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CINDERFORD WATER SUPPLY

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In the Beginning

Prior to 1795 the town of Cinderford in the Forest of Dean did not exist. The industrial revolution and the consequent hunger for coal and iron ore were the reasons behind the birth of the town. Both minerals were found in close proximity and the town quickly built up around these two industries with several iron smelting works and foundries. With this increase in population it was necessary to provide a water supply as the existing wells and springs were inadequate and soon began to dry up due to the draining of the mines and the lowering of the water table. In the first half of the 19th century there was little or no attempt to organise public water supplies or sewage disposal.

This changed on 16th January 1867 when the East Dean Local Board was set up, under the chairmanship of Mr Edwin Crawshay. The meetings were held at the White Hart Inn, Cinderford. Mr Henry Crawshay, brother of Edwin, was widely regarded as the "father"of Cinderford because of his development of the iron and coal industry around the town.

A Mr Hoskold was appointed Surveyor and Inspector of Nuisances on 28th June 1867 at a salary of £70 per year. It was his responsibility to provide and maintain the public sewage system and water supply, such as it was. However he resigned on 20th January 1869 after a disagreement with the board over one of his drainage reports.(1)

At the meeting on 24th March 1869 it was resolved that Mr Hewlett (a member of the Board) should investigate "a simple and inexpensive" way to supply water to the most populous parts of East Dean. As a result of this a Mr Cornish was appointed Surveyor and inspector of Nuisances at a wage of 15/- a week.

In June Mr Heane, the Officer of Health, was asked to report on the analysis of the local water supplies, but before any action could be taken the local Board was dissolved on the 6th April 1870. This was caused by their inability to obtain money from Central Government and the subsequent reaction by the local rate payers at seeing nothing for their money. As a result of the failure of the East Dean Local Board the Local Government Board set up a Committee of the Board of Guardians called the "Rural Sanitary Authority of the Westbury on Severn Union". The first meeting took place on 2nd August 1872. A Dr Bond was appointed Medical Officer of Health and in September 1874 he reported that "Bilson water was on the whole better water than Heywood for a general supply".(3) As a result of Dr Bond's observations it was decided to appoint Messrs Gotto and Beesley of George Street, Westminster, London to make a detailed report for plans and estimates for a sewage and water supply scheme for Cinderford.

Several sources were investigated including one to pump water out of Cinderford brook adjacent to the present Water Company Offices in Valley Road (MR 650140). This was to pump via a 6" main to a reservoir near the junction of High View Road and Belle View Road.

Various other schemes were prepared and estimated but after much discussion it was finally decided to construct a waterworks at Greenbottom (MR 670153) and utilise the copious supply of water issuing from the Beech Pit.

On the 13th July 1875 Mr William Spence was appointed Inspector of Nuisances on a salary of £100 per annum and became the first true water engineer for the Township of East Dean. Messrs Henry Crawshay and Co. sank the shaft known as the Beech Pit, about a mile north east of Cinderford Town in 1843 (MR 667152), for the extraction of iron ore. In order to drain the mine a heading was driven in from a place called Greenbottom. This heading was about 400 yds long and from information recorded by Mr William Whitehouse, considerable trouble was experienced in performing the work. The rock yielded water so fast that, to use the words of the workmen "it flew out as though shot from a riddle".(2) The Beech Pit was closed in 1893 and had four levels, the drainage heading being off level three. The water issuing from this adit was plentiful and of good quality, being mostly from outside the coal and iron ore measures.

On 19th September 1876 Gotto and Beesley reported that the final scheme to take water from Greenbottom and supply Cinderford, Ruspidge, Ruardean Hill, Drybrook, and Harrow Hill would cost an estimated £8,500. With the passing of the Public Health Act in October 1876 the Rural Sanitary Authority was able to obtain consent from the Local government Board for a loan of £8,400 for the work to commence.

Contracts were let for the supply of pumping engines to James Watt & Co (1,700), to Laurie & Co for the supply of pipes (3,001. 11s.7d), and to Phillips & Co for the laying of the pipes and the construction of the reservoir (3,797). Work commenced in April 1877.(3) It consisted of a pumping station and service reservoir, from which the water gravitated to the consumers. A small pump well was constructed near the mouth of the heading from which the engines raised the water to the service reservoir. The engines were each 20 H P horizontal, high pressure type, capable of raising 8,000 gallons per hour. The service reservoir was about 1300 yds away and 406 ft above the pumping station (MR 665146). The reservoir was demolished, with some difficulty, in 1981 after some children were found trapped inside, and can no longer be seen.

The load on the pumps was heavy and at first considerable difficulty was experienced with the pump valves, but after some improvements were made they worked "extremely well". The service reservoir was circular in shape, 61 ft in diameter at the bottom and 62 ft diameter at the top. Originally it was 10 ft deep to the water line with a capacity of 185,000 gallons, and had an open top.

