographic writers (attracted initially by the presence of the warm springs) were able to describe them. These descriptions are listed below with comments. It must be clearly stated at an early stage that there is no firm evidence whatsoever to say that these early baths were of Roman construction. However, the description of a number of them suggests such a date, and in 1572 Dr Jones referred to 'iii cheefe bathes' in his marginal notes but only described one.⁴ Not until 1695 is a second bath built suggesting that the other two in Jones' note were of great age and by then disused. There is no known reference to the 'Holywell' at Buxton until 1460 which does not suggest an extensive mediaeval use of the baths, although this remains feasible. The postulation therefore is, in line with the antiquarians, that these structures were the substantial remains of the Roman bath complex. This is of course open to challenge and the present author hopes that an opportunity will arise for a wider debate and for a full archaeological appraisal of the present Crescent area. However, it should be noted that only one of these early structures is not now built over.

The object of this short paper therefore is to draw together the antiquarian and later accounts of these baths and to construct a tentative plan of their positions. They were visible until at least 1572, and the structure, which became known as St. Anne's Well, was in use until 1709 when it was rebuilt. The baths subsequently became visible again in 1695-96 when Cornelius White drove a level to drain the one bath in use, and also when the foundations of the Crescent were dug in 1780. Full descriptions and references are given below. From the accounts it is believed that the positions of two baths and two smaller structures can be approximately plotted.

2. Descriptions and accounts

The following are extracts from antiquarian accounts and descriptions of the supposed Roman baths at Buxton. The alphabetical reference preceding them will be used in the subsequent discussion rather than an excessive use of notes.

- A) Dr John Jones, *The benefit of the auncient Bathes of Buckstones*, London, 1572.

fo.2: 'First of the cheefe Bathe which is the warmer springe... the heat of those springes, which be three especiall, and those very excellent for divers distemperatures, greefes and sicknesses....'

[Marginal note] 'iii cheefe Bathes at Buckstone'

fo.3: 'Joyning to the cheefe springe, between the river, and the Bathe is a very goodly house'.

Comment: It would appear that there were three baths visible but only one in use. This bath was situated adjacent to the 'goodly house' or Shrewsbury's Hall of 1572-73⁵ where the warm springs arise.

- B) John Speed, *The theatre of the empire of Great Britain*, 1670

Book 1, chapter 34, p67: The springs '...run from under a fair square building of freestone [the Hall], and about sixty paces off, receive another hot Spring from a Well, inclosed with four flat stones, called Saint Annes;'

Comment: St. Anne's well was then across the main road [to Manchester] from the bath. This account would make it some 30-40 yards away.

- C) Sir John Floyer, *An inquiry into the right uses and abuses of the hot, the cold and temperate Baths in England*, 1697

pp143-144: 'New improvements at Buxton Baths, AD 1695-96 by Cornelius White..... By taking some of the cold springs from the hot, the antient Bath repaired and paved, and a new one made, for the better conveniency of the poor and impotent; And a sough about 200 yards in length, to drain both, for the cleansing thereof every Day; a cold Mineral Spaw now discovered within 200 yards of the warm spaws, the Warne springs being separate, and about 40 yards distant from the Bath About the middle of the Sough a Cistern of lead was found 2 yards square, and one foot deep, being four yards within the Earth, supported by several Oaken planks; Something higher in the same Sough, was found a place seven yards wide and twenty yards long, being smooth and even on both sides and at the bottom, 2 yards deep in the Earth, and made of Stone.'

Comment: Later writers state that this sough or level was 100 yards long. The distance from the bath to the 'separate' warm spring (St. Anne's Well) is stated as 40 yards which is similar to Speed's estimate above. The 'cistern of lead' is considered to be one of the possible Roman structures and will be considered below. The structure higher in the sough (ie nearer to the bath - Short states that it was driven from the river 'up to the bath'⁶) is believed to be the remains of the mediaeval Well Chapel.⁷

- D) Celia Fiennes, 1697, quoted in C. Morris ed., *The illustrated journey of Celia Fiennes*, London, 1982.

p108: After describing the bath: '... about 10 or 12 yards distant is a spring called St. anne's Well'

Comment: This distance is notably shorter than those quoted above.

- E) C. Leigh, *The natural history of Lancashire, Cheshire and the Peak*, in Derbyshire, Oxford, 1700.

Book 3, p42: 'That these Baths were eminent in the Times of the Romans is most certain; Lucan and others acquaint us, they were extraordinary hot; the high Road, called the Roman Bath-gate, as Mr Camden says, further

confirms it, but it is especially evident from a Roman Wall cemented with red Roman Plaister, close by St. Annes Well, where we may see the Ruines of the ancient Bath. It's Dimensions and Length. This Plaister is red and hard as Brick, a mixture not prepared in these Days; and indeed the white Plaister the Romans used was much firmer and harder than any made in these Times, being harder than Stone itself; the Red Plaister appears as if it was burnt, exactly resembling Tyle, but I am rather inclined to think it was a Mixture of Lime and powder'd Tiles cemented with Blood and Eggs, which acquir'd that Hardness.'

Comment: This is the best description of all the structures which have been found. Whilst it may appear fanciful at first, a closer examination reveals much factual information. Norman Davey describes the preparation of Roman mortar, plaster and stucco. For baths and other 'underwater' structures a hydraulic lime is required but this is not to be found around Buxton. It can be made hydraulic however with the addition of pozzolana, a volcanic earth found in Italy. Davey recorded that in Britain the Romans used crushed bricks, tiles or pottery to achieve the same effect.⁸ Leigh may have been mistaken that the red effect of the mix was caused by blood. In the post mediaeval period bullocks blood was used in stucco in England.⁹

F) William Camden, *Britannia*, ed. Bishop E. Gibson, 1722.

p51: After referring to the Batham Gate; *'and much more plainly, the Roman Well cemented with red Roman Plaister, close by St. Ann's Well; where are ruins of the ancient Bath.'*

Comment: In the original edition Camden refers to the Batham Gate but makes no reference to the 'Roman Well', and so it seem likely that Gibson is quoting from Leigh. Of note however is the suggestion of three structures, St Anne's well, the Roman well and the ruins of an 'ancient Bath'. This is the only source to separate the first two. However it seem likely that the Roman well is the redundant St. Anne's Well which was rebuilt in 1709 by Sir Thomas Delves.

G) Thomas Short, *The history of the mineral waters' etc*, London, 1734

p23: After referring to the supremacy of the mineral waters of Bath and Buxton: *'.... the last without all dispute having been well known to the Romans as the former; which is evident, first from the Remains of the ancient Roman Brickwall about St. Anne's Well, which, together with it's Bason, was totally razed in 1709, when Sir Thomas Delves of Cheshire erected the present beautiful Arch over that noble tepid Fountain. Secondly, About thirty six Years ago when Mr White, then of Buxton-Hall, was driving up a Level to the Bath, fifty Yards East of St. Ann's Well, and fourteen Yards North of Bingham Spring, the Workman found buried deep under the Grass and Corn-mould, sheets of Lead spread upon great Beams of Timber, about four Yards Square, with broken Ledges round about, which had been a Leaden Cystern, and not unlikely, that of the Romans or some other antient Bath, which had been supplied from Bingham Well.'*

pp23-24: *'.... the Chapel here dedicated to St. Anne, whose Foundation was likewise discovered, and a large Piece of Wall dug up in driving the aforesaid level...'*

pp39-40: *'Thirty two Yards and a half North East of it [the bath] is St. Anne's Well..... Twenty Yards South East of St. Anne's, in another Close, is a hot and cold Spring, both rising up into the same Receptacle. About sixty three Yards, South and South East of St. Annes, in the same Close with the hot and cold Spring is Bingham Well, ordinarily called Mr Leigh's water,'* [The text continues with descriptions of other springs].

p43: *'before the year 1697, when Mr White brought up a level from the Brook to the Bottom of the Bath (above a hundred yards long)'*

p44: *St. Annes Well formerly rose up into a stone Bason, shut up within an ancient Roman Brickwall a Yard Square within, and a Yard high on three Sides This wall is twenty four Yards North of the outer Bath.'* [my underlining - this is the new bath described by Floyer]

Comment: In his description Short states that St. Anne's well was within the 'Roman' well. He also states that the structure in the sough or level was fifty yards east of St. Anne's Well and is similar to that described by Floyer mid-way along it. He says on page 43 that the level was '*above a hundred yards long*'.

Secondly, the measurements and reference to a sketch of 1725 (see section 4 below) clearly suggests that the outer bath, built by White, was on the west side of the principal bath. The siting of the Bingham well will be discussed in section 5.

Finally, Short makes no reference to the unknown structure '*higher in the sough*'. He does however state that the foundation of the Well Chapel was discovered when driving the level.

H) Russell, *England Displayed*, 1769

p102: '*The well is about a stone cast from the house across a dirty lane*'.

I) J. Whittaker, *The history of Manchester*, 1773

Vol. 1, p193: '*The Roman bagnio at this place was plainly discernible by it's ruins within the present century. The dimensions were then traceable by the eye. And the wall of it was brick, still rising about a yard in height upon three sides and covered with a red coat of Roman cement, hard as brick and resembling tile. The bason was floored with stone, and supplied, not by any of the springs which feed the present bath immediately above, but by that finer source of water which is now denominated St. Anne's well, and was then inclosed within it. And this continued the very curious and only remains of the Roman baths in the kingdom, so late as the year 1709;..... But about fifty yards to the east of this, on driving a level from the present bath to the river in 1697, was found an appendage probably to the Rowan bagnio about four yards square but made with sheets of lead that were spread upon large beams of timber, and had broken ledges all along the borders. This additional bath was replenished from another spring, which is about fourteen yards to the south of it called Bingham well*'.

Comment: The above appears to be an amalgam of previous accounts.

J) John Campbell, *A political survey of Britain*, London, 1774

Vol. 1, p99: '*This conjecture was verified when Sir Thomas Delves, of Cheshire, in Memory of a Cure he received here, caused an Arch to be erected; in digging the Foundation for which, they came to the Remains of a solid and magnificent Structure of Roman Workmanship; and in other Places in the Neighbourhood very capacious Leaden Cisterns, and a Variety of other Utensils, which evidently appear to be also of Roman Workmanship, have been discovered.*' [Here Campbell cites as his source Lambarde's *Topographical Dictionary*, p48]

p100: '*At a Distance of somewhat more than thirty-two Yards North East from the Bath at Buxton, rises St. Anne's Well..... It formerly rose up into a Stone Bason, shut up within an ancient Roman Brick Wall, a Yard square within, and a Yard high on three Sides, open on the fourth: till in 1709, Sir Thomas Delves..... About twenty Yards South-East of St. Anne's, in another Close. lies Bingham, or St. Peter's Well, called also Leigh's Well.*'

Comment: This description again indicates that St. Anne's well was associated with an earlier 'Roman' structure and that other 'Cisterns' (plural) had been discovered.

K) William Stukeley, *Itinerarium Curiosum*, London, 1776

In considering this reference it must be remembered that Stukeley actually visited Buxton in July 1725.

Vol. I, p56: After referring to the benefits of taking the waters Stukeley states, '*Such a one as this was imitated by the sumptuous bagnios of the Roman emperors*'.

Vol. II, p28: '*Roman plaster found here. mentioned in Thoresby's "Ducat, Leodiens."* p558'.

Comment: The present author has not been able to locate a copy of Thoresby's work.

L) William Bray, *Sketch of a tour into Derbyshire and Yorkshire*, London, 1783

p225: Reference to Cornelius White driving the level.

p227-8: Bray quotes Leigh's and Short's descriptions of the supposed Roman features.

p230: Referring to the Crescent, '*The foundations are laying and in digging them, another warm spring has been discovered near it was found the corner of a building of squared stone, supposed to have been the work of the Romans*'.

Comment: The first two quotes can be disregarded. The last one suggests that Bray may have been in Buxton in 1780 and possibly saw this new structure. As he does not give the more fuller descriptions of later writers it is possible that not all of this feature had been unearthed before his departure. However he is the only writer to record the presence of an earlier structure which may have been Roman or possibly the Well Chapel again.

M) George Pearson, '*Observations of the tepid springs of Buxton*', London, 1784

Vol. I, pp4-8: In his footnotes Pearson quotes most of the above writers. At the foot of page 8 he writes '*About four Years ago, in digging the Foundations for the new Building now erecting called the Crescent, the Remains apparently of two Baths were found, one had a Plaister Floor, with some Bottles in it, supposed to be Roman Bottles, and was nearly of the Figure of the present Baths, but not so large; the other was smaller, and had a Wall of Stone.*'

Comment: Pearson cites the discovery of two baths. The first is almost certainly that described by Leigh, but the second may be a new one. The cistern described by Floyer(C), Short(G) and others was situated under the present Crescent forecourt. This area had previously been landscaped to form the Grove Gardens.

On page 145 he states that the Gentleman's Bath measured 25' 6" x 12' 8". Other writers give an identical width but the length varies up to 18 inches longer. Denman (0: pp55-56) states that the dimensions of the Gentleman's bath room were 30 x 17 feet.

N) James Pilkington, *A view of the present state of Derbyshire*, London, 1789

Vol. I : pp211-212: Quotes Camden's reference to the red plaster bath and then states, '*And in the year 1781, when the foundations of the Crescent were dug, the shape and dimensions of this bath might be very clearly discerned. Its form appeared to be an oblong square, or parallelogram. It measured from east to west thirty feet, and fifteen in the contrary direction. The spring was situated at the west end, and at the east might be plainly perceived a flood gate, by means of which the water was let out. The wall was built with limestone and appeared to be of rude workmanship. On the outside it was covered with a strong cement, which most probably designed to prevent the cold water from mixing with the hot. The floor was formed with plaister and appeared not to have suffered any material injury from time. On top of the walls were laid strong oak beams, which were firmly connected together at the four corners. For these particulars I am indebted to the late Dr. Bullock.*'

Comment: This is a very good description but its dimensions make it bigger than the Gentleman's Bath, see Pearson above. It is probably the plaister bath described by Leigh and that this is the larger of the two cited by Pearson and whose estimate that it was 'not so large' is probably incorrect.

