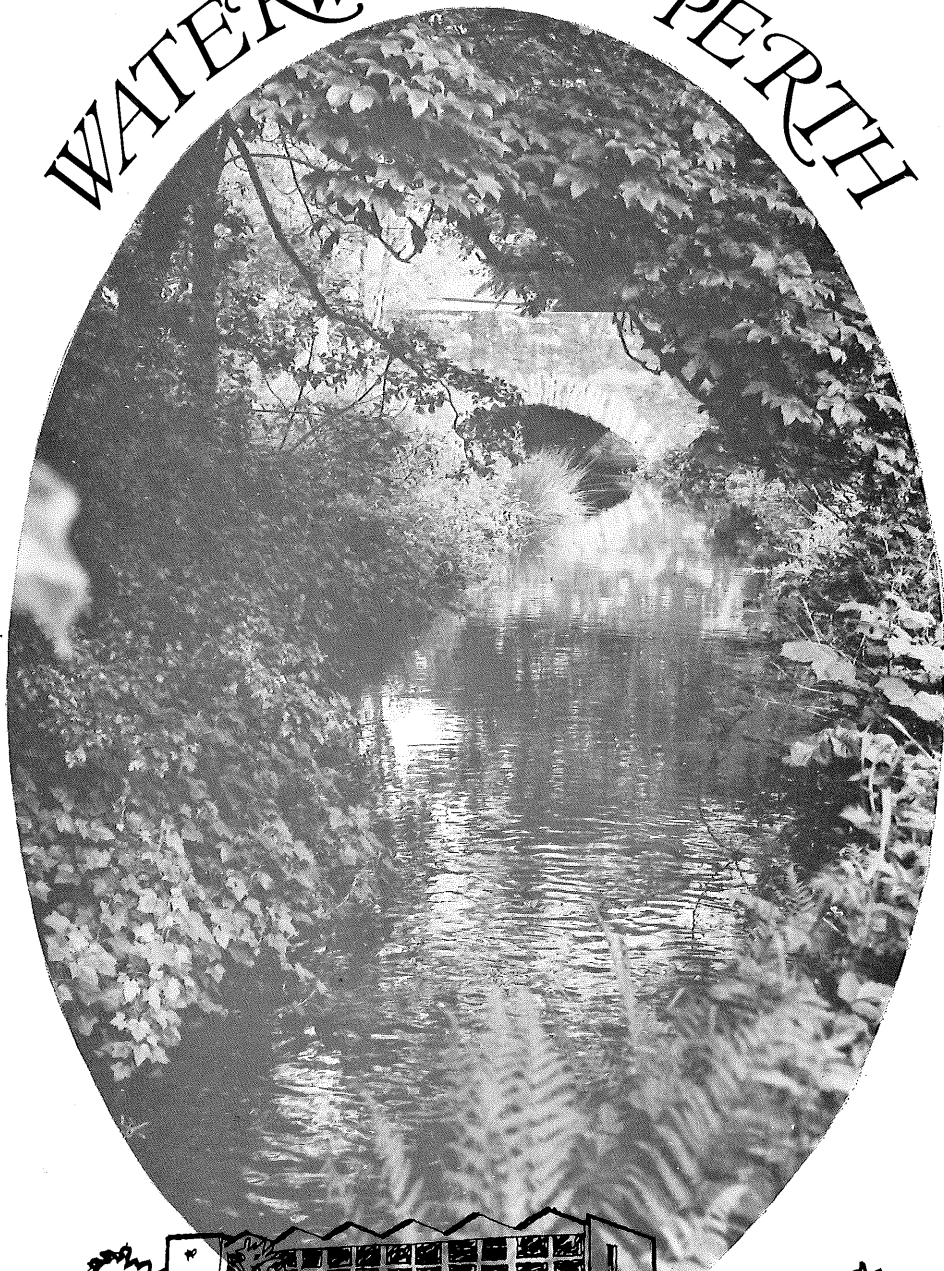


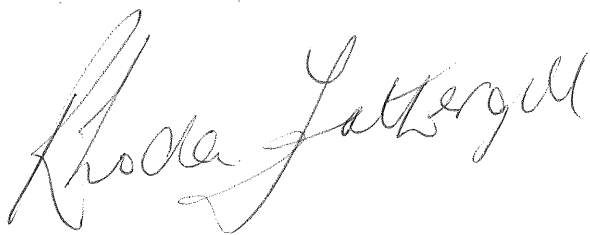
# WATERWAYS OF PERTH



## FOREWORD

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This short survey of Perth's waterways formed part of a project undertaken by Primary VII, Caledonian Road School, under the supervision of Miss R. Fothergill. The project included geographical studies, historical research, interviews and mathematical work. To all those who helped us in this project sincere appreciation is extended.

A handwritten signature in cursive script, reading "Rhoda Fothergill". The signature is written in dark ink and is positioned below the main text of the foreword.

## WATERWAYS OF PERTH

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A good water supply for the inhabitants of a settlement, village, town or city is of major importance. Indeed this consideration often determines the site of a village or town as was probably true of our own fair city of Perth. In the past, Perth inhabitants have obtained their water supply from two main waterways, the full flowing River Tay or the very interesting waterway known as the Town's Lade through which flows the water of the River Almond. The River Tay figures prominently in the history of Perth's development but so too does the Town's Lade when our historical past is examined.

It would appear that the earliest mention of the Lade at Perth is not actually of this waterway itself but of the flour and barley mills situated to the west of the Perth city wall and owned by the Mercer family. In 1106 John Mercer, proprietor of Meikleour, an estate about eight miles from Perth, was a burghess of Perth. The Mercer family were granted right of burial in St. John's Kirk. This privilege may have been granted in return for some gift. Would the gift be that of flour and barley mills at Perth to the King of Scotland, Malcolm Canmore? The arms of the Mercer family bear three mill rhynds. Mills driven by water power were in those times rare and valuable, possessed by people of property and influence and would indeed make a gift fit for a king in return for his grant of the burial vault in St. John's Kirk. If these facts are correct we must therefore know that the gift was made before 1126 because in that year the King, David I, gifted the Kirk of St. John the Baptist in Perth to the monks of Dunfermline Abbey who presumably thereafter ruled the affairs of the church. So we believe that the Mercer family gifted the mills to Malcolm Canmore who ascended the throne in 1057.

What can be said of the unique watercourse, which we call the Lade, before the eleventh century? It is indeed difficult to establish facts within this earlier period. Very early records have been either lost or destroyed as Scotland marched through its turbulent periods of history. Perth's Lade or lead of water is taken from the River Almond, a tributary of the River Tay. The River Almond rises in Glen Almond and at a distance of about four miles west of Perth the Lade is taken off. One legend has it that the large ditch was dug through the lands of the different proprietors in one night by the military and was known therefore as the King's Lade. A surprising feat of strength, speed and endurance, surely! At the point where the Lade is taken off the River Almond there is a sluice to regulate the water flow and this sluice is supported by a strong embankment of masonry called Low's Work. This appears on old maps alternatively as Louis' Werk and Lowes Wark. Does this suggest the builder's name. This would be doubted.