The rising main from the pumping station was 6" diameter and the distribution mains from the reservoir varied from 5" to 3". "The district is a very hilly and undulating one, and great difficulty has always been experienced in supplying the high level districts, due no doubt to the fact that the trunk mains have been throttled, friction, and the large draught made upon the mains in the low-lying parts of the district" reported Mr Whitehouse.(2)

In October 1877 John Hale from Cinderford was appointed Engineman at Greenbottom but was replaced by George Jefferies the following year.

The Supply is Turned on

The members of the Authority visited the works on November 6th 1877 to inspect the progress of the construction and to witness the first test pumping. The minutes of the meeting reported:- "The engines and pumps were started most satisfactorily and water was nearly brought into the service reservoir when a slight breakage took place near the works."(3)

Even before the works was operating the Council was busy formulating some of their policies for the new supply. In order to help fire fighting, the positions of hydrants were to be painted on walls and all private services should be 0.5" galvanised pipe with Tyler stop-taps at the boundary of the property.

The length of main originally laid was about 10 miles, and the pressure at the lowest parts of the district was about 23 m head. An early photograph of Greenbottom works dated 1914 is shown in Figure 1. In 1883 the number of houses connected to the mains was about 200, and the population supplied about 1,000 in the Cinderford and Ruspidge areas. In 1884 it was found necessary to do something to meet the increasing demand for water and at this time the difficulty was overcome by the construction of an impounding reservoir near the pumping station. This was used to store water which flowed from the heading during the night and at times when pumping was not being carried out.

The land for this reservoir was leased for the sum of 5/- per annum commencing on 1st March 1884.(4) The reservoir was 270 ft long by 15 ft wide, and 9 ft deep, with a capacity of 225,000 gallons. It was built by Cowdry and Sons. It was connected to the pump well so that water from the heading continually flowed into it, and through a waste drain when full, although means of diverting the water through the pump well were made , in case of emergency or to enable repairs to be made to the reservoir. The impounding reservoir was constructed of 9" brickwork with internal counter forts, and a concrete bottom. It was covered with an arched galvanised roof and can still be seen next to the station. Considerable difficulty was experienced in making the reservoir watertight, but it was eventually done by cement concrete and blue brick underpinning with outside counter forts.

At the beginning of 1885 the first water meters were installed. An initial order for 10 Guset and Chrimes meters were placed and the metered water was charged at the rate of 1/-per 1,000 gallons. By the end of 1886 a supply to Littledean was completed which was outside the East Dean area. In March 1888 Mr W Spence reported to the Council that 934 premises were connected to the mains. The Rural District Council was formed in 1894 and on the death of Mr William Spence, Mr William Whitehouse was appointed Surveyor in 1896. He had been working under Mr Spence since 1883.

Supply Problems

For several years the yield of water at the heading at Greenbottom had not been sufficient to maintain a constant supply during some portions of the year. The service reservoir was not covered and because it was open to the sunlight, algae or water weed was rapidly formed in hot weather. As a result it was necessary to clean the reservoir about every three weeks and sometimes as often as every 14 days. On one or two occasions, when scarcity or bad weather had prevented cleaning work , large quantities of insects were seen mixed with the water

weed "in fact a living mass". It was however not considered to be an impure supply at the time! Mr Embrey, the County Analyst, stated: "the water .....is very pure, and gives no evidence of sewage or other pollution. It is well fitted for domestic use".(5)

As a result of the problems of bacterial growth in the open reservoir it was decided to install a roof. Whilst this work was being carried out the supply to the town was maintained by a by-pass main and a 200 gallon balancing tank. The reservoir was round which made it rather difficult to cover. While this work was going on it was decided to make the reservoir bigger by increasing its depth by 5 ft. The 18" stone wall was carried up 3 ft to form a parapet and to support the ends of the joists for the new roof. The deepening of the reservoir gave 50% more storage ,but during the next 12 months it also gave considerable trouble. Before taking this work in hand some old drawings had been consulted, and from these it appeared that the reservoir floor and walls were built on a good concrete foundation, which Mr Whitehouse calculated would easily bear the extra weight placed upon it. However three months after the work had been completed there was considerable and continuous leakage. Part of the floor was taken up for examination and it was found that the stone slab paving was laid on clay puddle and not on concrete as shown on the old plans.

As a result the majority of the floor was taken up and a foot of cement concrete laid beneath it with as much underpinning as could be safely carried out. This showed quite an improvement but still the leakage continued, and was more pronounced when the reservoir was full. The conclusion was reached that the walls were expanding with the weight of water. In order to prevent this eight concrete counter forts were constructed on the outside of the wall. This solution effectively cured the problem and there was no evidence of leakage afterwards.