- O) J. Denman, *Observations on the effects of Buxton water*, 1793

p52: 'The bason [of Delves' St. Anne's well] was about 25 yards North of the outermost bath'.

- P) D. P. Davies, *Historical and descriptive view of Derbyshire*, 1811

p614: 'The shape and dimensions of an ancient bath which was about six yards from the present were clearly discovered when the building of the Crescent commenced in 1781'. Davies then quotes Pilkington's description and adds 'Near the end, a cavity was formed in the floor, resembling a boat in shape, extending circularly in length almost from one side of the wall to the other; its breadth was about six feet; and its depth below the level of the floor, at the deepest point of curvature, about eighteen inches: the water was conveyed into this room by a leaden pipe.'

Comment: This description amplifies that of Pilkington and places it 'six yards' from the present baths. In considering this reference it must be remembered that the bath complex had grown gradually towards the Crescent site during the eighteenth century. This structure is probably that which was adjacent to the original site of St. Anne's well and now lies beneath the St. Ann's hotel. The 'boat' shape description is of note and may permit dating by analogy if another such structure is known. It is interesting to speculate whether Davies obtained this more detailed description from an eye witness.

- Q) Arthur Jewitt, *The history of Buxton*, London, 1811

pp27-29: Jewitt quotes Leigh, Short, Bray and Pilkington.

Comment: It is frustrating that Jewitt, as the town's first historian and being resident, provides no new information. He does not even supply the additional material provided by Davies.

- R) W. Adam, *Gem of the Peak*, London, 1840

p257: 'Bishop Gibson mentions the existence of a Roman wall, "cemented with red Roman plaster, close by St. Anne's Well, where there are ruins of the ancient Bath". This was taken down in 1709, by Sir Thomas Delves of Cheshire, who, out of gratitude for a remarkable cure he received from the use of the waters, erected a small stone alcove over the well. Capacious leaden cisterns and other articles, evidently Roman were discovered when digging the foundation. The ancient Bath was discovered in 1781 on clearing and cutting away the ground to commence the building of the Crescent. Its form was an oblong square, approaching to the figure of a parallelogram, (dimensions thirty feet by fifteen feet). The spring was found at the west end, and the outlet, or floodgate to let off the water, at the east. The wall was constructed of limestone, with a coating of strong cement outside, and the floor a composite of lime and coarse sand saturated (it is said) with blood. Near one end a singular cavity existed, resembling the shape of a boat. The water was conveyed into this by a leaden pipe*. Coins also of Constantine the Great have been found here.....'

* Pegge's *Essay on Roman Roads*

Comment: Another amalgam of earlier sources notable for the reference to the 'leaden pipe'.

S) J. B. Chambers, *Beauties of Buxton*, Buxton, 1841

p11: Chambers briefly quotes some of the above descriptions and then significantly adds after that of the 30 x 15 feet bath, 'Coins, also, of Constantine the Great have been found here'.

Comment: If this is correct then the bath described by Leigh(E), Pilkington(N) and Davies(P) is probably Roman in origin,

T) W. Turner, Notes on old Buxton and District', in *Derbyshire Archaeological Journal*, Vol. 25, 1903

p161: 'As a further proof that the Romans used Buxton as a bathing place, what appeared to be a bath was found at the back of the Clarendon Buildings, Manchester Road, by Mr Webster, the owner, about twenty years ago. Mr Salt was invited to see it. The Chalybeate spring rises about this site, and may have been utilised for the purpose of the bath'.

Comment: No further evidence has come to support or deny this statement and so it must be left for the present. It is some distance from the baths described above.

From all of the above accounts it is clear that Jones(A), Speed(B), Floyer(C), Fiennes(D) and Leigh(E) are contemporary descriptions of the visible structures at a date before the site was extensively developed. There is no reason to doubt their genuineness although accuracy in detail may be questioned. Gibson's edition of 'Britannia'(F) and Short(G) appear to reiterate earlier accounts but the latter's details suggest that he may have interviewed someone present when White's level was dug, and also someone else who was familiar with the site before it was landscaped. He also provides the only workable dimensions between the key features. A drawing of July 1725 by William Stukeley¹⁰ shows the formal garden to the east of Manchester road the laying out of which may have obscured the supposed Roman features until the Crescent foundations were dug. Further landscaping was undertaken by Alexander Taylor (landlord of the Hall from c1727) and both Short and Russell¹¹ described these works.

3. The Roman Baths and cisterns

This section will examine the evidence cited in section two and consider what structures may possibly be considered to be of Roman origin. In considering this material it must be clearly stated that with one exception there is no supporting archaeological evidence.

Despite a range of appraisals and a small number of excavations of peripheral sites there has never been any archaeological exploration of the area where the baths are believed to be sited. Whilst part of the site is now occupied by the Crescent it is believed that certain remains lie under the forecourt. The one single piece of archaeological evidence was the chance discovery in 1975 of a votive hoard of 232 Roman coins in the former Great Bath.¹²

This bath is situated under the north east corner of the present Old Hall Hotel and has the warm mineral spring issuing through its floor. It is the site of the oldest known continuously used bath. Despite Jones' marginal reference(A) to 'iii cheafe bathes' he described only this one at the Hall which Floyer in 1697(C) called 'antient'. Because of its situation over the spring, its age and the presence of the coin hoard I would strongly advocate a Roman origin for this site.

The evidence for the other supposed Roman baths is less convincing. However, as no baths were built on their sites since at least 1572 and as there is little evidence of mediaeval usage it would seem that they were of considerable antiquity. Having considered all of the accounts cited in section 2, I would postulate, on tentative evidence, that there was one other bath, two cisterns and one further unidentified structure. The first of these lay under the Crescent and was supplied by a cistern (original St. Anne's Well), and under the Crescent forecourt a structure four yards square which may have been a large cistern (or a small bath?) was found.

St. Anne's Well. was formerly across the road from the Great Bath and situated under the former St. Anne's Hotel (see section 4 below). Leigh(E) described it as adjoining a Roman bath and Short(G) stated that it was '..... shut up within an ancient Roman brick wall'. This is not convincing evidence but its dimensions of a yard square(G) and its position next to a bath suggests that it was a cistern supplying the latter. This is the bath graphically described by Leigh(E).

The other cistern was situated approximately in the middle of the present Crescent forecourt and was discovered when Cornelius White drove a level to drain the Great Bath in 1695-96. This is described by Floyer(C) and amplified by Short(G) although their dimensions are at variance. The size of the structure and its well-built construction suggest a possible Roman origin, but at issue is whether it was actually a cistern or a bath. At twelve feet square this would appear to be rather small to be a bath and so a function as a cistern seems more likely. However, Short(G) states that it was supplied by the Bingham Spring. This is not a warm spring but could have been the supply for a *frigidarium*.

A second cistern begs the need for a third bath which would logically complete the bathing facilities supplied by a *caldarium*, *tepidarium* and a *frigidarium*. Floyer(C) in describing White's level refers also to '*Something higher.... seven yards wide and twenty yards long*'. Higher suggests nearer to the Great Bath and the west side of the cistern which seem unlikely. On a practical level it is unlikely that the bath was 'higher' than a supplying cistern when overflow water would have to travel in the opposite direction past both structures to empty into the river. Short(G) clearly suggests that this structure was the remains of the mediaeval well chapel. Without further evidence no further comment can be made.¹³

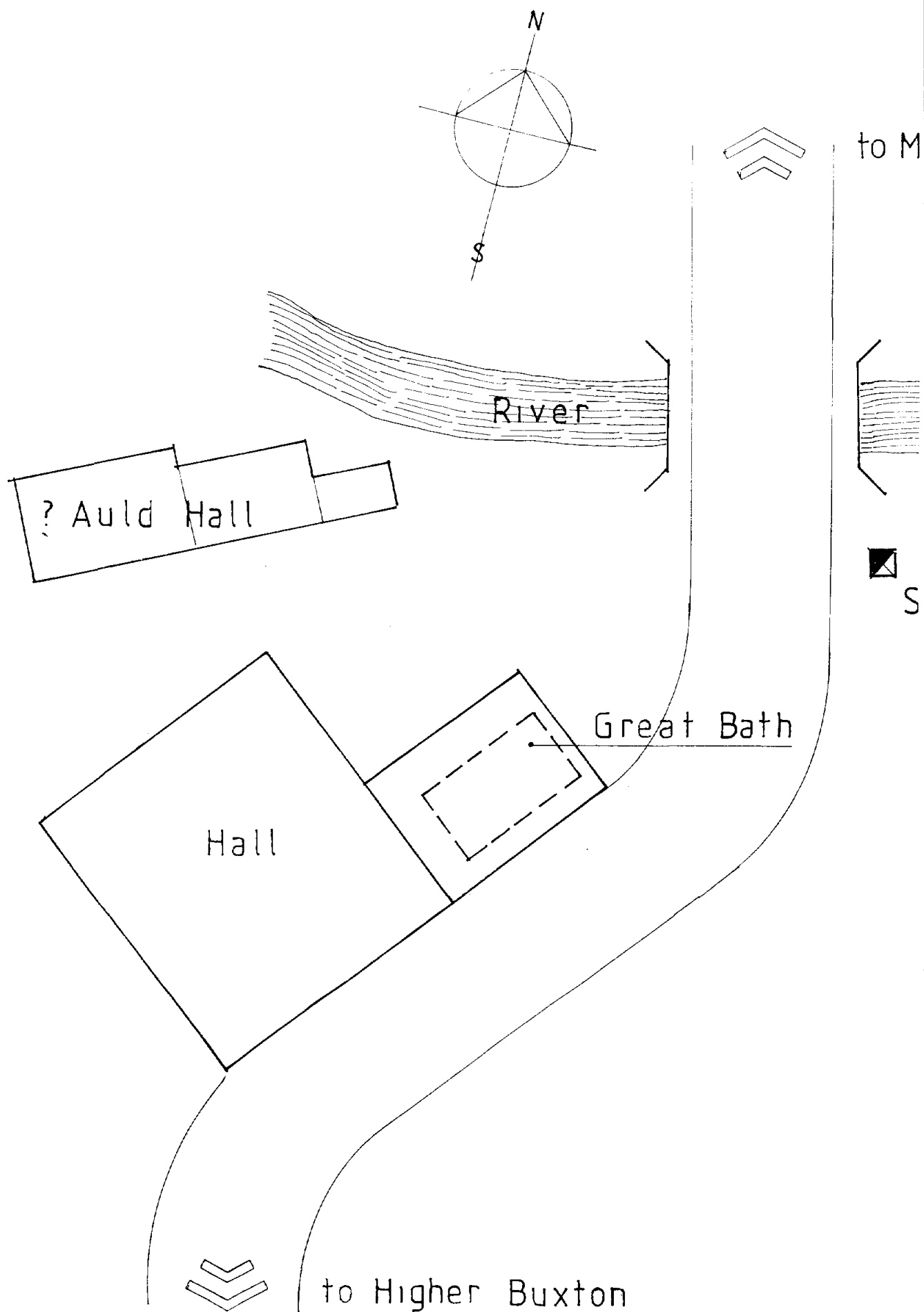
The discovery of a bath was reported during the digging of the foundations for the Crescent. It is described by both Pilkington(N) and Davies(P). The latter places it some six yards from the 'present baths' so it is probably a rediscovery of Leigh's bath(E). Curiously Chambers(S), a late source, said that '*Coins, also of Constantine the Great have been found here*'. These have not survived nor is there any other evidence to support the statement. Pearson(M), writing in 1784, refers to two baths being discovered. With the Great Bath this makes a total of three, but I believe that his 'smaller bath' is actually the remains of the cistern which became St. Anne's Well. Jones(A) in his account of 1572 has a marginal note referring to '*iii cheefe bathes*'. After consideration it must be concluded that the role for a third bath is logical but the evidence is hard to find.

4. Key features of the site

Fundamental to any interpretation of the site is the understanding of it prior to the developments of the late eighteenth century.