There is a suggestion that the Gaelic Dictionary gives the meaning as Water Work. This would seem reasonable, consideration being given to the dialect of the district at that period. We do know that Low's Work must have in the beginning been strongly and skilfully built over the Almond and as the centuries passed the maintenance and repair of the dike has figured frequently in discussions and agreements. Low's Work is part of the chartered property of the Burgh of Perth of no inconsiderable value. The origins and original purposes of the Lade appear, unfortunately, to be lost in the mists of the past. Some writers in the nineteenth century suggest that the Romans may have built it to get water for a fosse or ditch around the walls of their Settlement on the site of Perth! The Roman advance into Perthshire and Angus under the leadership of Agricola in 83 A.D. was not followed by a settled occupation of the area. There was the constant threat of attack by the Picts who rallied time and again to harry their foe. The Romans finally withdrew from this area. Is it likely that they had time to build a settlement then on the site of Perth or indeed engineer the construction of the Lade of Perth? Also, there is little evidence that the Romans ever encamped on the site of Perth. Their fort lay to the north of the city at the confluence of the River Almond and the River Tay. The Romans are tentatively and probably erroneously suggested as the builders of our unique water course by some earlier writers, but certainly all agree that it is of remote antiquity.

Although the Romans may not have been the builders, was the original purpose of the construction defensive? This indeed seems likely. In the early centuries A.D. after the Roman occupation, evidence has been uncovered of a Settlement on the banks of the River Tay. To these peoples came the first Christian missionaries. It is probable that a church was established on the site of St. John's Kirk prior to the 12th century. The Settlement prospered with the easy trade and communication facilities of the River Tay and the burgh grew westwards from the banks of the river. The aqueduct from the River Almond branches about half a mile before entering the River Tay to form a west and south branch. This rectangle formed by the Lade and the River Tay appears to have been the confines of the early town of Perth. Most certainly the Lade was used as part of the defences and lay immediately beyond the city wall. When Bruce took Perth in 1313 the lade was filled up with water by opening the sluice gates and this made the city almost impregnable. Again, Robert the Steward of Scotland was appointed Regent of Scotland in 1338 and laid siege to Perth. For five months the English in the city held out. Finally, the Earl of Ross drained water from the fosse or moat and the walls of the city were scaled.

The indisputable fact is that the water of the River Almond was used to fill the canal across the lands of Huntingtower and the ditch surrounding the walls of Perth. Was the Lade's original purpose to procure a water supply for the early town? This might be doubted as

the town was situated on the banks of the Tay—a readily accessible supply of water. Would it be likely that such a massive piece of construction was undertaken for that purpose? In later times—the sixteenth and seventeenth centuries—the water of the lade was being used to supply the tables of the inhabitants of Perth. A writer in the *Guide to Perth* of 1822 writes of the situation. “It were most devoutly to be wished that the water for this use were procured from a different source. That of the town’s aqueduct has no unwholesome property but it is so liable to be contaminated by the poisonous substances that are used in immense quantities at the bleachfields and printfields through which it passes.”

If the original purpose of the Lade was not to provide power for industry, this became an important part of its function as the centuries passed. The Corn and Flour Mills which were mentioned as being in possession of the Mercer family in the eleventh century and gifted to the King, Malcolm III, were then known as the King’s Mills. They remained royal property till the reign of Robert II who in 1375 gifted them to the city fathers and inhabitants of Perth. King Robert the Bruce in 1323 granted by charter to the Dominican Monks of Blackfriars, Perth, the right to have their meal ground and stored free in the King’s Mills. This was one advantage brought, be it so indirectly, to the Dominican monks. Earlier, in 1244, soon after the foundations of the Monastery of Blackfriars the monks were granted by their royal founder, Alexander II, a pipe or conduit of water from the Lade, the pipe to be a width of four inches. The Carthusian monks established their monastery to the west of the mediæval city and their royal benefactor, James I of Scotland, granted a similar privilege. They were allowed to lead a conduit of water from the mill dam on the Lade to the Carthusian Monastery. It would appear that during the reign of his grandson, James III, the conduit was broken and the King rebukes the city fathers and commands the repair of the pipe.

It is interesting to note that the size of pipe is strictly stated in these privileges and it must have been a constant fear that such offshoots would be to the detriment of the mills or of the defensive purpose of the moat of the city. Yet a later request for the use of water from the Lade was made by the Laird of Balhousie. The Eviot family owned the lands and barony of Balhousie in early times. A request is made concerning the so-called Boot of Balhousie. It is said that the Laird asked his sovereign for a bootful of water from the Lade. The request was granted. Being apparently of crafty mind, the boot used had no sole and the Laird obtained a constant flow of Lade water! However interesting this tale may be, it is possible that the Boot is the word bowt or boult meaning a gap. The gap or pipe was about ten or eleven inches in diameter. The purpose of obtaining this pipe was to drive corn mills at Balhousie. The exact date of this royal grant is unknown but there is a record dated 1464 of an agreement between the Eviots of Balhousie and the Aldermen, Baillies and Council of Perth to take

up the Boot and make a fresh pipe of 32 inches diameter. This document also provides for the future maintenance of the pipe at Balhousie. Possibly this corn mill at Balhousie was nearest to the burgh of Perth after, that is, the town's mill which appears to have been growing in size as time passed. Some years later, in 1494, an indenture was made by Lord Ruthven to the Burgh about the upholding of Low's Work. There seems to have been a dispute and the resulting agreement was between William, Lord Ruthven, William, his son on the one part and the magistrates of Perth and John Eviot on the other part. Here there is mentioned the permanent maintenance of Low's Work which is to be the retainer and closer of the aqueduct. Earth and stones were to be taken from the lands of Ruthven for the maintenance of the Lade and the inholding of water. In the document all parties agree never to disturb each other in the peaceable possession of the Lade nor in the taking of earth and stones from the Ruthven lands for its maintenance. The flow of water from the River Almond into the Lade was sometimes considerable and damage to the Lade was feared. The parties concerned agreed that for the benefit of all a sluice should be at the head of the Lade so that a sufficient water supply for all the mills on it could be maintained. Low's Work was to be "mended, built or reformed" to keep the water to the original channel.

Possibly by this time there were more than two mills on the Lade. The Town's Mills, formerly the King's Mills, had been gifted to the Burgh of Perth by Robert II during his reign. The Balhousie mills were in operation and probably by the fifteenth century other mills would be operating on the course of the Lade between the River Almond and Perth burgh. These agreements between the Perth city fathers and the families of Eviot and Ruthven are all confirmed in a Royal Charter of 1600 granted by King James VI. The Lade ditch is dug across lands which in early times belonged to the Earls of Gowrie who built Ruthven Castle about two and a half miles west of Perth. This was the scene of the famous Raid of Ruthven in 1552 when the object was to take the young King James VI out of the hands of his favourites Arran and Lennox. While out hunting, James was invited by the Earl of Gowrie to stop at Ruthven Castle. After the Gowrie Conspiracy of 1600 the lands were confiscated and came into the possession of the Stormont family who later sold them to the Earl of Tullibardine, one of the Atholl family. The name of the castle was then changed to Huntingtower. A letter in the Atholl papers dated 1643 tells of this purchase.