The covering of the reservoir proved to be a complete cure for the water weed trouble, and except for a little sand which was pumped up from the intake the water appeared clear and satisfactory. It was estimated that approx 700,000 gallons of water yearly was saved by covering the reservoir, as about 50,000 gallons was sent through the waste pipe every time the reservoir was cleaned. But of course the greatest benefit was the improved water quality.

Although covering the reservoir meant a great improvement in the quality as well as the quantity of water, they were still unable to maintain a constant supply in periods of drought. Because of this Mr Whitehouse tried the introduction of a superior class of fittings, machinery for tapping the mains under pressure, and employed an inspector who devoted all his time to the repair of leaky taps. All these things reduced the consumption, but as the number of consumers increased the insufficiency of the supply became more apparent. The supply had to be shut off during the night for some parts of every year, the period varying in accordance with the average annual rainfall. Under these circumstances the Council began to seriously consider the question of an additional supply, which became more urgent as a result of persistent applications for water which were being received from parts of the district situated at a level too high to be fed from the service reservoir.

Mr Whitehouse was a prominent figure in Cinderford and the mains water was known locally as "Whitehouse Rock Wine".

Wakefield and Barnard
In 1903 The Council directed Mr Whitehouse to have an inspection made of the heading at Greenbottom.(5) Two Forest of Dean miners by the names of B. Wakefield and T. Barnard from Plump Hill Colliery undertook the task. This was no small undertaking considering that there was no one alive who could give them any information.

They produced a detailed report (8) which was then used as a basis to carry out repair work. Mr Whitehouse examined the heading personally on several occasions after the report was made and found that the description given by the miners was quite correct. Repairs to the arching and the clearing up of the heading was undertaken by the two men who made the examination, assisted by two hod boys. The work was carried out for six hours daily, two were allowed for the water to clear, and the remaining 16 hours were devoted to the supply of the district.

Large lengths of the arched portions had to be taken out and rebuilt. It was done by the miners system of holing and timbering around the archways, and when the ground was secured the archways were taken out and rebuilt. The work of clearing up and repairing the heading took some months to complete, but it improved the supply by at least 25%.

The Beech Pit Adit
Several more recent examinations of the heading have taken place, mainly to investigate the geology of the rock formations. On 6th August 1964 Ray Wright of the Royal Forest of Dean Caving Club went to within 50 ft of the Beech Pit shaft and reported several sets of initials scratched in the rock walls, most of them being half way up. The furthest being "R W" and a date of 6th June 1911.

Mr Wright and Mr G W Hudson from Stroud again entered the heading on 17th December 1980 and found a 19th century miners rock cutting drill in the mine churn. Mr Hudson did another survey in 1981 and produced a comprehensive report on the rock strata through the Beech Pit shaft. A Caving Club from Worcester made two expeditions up the heading to explore the Beech Pit in December 1988.(8)

As time went on the number of consumers rapidly increased, and those in need of a supply became more persistent in their demands and so in 1907 the Council determined to make an attempt to provide an additional supply. It was found after repeated examinations of the heading that most of the water boiled up from the bottom, and this, combined with other local knowledge made Mr Whitehouse come to the conclusion that more water could be found by sinking a shaft close to the pumping station, and that this would not interfere with the existing supply.

Additional well sunk
The shaft was commenced in the spring of 1907 within a few yards of the mouth of the heading. It was sunk into the old red sandstone, the specification stating: "That it was to be 40 yds deep, steened with 9 inch brickwork, and the diameter 6 feet in the clear"(5). In order to give local miners a chance, tenders were invited for the sinking labour only, the council finding all machinery and driving power. The water was struck 45 ft down from the surface

and gained in volume with every additional foot. Difficulty was experienced in pumping out the water to allow the work to proceed and in January 1908, when they had reached 90 ft they suspended operations until the summer. During the suspension an Evans"Griff" pattern pump was purchased which enabled the remaining 30 ft to be completed without difficulty by the end of the summer 1908.

It is interesting to examine the cost of the work:-

Sinking contract (labour only) £353. 0s. 0d

Labour (stokers, fitters, carpenters, erecting pit head framing, engine and boiler sheds etc) £465. 2s.11d

Machinery £656. 2s.1d

Fuel £276. 0s.0d

Total £1,750. 5s. 0d Value of machinery and plant at the conclusion of the work = £602

Between 1882 and 1909 the number of houses supplied from Greenbottom had risen from 200 to 1,900 and the population from 1,000 to 9,500. The average consumption in 1909 was about 12 gallons per head per day, totalling 114,000 per day.(5)

During times of drought such as in 1891 the minimum yield from the heading was 30,000 gallons per day and from the new shaft it was 150,000 gallons per day.