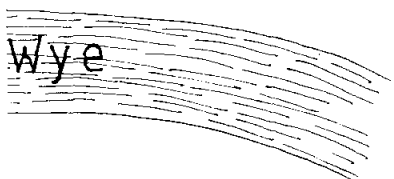
The postulated layout of the site about the year c1580 is shown in Fig 1. The New Hall, built in 1572-73 by the sixth Earl of Shrewsbury, operated alongside the earlier Auld Hall¹⁴ and later succeeded it. Adjoining it were the celebrated thermal springs and the Great Bath. To the east of the bath-house was the Manchester to Buxton road and immediately across this road was St. Anne's Well. In close proximity to this latter feature was the Well Chapel which was closed by Sir William Bassett in 1538. There are a number of late sixteenth century references to the chapel (then dedicated to St. John) but it is not known whether they refer to this building or to the present chapel in Bath Road which was in use by 1614. By 1580 the Well Chapel may have been disused or even demolished to extinguish the idolatrous associations with St. Anne. To the east of these features, the site now occupied by the Crescent was landscaped to make the formal 'Grove Gardens'.¹⁵ All around the site were other springs including one which became known as the Bingham or St. Peter's Spring. To the north east of the Great Bath two later baths (for females and for the poor) were added during the eighteenth century. These followed the line of the old Manchester road and are visible on contemporary maps.¹⁶

Within the documentary accounts are a number of obvious problems concerning the accuracy of quoted dimensions, but more seriously a problem about orientation. With regard to the former there is a wide variety in the sorts of dimensions quoted by various authors and the actual distances. Some however, can be demonstrated to be quite consistent and accurate when compared to modern plans. The major exception would seem to be the dimensions quoted by Floyer(C) but who otherwise supplies very valuable information. It is interesting to note that few measurements are given in round figures. The greatest problem in regard to dimensions is the uncertainty of the particular points 'from and to' to which they refer.



anchester

Wye



t. Ann's Well

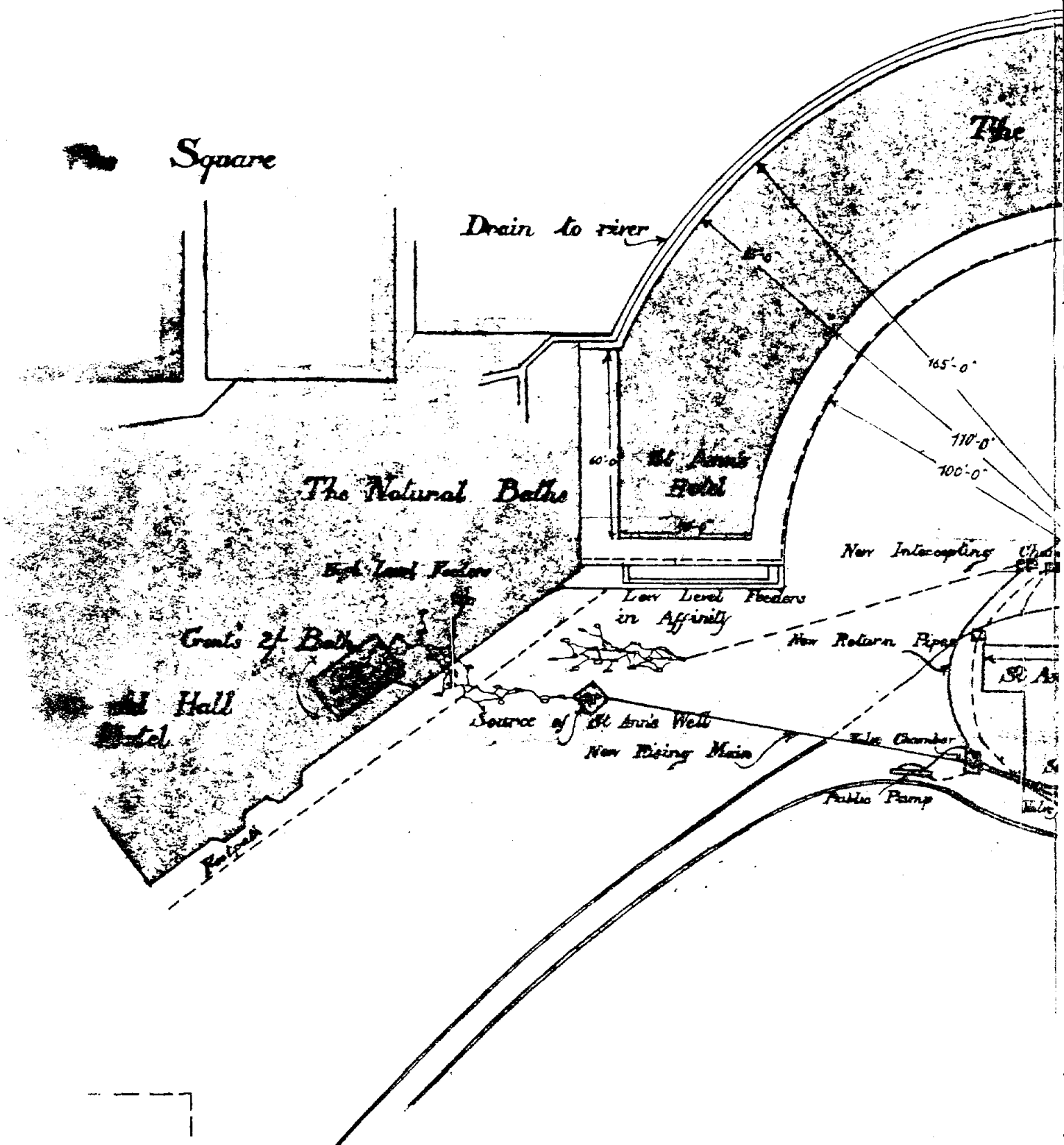


'Something higher in the sough'

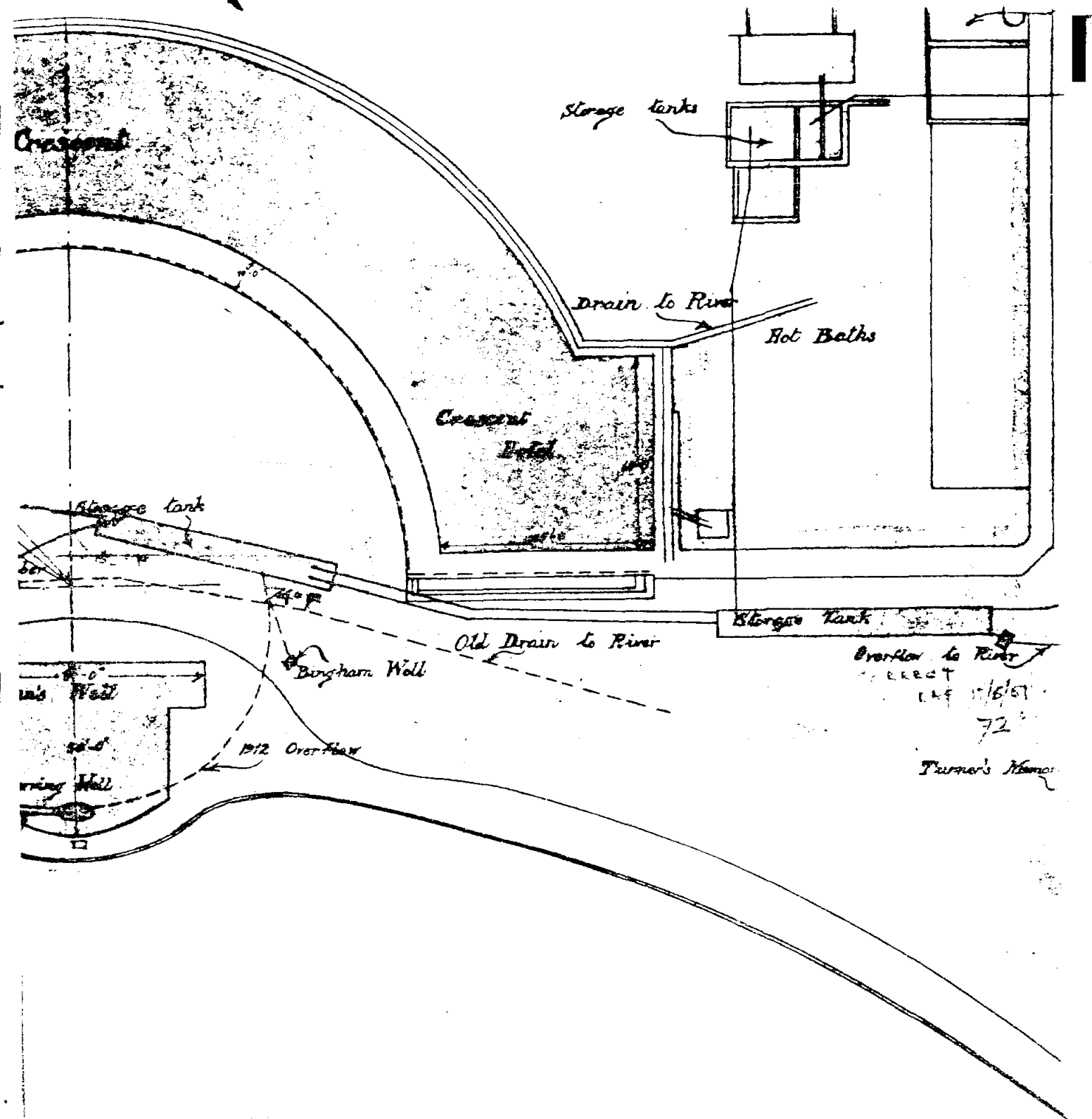
Was this a bath or the remains of the Well Chapel?

FIG 1: Lower Buxton c.1580

NOT TO SCALE



Plan shewing position of New
as Repo
Scale 4



Rising Main & Contiguous Work

erected 1914

40 feet to 1 inch

Reproduced by kind permission of High Peak Borough Council.

Orientation however presents a further problem because of an early assumption that the Crescent fronted to the south, whereas it actually fronts to the south, south east. Jewitt,¹⁷ referring to the work of Pearson,¹⁸ states.

'The account of Dr Pearson, with regard to the distance which the water was, and is conveyed, is accurate; but in his bearings he seems to have been misled by the popular opinion of the Crescent's fronting due south, whereas it directly faces South East by South'.

Having acknowledged this error in what is otherwise a reliable work one must consider whether other writers fully appreciated the true orientation or not. A large error factor (at least 22.5 degrees) is likely and so is thus an unreliable basis from which to proceed. One particular reference (Short(G)) that the Bingham Well is 63 yards S.S.E. of the original St. Anne's Well, is proved to be a nonsense by knowledge of its approximate site and the fact that the bearing would place it beyond the known area of the springs and up the hill formerly known as St. Anne's Cliff. A bearing of 63 yards east is however reasonably accurate (67.5 degrees difference). Further reference will be made to this dimension. It is very important to note that St. Anne's Well has enjoyed a number of different sites and it must be remembered that references quoting it refer to its contemporary site.

When one reads the accounts of these supposed Roman works one is struck by the considerable extent of the remains which have survived after thirteen centuries. The writers related them to later features which in turn have disappeared. It is necessary therefore to locate these later features before any attempted reconstruction can take place. Two features which can be reasonably located from a plan (Fig 2) held by the High Peak Borough Council¹⁹ are the source of St. Anne's Well (in the roadway in front of the former Natural Baths) and the Bingham Well (between the Pump Room and the Library). The water from the former travelled from 'subterranean streams'²⁰ to the original St. Anne's Well.

This well has enjoyed several sites but the original one can, fortunately, be deduced. Jewitt²¹ describes both the source and the site of the original well:

'The spring from which the old well was, and the new one is supplied, lies under the causeway near the lower corner of the Hall, and at an equal distance from the window that lights the ladies private bath, and that near the lower part of the public one. The old well was situated under the third pier from the corner of that part of the arcade, which runs along the side of St. Anne's Hotel to the Bath passage, the basin of which, and the foundation of Sir Thomas Delves arch, are said to be buried beneath the pavement.'

From knowledge of the bath layout at this time the site of the source is accurate but the site of the Well may be slightly in error. Robertson²² referring to the newly built Natural Baths (1851-52) and the re-siting of St. Anne's Well within that building records:

'This new well is on the site of the oldest St. Annes Well that is on record, and close to the spot at which the spring emerges by which the well is supplied.'

From his plan²³ the Natural Baths and Well can be seen located adjacent to the first and second piers of the south western arcade of the Crescent with the entrance to it between the second and third. Pearson²⁴ (supported by Jewitt²⁵) states that *'The Water was conveyed at least forty feet to the old Well'*. Based upon the High Peak Borough Council map that distance would point to the well being between the first and second piers as suggested by Robertson. The position of the well can also be related in distance from the Great Bath; this distance was recorded by Short (E: 32½ yards) and Campbell²⁶ (32 yards). As has already been stated a problem occurs in knowing from which two precise points the measurement is taken. A map in Buxton Museum and Art Gallery²⁷ showing the pre 1851-52 bath layout gives a dimension of exactly 20 yards from the exterior of the Great Bath to the corner or first pier. This does not disprove the accuracy of either Short or Campbell because their fixed points are unknown. It is interesting to note however that the distance from the 'chief spring' within the Great Bath to the first and second piers is 31 and 33½ yards respectively. For the purpose of producing a plan of the Roman Baths it is accepted that the original St. Anne's Well lay between the first and second piers.

Bingham Well is located from the plan illustrated in Fig 2. It is not known however how big it was (so it is impossible to measure accurately from it) nor whether it is shown in its original position. In the absence of evidence to the contrary it is considered to be in this location for the purpose of preparing a tentative plan.

One other more recent feature needs to be determined before any plan of the Roman baths can be attempted. That feature is the level built by Cornelius White in 1695-96 to drain the Great Bath and his newly constructed bath for the poor. In fact White built two drains and these are both recorded by Short²⁸, who refers to the principal one as a 'level' and the other as a 'sough'. Floyer terms the level as the sough which is confusing. Short also states that the level was built to drain the inner or Great Bath and the sough to remove the cold springs from the hot ones. The location of the sough is unknown but what is believed to be the level is recorded on the High Peak Borough Council map. However, from the map it can be seen that the level does not reach the baths complex. Although there are numerous springs in the vicinity the only known 'hot' ones are under the Great Bath where 'cold' ones also arise. The true function and position of these channels may never be known but it could be that the sough removed the cold springs from the Great Bath and delivered same into the level, and, when required emptied the baths via a sluice perhaps. There must have been an early need to drain the water from these springs in front of the Bath as they were arising in the middle of the main London to Manchester road.

The High Peak Borough Council map already referred to shows an 'Old Drain to river' running some 35 yards in a north easterly direction from outside the present Natural Baths to a point almost at the centre of the Crescent forecourt. Here it abruptly changes course and heads east north east and then east across the front of the Crescent. It measures 121 yards long. The new drain from the Natural Baths is shown on the same map following exactly the line of the rear of the Crescent and was probably built between 1803-06 when John White effected considerable improvements to the bath complex.²⁹ This drain empties into the River Wye under the former Thermal Bath complex. It is interesting to note that at the north east corner of the Crescent the new drain turns north east and is almost in a direct line with the 'Old Drain' referred to above. I would suggest that the 'Old Drain' formerly ran in a north easterly direction for its entire length but had to be temporarily diverted when the foundations of the Crescent were being built and before the new drain was completed.