Passing the City Mills Perth Lade branches. One branch runs along Mill Street to what was formerly known as the Deadlands Garden, a cemetery by the Tay known locally as the Diddledan. Nearby was the "Lady Walk" which crossed the Lade by a high arched bridge. The water pours into the river at this point. The west branch of the Lade flowed south by South Methven Street and Canal Crescent. This was known as the Port Burn. Flowing then eastwards along Canal

Street the Lade reached the Old Shore or Coal Shore. South Stank was the name given to this part. The How Rig, which later appears as the Spey Gardens on maps, was the marsh to the south of the Lade. The Inch Burn was a water course that flowed from the Lade at the west end of Canal Street across the western portion of the South Inch to Craigie Burn. From there the water flows into the River Tay at Friarton.

Throughout the centuries right up to the present day the Lade has been constantly in need of care and attention. In 1770 the west and south branches of the Lade at Perth were uncovered. Small boats from the River Tay would use this water course to transport coal from the Coal Shore situated at the exit of the south branch of the Lade. Flour boats from the City Mills plied along the town's canal. About 1802 these two arms of the Lade were arched over but before that Canal Street was unpaved, merely a narrow pathway by which ran the aqueduct.

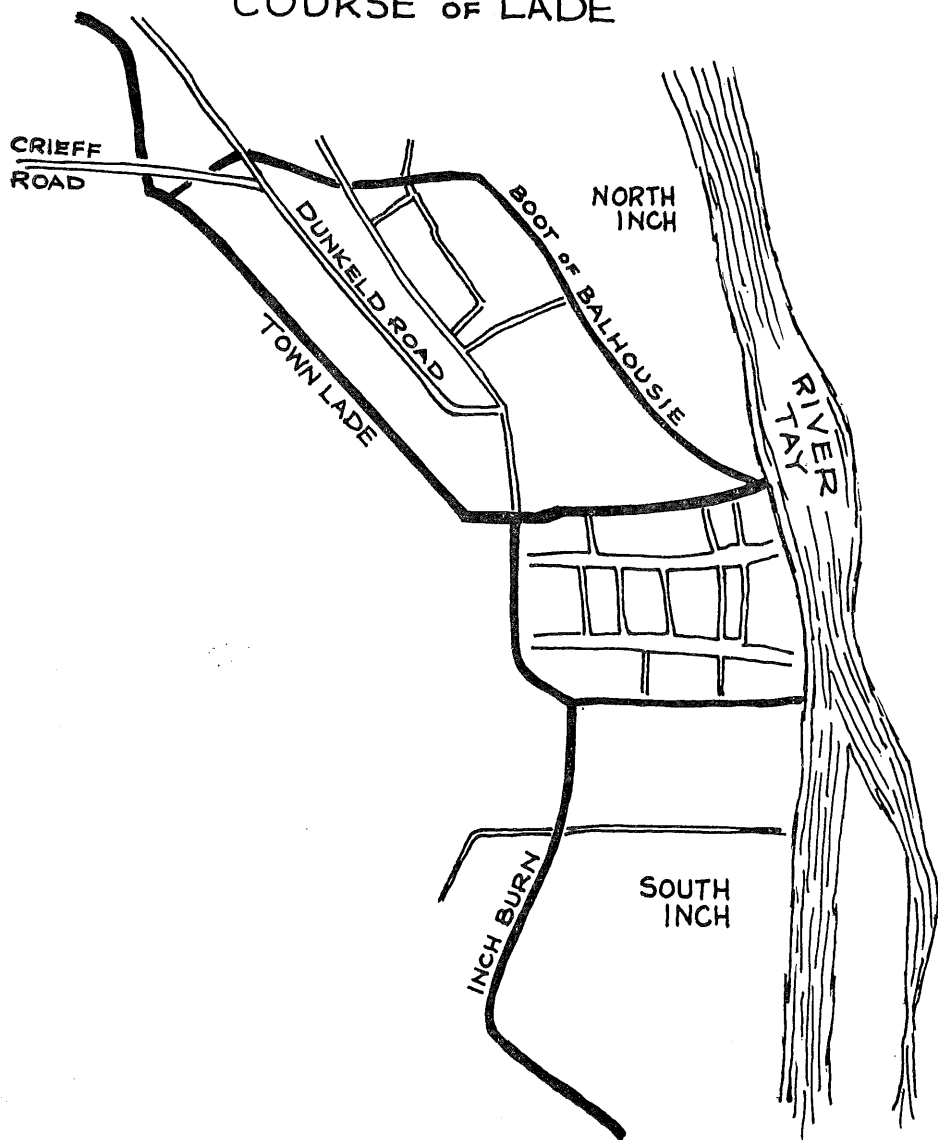
An article written in 1828 mentions great improvements projected upon the River Tay by forming a basin and canal to convey goods to the Town when the state of the river from swells or low tides prevents regular approach.

In 1846 there was a suggestion reported in the Perth Courier that the Lade in Methven Street opposite St. Paul's Church should be arched over and a wider access to the High Street obtained. This met with an objection to the closing in of the Lade from the tenants of houses nearby to many of whom it was useful as a source of domestic water.

Later, in October 1846, there is a record of a Mr. Lindsay giving up some of his property adjacent to the Glassite Chapel for the purpose of widening the High Street on condition that the Town put back the existing wall and foot-pavement and gave up the pound a year which he had been paying the Town for provision of a wooden bridge across the Town's Lade at Methven Street.

From the 18th century the Lade helped the growth of the textile industry. Formerly there had been corn, meal and malt mills and oil mills too. The branch from the Lade which drove flour and meal mills at Balhousie flowed west of the North Inch to the River Tay. There are frequent references during the years to the repair or rebuilding of various parts of the Lade. An interesting point is that the culture of the Town's mills was heavy and bakers of Perth adopted a plan of selling their wheat to Balhousie Mill and buying back their flour. At a later period there was a snuff mill on the Balhousie branch of the Lade. An interesting story is connected with the Balhousie branch of the Lade. This tale tells of a girl's school possibly in Blackfriars House facing the North Inch. There was constant talk of ghosts because of

# COURSE OF LADE





strange noises terrifying the young ladies therein. Actually it was the Lade water flowing past from Balhousie to join the main Mill Street branch of Perth Lade.

The Town Council had income from the different mills on the Lade and this income was quite high, forming a considerable part of the burgh revenue. The Lade would probably be common good property administered by the Town Council who granted permission for the use of its water and requested maintenance of the Lade from other parties. These revenues undoubtedly increased when manufacturing trade increased. As there is no limestone in the district of the River Almond this means that the water of the Lade is very soft—ideal for the later industrial purposes of bleaching and dyeing. However, such use caused the loss of fine trout from the Lade which had once abounded with such fish. The effluent from the printfields was the cause of this. In more recent times it is said that in a shop situated at the top of George Street they used to lift some of the floorboards and catch salmon in the Lade!