The two original James Watt pumping engines were capable of raising 135 gallons per minute to Littledean reservoir or if required 100 gallons per minute to the new Ruardean reservoir built after the first world war. The other engine erected by Hathorn Davey & Co of Leeds was designed to raise water from the deep well to the impounding reservoir and was installed in 1914 (Figure 2). Tragedy struck while the latter pump was being installed . On 30th December 1914 the contractor□s mechanic Mr D Goodworth, was killed in an accident during the erection of the machinery.

These pumps were all replaced by electrically driven centrifugal pumps when the station was modernised, with the exception of the Hathorn Davey well head pump which was fitted with an electric motor.

With the increased supply afforded by the new well in 1914 Mr Whitehouse put forward proposals to lay a 7 " main from Greenbottom to Ruardean and to build a reservoir on Ruardean Hill. However the onset of the war delayed the proposals until hostilities had ceased.

The minimum charge for a domestic supply in 1917 was 9/- per year and householders with a rateable value above £6 per annum were charged 1/6 in the pound. At this time the

engineman at Greenbottom, Mr Jefferies, was paid £1. 15s. 0d. per week, although in addition he was given free accommodation, free light, fuel, cleaning requisites and all internal repairs, plus a coal saving bonus which averaged 7/8d a week. He also had an assistant.(5)

Costs and Efficiency

By the end of the war in 1918 inflation was causing financial problems. In 1917 the expenditure on water supply was £1,275 whereas the income was only £1,227. Again in 1918 the expenditure of £1,385 was more than the income of £1,253. As a result the Committee decided to increase the water rates to 12/3d minimum charge and 1/9d in the pound for all rateable values over £7.

The following year Mr Whitehouse, the Engineer, produced a lengthy report on the cost effectiveness of the engineman and his assistant and as a result his method of payment was altered and he was appointed Engineer at Greenbottom. Mr Harley Brain of Belle View Road was appointed Assistant Engineer (aged 27). Mr Brain's son Wilf later worked at the station and lived in a house above the works until his death a few years ago. He used to grow his own tobacco and dry the leaves on wires strung out over the boilers at the pumping station. The boilers have long since been removed but the wires are still in place. He worked at the station from 1948 until 1976.

Ruardean Supply

After World War I work recommenced on the supply to Ruardean and a tender price of £2,510 was accepted from Holst and Co for the construction of Ruardean reservoir (MR631169). A visit to Greenbottom Waterworks in 1923, by the Cotswold Naturalists Field Club reported that Ruardean reservoir was complete but the mains extensions were still in progress.(6) The reservoir, which was abandoned in 1985, was divided into two halves, covered, and ventilated by cast iron curved ventilators fixed in the roof. The two halves were not equal, being 40,000 and 60,000 gallons.

The top water level was 293.2 m (962 ft) A.O.D. which was 161.5 m (530 ft) above Greenbottom. It was built of reinforced concrete and is one of the earliest examples of this type of construction. Although no longer in use it can be seen opposite the flag pole on the top of Ruardean Hill.

The delay in completing the scheme to supply Ruardean caused concern and in July 1921 the Committee instructed Mr Whitehouse to: "cleanse cattle drinking and house cleansing ponds at Joys Green, Ruardean Woodside, and the Pludds and to arrange a temporary supply of water by hauling barrels to the districts of Ruardean Hill and Joys Green".(5) It was also agreed to install a ram pump at Joys Green to pump water from the Reddings Level (also known as Scotts Level) to supply a stand post near the Post Office.

Although the well at Greenbottom was sunk in 1907/8 the permanent pump was not installed until 1923, together with the permanent stone building. This Hathorn Davey three throw crank pump (Figure 2) is capable of raising 200 gallons per minute and was affectionately known by the operators as "Lazerus". Although no longer used it is still *in situ* over the well.

Figure 1 shows a general view of the station as it was in 1914. It has changed only slightly since then. The chimney has been removed and a new well and pump installed in a separate building in the corner nearest the camera.

When the Ruardean mains extensions were completed in 1923 the number of houses supplied was 2,500 and the population 13,000. This still left about 450 properties without a supply in the Soudley, Aylford, Brains Green, Viney Hill and Popes Hill areas. In 1924 a tender was accepted from H Middleton of Newnham to lay mains extensions to Soudley, Brains Green, Blakeney Hill, and Plump Hill at a cost of £7,717. 3s. 5d and negotiations were started for the supply of water to Ruardean Village and Newnham which were both outside the East Dean boundary.

