

Llanelli's Water Past and Present by Dr Roscoe Howells

"Water, water everywhere nor any drop to drink" The Ancient Mariner, S.T. Coleridge

About 70% of our planet is covered by water. Of that water 97% is in the oceans and too saline for drinking – of the remaining 3% which is fresh most is locked up in the polar ice-caps, 0.3% is too deep in the earth to tap, leaving 0.34% in rivers and lakes or in underground reservoirs less than one mile down.



Water is Life, and Life is Water

Worldwide, water is a very scarce resource. After air, man's first requirement for life is water. Water makes up 65% of our body weight. We can survive without food for several weeks, but only ten days at most without water.

In the UK at present we consume on average 40 gallons each every day – that's 14,600 gallons each per year or 180 litres daily, 65,700 litres annually. It's not all drunk of course – part of it is for personal use (baths, showers and toilets, washing of clothes and utensils, watering gardens, cleaning cars, etc.). Agriculture and industry are also heavy users of water.

Unlike some other European countries we are lucky enough to have 98% of our water supplied through the mains, and while the taste varies across the country, we can reasonably expect it to always be clean and uncontaminated. A clean and reliable water supply is taken for granted: it is difficult for us to appreciate the problems in other parts of the world where only one person in five may have access to a safe supply; many people have to walk up to thirty miles a day to collect water for their families.

Water is an amazing substance. It is indestructible. The water we have now is the same water there has always been – we are drinking the water the dinosaurs drank – exactly the same water because water does not disappear – it passed through the dinosaurs' digestive systems into the earth, evaporated into clouds, fell as rain, so now we drink again the water they drank.

Corruption and Inefficiency

Llanelli serves as a typical example of the history of water supply in Britain. Nineteenth century local government was in the hands of the Portreeve and Burgesses of the Borough of Llanelli which formed part of the lordship of Kidwelly whose Steward approved their appointment. In the absence of an official charter, the Burgesses (apparently unelected officials who appointed themselves) then chose one from among their number to be Portreeve (warden of the port).

Prior to the Enclosure Act of 1807, the 156 Burgesses had been entitled only to "use" waste lands within the Borough, but after the Act the Trustees, chosen from among themselves, had

powers to "embank, drain, allot and enclose the commons and waste lands and lease or sell them – which, of course they did. The money thus acquired was in theory to be used for the improvement of the port and town of Llanelli. Much of it however seems to have gone on "expenses". It was decided by the trustees that after improvements to port and town had been carried out and appropriate expenses met, "the remainder should be equally divided amongst and paid to the several burgesses of the town annually on 25th December". A very nice Christmas present!

In 1832 £222 was shared among 37 burgesses, the equivalent today of £16,000 (calculated on the retail prices index). For repairs to the embankment the trustees had paid out £52 (equivalent to £3,770) and a similar amount for repairs to the Town Hall. Fortunately for them there had been enough left over to pay for dinners to the value of £35 (£2,450). What a pity there was only £10 10s. (£761) available for preventive measures against cholera!

The shortcomings of local administration in Britain were not confined to Llanelli. A report commissioned by Parliament on the condition of the country's municipal corporations brought James Booth to the town in 1833.

The first mention of water supply that I have been able to find is in the Booth Report referring to a letter from one of the Burgesses suggesting the possibility of providing street lighting in the town and stating that the Burgesses are "in contemplation about the provision of a water supply".

The population of Llanelli was growing rapidly at this time. Census figures show the population of Llanelli as: 1801 - 2972: 1831 - 4173: 1861 - 11,084.

The Burgesses however were declining in number: the one hundred and fifty-six men of 1807 had dwindled to a mere thirty-four by 1833 with an average age of seventy years. Now, fewer and fewer burgesses appear to have been eating more and more. In 1844 they spent £89 (£6,940 today) on dinners between them.

Wells and Water Closets

Meanwhile, sanitary conditions in the town were dreadful. Drinking water came from springs and wells; rivers and streams supplied water for other needs; sewerage was almost non-existent.

After the Trustees had apparently ignored a request from the townspeople to "*give special consideration to the lack of a drinking water supply*" a petition was sent from the town to the General Board of Health in London. Under the provisions of the Public Health Act of 1845 an inspector was appointed to enquire into the sewerage, drainage, water supply and sanitary conditions in the town. Mr. George Clarke came to town and conducted a three-day enquiry at the Town Hall (then in Hall Street) on 7th, 8th and 9th November 1849.