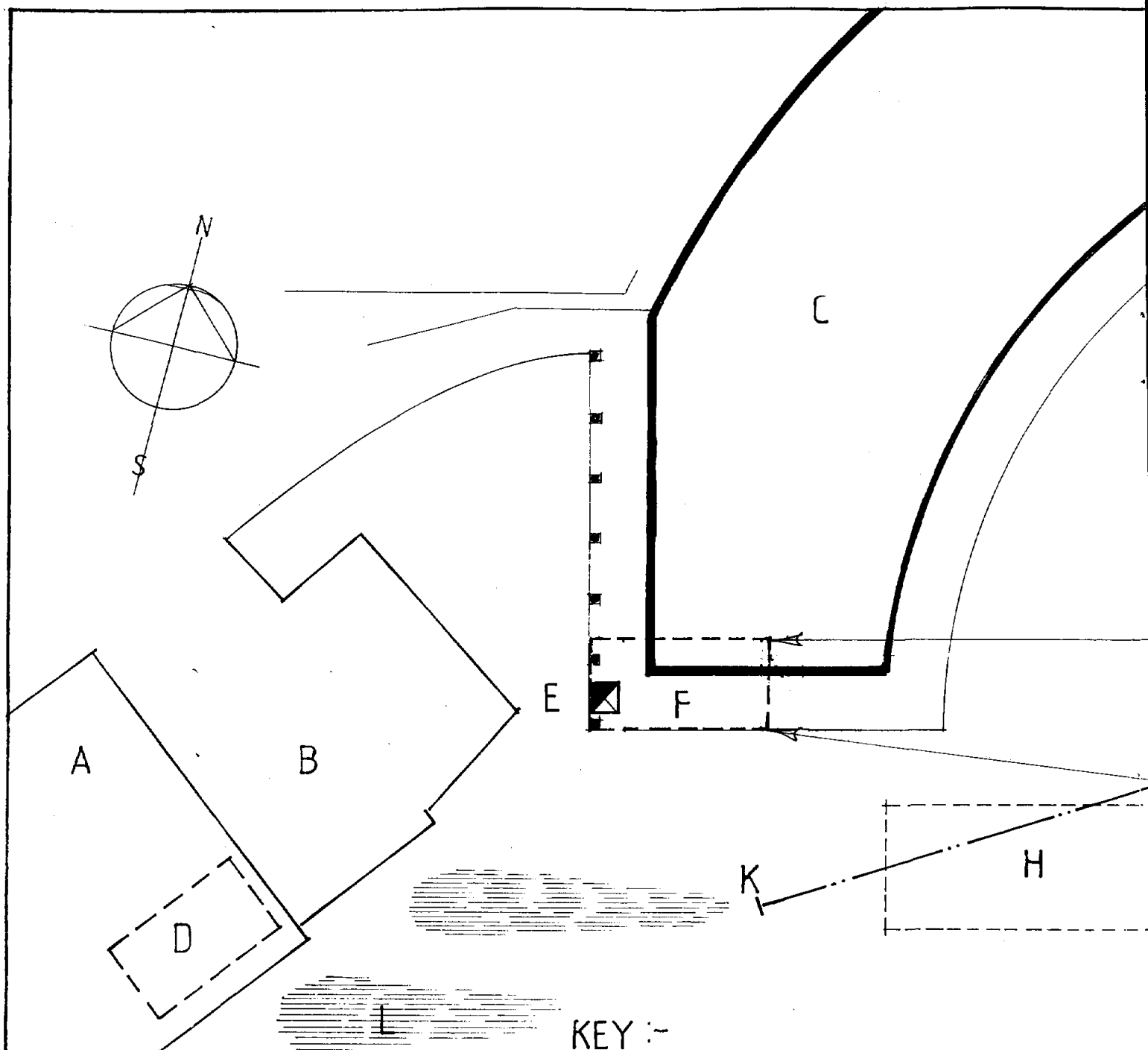
5. Location of the supposed Roman Baths and Cisterns

From the arguments advanced above there is a strong case for believing that the site of the Great Bath is a former Roman one. It is time then to consider the spatial relationship between the more recent features (which are not now visible) and the other 'Roman' features described in section 2 above. These are shown in Fig 3. That the original St. Anne's Well was situated within a Roman structure is recorded by Short(G) and Whittaker(I) who after describing the bath referred to by Leigh, add that it was supplied 'by that finer source of water which is now denominated St. Anne's well, and was then inclosed within it'. With only secondary accounts available the Well must remain only a probable Roman feature with a reasonably definite location; what is important is the close proximity of the Well to the bath. Campbell(J) supports this; after referring to the likelihood of Buxton being a Roman station he states:

'This conjecture was verified about fifty years ago when Sir Thomas Delves, of Cheshire, in memory of a cure he received here [Buxton], caused an Arch [over St. Anns well] to be erected; in digging the Foundation for which, they came to the Remains of a solid and magnificent structure of Roman workmanship; and in other places in the neighbourhood very capacious Leaden Cisterns, and a variety of other utensils have been discovered'.

This adjoining bath was fully described by Leigh(E) who also makes the point that it was 'close by St Anns well'. This bath was exposed (and presumably destroyed) when the foundations of the Crescent were being dug in 1780-81 and is described by Pilkington(N) and Davies (P: as a 'boat in shape'). By this time a Ladies bath had been built adjoining the north end of the Great Bath and a new Poor bath adjoining the Ladies bath. These two new baths would bring the whole complex nearer to the Crescent and the former St. Anne's Well (plus associated Roman Bath) and this can be seen on a number of contemporary prints. From the description of Pilkington and Davies, its close proximity to St. Anne's Well, and Davies' dimension that this 'boat bath' was 'about six yards from the present [bath]' gives the bath a location under the south eastern end of St Ann's Hotel. It has to be to the east side of St Anne's Well due to the presence of the former turnpike road to the west. According to Pilkington its orientation was east-west.

Sir John Floyer in 1697 recorded the improvements effected by Cornelius White. Perhaps the most important was the level built to drain the Great Bath to enable it to be cleaned. Floyer(C) writes 'About the middle of the Sough a Cistern of lead was found.....'. This vague reference is amplified by Short(G), Whitaker(I), and Bray³⁰ who record that it was sited 50 yards east of St. Anne's Well and 14 yards north of the Bingham Well which supplied it.



KEY :-

A. Old Hall

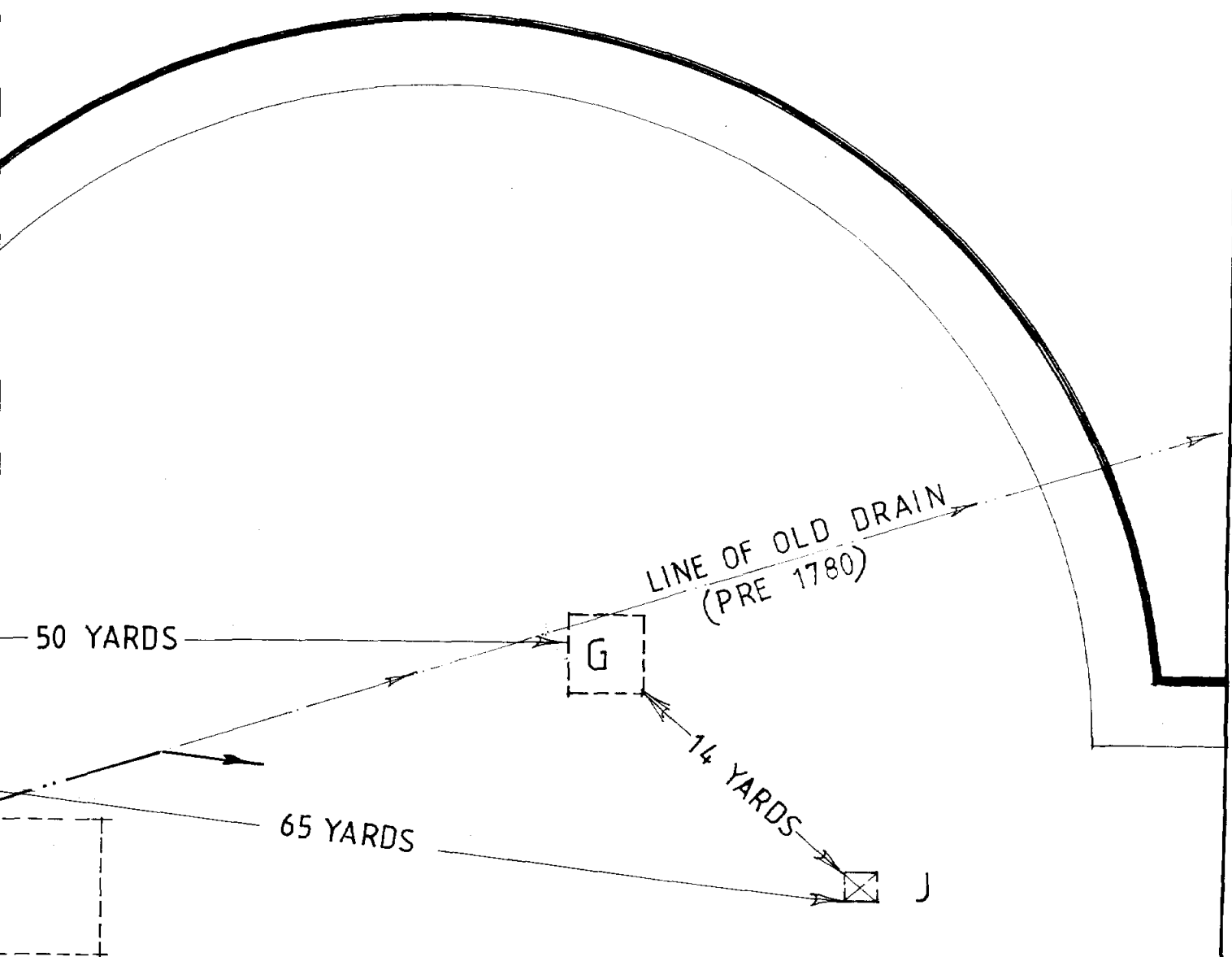
B. Baths Complex ~ pre 1851

C. The Crescent

D. Great Bath

E. St. Ann's Well ~ original position

FIG. 3: Location of the supposed Roman Bath



- F. 'Boat' Bath (30'x 15')
- G. Cistern (12'x 12')
- H. 'Something higher in the sough' (60'x 21')
- J. Site of Bingham Well
- K. Commencement of drain
- L. Source of St Ann's Well

Baths

NOT TO SCALE

There is a conflict between these three accounts and that of Floyer's; the former record that its dimensions were four yards square whereas the latter's contemporary account records that it was two yards square. However, as stated above Floyer's dimensions are suspect but even so there can be no doubt that a structure existed on that site and had been disused for many years for, as Short records, it was *'buried deep under the Grass and Corn mould'*. Plotting the above dimensions from Bingham Well and St. Anne's Well by compass makes no sense because their arcs are nowhere near enough to each to allow even the four yard square cistern to be situated between them. However, if the 50 yard dimension is taken from the east side of the 'boat' bath (Short and Whitaker both record that St. Anne's Well was *'inclosed within it'* - see above) then between the two compass arcs a four yard square structure would fit perfectly and be situated along the projected line of White's level/sough. At 50 yards from the southern end of the level/sough it would be slightly less than halfway along the length indicated on the High Peak Borough Council map (121 yards). The distance from the east side of the 'boat bath' to the Bingham Well is 65 yards - two yards longer than Short's quoted measurement from St Anne's Well.

This neat coincidence is however at the cost of ignoring the quoted orientations of the measurements which are believed to be unreliable. Short's 50 yards east is reasonably accurate but the distance 14 yards north from Bingham to the cistern is now made to be north west, and the distance 63 yards SSE from St Anne's Well to Bingham is now made to be slightly ENE. This is unfortunate but this is the only possible way to link these key features and locate the cistern approximately half way along the level or drain.

After recording the cistern Floyer(C) records that *'Something higher in the same Sough, was found a place seven yards wide and twenty yards long, being smooth and even on both sides and at the bottom, 2 yards deep in the Earth, and made of Stone'*. Bearing in mind that the dimensions are suspect there is probably no doubt as to its large size, its overall plan and the fact that its floor was below ground level. Could this be another bath or perhaps the foundations of the former mediaeval well chapel? Short records that *'the Chapel here dedicated to St. Anne whose foundation was likewise discovered, and a large piece of its Wall dug up in driving the aforesaid level'*.³¹ Evidence from elsewhere attests to ancient parish churches *'sinking'* gradually into the ground but as the age of this chapel is unknown little more can be said on this point. John Jones(A) writing in 1572, recorded that there were *'3 cheefe bathes'*, but only describes one as being in current use (ie. the Great Bath). Could perhaps the other two be the 'boat' bath and that recorded by Floyer? This will probably be never known but a structure did exist to the south of the cistern along the level/drain; possibly of Roman or mediaeval origin.

Beyond the scope of this work is research into the seventeenth, eighteenth and nineteenth century bath and well complexes. The above dimensions, and many more, quoted by the various writers are of great value in this field of research, and it can be reliably stated that (orientation apart) there is remarkable constancy and accuracy amongst them.