On 8th May 1925 Mr Whitehouse presented another report on the state of the water supply network. He stated that there were 2,700 houses being supplied from 70 miles of main.(5) He put forward proposals for the removal of standpipes at Blakeney Hill and Ruardean hill to force people to have a piped supply. He also stated that he was investigating the possibility of converting Greenbottom to electricity. The following year a tender was accepted from Mather and Platt Ltd to provide and fix electric turbine pumps at Greenbottom to replace the steam engines for a cost of £1,057. 2s. 0d. It was estimated that these would save approximately £200 per annum in running costs, but later figures showed this to be nearer £300. The two new pumps were installed to pump to Littledean reservoir and Ruardean reservoir at a rate of 550 gallons per min and 250 gallons per minute respectively and can still be seen in the pumping station.

With the advent of electricity many new innovations were possible. In 1928 quotes were obtained for automatic level recorders at the three reservoirs: Littledean, Ruardean, and Blakeney.

Duplicate Pumping Plant Installed

In October 1933 a tender of £565. 8s. 0d was accepted from Mather and Platt Ltd for additional duplicate pumping plant at Greenbottom. These were installed in January 1935 and the steam engines finally removed. The duplicate pumps were slightly smaller than the originals with capacities of 450 gallons per minute and 150 gallons per minute. These pumps finally became redundant in 1976 when Mitcheldean Water Treatment Works was opened. They were removed in 1981, the last time the station was operated.

In November 1933 Mr H Woolford was appointed Acting Surveyor. He went on to become Surveyor and Water Engineer and replaced Mr Whitehouse who had held the position since 1896. Mr Whitehouse died in 1935.

The years 1933 and 1934 suffered a deficiency of rainfall and it was necessary to issue notices in the local newspaper asking people to avoid waste of water. The demand in the East Dean area was continually increasing, caused by the expansion of industry based on the iron and coal deposits. This caused perpetual supply problems to the works at Greenbottom and no

sooner had one addition been installed to increase the flow than another was needed. As a result of the drought it was decided to sink two shafts close to the pumping station in order to increase the output, and also to construct another reservoir.

Additional Reservoir and Joiner's Well

The new reservoir was started in 1936 on Littledean Hill adjacent to the original circular reservoir. It was completed in 1939 and is still in use today. It has a capacity of 400,000 gallons. It is built of reinforced concrete with a top water level of 258.1 m A.O.D. The first well was sunk in the south west corner of the Greenbottom compound. It was sunk by J J Joiner and Co to a depth of 170 ft and was 7 ft in diameter. The well had an adit driven out from it in a westerly direction for a distance of 100 ft at a depth of 120 ft and was completed in February 1937. "Joiners Well" as it was called was fitted with two Mather and Platt vertical centrifugal borehole pumps with surface mounted electric motors delivering into the impounding reservoir. Each pump was capable of an output of 18,000 gallons per hour and worked on a duty/standby regime. The pumps were housed in a separate building erected in 1938.

The second shaft was a trial shaft sunk to the north west of the building (now in the garden of the adjoining house) by a Mr Fisher. This was abandoned in June 1939 because Mr Fisher had failed to carry out the necessary work.

Before "Joiners Well" and the new reservoir were completed the amount of water pumped towards the end of 1936 was(8):-

Week ending	Gallons per day
22nd August	273,571
29th August	256,000
5th September	271,571
12th September	254,856
19th September	257,000
26th September	239,428
3rd October	233,714
10th October	255,285
17th October	240,285

Mr Jefferies , the Engineman at Greenbottom (the son of the original engineman) retired on 5th December 1937 with a Council pension after 32 years service, and the position was taken over by Mr Hale. Mr Hale retired in 1963 after a heart attack.

After the removal of the steam plant at the pumping station the chimney was demolished on 14th March 1938. The winter of 1937/8 was very cold and in January 1938, 130 burst taps and pipes were reported in one week. It is recorded that in January 1939 Mr Basil Morgan's wages were increased to 5 shillings a week. He remained with the water undertaking until 1979, when he retired from the position of Inspection Superintendent.

World War II
It was thought that the works carried out in the late 1930s would have been sufficient for future demands for a number of years. Unfortunately the Second World War intervened. It is said that the Engineman , Mr Bill Hale had a 10/- bet with a Mr Meredith while "Joiner s Well" was being sunk in 1938 that they would still be short of water the following year. Mr Hale won.

The normal population of East Dean supplied with water was 15,100 but the evacuation of people from London and other big industrial cities caused an influx of 3,000 people into the area, plus 700 military personnel in camps. This was an increase of 25% over the normal population.