The Secretary of the Chamber of Commerce gave evidence to the effect that,

The supply of water for 7,000 people who are almost wholly without water of a wholesome nature for domestic purposes, leaving water for personal use out of the question, is a matter of great anxiety.



Drinking water was drawn from wells or springs in or near the town including Capel Als, Bres, Waunlle, Tyisha, Llanerch, Furnace and Cille – the exact location of all the wells is not known. According to Thomas Rees in 'Hanes Eglywsi Annibynol

Trebeddrod: The lower pond, south, was Furnace Pond that supplied power for Raby's Furnace. It was drained c2000 to alleviate flooding. The north pond is Trebeddrod built in the mid-19th century to supply Llanelli with water. It is the pond that exists today (2013).

Cymru', 1873, there had been a house called Ty Alice with a well at one corner called Ffynnon Alice; Capel Als, the chapel built there in 1780 was not enclosed by railings like other chapels, but open to allow the general public access to the well. Water carriers charged a halfpenny for two gallons.

The Clarke Report of 1850 makes interesting if disturbing reading. The mortality rate in Llanelli town was 22.5 per thousand; in Westfa and Hengoed 18.7 per thousand and at Llannon 15.7 per thousand. Living in town was obviously bad for your health.

There was no town drainage at this time and an almost total absence of household drainage. Waste was allowed to putrefy around the walls of houses and heaps of rotting matter and dead animals lay on the roads.

Clarke referred to the *"filthy condition"* at Seaside where roads were unpaved, water collected in gutters and pools, and there were no sewers and very few privies. Beside the houses near the *'Cornish Arms'* (now optimistically renamed the *'Bucket and Spade'*) there were *"heaps of ashes, stagnant cess pools and accumulations of filth"* while nearby a large pool of stagnant water was surrounded by refuse.

"The surface filth of the town was very great. So-called drains formed a vast reticularised cess pool below the surface. The water supply was scanty and bad, some a long way from houses, and some water from certain foul water courses with discharges from drains, privies and pigsties. The inhabitants lived above and in the midst of their own filth – breathed it and drank it. Even the dead went to add to the general sum of foulness for they were packed in crowded burial grounds among the houses."

These were the days before municipal cemeteries. Clarke describes the town's burial grounds:

The Parish Churchyard is in the centre of the town with dense population around it. It is so completely filled with corpses that the earth covering the graves and the surface of the yard is saturated with the products of putrefaction.

He makes similar comments on the graveyards at Capel Als and Capel Newydd, adding

(where) a very large majority of the dissenting body of the town bury and in the present moment during the fatal consequences of the cholera, the evils of interment in these places are daily becoming greater.

When Clarke asked the burgesses for the accounts, they resigned en masse!

Following the Clarke Report a local Board of Health with twelve elected members was set up; some leading citizens of the town purchased land at what had been the Box Farm and opened a cemetery there in 1850; the well at Capel Als was closed in 1852.

New Supplies

The Board of Health's first act was to investigate the possibilities for securing a supply of fresh water. They paid £1800 for land at Trebeddrod where a reservoir was completed in 1854 holding 8 million gallons – a good ten days' supply even in dry weather. However the problems did not end there. Industrial expansion meant increasing pollution in the Lliedi and Dafen rivers, and a growing population put further pressure on the Trebeddrod reservoir and Cwm Lliedi. In 1869 work was completed on direct river abstraction from the Lliedi at Quarry Mawr.



Trebeddrod means burial site.
In the seventeenth century the bodies of plague victims were disposed of here. Subsequently Jews and Roman Catholics were buried here because they were not allowed burial in the town's churchyards.

A report of 1870 by J. Nathan Radcliffe on the sanitary state of the town was triggered by an outbreak of typhoid. In the whole town there were only two brick sewers; only 400 houses out of a total of 2700 had WCs; half the population of 13,500 made use of middens, cesspits or buckets. There were three outbreaks of cholera in Wales in the nineteenth century, one of the worst being in Llanelli in 1866 when out of a population of 12,000 there were over one thousand cases and in July/August of that year more than 220 dead.

A further report on sanitary conditions in Llanelli was published by Dr. H.O. Buckley in 1875. He noted that due to high infant mortality, the average age at death in the borough in 1873 and 1874 were 25 and 26 years respectively, remarking that:

water quantity and quality forms the most important feature of conditions

. By this time there were 714 WCs. 1006 middens or cesspits, 1100 pails and 300 dwellings with "nothing"

Work started on the Lower Cwm Lliedi reservoir in 1873 completed five years later. It had a capacity of 200 million gallons, but the demand had now risen to about 400 million gallons. A second Cwm Lliedi reservoir was opened in 1905 with a capacity of 200 million gallons.