There was a mill dam above the City Mills and the water was led by wooden pipes to wells in Perth City. The Lade water flowing through at the Boot of Balhousie was said to be beneficial to people troubled with sprains and rheumatism and many Perth folk “took the waters” and bathed at the pipe.

The Almond and the Lade had purity and softness of water for bleaching the cloth. Terraces were used for grass bleaching which in the nineteenth century changed to chemical bleaching.

In the Old Statistical Account of 1796 there is mention of a lint mill at Huntingtower. Woollen and linen cloth had for long been produced by the home industry of handloom weavers. By the eighteenth century these weavers bought the yarn and made the cloth. Linsey woolseys were later produced and silesia linens were sold to the printers. It was a mixture of linen and cotton—“blunk”—however, that the printers preferred. About 1782 cotton manufacture was introduced to Perth and printed shawls and chintzes were made. Perth did not quite succeed in making good in the Industrial Revolution which was bringing wealth to many other cities—it was not for want of trying! Cambrics and calicos were tried and for a time Perth made a name in manufacturing of cotton, gingham, napkins and umbrella cloths. Materials had to be stamped to indicate length, breadth and quality. The cost for stamping each piece was 2½d. and the stampmaster could cut the bale into pieces only stamping those of the required quality. Silesias, linens and blunks were all stamped and there was a building behind Huntingtower Castle, near the Lade, which was the Stamp House. It is an interesting sidelight to think of the days of the stage-coach coming from Glasgow through Dunblane and Auchterarder to Perth. On this route passengers for Huntingtower printfields descended and parcels were also given off.

There was quite a large manufacturing trade carried on between Glasgow and the various works in the Huntingtower area. Large Glasgow cotton and woollen merchants controlled, by shareholdings, the printfields at Huntingtower. In 1800 there was in Perth a cotton spinning mill at the foot of Mill Street but it later turned to wool spinning about 1810. The fluctuation in commerce ruined the cotton trade in Perth and the weavers had to go to Glasgow for both the cotton and calico trade. Perth had already lost its linen trade to Fife. It was at this point that Perth weavers furthered the production of umbrella fabrics and such goods gave an impetus to the business. Indeed, dyeing replaced textile manufacture in the nineteenth century. The branches of the town's Lade formed the basis for the early growth of Perth's dyeing trade. By 1824 five dyeworks were in operation on the south branch of the Lade and three on the north branch at Castle Gable. By the late nineteenth century two of these dyers had emerged as principals, Pullars of Perth and P. & P. Campbell, Dyeworks. Campbell's Dyeworks were later sited in Dunkeld Road adjacent to the Lade course but a fire in 1915 destroyed the works and led to the amalgamation of Campbell's and Pullar's. It is a sign of the approach of the motorised age that a garage was built on the site of the burnt works!

The number of mills situated by the Town's Lade increased during the seventeenth and eighteenth centuries. Lack of the proximity of coal was probably the reason for Perth not quite making it at the time of the Industrial Revolution but although never at any time a factory town such as those in the Central Lowlands of Scotland, Perth has had several interesting industrial projects. The north branch of the Lade was crossed by the Red Bridge which gave access to Perth from the North Port via Castle Gable and Skinnergate. The Horse Cross, where the horse carriers assembled and did business, and Mill Street appeared to be a small industrial estate in early Perth due to the Lade's water so readily available. Near the Red Bridge there was a Nether Malt Mill and a Nether Waulk Mill and to the east of the bridge there is shown on Buist's Plan of Perth, 1765, an Oil Mill and a Lint Mill. There was an Upper Malt Mill at the City Mills and there also above the City Mills was a waulk mill which was later occupied by dyers. Thereafter it became a spinning mill for wool. Later this particular fall of the Lade was used to drive machinery in Perth Foundry.

To return to the lower fall of the Lade at the Horse Cross, Rutherford's Map of 1774 shows a barley mill and an oil mill in the area. This oil mill was removed to make way for George Street. In McFarlane's Plan of Perth of 1792, there is a cotton spinning mill and a barley mill lying west of the north end of Skinnergate. One of these mills situated at the Horse Cross had two upper flats and an attic and towards the end of the 19th century Mr. Jackson, printer, offered £50 a year rent for these premises for a printing office if the Town would grant him right to the power of the Water Wheel.

In 1824 Dr. Adam Anderson designed Perth's first Gas Works. The illuminating gas was to be made from coal although other schemes in Scotland used oil. Dr. Anderson placed his gas works in Canal Street adjacent to the Lade. This waterway again was useful in bringing coal to the works. Dr. Anderson's Gas Works lit the Town's lights for over fifty years and were eventually demolished, the site being used for the new Public Wash-houses. A Latin inscription was placed by Dr. Anderson above the doorway of the Gas Works.

Non fumum ex fulgare sed ex fumo dare lucem.

When the Canal Street Mill Lade had to be cleaned in 1846, remarks were made about the "nuisance" caused by the Gas Company.

### **PERTH PUBLIC BATHS & WASH-HOUSES**

The Lade appears in yet another role in Perth's history. Towards the mid-nineteenth century Perth felt that in the interests of the health of the citizens there should be erected baths for "the working and middle classes". Mr. Simpson, an advocate from Edinburgh, addressed a large meeting in the City Hall on this subject in February 1845. By July of that year the Council had received a petition from the committee of the working classes requesting grant of money sufficient to arch a portion of the Lade between Methven Street and the Union Bridge. It was proposed to erect the public baths there. The arching was to cost £200 and at that point it appeared that the baths were to be supplied from the reservoir at the barracks, situated north of the City Mills. Other sites for the baths were considered including the Flesh Market and Marshall Place. By September it had been discovered that if the baths were to be sited in Mill Street water would require to be taken from the Lade as the Water Commissioners had informed the committee they would not obtain a supply of water from the tank previously mentioned. A report in the Perth Courier of January 1846 suggested that the middle classes might not take advantage of the baths if placed in Mill Street. There was also a fear that if the Lade were arched over it might prove the means of harming the flow of water to the mills from an accumulation of ice in winter. It was decided by the Council to put up for public sale the part of the Lade to be arched. It was then up to the Baths Committee to buy it. It was suggested that the arched part of the Lade could be used as a butter and cheese market, relieving George Street and High Street from confusion. The site was indeed put up for sale the following month and bought for £195 by the Baths Committee. Apparently a section of the community felt that such an "unseemly set of buildings as the baths would be" would spoil the fine square.