The average yield from the two wells and the adit at Greenbottom from 1938 until 1942 were as follows(8):-

1938 222,250 gallons per day
1939 236,650 gallons per day
1940 245,150 gallons per day
1941 272,550 gallons per day
1942 275,900 gallons per day

In 1941 it was necessary to shut off the supply from 7.00 p.m. until 6.00 a.m. each day for 13 weeks during September to December, and again in 1942. In order to overcome this shortfall in supply it was decided to sink a trial borehole 150 m north west of Greenbottom Waterworks with a proposal to construct a permanent station if the yield proved sufficient. The 6 inch bore was sunk to a depth of 250 ft but they found impervious clay like layers in the strata and the maximum pumping rate was only 2,000 gallons per hour. As a result the bore was abandoned.

Mr R C S Walters was then engaged to carry out a geological survey of water resources in the area. His report recommended sinking a 10" borehole at Marstow Farm near Ruardean. Trial pumping showed that 7,000 gallons per hour could be achieved but in the end it was decided not to proceed with a permanent installation.

Additional supply from Gunns Mill
In May and June 1943 the average consumption had risen to 369,000 gallons per day and so it became necessary to only turn on supplies for 10 hour per day. Several meetings took place with the Army Commanders to try and prevent waste of water and reduce consumption but with little success. So a decision was made to exploit the source at St Anthony's Well. A6 ft diameter well, 30 ft deep was sunk at Gunns Mill (MR 671158) and a trailer pump loaned from the National Fire Service. A 6" steel main was laid overland to Greenbottom to discharge into the impounding reservoir and this temporary installation commenced pumping on 20th October 1943.

In June 1944 a permanent pump was installed at a cost of £200 and a standby pump was acquired in late 1945. A restriction of 72,000 gallons per day was imposed on the abstraction from the Gunns Mill source. Although now abandoned the brick pump house can still be seen alongside the track to St Anthony's Well.

The problems of water shortage and the war effort must have continually influenced the water Committee's decisions because in May 1941 they refused applications for a supply to a number of properties including a Mr Micah Brain of Ruardean Woodside. Mr Brain was a member of the Water Committee and therefore not without influence. They also had problems getting authorisation for expenditure because of the war.

It was about this time that proposals were put forward for "The Forest of Dean Joint Water Board". This was to be set up to cover the areas of East Dean, West Dean, and Lydney Rural District Councils. Many meetings took place and the idea of taking water from the River Wye was again considered. However it was all to no avail when Lydney Rural District Council withdrew because they considered they would not benefit sufficiently from the proposals. It was the only Authority who was not short of water at the time as it had a large supply from Tufts Level, and was also considering a supply from St Anne's Well at Rodmore.

In 1946, at the end of the second World War, East Dean had a population 20,000. 3,689 houses were connected to the mains out of a total of 4,812, and the average domestic consumption was 19.7 gallons per head per day. In 1947 the Water Committee decided to increase the water charges by 50% and also reduce the discount for prompt payment in an attempt to counteract the post war inflation.(5)

Lydbrook Source

In the year ending 30th November 1948 the average supply from Greenbottom was 385,000 gallons per day of which 87,000 gallons per day was pumped to Ruardean. It was stated in a report by Lemon and Blizzard that this was again insufficient to meet the demand. In 1949 East Dean Rural District Council obtained a loan of £13,000 to construct a pumping station at Lydbrook, to utilise the water rising from the Whitehead limestone at a place called Limekiln Springs (MR603156). It was a joint project with West Dean Rural District Council and pumped water up to a new reservoir at The Pludds with a capacity of 250,000 gallons. A booster station was then built (MR 616167) to pump the water to Ruardean reservoir and help relieve the load on Greenbottom. The pumps at Lydbrook were first started on Thursday 18th December 1952 although the water did not eventually reach Ruardean reservoir until 1st March 1954. This source is still in operation but now only pumps towards Coleford. Mr Bill Morgan was one of the original pump attendants at Lydbrook and he remained with the water undertaking until his retirement in 1976.

North West Gloucestershire Water Board

A larger reservoir was built at Blakeney Hill in 1952 (MR 663075) but little further development then took place until the formation of the North West Gloucestershire Water Board in 1965. Immediately prior to the new Board coming into being East Dean Rural District Council had experienced considerable difficulty in maintaining supplies from

Greenbottom. In order to supplement the struggling source a temporary overland 6 inch PVC main was laid from the Gloucestershire Corporation's main at Westbury on Severn to Gunns Mill. The supply crisis at Greenbottom was such that speed was essential. Under the supervision of Mr J A N Butterworth, the East Dean Engineer three miles of main was laid in just 6 hours on 6th December 1964. 40 personnel of the national Fire Service (all volunteers) worked all day to lay the pipes, which had been loaned by the Home Office.