In the meantime the Local Board of Health had given way to the Llanelly Urban District Council in 1894, and in 1913 the Llanelly Borough Council came into being. A treatment plant was constructed at Felinfoel to serve a population which had grown to 32,000 and required a daily supply of 3.5 million gallons.

As a consequence of a disastrously dry year in 1919 the Council purchased the water works supplying the munitions factory at Pembrey for £55,000 which took its water from the Gwendraeth Fawr upstream from Kidwelly. The scheme, completed in 1931, involved pumping 3 million gallons per day to the upper and lower Cwm Lliedi reservoirs.

Pre-War Years

As a consequence of a disastrously dry year in 1919 the Council had purchased the water works supplying the munitions factory at Pembrey for £55,000 which took its water from the Gwendraeth Fach upstream from Kidwelly. By the time the scheme was completed in 1931, pumping 3 million gallons per day to the upper and lower Cwm Lliedi reservoirs, Llanelli's water supply was serving a significantly increasing population and a proliferation of industrial enterprises.

The munitions factory re-opened in 1938 and the rate of abstraction doubled, going from three million gallons per day to six million. The cost of the increased abstraction from the Gwendraeth Fach was borne by the Ministry.

Demand for water continued to grow after the end of World War II as populations increased and industry expanded. It soon became clear that even in the short term, demand would overtake supply. The establishment of the new tinsplate works at Trostre made this even more likely. Consideration was given to the construction of a new storage reservoir in the Gwendraeth Fawr catchment area, but it was finally decided to proceed with a scheme based on extracting water from the Tywi at Nantgaredig at a rate of 6.1 million gallons per day. The cost of construction amounted to £400,000. Water was pumped 10.5 miles by a rising main to the Lliedi river at a point about one-and-a-half miles above the upper reservoir – this scheme is no longer in use.

Rural Llanelli

So far, no mention has been made of the water supply problems in the rural communities around Llanelli.

The numerous wells and springs on Pembrey Mountain which had originally supplied the Burry Port area became inadequate as the population grew, and eventually Burry Port became dependent on the Borough of Llanelli for its water.



In 1875 the Rural Sanitary Authority was formed, and in later years, arrangements were made by it to supply water to Felinfoel, Dafen, Halfway and Llwynhendy from the Lliedi reservoirs. In 1894 the rural Sanitary Authority became the Llanelli Rural District Council. By 1914 the District Council was responsible for five parishes with a population of twenty-seven thousand, as well as thirty or more

collieries and other industries.

Apart from the area supplied by the Borough, there were no piped water supplies. The little water that was available came from private wells and streams, was in short supply and often polluted.

Much of industry took its supply from wells, springs and rivers. Both Morlais Colliery and the Llangennech tinworks extracted water from the river Morlais.

The search for fresh springs and new underground sources was carried out diligently by council sanitary inspectors. Mr. David Rees of Dafen was particularly skilled with the divining rod, and was frequently called upon to help farmers in their search for water. This ancient skill is often derided but it has proven useful in the past and is still employed today. Southern Water, which supplies large swathes of the Home Counties, regularly employs dowsing techniques to aid in the detection of leaks in underground water pipes.

At the end of the nineteenth century the situation in the rural areas was becoming intolerable; there was no sewerage and many of the wells and springs were polluted. Several public meetings were called in 1908, and the District Council pondered the problem, coming up with a plan 1910 for a small reservoir on the Morlais at Llangennech. No action was taken.

Llyn-y-Fan Fach

The story of what happened next has been recorded by Mr. R.C. Jones, Engineer at the RDC. He was a delightful man and clever engineer whom I was lucky enough to have met in my early days in pollution control. He actually worked on the project about which he wrote.

It seems that the Vicar of Pembrey, formerly the vicar of Llansadwrn and Llanwrda, the Rev. D. Jones, was a member of the Rural District Council. He proposed investigating Llyn y Fan Fach to the north of Llangadog in the Tywi Valley as a possible reservoir for supply to Llanelli. The whole Council then of course had to visit the proposed site. They took train to Llangadog from where they proceeded by pony and trap nine miles up to Blaenau Farm. They then walked another one-and-a-half miles climbing eight hundred feet!