There is an interesting side story at this point. Apparently one Saturday afternoon in April 1846 two children of the Kiln drier at Perth Mills were playing at the Lade side when the younger child aged five years fell into the water and was carried through the sluice and down the fall of the Meal Mill. The child's brother ran home

and told his parents who searched the water but the body had been carried down the Lade to where the archings were being erected in Mill Street. A young woman passing observed the body floating between Union Bridge and the Flax Mill. She took out the body which had probably been in the water for about half an hour. The parents did all they could to resuscitate the child and Dr. Scott, the surgeon, was called. After about two hours the boy recovered. Another aspect of the arching of the Lade appears when an application was made for a reduction in rent for a mill on the north branch of the Lade. It was found that after the arching a much larger amount of water was going into the south branch along Methven Street and there would be a scarcity of water in the dry season to drive the said mill.

By March 1847 the Public Baths had been in operation during the previous winter and at the second Public Meeting of the Baths Committee the report was that 2,334 baths had been taken. First, second and third class baths were provided. In the following year, March 1848, at the third Annual Meeting of the Committee the report states, "It appears although income exceeded expenditure by a small amount there was nothing like the number indulging in the habits of cleanliness and health in proportion to the population of the city, that might have been anticipated". The citizens perhaps were not entirely convinced of the benefits of cleanliness and health!

Perth's Public Baths and Wash-houses in Mill Street continued to be successful although there was danger of collapse in 1857, when there were baths only. A subscription list was begun by Lord Breadalbane giving £200 and a bazaar was held in the grounds of Pitfour Castle in August 1857 to build a Wash-house. This proved more successful and in 1882 the original wash-house was extended.

Charges were made for the various types of baths available and as the decades passed it appears that the Wash-house facilities showed more profit than the Baths. In 1871, as the prices of coal had risen, the charges at the Public Baths and Wash-houses were raised.

Hot or Tepid Plunge or Shower—

Marble baths—1/6.

First class—1/-.

Second class—6d.

Third class—4d.

Cold Plunge or Shower—

Marble baths—9d.

First class—6d.

Second class—4d.

Third class—2d.

Salt baths—3d. extra.

The Public Washing and Drying Department—

2d. per hour for the first hour for each person, and one penny per hour thereafter.

In March 1889, owing to the declension of the Baths, there was a decision to extend the Wash-house Department in Mill Street. The drying closets were not adequate and it was decided to buy more modern equipment and make an extension to the building.

At a meeting of the Baths Committee in 1902 it was stated that during the previous year 5,116 baths had been taken. This the Directors were gratified to announce. In former reports they had dwelt upon the many advantages of the baths in promoting and maintaining health, in improving the tone and energy of the system and in affording a pleasurable stimulant after fatigue. The baths were reported to have an ample supply of hot and cold water taken from the domestic supply of the city. In the Wash-house Department two new patent water-driven hydro extractors had been installed to replace an older machine.

Later, in 1902, a report in the Perthshire Constitutional expresses the opinion that Perth could afford to have two other public wash-houses, one in the north and one on the south side of the city. There was an increasing demand from the townswomen for the facilities provided in the wash-house. Apparently the floor space was only 27 feet by 21 feet. The Wash-houses were open from 7 a.m. to 6 p.m. (Winter months 8 a.m. to 6 p.m.), closing at 12 noon on Friday until Monday morning. On Mondays and Thursdays they were open until 8 p.m. The report states that apparently women prefer to carry clothes a distance to a properly equipped wash-house rather than work in the private wash-houses which were often situated in the back areas of the tenements. It was also noted that the working classes could not get their washing dried without using their kitchens for drying to the inconvenience of the family. Public wash-houses were considered great aids to cleanliness and health. Certain investigations had been made into the wash-house facilities in Glasgow and Dundee. Apparently in Perth the washer-woman had the use of two tubs and one had to be used as a boiler. She had to carry an extra tub to and fro on top of her washing. The Washer-woman in our city had one tub less than her neighbour in Dundee and Glasgow! Also the Perth Wash-houses seemed to be less up-to-date in ventilation and the report describes the steam circulating in clouds "almost as dense as London fog". Soon after that report a site for additional wash-houses was chosen. Early in 1902 the old Gas Works in Canal Street, designed by Dr. Adam Anderson, were demolished and the area at the corner of Charles Street and Canal Street was now decided suitable for the new Wash-houses which were to be "fully equipped with the newest machinery". It would appear, therefore, merely coincidence that the new Wash-houses were placed adjacent to the south branch of the Lade. The Perthshire Constitutional in July 1903 reported that the original estimate for the Public Wash-houses in Canal Street had increased. However, Sir Robert and Lady Pullar had made up their minds to give a new public wash-house to the city and had therefore decided to add the increase from the original estimate to the final cost to their gift. Sir Robert handed

over to Perth Town Council a cheque for £8,500. These Wash-houses continued to serve the needs of our community and indeed in 1951 they were extended. With the advent of the modern washing machines there was a rapid decline in the use of wash-houses and they were demolished in 1970, the space being used as a car park!

## PERTH SWIMMING BATHS

In 1886 there was a proposal to build Public Swimming Baths in Perth and the Committee requested permission to use the "Little Inch" behind Charlotte Street as the site. This was refused. Eventually, ground adjacent to the Lade in Dunkeld Road was feued from Lord Kinnoull. Permission to draw water from and return it to the Town's Lade was requested. Two ponds each holding about 10,500 cubic feet were to be filled twice a week from the Lade. The Town Council were very firm about the water from the ponds not being returned to the Lade nor was it to be put into the Town's sewers. After much lengthy discussion the Baths Committee was given permission in 1888 to lay a pipe to carry the outflow water along Balhousie Avenue to the Balhousie branch of the Lade on condition that the Committee gave assurance of making good any damage done in the laying of this outlet pipe. A twelve-inch pipe from the Lade to the Baths was to fill one pond of seventy by thirty feet in two and a half hours. The Town Council agreed to this but suggested that the filling should be done at night or on a Sunday so that there was no inconvenience to users of Lade water particularly the City Mills on the lower reaches of the waterway. Any damage caused to the bank of the Lade when inserting the twelve-inch pipe had to be put right by the Swimming Baths Committee. Throughout this matter the Town Council always insisted that the consent of Mr. McDonald, their tenant on the City Mills, should be obtained. For the use of Lade water the Swimming Baths were to pay an annual rent of £1 1/-. In May 1889 permission was asked by the Public Swimming Baths to fill the ponds daily from the Lade between the hours of 10 p.m. at night and 4 a.m. in the morning. When the Town Council considered granting this permission, Mr. McDonald, their tenant of the Town's Mill, was always consulted and Mr. McDonald was given right to refuse permission to take the Lade water when the level was low. In September 1903 the Perthshire Constitutional printed a report that the water at the Swimming Baths which was taken from the Town's Lade to fill the swimming ponds was often much discoloured. The suggestion was made that a supply be had from the town's mains when occasion required. The Town Council agreed but the supply was to be paid for at 3d. per 1,000 gallons. Some members of the Council questioned the charge and pointed out that the Town gave a free supply to Mill Street Wash-houses. After all the Town held the profits made by both these public institutions.