A booster was installed at Westbury (MR 711145) to raise the water up to Gunns Mill. On completion of this emergency scheme there existed the ludicrous situation of the water being pumped four times before it reached the consumer. It was originally raised from the well at Newent to Upleaden reservoir, it then gravitated to Westbury on Severn where the emergency booster pushed it through the overland main to Gunns Mill. From here it was again pumped to Greenbottom via the overland 6" steel main laid during World War II and then pumped up to Littledean reservoirs by the Greenbottom pumps. This rather expensive situation had been brought about by small Authorities trying to make ends meet without the financial backing that a larger organisation had at its command.

Buckshaft source

East Dean Rural District Council had realised what a difficult situation they were in with the water to Cinderford being shut off from 7.00 pm until 6.00 am and had already started looking for a new source. This investigation was taken over by the Engineer for the new Board Mr Cliff Whiting. The proposed new source was to be the flooded iron mines at the northern end of the Soudley Valley, near Ruspidge. This source had originally been considered by Gloucestershire Corporation as long ago as 1891. Tests were carried out at the Perseverance shaft but these revealed that the shaft was blocked, and so attention turned to Buckshaft a little higher up the hill. Test pumping began at the new location on 8th February 1966 at the rate of 2.4 million gallons per day and after four weeks the level had only dropped 19 ft.(7)

A permanent pumping station was built together with a storage reservoir (MR654121) and a 12 inch main up to Littledean reservoir. It was formally opened by Alderman B W Taylor (Chairman of the Board) on 22nd May 1969. A 9 inch gravity main was also laid to supply the Lydney area. The new pumping station at Buckshaft was not without its teething problems. At the end of 1970 all three submersible pumps sustained shaft fatigue failure putting the station out of action for a time.

Mitcheldean Waterworks

The next major development to affect the water supply to Cinderford was the construction of Mitcheldean waterworks on Wigpool Common (MR 654186). This was the largest and most expensive water supply project the area had ever seen. The proposals were to abstract 8 million galls/day from the River Wye (MR 602176), pump it up to Wigpool common and then after treatment, distribute it throughout the forest of Dean area. A main was also laid to supplement the supply to Gloucester and another to give a supply to Welsh water. The works

began operation in 1976 shortly after Severn Trent Water Authority was formed. With this modern installation and the construction of further reservoirs at Ruardean Hill, Nottswood Hill, and Littledean Hill, Greenbottom Pumping station was no longer required. It finally ceased pumping in 1981.(8)

Negotiations to sell off the site began with various interested parties and were almost completed in the mid 1990's when Severn Trent (by now a privatised water company) withdrew because of the possibility of re-opening the site, brought on by public concern of over abstraction from rivers.

Today the pumping station is in a sorry state. The windows are broken and even the ornate door hinges have been stolen. Will it ever be rescued ?

For those who require more information a copy of "The History of Water Supply in the Forest of Dean" is deposited in the Gloucestershire Records Office, reference D2826.