The above accounts by various authors are their personal opinions based upon a limited contemporary knowledge of Roman archaeology. However, these accounts have never been challenged and have been put forward in modern works (see section 6) pertaining to Roman Buxton. Other archaeological evidence (apart from the coin hoard referred to above) is meagre. Pearson³² after referring to the finding of *'Cisterns'* in the neighbourhood writes that *'a Variety of other Utensils, which evidently appear to be also of Roman workmanship, have been discovered'*. Both Adams(R) and Chambers(S) refer to coins of Constantine the Great having been discovered, but neither these nor the utensils have survived. The question must be considered whether the two (possibly three) baths discussed above have a lost mediaeval origin. This will probably be never known but seems unlikely; Jones(A) in 1572 refers to *'three cheefe bathes'* yet only describes one and the improvements made to it. In fact up to 1695-96 reference is only ever made to one bath so it would appear that the other two were superfluous at a time (1570-1585) when the practice of bathing at Buxton was very popular due to the visits of Mary, Queen of Scots and the Tudor nobility.

One other Roman bath is alleged to have been found in Buxton in 1883 when the foundations were being dug for the Clarendon Hotel.³³ This was inspected by local archaeologist, Mr Micah Salt but no more is known of it.

The features in Fig 3 are therefore very tentatively located. Much doubt surrounds the measurements and orientations and there are no really certain fixed points. St Anne's and the Bingham Well are reasonably certain and the level is conjectural upon the plan in Fig 2. For all these uncertainties however they did exist and their relative positions made sense to contemporary writers. The plan in Fig 3 is conjectural but it is the only proposal which locates the key features in accordance with the meagre and sometimes contradictory evidence.

6. Twentieth Century Perspectives

Micah Salt of Buxton undertook a considerable amount of amateur archaeological work in Buxton at the turn of the century. Unfortunately he chose not to write up his work personally but much was recorded by his colleague, W. Turner. In articles dated 1903³⁴ and 1904³⁵ he describes the 'Roman relics' found in the district but adds nothing new to the baths debate except for the Clarendon reference above. He does however, in the latter article make the point that the antiquarian view of Roman Buxton may have been based on an '.... a priori reason ... that the Romans were very fond of bathing, especially in thermal natural waters'.

An appraisal of the Roman remains was made by F. Haverfield in the *Victoria County History* (1905). He notes that Camden (1593)³⁶ was the first person to call Buxton a Roman site, but this was based on the presence of the road 'Batham Gate' leading from the east. The significance of this road name was also noted and discussed by Samuel Pegge in 1769.³⁷ Haverfield also refers to Stukeley's visit of 1725 and makes the comment that he '...saw practically no Roman remains'. Of particular importance, and contained within a footnote, is the comment that a piece of bath plaster was kept in Ralph Thoresby's museum.³⁸

The first major work to consider Roman Buxton was that of Edward Tristram in 1916.³⁹ Apart from a postulation concerning the alleged Roman fort it is a fair account of the facts then in existence and is still of worth. Earlier writers are repeated but no new arguments are put forward. He does however quote a description of the 'boat bath' from *Archaeologia*, Vol. IX which this author has not seen.

Ernest Axon and Wilfred Jackson make reference to Roman Buxton in their various publications. These authors are of high repute but unfortunately they make no contribution to the baths debate. Disappointing also is a work of 1971 by Jennifer Kirkham entitled *Roman Buxton and the Roman army's use of spas*.⁴⁰ This appears promising but again is another reordering of the existing material. It should be noted however that it pre-dates the discovery of the coins.

Modern archaeological interest commences with the work of the former North Derbyshire Archaeological Trust. Surveys and reports by P. Holdsworth⁴¹ and Clive Hart⁴² discuss present knowledge and future potential but make no major assessment of the bath complex. Holdsworth does make the useful comment regarding the discoveries made at the Great Bath in 1975 'That no further coins were deposited here until the mid seventeenth century shows that in the intervening period the well had fallen into disuse'. This does not rule out mediaeval usage but argues against development of the complex at that time and suggests that Jones' 'iii cheefe bathes'⁴³ were of considerable antiquity.

My own work of 1987⁴⁴ is a wider history of the town and was not appropriate for the type of analysis which is necessary. Joanne Dodd produced a more considered account of the known evidence in 1988⁴⁵ but said little that was new except to postulate that the Great Bath may have been a *caldarium* and that described by Leigh(E) may have been a *tepidarium*. She correctly notes the errors associated with the orientation of the Crescent but believes it to front south east and not south, south east. A major part of her work is spent in considering the coin hoard found in the Great Bath.

Most recently, Messrs Langham and Wells, in their *History of the Baths at Buxton*, order the existing information well and offer a comparison with the complex at Beauport Park, Sussex. They do however provide contemporary information about a 'drinking well built of gritstone which had a flight of steps more than seven feet deep'. No date is ascribed to this feature which may well be part of the eighteenth century 'Grove Gardens'.⁴⁶

From a national perspective Messrs Rodwell and Rowley⁴⁷ only recite previous accounts of the baths. Their work is of use because it also considers other small Roman bath complexes such as Braughing and Godmanchester. Messrs Burnham and Wachter⁴⁸ provide information on the bath complexes at Baldock and Bath which would be useful for comparative analysis. They state that the 'boat bath' was supplied by a 200mm lead pipe and that '... was floored, if the description is reinterpreted, with a layer of opus signinum 150mm thick'.⁴⁹

The most modern assessment of the Roman baths is found in a report entitled *Buxton: The Natural Baths* written by John Walker on behalf of the Trent and Peak Archaeological Trust.⁵⁰ It was prepared as a planning brief for the High Peak Borough Council and issued in draft form in May 1994. A copy was sent to me, and presumably others, for consultation but as far as I can determine a revised edition was not produced.⁵¹ It is a very thorough report and its archaeological recommendations are to be applauded. However, it makes a bold statement about

the possibility of a temple site and, more pertinently, is confused over the number and siting of the supposed Roman baths.

When considering the 'Finds adjoining or within the study area',⁵² Walker describes six structures. These with comments are discussed below:

- i) 'Red bath': This is the structure surrounding St. Anne's Well which is described by Short(G) and others. It is more probably a reservoir supplying the adjoining bath described by Leigh(E). See section 5. The red description is a confusion by Walker with (iv) below.
- ii) 'Lead bath': This is the structure discovered when driving the sough in 1695. It is described by Floyer(C) and Short(G).
- iii) 'Great bath': This is not the 'Great Bath' where the coin hoard was found but Walker gives this name to the 'Something higher in the same sough' driven in 1695 (Floyer(C)). There is no strong evidence whatsoever for this structure being a bath and indeed it may be the remains of the mediaeval well chapel.
- iv) 'Plaster bath': This is the bath described by Leigh(E) and subsequently re-discovered during the construction of the Crescent (M, N & F).
- v) 'Small bath' The only justification for this bath is a reference by Pearson(M) to the discovery of two baths when digging the foundations of the Crescent. One is clearly the red plaster bath; 'the other was smaller and had a wall of stone'. Indeed Walker notes that size, date and location are unknown. It was very probably the remains of the cistern which became St. Anne's Well and which had a stone wall (Speed(B)).
- vi) 'Salt bath': This is clearly the structure discovered in 1883 and described by Turner(T). So little is known about it that no definite statement can be made.

In considering the above I would strongly argue that only (i), (ii) and (iv) above may be considered to have possible Roman origins. There is little evidence for (iii) or for (vi), and (v) I believe is a confusion with (i). What is of most concern is the failure to associate the 'Great Bath' (not iii above) with a Roman usage, especially as this is the only structure to be supported by any modern archaeological evidence (ie. the coin hoard).

7. Conclusions

In preparing this article it has been the author's intention to bring together the relevant accounts of the supposed Roman baths and to discuss a number of problems which hinder their understanding. The work seeks to make no definite statement but to consider present knowledge as a basis for future research through archaeological means or by analogy. John Walker has already commenced the latter process by comparing the dimensions of the Buxton structures with those at Bath.⁵³

Are the structures of Roman origin? Messrs Burnham and Wachter whilst considering the antiquarian and other accounts open their discussion with a very important caveat:

'Almost our entire knowledge of this important site in the Pennines is derived from its name: Aquae Arnemetiae'.⁵⁴

John Walker believes that:

'There exists enough information to reasonably suggest that the area, including the Slopes, could have contained Roman remains similar to, though small in scale, to those at Bath'.

It is my belief that there is strong circumstantial evidence to believe that the structures described in section 3, in the setting of other nearby Roman archaeological evidence, are of Roman origin. However, the caveat of Messrs Burnham and Wachter must be taken seriously because many writers have almost willed the presence of forts,

baths and a large civilian settlement but with very little evidence to support them. The plan of the key features offered in Fig 3 is conjectural, and is open to further discussion and challenge

8. Acknowledgements

In preparing this article I would like to acknowledge the kind assistance of the John Rylands (University of Manchester) Library, High Peak Borough Council, Sheila Babbidge and Tony Hassall.

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THE PUBLIC RECORD OFFICE CATALOGUE ON THE INTERNET

As part of the Public Record Offices's Archives Direct 2001 Programme (AD2001 for short), the PRO now has an online catalogue currently containing 8,236,976 records (14 September 1999) - good news for any researcher who is planning to visit the PRO because you can find out what is there or order documents before you go. The catalogue, which can be accessed from <http://www.pro.gov.uk/about/search.htm>, is a database containing descriptions of the documents and the classes in which they are categorized. It is based on the PRO's paper catalogue which was created over the centuries in many different styles. So, if the paper catalogue gave full descriptions, the online catalogue can be wonderfully helpful. There are no images of documents themselves.

There are two ways of using the catalogue: by browsing the catalogue or by searching it. You browse through the catalogue by first selecting the department that you are interested in from a list of about 350 departments. Then you choose the class of document and then a document itself for its details including its reference number, whether it is open or closed and where it is stored. Alternatively you can search the catalogue using up to three keywords, either searching the whole catalogue or limiting your search by the class of documents. At the moment the search is limited to 1500 results.

If you use the search facility using a keyword only, eg Melbourne, Darley, Derby, a personal name, etc, you first of all get a result for a search on class description (which is usually negative if no class description is entered). However, you are then directed to 'search documents' which results in a list of all the documents (up to 1500) which are online for your keyword. Some of these of course will not be relevant, ie you will get references to Melbourne in Australia and Cambridgeshire and well as those for Derbyshire. On the other hand if you don't know which department you want or you just want to know what is available, this is an interesting way to start. For instance the Melbourne documents include OS and tithe maps, census references, Duchy of Lancaster records (including a survey of the state of the castle in 18 Elizabeth), Chancery records and Exchequer records.

As a further example of the usefulness and fascination of this online catalogue, a search on Darley results in documents relating to the Abbey at Darley Abbey, Darley Abbey village, Darley Dale and the Darley family of Darley Dale as well as companies or other people who are also called Darley.

This list contains 199 Chancery records. Here many medieval documents have fuller descriptions making them extremely useful. Some examples are: '*Sir William Bisshop, late schoolmaster in Derby. v. (William or the abbot of Derley (Darley)?): False arrest for trespass, &c.: Derby*' (No schoolmaster of this name was mentioned in 'Grammar School Education in Derby: its early history to 1662', *Derbyshire Miscellany*, Spring 1998), '*Edward Merynge of Higham. v. Thomas, abbot of Darley.: Refusal to complete a lease of his bloom-smithies called "Pentryches Smethes" with the watercourse thereto belonging, and the right to take sufficient wood in the lordships of Pentrich and Butterley*', '*William BOLLES, esquire, v. Christopher STRELLEY.: Messuage and land in Attenborough, late of the monastery of Darley, and now held of complainant at will.: NOTTS.*' and '*Thomas Hether, 'hewster,' and William Bradeshaa, butcher. v. Roger Moore and Thomas Warde, bailiffs of Derby.: Corn-mills in Rowdiche, leased to Derby town by the abbots of Darley and Burton, which complainants farmed on condition the town found timber (the description ends here)*'. There appears to be no record of corn-mills in Rowditch in either the Darley Cartulary or Jeayes Catalogues. The descriptions for other documents are not always so informative and may just consist of, for instance, '*Wayte v Darley, 1691*'.

JOHN FAREY'S DERBYSHIRE: DERBYSHIRE SHEEP FARMING IN THE EARLY NINETEENTH CENTURY

(by Roger Dalton, University of Derby, Kedleston Road, Derby)

John Farey's three volume report on the Agriculture and Minerals of Derbyshire was published between 1811 and 1817¹ and was based upon survey visits made in 1808 and 1809. The report was commissioned by the Board of Agriculture² as part of its second series of county based investigations. Uniquely it was also supported by the Royal Society, hence the additional concern with geology, minerals and related industries. A key objective of the Board of Agriculture was the promotion of best agricultural practice. Consequently the authors of the reports, including Farey, gave but passing reference to those farmers whose holdings were small and whose approach to husbandry lacked sophistication.

Farey's findings on livestock comprise the first part of the third volume of his Derbyshire report with 87 pages being devoted to cattle and 63 pages to sheep.³ The balance of information seems appropriate as cattle, particularly dairy cattle for cheese making, were becoming a dominant element of the mixed livestock based farm economy which characterised much of the county. Locally, however, sheep were the principal farm enterprise, especially in the uplands of the Peak. Given that Farey compiled the earliest detailed account of Derbyshire livestock⁴ it seems appropriate to review and contextualise his findings and it is the concern of this paper to do so with respect to sheep farming.

Farey carried out his survey at a time when the pattern of agricultural trade in Europe had been disrupted by the Napoleonic conflict. In combination with the demands of the military, this meant that there was severe pressure on food supplies. The resultant shortages led to sharp price inflation during the 1790s and 1800s but after Waterloo prices fell back and agriculture entered a period of depression. More specifically the livestock industry in Britain was developing new objectives. As Slicher van Bath has written, *'in regard to breed improvements we must remember that a great change took place in the qualities that were considered desirable in animals'*.⁵ For sheepmen the traditional emphasis on stock for wool was declining as a result of the growth in the demand for carcasses for meat and tallow for candles amongst the new urban and industrial populations. Farey provided much information which enables the clear identification of such changes as they were taking place in Derbyshire.