It is interesting to record here a find reported in the Perthshire Constitutional of May 1902. A portion of the old City wall was exposed when excavations for a tenement in Canal Street were being made. It is described as "a solid mass of masonry". Apparently when in peaceful times the wall to the south of the city fell into disrepair the older Lade waterway or ditch was broadened and made into a canal. For many years coal from Fife and other merchandise which came to Perth by water was conveyed up the canal and deposited at South Street Port. South Street Port Quay appears to have extended as far as the High Street Port. Towards the end of last century and the beginning of this century iron cleeks were exposed under buildings in South Methven Street. They were strongly embedded in walls of buildings bounding the Lade and had in earlier times been used for securing boats. When the tonnage of boats increased they could not proceed to the South Street Port but deposited their cargoes at the side of the river at the entrance to the canal. A quay was then formed south of County Buildings in Tay Street and was known as the Coal Harbour. The canal fell into disuse as a waterway and permission was given to build bridges over it. It is believed a dozen bridges spanned the canal from Canal Crescent to Tay Street. When ground adjacent to the canal was feued it was expressly stated in many of the old feu charters that the southern boundary of the properties was the City wall.

Although the Lade together with the City wall was a most useful defence for Perth town in mediæval times, as the town expanded the Lade proved to be something of a barrier. Several bridges allowed the citizens to cross the Lade. The Red Bridge and the Union Bridge crossed the Mill Street branch of the Lade. The Port Bridge crossed the Lade at the west end of High Street. Apparently there was also a bridge over the Lade which flowed along beside the North Inch from the Boot of Balhousie. This bridge was used by members of the Royal Golfing Society, who had a clubroom in Atholl Street, when indulging in their favourite sport. In April 1879 permission was given to the Society to erect an iron bridge instead of the existing stone one. The bridge was made in Glasgow and sent in pieces to be erected in Perth, the total structure costing £50. As has been said the Lade forming part of the Boot of Balhousie crossed the west side of the North Inch and flowed in front of Rose Terrace. In May 1847 there was a petition from the inhabitants of Rose Terrace asking the Council to erect a cast-iron bridge across the Lade there to replace a wooden one betwixt Barossa Place and the North Inch.

In the mid-nineteenth century the Salmon Fisheries (Scotland) Act demanded that hecks or gratings be put across the intakes and outlets of lades and canals and also at the entrance to each mill wheel. One can imagine Perth fishers enjoying easy catches of salmon which had found their way into the narrow confines of the Lade! A news report of April 1879 in the Perth Courier tells of the body of a Perth salmon fisher, one John Lennox of Scott Street being found drowned in the

Lade behind the City Mills. Another report of April 1846 tells of a fatality when the body of a man was "recovered from the narrow lade in front of St. Leonard's Bank". This was a branch of the Lade from Canal Crescent through Pomarium. Yet another victim was claimed by the Lade when in July 1847 the Perthshire Courier reports a boy of 9 years drowned wading at the mouth of the "Deadlands Lade" this being the area adjacent to Perth Bridge as the Lade flows into the River Tay on the west bank. In July 1899 there was a recommendation in Perth Council to fence the Town's Lade "from the City Mills to the Boot of Boosy".

Indeed the waters of the Lade have from time to time claimed their victims and as the City boundary extended and new housing areas were built at Crieff Road and Tulloch it was felt necessary for the safety of children playing in the vicinity of the Lade to put a high wooden unclimbable fence along parts of the canal.

In the Town Council minutes of 1847 there is mention of "certain encroachments alleged to have been made by the Scottish Midland Junction Railway Company on the Mill Lade at Crieff Road", and a request was made for investigation. In June 1847 the matter was again discussed. Apparently the level of the railway was about one foot above the surface of the ground where the Bridge (railway) was to cross the Lade north of the Crieff Toll Bar and as the water there was so much under the banks for a long way up and down from that spot the Town would not require to exercise their right of taking earth from the adjoining fields for repairing of the banks which they had often required to do farther up the Lade. It was decided that the right of repairing the bank and inspecting it through the whole length would be interrupted and that Town as proprietors of the Lade and their tenants at the City Mills would suffer damage and inconvenience. It was advised that Railway erections must not go ahead until compensation was paid. This is an interesting sidelight when the modern invention of iron railroad touched a very ancient waterway. By the mid-twentieth century only a few firms still requested the right to take water from the Lade. Messrs. Lumsden and Mackenzie had their works close to the intake of water from the Almond and were dependent on the water from the Lade for motive power and processing. In the Dunkeld Road industrial site Messrs. Shield and Co., Messrs. Coates and Co., manufacturers of textiles and Messrs. Moncrieff Ltd., glass blowers, drew water from the Lade for various purposes but by the 1950s in decreasing quantities. Messrs. Coates had requirements of 28,000 gallons per day. The water was used for industrial processing, for generating electricity and as water for boilers.

The nationwide business of Pullars of Perth began in the very humble and confined quarters of a small shop in Burt's Close. The factory building which faces Mill Street and Methven Street and which has its tall distinctive chimney still a landmark in Perth is the modern



home of Pullars of Perth. The cleaning and dyeing business at its inception used the water of Perth Lade and continued to do so for decades. Nowadays, however, the water supply comes from the River Tay through Perth Waterworks in Gowans Terrace although the firm still has the right to take water from Perth Lade if the River Tay level falls. Should fire occur the water of the Lade is used by the firm for fire-fighting services. The water requirements of the firm are estimated at 23,000 gallons per day—a far cry from the pipe that was first taken off the Lade opposite Cutlog Vennel.

Fire hydrants are linked to the water mains of the city for use in fire emergencies. The hydrant is often called a fire plug. The term comes from olden times when firemen would dig down and chop a hole in the wooden pipe to draw water for the pumps. Afterwards the hole would be stopped with a wooden plug and often the position was marked for future use.

In a report on the system of Sewage in Perth dated 1862 it is noted that the constant flushing afforded by the Town's Lade is an advantage. In parts of the town sewers had to be put under the Lade to form part of the sewage disposal system. This in turn caused difficulties as the sewer then lay below the level for flushing into the River Tay. Some of the Lade water could be taken off into the sewers and this was done to clear the water of pollution from dyers and cleaners making use of the Lade water. In 1887 part of the Town's Lade from Canal Street to Marshall Place was to be covered. There were two objectors. Mr. Magnus Jackson, photographer, whose property was in James Street and Mr. Robert Mailer, also of James Street who claimed that he had the right derived from King James VI Hospital Managers to draw water from the Lade for a steam engine. The covering over of this part of the Lade was done when objections were over-ruled. However, Mr. Mailer appears again with objections to the position of the wooden fence erected by the Town Council on the west side of the Lade covering at Mr. Mailer's property. Mr. Mailer insisted that his property extended to the middle of the Lade and there the fence should have been erected!