References

1. Minutes of the East Dean Local Board

2. Water Supply in the Forest of Dean - William Whitehouse 1910

3. Minutes of the Westbury-on -Severn Rural Sanitary Authority

4. Severn Trent Water Co Ltd land Terrier

5. East Dean Water Committee Minutes

6. Cottswold Naturalists Field Club Minutes 1923

7. North West Gloucestershire Water Board Minutes

8. Severn Trent Water Co Ltd records

Figure 1 Greenbottom Waterworks 1914

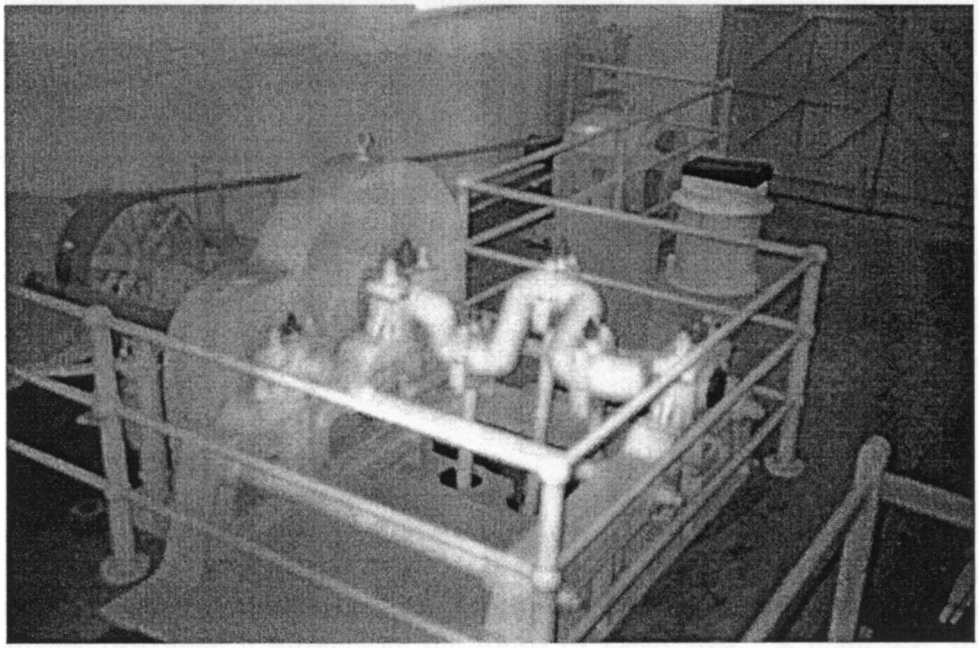

Figure 2 Hathorn Davey Pump Greenbottom Waterworks

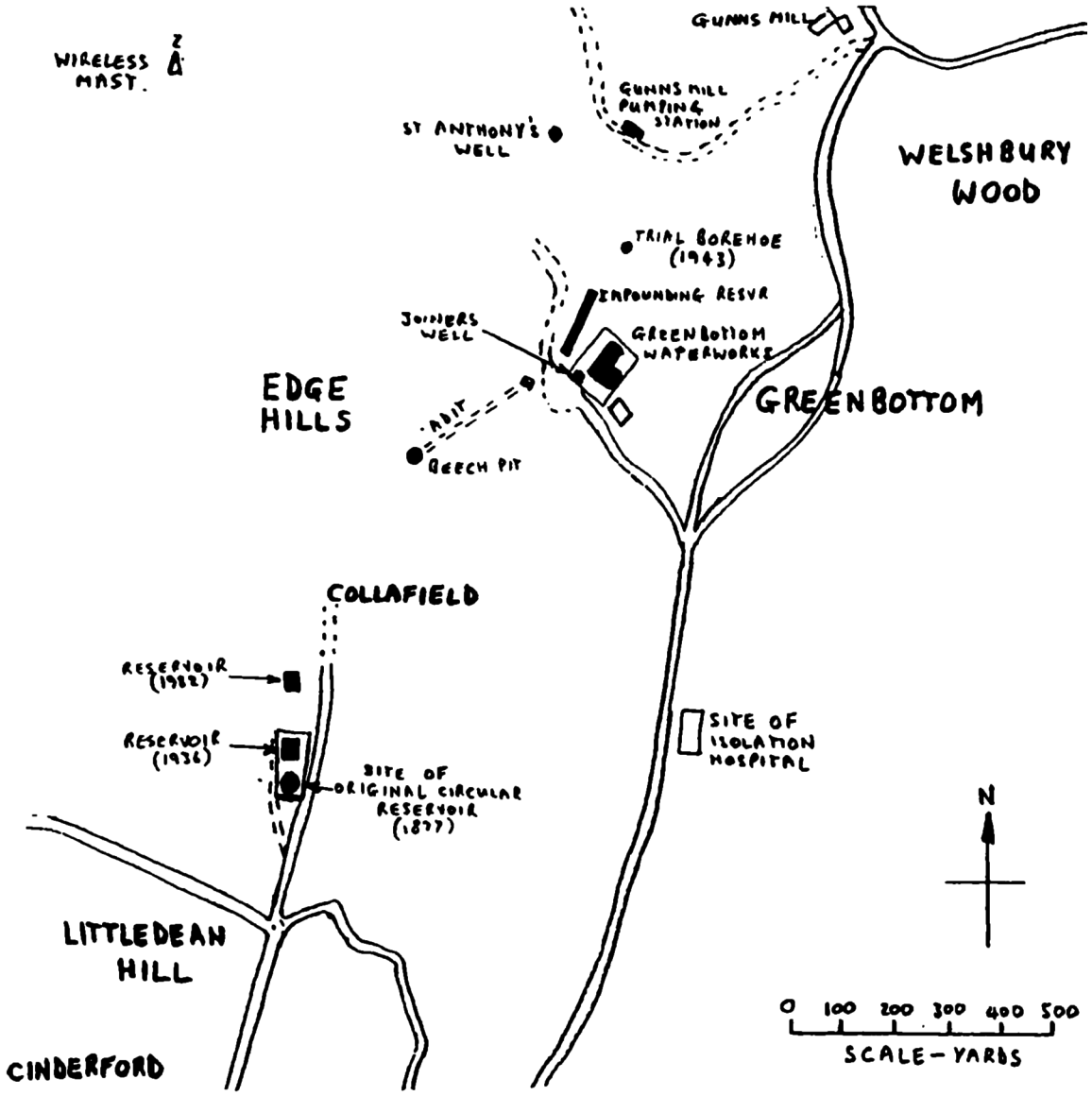

Figure 3 Cinderford Waterworks Location Plan