Initially Farey considered the distribution of sheep breeds as at the middle of the eighteenth century. He identified four breeds which were separately located in relation to differing physical environments in the county. A distinction between upland and lowland types of sheep was clearly evident as it would be today. The northern moorlands around Kinder, Bleaklow and Edale carried the Woodland sheep which were still dominant at the time of Farey's survey in 1808 and 1809. The limestone of the White Peak, much of the higher parts of which were still unenclosed heathlands, had been associated with the coarse-woolled Old Limestone which gave place to dairy cattle and 'more useful' sheep as enclosure proceeded during the second half of the eighteenth century. The lowland south of Derbyshire was territory for the coarse-woolled Old Leicester while the fine-woolled Forest breed, characterised the eastern border with Nottinghamshire. By the early nineteenth century in both these areas the New Leicester, either as a pure breed or a cross, had effectively replaced the original breeds.

From his survey, based on the activities of some 140 farmers, Farey identified ten pure breeds of sheep and seven cross breeds in Derbyshire. Four pure breeds, the Woodland, the New Leicester, the South-Down and the Merino received particular prominence while the Old Limestone, Old Leicester, Forest, Ryeland, Portland and Spanish appear of minor local significance. The references to all these breeds have been mapped as Figure 1 and clear distributional patterns are apparent.

The Woodland, dominant in upland north Derbyshire, was described by Farey as small, fine-woolled, white faced with black specks, long-legged and horned. Seventy five breeders of Woodland sheep were listed in the report and many of their farms can still be identified in locations at the margins of the main upland of the Dark Peak around Kinder and Bleaklow. The description of the management system which was practised has strong echoes of contemporary arrangements. As now the moors of the Dark Peak comprised open rough grazings but blanket peat areas were less eroded than they are today.⁶ Farmers moved sheep onto the higher land using dogs and accessed the moors through gates at the boundary of the enclosed lands around farmhouses and in valley bottoms as, for example, in the Edale, Ashop, and upper Derwent Valleys. The enclosed land was improved and

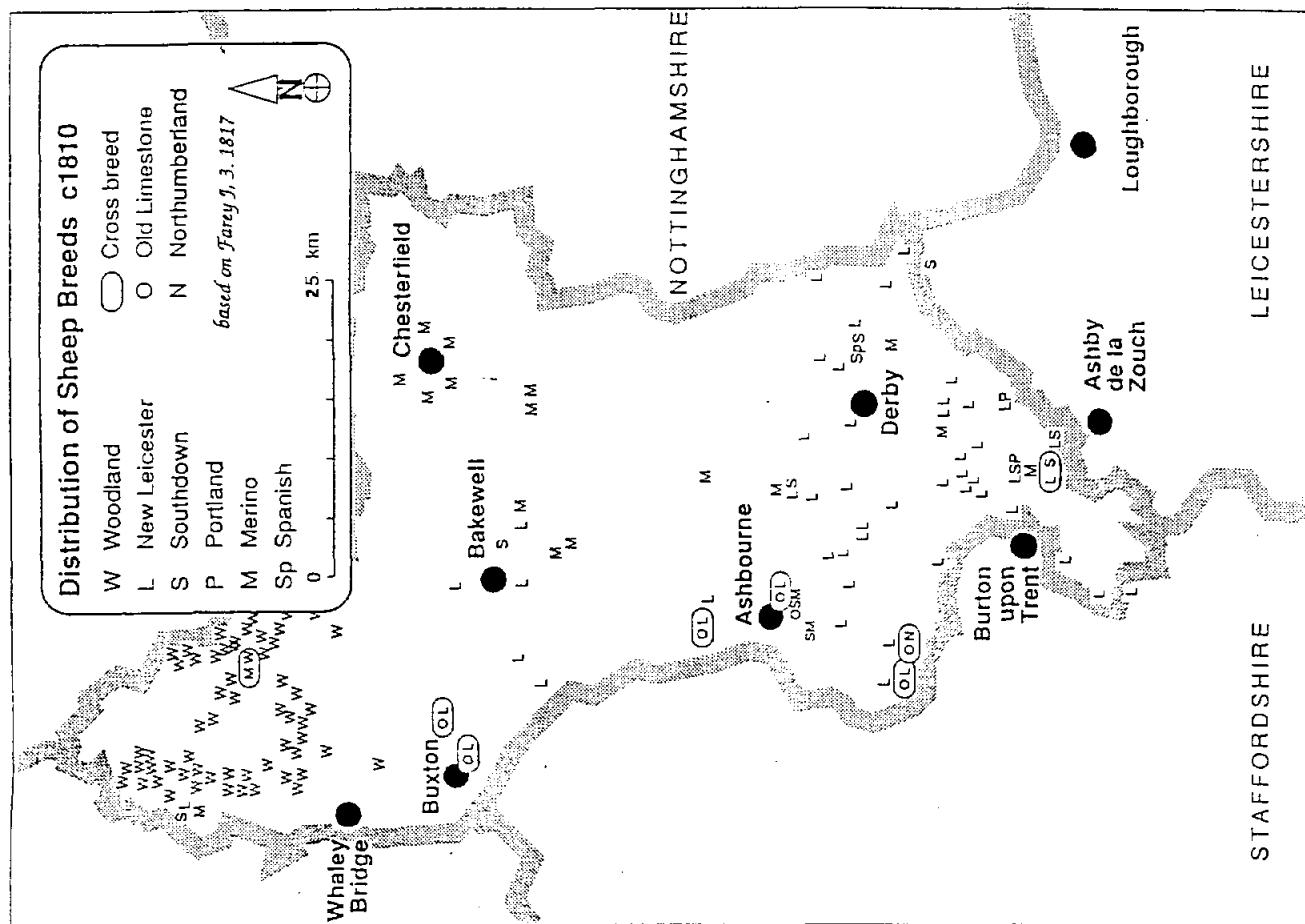


Figure 1.

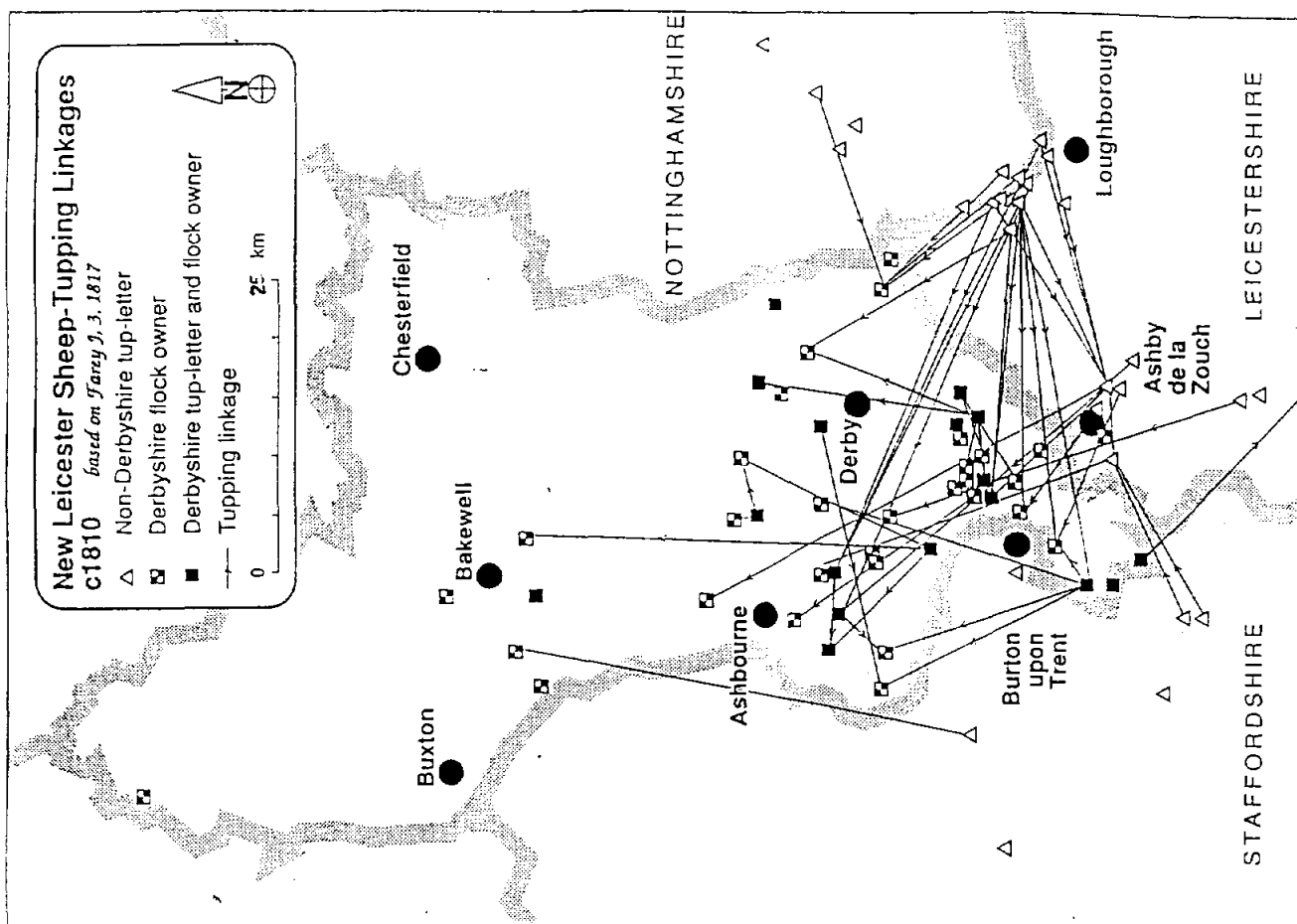


Figure 2.

mown for hay particularly, for feeding pregnant ewes, while wethers (castrated male sheep being fattened for sale) and rams fed at the moorgates or at lees which were '+'-shaped or 'S'-shaped stone-walled shelters on the moor.

The annual cycle of management of Woodland sheep as practised by Charles Greaves of Rowlee in the Ashop, Valley, agent to the Duke of Devonshire, is described in some detail. Topping took place in early November so lambing was towards the end of March but twins were very rare. Washing, probably in one of the typical walled sheepwashes along a stream course, was at the end of June, immediately prior to shearing. Five fleeces averaged a stone of 14lb in weight which made 18s 6d in the 1808 season. Lambs wool @ 13d to 14d per lb went to hatters and tails of male sheep went to carpet makers. In 1808 wethers of five to six years old sold for about 24s per head while ewes of various ages were made between 12s and 20s per head. It was normal to send lambs to over-winter in adjacent less elevated districts in Derbyshire, Yorkshire and Cheshire, hence Greaves lambs were sent to Bolsover. Farey was critical of this arrangement as it involved expensive driving on the hoof, the risk of neglect by the host farmer and exposure to foot rot on ill-drained lower pastures. He advocated extending the area of improved land on the lower slopes of the upland valleys as a desirable alternative. Older Woodland ewes were purchased for fattening to provide mutton '*for the tables of the higher classes*' including Mundy of Markeaton, Lord Vernon of Sudbury and Sir Joseph Banks of Revesby in Lincolnshire. Such sheep were pastured for well over a year before they were ready for the table which gives an idea of the limitations of herbage as feed at that time.

Figure 1 shows the importance of the New Leicester breed in the southern part of Derbyshire where environmental considerations, proximity to Loughborough and the locations of more progressive farmers were of some influence. The New Leicester was a major innovation in the breeding of farmstock in general and sheep in particular and was the product of Robert Bakewell's experiments at Dishley Grange to the north of Loughborough. The new breed was derived from Lincolnshire sheep and had been fixed in the 1760.⁸ According to Pawson⁹ Bakewell's purpose had been to develop a sheep '*which would give the greatest weight of mutton for the least expenditure in food in the least possible time*'. His New Leicester was markedly thin in wool but fattened quickly to give an advantageous ratio between flesh on the one hand and bone and offal on the other. Farey indicated that by the 1790s the process had been taken too far and some sheep were so naked of wool they were subject to fly attack. This echoed Curtis's comment, following his 1805 excursion in Derbyshire, that '*nearly all the sheep and lambs that I beheld in the county were so completely bald that linen caps were compelled to be used as a protection from the flies*'.¹⁰ However, it is evident from Farey's reportage of fifty five New Leicester breeders that better wool had been bred back into flocks. An exception was John Blackwall of Blackwall near Kirk Ireton where seemingly New Leicesters had too little wool for his situation in the southern Peak. This is not surprising as the New Leicester was clearly better adapted to the more sheltered conditions provided by the small hedged fields which dominated the landscape of south Derbyshire.