In 1888 the Lade was diverted between the Glassite Church and Methven Street and a complaint was made by Garvie and Deas, a South Methven Street company, that their water supply had been affected and their water power lessened. Apparently the bed of the Lade had been raised by laying a concrete bottom and the result was that the water flowed down Mill Street instead of Methven Street. In June 1888 Mr. Coates of Balhousie Works in Dunkeld Road requested water from the Lade. The works were to be dyeing yarns and 3,000 gallons per day were to be taken out and returned to the Lade. The request was granted at an annual rent of 10/6 and the stipulation made that the water once used should be filtered and cleaned in the works before being returned to the Lade. At the same

period another works in Dunkeld Road, namely P. and P. Campbell, were asked to assure that effluent from dyeing and cleaning was purified as much as possible as it had caused considerable pollution of the Lade. Messrs. P. and P. Campbell installed new settling tanks. This same firm paid annually 5/- for a gangway over the Lade from their works. In 1891 the business of Messrs. Pullar, Dyeworks and Cleaners, had their annual rent for the taking of a supply of water from the Lade and River Tay increased to £30. Apparently the supply was brought by pipes from the River along the Horse Watering Road, North Port and Curfew Row to the works in Perth. The income from the Mills and Waterfalls figured each year in the Town's Revenue. In 1889 the income was £370, by 1891 it was £422.

Searching through the Perth Town Council Minutes it is very clear that the Lade was a very prominent and frequent subject of business. The Council watched carefully over the care and upkeep of the waterway and the permission to use its water flow.

The Town's Lade has been for a long time and indeed still is inspected annually. In earlier times one can imagine the worthy members of the Town Council walking from Low's Work to the City Mills. After inspection the Lade was emptied at Midsummer when cleaning and repairs were carried out.

The Lade, as it flows from Low's Work to the River Tay, takes in a large quantity of surface water drainage from burns and fields. As the industries of Perth depend less and less on the waters of the Lade this drainage is possibly the main reason for keeping the Lade in existence. It would be very difficult to find alternative points of discharge for the burns and drains which is perhaps a blessing as it ensures that we do not lose this unique piece of our heritage.

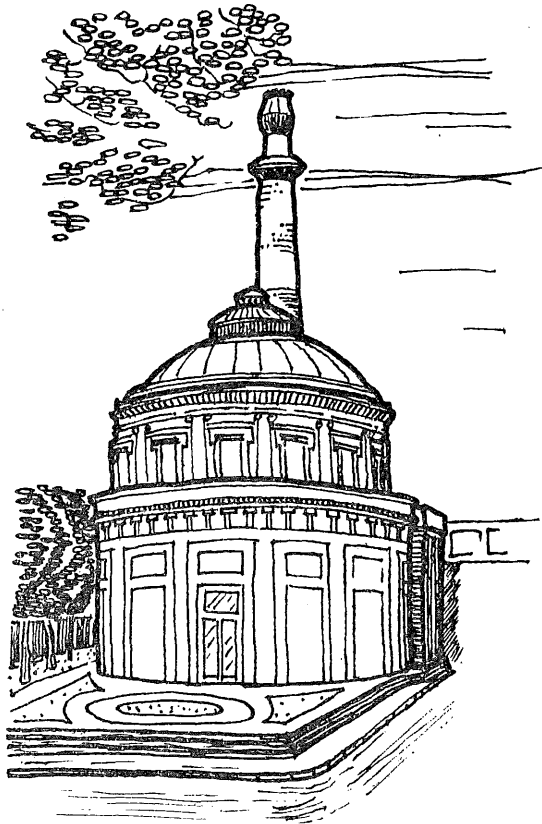
There is no solution to our problems of who built Perth's Lade and why was it built. However, the water course allegedly constructed in the 12th century to carry water to the King's Mills at Perth must surely be one of the oldest and most interesting aspects of Perth's past history.

## **PERTH WATERWORKS**

Previous to the eighteenth century the citizens of Perth obtained domestic water either from the branches of the Town's Lade or from the River Tay. It is not surprising that there were outbreaks of typhoid in the town! In 1751 apparently the Town Council felt that a more satisfactory water supply was required and a lead pipe brought water from the river to a well at the foot of the High Street. This was the first attempt at a proper public water supply. In 1759 the Council thought of building a reservoir near the City Mills, filling it from the Lade and piping the water to the city wells. Three years later a glover by the name of Patrick McGillivrie offered to bring water from the

Lade beyond the City Mills and distribute it in wooden pipes to various sites. This scheme was to cost £150 and the citizens of Perth were to subscribe this amount. The Town Council were to provide the wood for the pipe from the trees on Burghmuir. This scheme served well from 1768 but by 1789 the wooden pipes had fallen into sad disrepair and in High Street they were replaced by lead ones. Three years later lead pipes were laid in South Street. A better and more efficient supply of water for the city was much to be desired. During the later years of the eighteenth century several streams in the vicinity of Perth were examined as possible water supplies. The yield of springs on Kinnoull Hill, at Huntingtower and at Craigie were measured in Scots pints per 24 hours! A machine was even made for filtering water from the Town's Lade for the city wells. All this lacked success. However, in 1810 the Magistrates requested Dr. Adam Anderson, Rector of Perth Academy, to investigate possible sources of supply at the River Almond and at Campsie Linn. There was then a suggestion to use the Lade water as motive power to pump water from the Tay at the North Inch. This was not feasible. Also chemically the water of the Tay there was not suitable, but a pure supply of water could be procured from a filter at Moncrieffe Island. Dr. Anderson proposed to pump the water from the filter to a tank on the west bank of the Tay. Thus there developed Perth's Water House in Ionic style still standing to this day in Tay Street and now occupied by the Tourist Office. There was a small engine room with a 12 h.p. beam engine, boiler-house and a tall chimney surmounted by a cast iron vase. In the dome of the Water House was a cast-iron tank of 42 feet diameter and 18 feet depth. The tank, pipes and vase were all made by the Dundee Foundry Company. The total cost of the works is given as £13,609 11s. 11½d. The pilastered rotunda of the Water House is a cast-iron drum. The fact that it is cast-iron is not readily detected at street level.

The original site for Dr. Anderson's Waterworks and Reservoir was to be in the Coal Yards adjacent to Greyfriars Burying Ground. Some scruples arose. Was it proper to place the Receiving Wells so near the mansions of the dead? The present site was therefore chosen. Perth's first Water Act received the Royal Assent in 1829 and early in 1832 the supply was in operation. Pipes supplied water to city wells in the area bounded by Marshall Place, West High Street, Barossa Place and Tay Street. For his services Dr. Anderson was given the sum of £315, rather inadequate for the Engineer and Chemist of Perth's first proper water supply and architect of the fine Water House in Tay Street. A copy of the plans of Dr. Anderson's water scheme was requested by the King of Prussia. A facsimile was erected in Berlin. The supply worked well and in 1834 the daily total of water pumped was 100,000 gallons. Very few citizens had water taps in their houses and the street wells appear to have caused trouble, becoming water-logged and being subject to vandalism! In 1845 the filter gallery in the river was extended as changing water levels were causing some difficulty in the supply.



Old Waterworks after conversion.

Dr. Adam Anderson, who had been Professor of Natural Philosophy in the University of St. Andrews since 1836, died in 1845. On one of his last visits to Perth, Dr. Anderson had chalked on the walls of the Round House the words "Aquam Igne Et Aqua Haurio" and these later were erected permanently in metal lettering on the wall of the building. Dr. Anderson lies buried in Greyfriars Churchyard in Perth.