Despite the discomforts suffered by the intrepid councillors, the visit was a success and the site approved. Parliamentary powers were obtained in 1912 and work started in 1914. The state of the water supply in the rural district of Llanelli at the time was considered to be so bad that work was allowed to continue despite the outbreak of war in August of that year.

Conditions of work were very difficult, partly because of the exposed position and high altitude (1200 ft.) and partly because all materials had to be hauled from the railway nine miles distant. Initially the majority of the work was done by Irish navvies – 175 men housed in bunks in two large huts, along with a shop, a canteen and a small hospital. This situation did not last. Because of the tough conditions, the Irish refused to work and departed from the site.

By 1916 conscription had been brought in, but not everyone was willing to go to the front. Two hundred conscientious objectors were drafted in by the Government to work at Llyn-y-Fan Fach. They worked under a strict regime in a tough environment. They were unused to

manual labour having been professional people, teachers, accountants, army officers and one concert pianist. Not surprisingly, many absconded and were arrested.

The level of the lake was raised by ten feet and its capacity increased to 200 million gallons. A trunk main was built to a service reservoir at Llannon. This was a major engineering feat – ten miles of the twenty-five mile long trunk main had to be driven through solid rock.

Water was distributed east and west of Llannon to Hendy, Tycroes, Llangennech and the Gwendraeth Valley from the service reservoir capacity of 3 million gallons.

The scheme was completed in 1918, and continued to operate successfully up until 1967.

The 1970s

The 1970s brought two significant events: The building of the Llyn Brienne reservoir, and the establishment of the Welsh Water Authority.



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The Llyn Brienne regulating reservoir upstream of Llandoverly on the river Tywi was completed in May, 1973. It has a capacity of 13,400 million gallons. A regulated flow of water up to 86 million gallons per day is discharged down the Tywi and abstracted from an intake at Nantgaredig many miles downstream. From there the water is pumped to the Lower Lliw Reservoir north of Pontardulais and thence to a modern treatment plant north of Swansea near the former Velindre Tinplate Works. The treated water is then distributed east and west.

In April, 1974 all local authority water, sewerage and drainage boards as well as all the river authorities ceased to exist and were brought into one body, initially named the *Welsh National Water Development Authority*, now *Welsh Water* or *Dwr Cymru*.

The 1980s



In the late 70s and early 80s the whole of the area from the Loughor Bridge to Kidwelly was supplied by water from the Upper Cwm Lliedi reservoir while the lower reservoir provided about 2 million gallons per day of industrial water mainly for Trostre. The system continued to be augmented by the supply from the Gwendraeth Fach.

In an operation to enhance water quality and secure water supplies for the future, in the mid-1980s, Welsh Water laid a pipe from the Velindre water treatment plant all the way through Pontardulais, Hendy, Llangennech and Dafen to Felinfoel.

Since then, all drinking water supplied to Llanelli and the surrounding area is Tywi water pumped as explained, from Nantgardeig, but originating in Llyn Brianne. This is an extremely secure source which guarantees quality and quantity.

The Llanelli Borough abstractions from the Tywi and from the Gwendraeth Fach are no longer in use. The upper and lower reservoirs at Swiss Valley are solely used to supply polished industrial water, mainly to the tinplate works at Trostre.

The Future

It appears that there should be no problems in the future. We must not, however, be complacent. I well recall the situation in Wales in 1976 when a very dry winter was followed by a red hot summer. By August we were becoming increasingly anxious about the water supply in many parts of Wales. We even began to look at unusual and potentially risky sources of water discharging from various mines, for example an iron mine in south east Wales. We appealed to the public to conserve water, and hosepipe bans were applied. (Garden hoses use about 240 gallons per hour or 122 buckets.) We also banned all car washes. Fortunately the rains came in a big way in September, and Llyn Brianne which had been down to a quarter full was restored to health.

When we look to the future, we have to consider the effects of climate change and increased population. Although it is hard to predict the effects of climate change, in the long term decreased rainfall, even here in Wales, could be one of them. The population of Britain is certainly increasing rapidly. This fact is borne out by the latest census (2011) which shows that the population of England and Wales had reached 56.1 million, up by 3.7 million in a decade. That is the largest growth shown by any census since the first one in 1801.

For the time being, however, we have an excellent and reliable supply of water of good quality for the foreseeable future in Llanelli and district, thanks in no small measure to the diligence and foresight of our forefathers.

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