The characteristic fattiness of New Leicester mutton was well recognised. Farey reported that it '*was relished, and even generally preferred by the work-people in manufacturing districts*' but doubts evidently existed as the opinion of George Clay of Arleston was: '*that labourers and manufacturers have sickened of very fat Leicester mutton*'.¹¹ It is not surprising therefore that the New Leicester was severely criticised by those with cultured palates. Trow-Smith commented that the meat was '*not fit for genteel tables*'.¹² Curtis was markedly caustic: '*during the whole of my sojourning in the county of Derby I but once tasted mutton that I did not loath the sight of*'.¹³

The strong position of the New Leicester amongst the Derbyshire farmers visited by Farey was part of a wider pattern of dissemination of the breed over the previous forty years. An important mechanism in this process was the hiring of rams, otherwise known as tup-letting, which paralleled bull-letting and stallion-letting in other aspects of the livestock system. Trow-Smith has described how rams so hired were sent out on slings in specially sprung carts to avoid injury to serve flocks at distances of over 200 miles.¹⁴ Bakewell had developed this to a fine art through the founding of the Dishley Society in 1783¹⁵ to regulate the practice and protect the interests of those involved. The demise of the Society occurred following Bakewell's death in 1795 but eight of the names of tup-letters listed by Farey, resident outside Derbyshire, match those of members of the Dishley Society. By using Farey's lists of new Leicester flocks and tup-letters a pattern of dissemination can be traced by plotting tupping linkages as shown in Figure 2. In all fifty tup-letters were listed of whom 31 were operating from north Leicestershire, Nottinghamshire and Staffordshire while a further 19 were established in Derbyshire. Not surprisingly the most prominent cluster of tup-letters was located around Dishley Grange. An array of linkages

leads northwards and westwards from this cluster into south Derbyshire, east Staffordshire near Burton and north Leicestershire around Ashby. Further linkages extend from these locations northwards into Derbyshire.

Typical of Derbyshire farmers who engaged in ram letting was Thomas Bowyer of Waldley near Doveridge who had been a pupil of Bakewell. His rams were kept '*in a state fit to kill*' and let for five to ten guineas.¹⁶ Thomas Harvey of Hoon Hay by Marston on Dove was also a significant figure as his flock of 300 to 400 sheep was the largest noted by Farey. He let '*a good many tups at 5 to 40 guineas each*'¹⁷ which is typical of the range of prices quoted by Farey. Such sums are equivalent to £150 to £1,200 at present prices which gives an indication of the potential income that tup-letting could generate but were modest compared with the early days of the Dishley Society. In 1786 Bakewells ram 'Two-Pounder' earned 400 guineas while in 1789 Bakewell and a small group of Midland breeders made £10,000.¹⁸ According to William Smith of Swarkestone Lowes¹⁹ and agent to the Calke Estate tup-letting remained important until 1818 after which the value of tups declined rapidly, perhaps a reflection of the depressed state of farming.

The importance of tup-letting is evident from the returns to farmers in the price of earlier maturing wether hogs. These were sold to the butcher at the early age of 18 to 20 months which compares very favorably with the two years of the late eighteenth century, or the four years of the era prior to Bakewell's breeding experiments. Farey noted wether hogs being sold at £2 16s 3d made up of carcass £2 8s 1d and 8s 2d for wool.

The emphasis given to the New Leicester by Farey can be confirmed by inspection of farm sales advertisements in the *Derby Mercury* in which the breed is cited twice as often as any other. It is also apparent that Bakewell's esteem and influence extended well into the nineteenth century. At a sale of the stock of Blake of Longford in 1803 [DM 24.2.1803] it was asserted that '*sheep have been bred with great care and attention from the New Leicester sort for many years*'. In 1828 [DM 6.2.1828] Hill of Drakelow sold 100 ewes and '*has hired rams of Valentine Green Esq. of Normanton and has also hired the celebrated ram Magnum Borum the property of Mr Smith of Dishley*'.²⁰ Even as late as 1852 sheep at Snarestone near Ashby were offered for sale as '*truly descended from the flock of the late Mr Bakewell*'.

Apart from the New Leicester the other major innovation in lowland sheep breeds was the South-Down developed by Ellman of Lewes in Sussex. Farey considered that these sheep had '*not found their way into Derbyshire in the numbers that their merits demanded*'.²¹ Although following his original survey of 1808/9 he thought numbers of ewes had increased for the purpose of crossing with merino rams. Farey noted ten flocks of Southdowns, all less than twenty in number, except for 100 at Locko and 280 at the Calke Estate. Sir Henry Crewe had purchased these directly from Ellman and were considered by William Smith '*to be the best fine-woolled sort of sheep in the county*'²² well suited to grazing amongst mixed park stock.

Farey was particularly enthusiastic about the Spanish merino breed, which had been introduced into Britain by George III. He devoted some eight pages to the virtues of experiment with merinos as a way of combining palatable mutton with high quality wool which was already being imported into Britain in large quantities. By March 1812 Farey estimated that 450 pure bred merinos and 1,750 cross bred merinos were being kept in Derbyshire. He listed twenty one breeders of merino sheep including the Duke of Devonshire, William Drury-Lowe of Locko and the Earl Harrington of Elvaston. In the main merino flocks were less than 30/40 ewes but a few were much larger. The largest of all comprising 591 sheep was held by Joshua Jebb of Walton Lodge while Samuel Oldknow of Mellor had 298 merino crosses. The breeder given greatest significance was Mr Wooton Berkenshaw Thomas of Chesterfield who farmed at Boythorpe, Brampton and Barlow on the west side of the town. Farey reported Mr Thomas's belief in the merits of merino sheep for short fine quality wool and close grained and high flavoured flesh. Thomas claimed that both pure bred and cross bred merinos were perfectly hardy with respect to both climate and keep on the moors which he farmed and that the value of the wool dip was at least twice that of native ewes, a figure of 17s 8d per fleece sold in 1812 being quoted. Seemingly Thomas promoted the merino by inviting '*a large party of agriculturalists*' to his sheep shearings to view the proceedings, sample the mutton and also admire '*Ladies' and Gentlemen's wear, manufactured from the wool*'.

Farey also emphasised the merits of cross breeding. Three of the seven crossed types he described involved merinos with South Down, Ryeland and Woodland, a combination with Woodland being the most popular. The Earl of Chesterfield at Bretby had the only recorded lot of New Leicester/South-Down crosses in an attempt to bring together the characteristics of the two great lowland sheep breeds. New Leicester crosses with Limestone and Northumberland also existed in attempts to induce quicker maturity and greater hardiness. This pointed the way in which the New Leicester and also the South Down were to make their great contribution to the British

sheep industry in the nineteenth century through the creation of early maturing forms. The only crossed sheep which Farey discounted was the gritstone derived from an ancient crossing of Woodland and Limestone. It characterised the stock of the small and most unimproving farmers of the Peak and its wool fetched only a poor price.

Farey concluded that *'the sheep pastures in this county present little for remark'*. The general feeding regime for lowland sheep in summer and autumn was based on old pastures or new leys and clovers. Old pastures would have predominated across the greater part of the county²³ and Farey was aware that the condition of much grazing was poor having noted *'numerous cold, rough, ant-hilly and unproductive pastures in the south'*.²⁴ Although it was evident to him that nearly all old pasture had been ploughed at some time, from the presence of ridge and furrow, it was highly problematic for farmers to establish and maintain quality grazings in the era when grass-seed was the sweepings from barn floors and dung was largely destined for arable land.

In winter and spring sheep were fed on hay and on common and/or swedish turnips. The 1801 Crop Returns for Derbyshire²⁵ show common turnips to have been widely cultivated but in small areas and as Farey correctly identified that swedish turnips were better adapted to *'stiff land'* based on the Red Marl (Keuper Marl or Mercian Mudstone). The practice was for the greater part to be fed off the land by sheep and lambs, although some, such as F.N.C. Mundy of Markeaton, drew and cut turnips prior to feeding.

In common with much Board of Agriculture reportage Farey was concerned to promote the collection of basic statistical data about livestock as a means of encouraging awareness of farming progress. This was achieved by comparing the live and deadweights of stock and, with respect to the latter, *'making detailed weighings of their several parts'*,²⁶ which comprised carcass, heads, loose fat, skins, plucks (vital organs), entrails and blood. Farey compared the records of competitions for the best two year old New Leicester wether of the Derby Agricultural Society for 1794 and 1797 with the Repton Sheep Society for 1809. On the basis of admittedly thin evidence Farey noted an improvement in the average weight of carcasses over this time period from 186 lb liveweight in 1797 to 260 lb in 1809. Such weights are heavy compared with modern sheep and suggest that farmers saw size as the key to success in competitions.

Farey's comment on wool had a wider data base. It was evident that the price of wool per tod of 281b had risen in response to strong inflationary market forces of the French Revolution/Napoleonic Wars from 19s 8d in 1792 to £1 13s 6d in 1806.

Prices of wools from different sheep breeds also varied significantly. New Leicester wool was inferior at c1s 2d per lb while merino/Portland wool fetched over 3s per lb. Farey noted preparation for shearing through the use of permanent and temporary sheep washes in stream beds and observed early shearing to prevent maggots in the Dove (location not stated) on 30th May 1808. He recommended and provided an illustration of a Bedfordshire sheep wash where the hand in charge stood in a barrel to avoid prolonged immersion in cold water. *'New and considerable farm premises'*²⁷ had specially constructed wool chambers for storage. The marketing of wool appears to have frequently involved middlemen or wool-staplers who operated outside regular agricultural fairs. The wool-staplers were like the cheese factors in this respect and were in a position to dictate prices and even advance monies to farmers.

Finally, Farey gave attention to the problems of diseases or *'distempers of sheep'*.²⁸ This was a topic of fundamental concern to farmers as, in an age before veterinary science, farmers could describe symptoms but often only speculate as to causes and attempt home made patent remedies. Half of the nine pages given to this topic were about 'the Rot' or liver-fluke disease, described by Farey as *'the most prevalent, as well as the most destructive disorder, in this as well as other counties'*.²⁹ Farmers from the Ashop valley in north Derbyshire to Melbourne in the south reported the occurrence of the Rot. There was agreement that wet land contributed to the condition in some way but the role of water snails as hosts for the larval stage of the organisms' life cycle was not appreciated. Sheep ingest the larvae while grazing, leading to infestation of liver and bile ducts with flukes with consequent loss of condition and ultimate death from liver failure.

Suggested treatments included feeding iron filings, mistletoe and mixtures of turpentine with wine or ale. Additionally Farey noted the prevalence of a range of skin and gastric disorders as well as the effects of intestinal worms and the ravages of ticks and the larvae of flies. Foot rot was also widespread but it was known that resting pastures relieved this condition.

In conclusion it is apparent Farey presented a positive view of sheep in Derbyshire farming in which he identified a range of good practice and made a number of, albeit minor, suggestions as to improvements. It is difficult to put Farey's reportage in true perspective as there is uncertainty as to the extent of the continuance of traditional sheep such as the Old Leicester type. Curtis in 1806 noted that '*upon the common highways and on the moors I met with sheep extremely coarse both in shape and in wool but not knowing how to class them under any particular distinction I shall only observe that they are a disgrace to their owners*'.³⁰ Farey himself acknowledged the existence in Derbyshire of '*a great variety of mixed and uncertainly crossed animals*'.³¹

Despite such cautions sheep farming had achieved and was to sustain a significant place in the livestock economy of the county. However, the continuing development of the specialism in dairying as the nineteenth century progressed, plus periodic ravages of sheep rot on heavier lands in wet seasons, meant that sheep were to decline on the heavier red marl but to become more significant on better drained lands such as the sandstones of the area south of the Trent and the limestones of the White Peak and north-east Derbyshire. In the Dark Peak upland sheep were to continue as the core farm enterprise.

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13. Curtis, *op. cit.*, 1806, p81.
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16. Farey, 1817, *op. cit.* p102.
17. *ibid*, p104.
18. Stanley, *op. cit.*, 1995, p25.
19. William Smith, Evidence on Derbyshire, Report of the Select Committee into the Present State of Agriculture and of Persons Employed in Agriculture, *British Parliamentary Papers*, 1833.
20. William Smith was in charge of the Dishley farm at the time of the final dispersal of the Bakewell stock in the 1830s.
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22. *ibid*, p111.
23. The first agricultural Census of 1866 shows Derbyshire to have been one third arable and two thirds permanent grassland which matches Brown's estimate of 1794.
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28. *ibid*, p140.
29. *ibid*, p140.

MELBOURNE WATER SUPPLY

(by Howard Usher)

Pollution

In April 1859 the five children of Samuel and Sarah Matthews of Woodhouses, Melbourne, all died within four days of each other of a fever, presumably typhoid. They were aged between 8 months and 9 years. The Melbourne Hall agent, Frederic Fox, suggested that Lady Palmerston may care to make a donation of one or two pounds. Lady Palmerston had personal knowledge of contagious diseases, as her son-in-law, Viscount Jocelyn had died of smallpox in 1854, leaving her daughter, Fanny, inconsolable. Lady Palmerston spoke of the overpowering calamity for Matthews to lose all his children and suggested that the disease was caused by the "*smell from the stable and dogs in the yard*". She thought that if the cottage was unwholesome, it would be better to pull it down. Local historian, J.J. Briggs, blamed it on putrid meat for the dogs amid the proximity of a dunghill.

Typhoid fever was endemic in Victorian Britain and it was known that the cause was due to the mingling of sewage with drinking water. However, nothing was done about it until 1861, when the Queen herself suffered the loss of her Prince Regent, Albert, who contracted typhoid. 10 years later, Edward, Prince of Wales had a typhoid attack but recovered. Various bills were passed in Parliament to build main sewers in London and to create one single water authority. Nevertheless, in 1870, one person in 3,000 of the population died of typhoid.

Improvements to the water supply were slower to be implemented outside London, and in 1888, Mr. W. Earp of Kings Newton complained that his well was polluted by the drainage from Mr. Taylor's yard. It reminds one of the old joke of the country dweller who asked his neighbour to stop putting disinfectant down his lavatory because it made his well water taste funny. The Parochial Committee proposed that a new sewer be laid to the Pack Horse, emptying into the stream course nearby. It was pointed out that this was within 16 yards of the Holywell, a valuable spring of excellent water. An alternative suggestion was to run the sewage over the neighbouring fields, but Melbourne Estate would not consent to either of these suggestions because of the severe pollution risk. In the event, nothing was done in the succeeding 16 months, when the Hall Agent brought up the subject again. In 1897 Shardlow Rural District Council proposed planting osier beds for sewage disposal purposes. In 1900, W. Astle of Kings Newton complained of sewage pipes leaking in his cellar and Melbourne Hall was instructed by Shardlow to relay them with sanitary pipes and cement joints, but refused, claiming it was a public, not a private sewer.

In 1898 Mr. Knight's tank in Green Lane was running over and contaminating the brook. This happened again in 1902, as did a case of pollution at Derby Hills House.

Wells

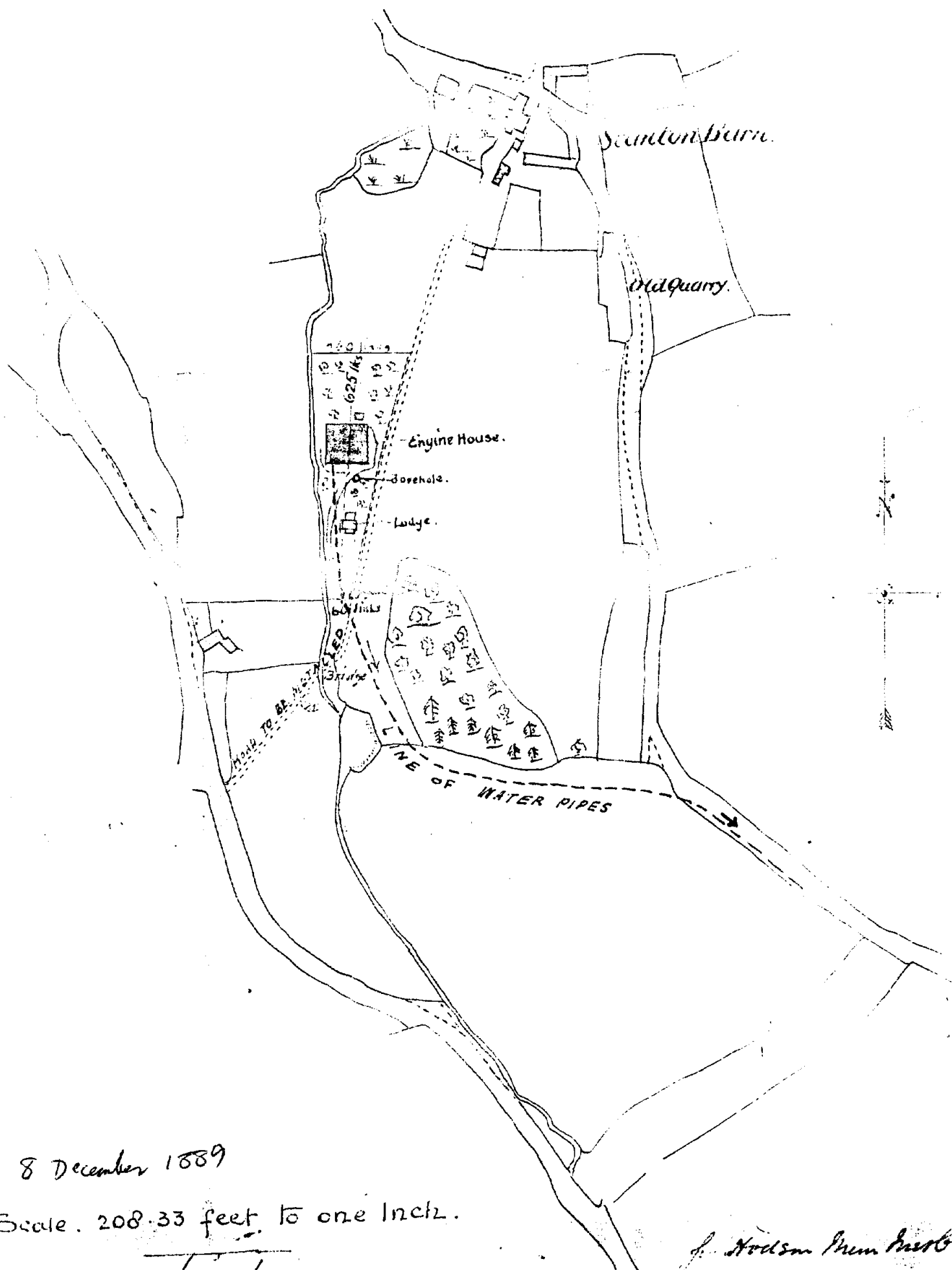
In 1875, samples were taken of the Melbourne Hall water from Pearce's Garden, Kitchen pump and the Stable Yard pump. These appeared to be satisfactory. In 1881 Shaw Spring was enclosed to protect it from pollution. In 1888 the idea of forming a private water company for Melbourne was mooted. Water could be drawn from the spring at High Fields, but would have to be pumped from Sweet Leys. Extra supply could come from Seven Spouts, but this was a long way under gravity flow. The idea was dropped in favour of obtaining a supply from the Long Eaton works.

In August, 1889, analysis of a number of wells showed that the water was generally bad and one was dangerous. Out of 7 samples taken for analysis, 6 were considerably polluted by sewage. The Market Place pump had recently been embellished with a monument to commemorate Queen Victoria's Golden Jubilee, but it should be closed as it was unsafe and was polluted heavily with sewage and animal drainage. Chantry House water was very hard, but suitable for drinking. The Holy well stream was still polluted and Thomas Salsbury's well at Kings Newton was unsafe. The Lily Pool water was not fit for drinking, but Shaw's water, near the church, was pretty good. A shallow well in The Hollow contained excessive solids but was suitable for drinking.

Piped Water

George Hodson, a Civil Engineer, of Westminster and Loughborough was employed by the Long Eaton Council to find a source of pure water for the town. Eventually he located a good source in the gritstone at Stanton Barns

Site for Waterworks Stanton Darn



8 December 1889

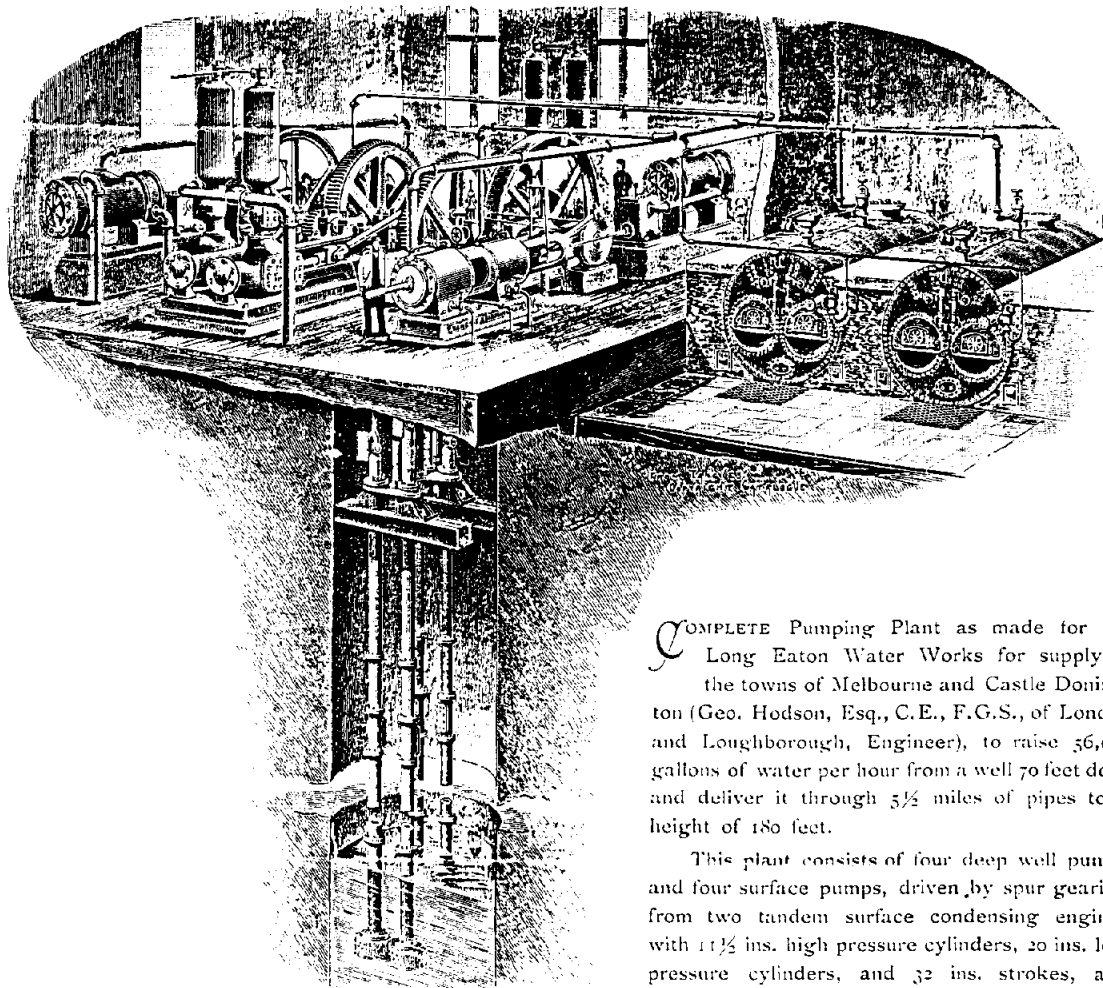
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TANGYES

Deep Well Pumping Plant



COMPLETE Pumping Plant as made for the Long Eaton Water Works for supplying the towns of Melbourne and Castle Donington (Geo. Hodson, Esq., C.E., F.G.S., of London and Loughborough, Engineer), to raise 56,000 gallons of water per hour from a well 70 feet deep and deliver it through $5\frac{1}{2}$ miles of pipes to a height of 180 feet.

This plant consists of four deep well pumps and four surface pumps, driven by spur gearing from two tandem surface condensing engines with $11\frac{1}{2}$ ins. high pressure cylinders, 20 ins. low pressure cylinders, and 32 ins. strokes, and supplied with steam by two Lancashire boilers.

TANGYES LIMITED,
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and in January 1889 he applied to the Melbourne Estate for permission to drill a borehole in the area. He would wish to lease a one acre plot for the well, Engine house and Engineer's Lodge and the pipes would pass through Kings Newton to Castle Donington; connections for Melbourne could be made at Kings Newton.

Permission was granted and he started boring, the rock was so hard that a chisel was blunted in one inch. At a depth of 154 feet, water started to overflow the surface. This caused a panic among the villagers of Stanton-by-Bridge, who were not well educated in hydrodynamics and thought that the well would divert the river Trent through their village. It was an artesian spring fed from the high grounds to the south of the village. Boring was stopped at 272 feet. The Stanton water was found to be of excellent quality, the same as the water used by Schweppes in Derby, and superior to Kent water, which was the best London supply. The total cost was estimated at £25,797 for the mains to Long Eaton. If Melbourne wished to take water, the mains would need to be increased from 10" to 12", which would cost an extra £6,000.

In January 1890 a Public Enquiry was held at Melbourne to discuss the water supply. Most of the Melbourne wells were condemned. There were 715 houses in the town, 149 of which had their own pump or well, and 308 houses were supplied from 3 pumps and 2 springs. The underground headings for water collection at Stanton totalled 561 yards, which were charged on the lease at 10 shillings a yard. The cast iron pipes were obtained from Staveley, Butterley or Alfreton Iron; lead or galvanised pipes would be used for service to the houses and these should be 2 feet deep for frost protection. It was decided that Melbourne would take this supply.

Work continued through 1890 and by September 1891 the engine house had been built at Stanton, the Castle Donington reservoir was completed, and pipes were laid from Long Eaton to Sawley Bridge and from the Stanton works to Kings Newton. In 1892, the Melbourne branch consisted of 8" mains laid from the Packhorse, 6" to High Street, 4" to Potter Street and 3" to New York. The Pumping Plant was supplied by Tangyes Ltd. of Birmingham and was advertised as four deep well pumps and four surface pumps supplied with steam by two Lancashire boilers. This would raise 56,000 gallons of water per hour from a well 70 feet deep and deliver it through 5½ miles of pipes to a height of 180 feet. The mains were charged in July 1892 and on 8 September 1892 a grand opening ceremony was held. The Guardians of Castle Donington and Melbourne were invited with 60 or 70 people sitting down to lunch in a large marquee which had been erected at the works. In the evening there was a general display with waterworks and a steam fire engine.

The charge was agreed with the Long Eaton Water Works of 7d/1,000 gallons with a minimum charge of £50 per annum. However, by March 1893 only 155 houses were supplied with water and the cost worked out at 3s 8d per 1,000 gallons.

The Melbourne Estate complained about the minimum rent figure and Long Eaton responded: "*Take advantage of this splendid supply and income will soon exceed the minimum rent*". The supply to 1300 people at a high level was inadequate and a 15,000 gallon reservoir was built on high ground near Bleak House and close to the highway. By the month of November 1893, 273 homes were supplied. Hodson wrote: "*£50 a year is only 2s. 9d. a day water for the town of Melbourne amounts to the price of a quart of beer, an ounce of tobacco and a box of matches a day*". William Garrett wryly annotated this letter "*Lucky Melbourne*". Hodson also observed that Melbourne was only using 3 gallons of water per head, whereas London used 29 and American cities 40-50 gallons per head. Rain water was still being used for all purposes except drinking.

In 1894, 363 houses were using piped water and Garrett complained that it was 2 years since Melbourne had had the most expensive water supply with an income of £216 for a cost of £253. 6s. 8d. However, the situation improved and by 1896, 461 houses were on supply and the costs were as originally predicted.

The Stanton-by-Bridge boreholes continued to supply Melbourne with drinking water, although of late years it has been blended with water from the Derwent Valley reservoirs. In July 1999, after more than a century of service, the Stanton boreholes were discontinued and Melbourne is now supplied from the Melbourne Water Treatment Works which collects water from the Dove Valley and Foremark Reservoir.

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