By 1860 the increase in population and extension of the water supply necessitated the construction of a larger reservoir at Welshill. Dr. Anderson's scheme supplied only the city west of the Tay. Those living on the east bank of the river obtained water from the Bridgend of Perth Water Company. The Earl of Kinnoull had private waterworks, the source being at Muirhall Quarry. A number of springs on Kinnoull Hill supplied wells at Bowerswell, Wellbank, Murray Royal Asylum and Barnhill Sanatorium. Dr. Anderson's sudden and unexpected death was deeply mourned in Perth. He was the architect and engineer of the city's Waterworks and it was written in his obituary

that the laying of pipes six feet below the bed of the river and the securing of flexible joints was just like child's play to Dr. Anderson in whose mind the whole conception was so vivid. Previous to the labours of Dr. Anderson our city had water said to be distinguished by three peculiarities of colour, taste and smell!

When the reservoir in the Water House was no longer required the Water Commissioners decided in 1872 to remove and sell the base of the tank. This brought in a sum of £100. At this time there was probably about seventy street wells in use.

In 1877 the Perth Water Act received the Royal Assent and the area of supply was to be increased to include the whole of the City and Royal Burgh of Perth. A new reservoir on the Burgh Muir of Perth and another at Tullylumb Farm were to be erected. By 1880 water from the Perth water supply was available on the east side of the river and in 1888 the daily consumption was 1,400,000 gallons of water. Such consumption necessitated looking for an extra supply of water and an auxiliary filter was made above Perth Bridge with a pipe to the Water House. Progress is clearly seen in the history of our Water House. In 1888 a telephone was installed and electric light in 1895. In the following year, due to leaking at the Burghmuir and Viewlands Reservoirs, a new reservoir at Burghmuir was designed and completed in 1897. The Muirhall Reservoir provided water for those on the east side of the river and those in Scone in 1900. As the new reservoir at Burghmuir was higher than the previous one new pumping engines were required. A rectangular Engine Room was built onto the Water House and a triple expansion steam engine was installed. During the First World War the water supply was far from satisfactory and a bore of 400 feet was put down within the Water House to try to get an extra supply of water. In 1919 an epidemic of typhoid broke out in Perth. A number of possibilities for an improved water supply were considered including the Water of May, the River Almond, Loch Ordie and Loch Freuchie.

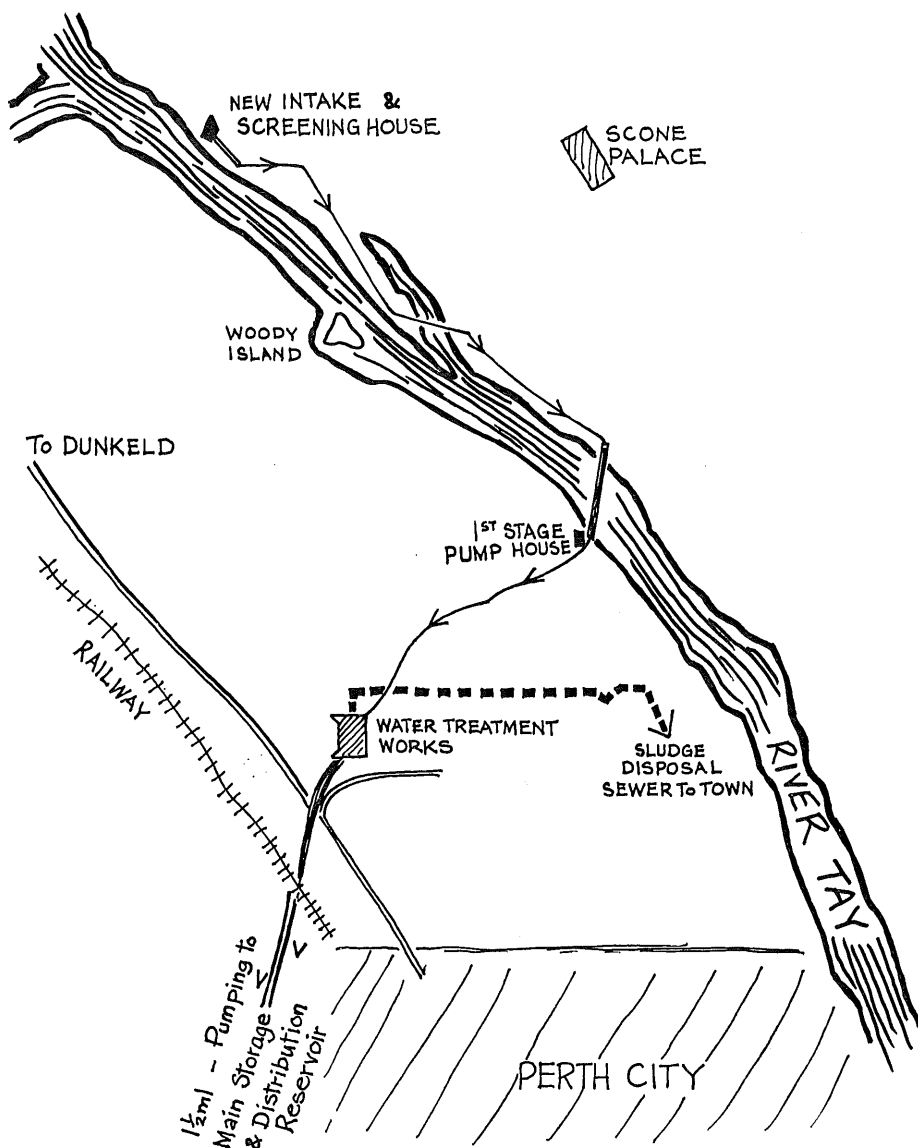
It would appear that Perth's water supply was not quite what it should be! In 1928 an eel came through the tap in a house in the Glasgow Road district. Algae formed in the water of the reservoirs as they were uncovered and the possibility of stocking the tanks with trout to feed on the algae was considered. In January 1925 it was decided to adopt the Loch Ordie scheme but later the elections gave the majority to those who had from the beginning opposed the Loch Ordie scheme for Perth. In April of the following year a petition to authorise taking a supply of water from the River Tay near Woody Island was signed. This scheme necessitated alterations within the Water House and also a modern chlorinating plant was installed. The water supply for Perth was brought from the filter beds of Woody Island through pipes to the Water House where it was pumped to a new Reservoir at Viewlands. This scheme was inaugurated in 1930.

The Water House remained as the pumping station for the town's water supply from 1832 until the present Waterworks in Gowans Terrace were opened in 1965. During that period, of course, the pumping engines had been changed and also the motive power. The original beam engine unfortunately no longer exists and in 1954 the work of the triple expansion steam engines was taken over by electric pumps. The Round House situated on the banks of the River Tay is a gracious reminder of how a past age solved the problem of a water supply.

## **PERTH'S PRESENT WATER SUPPLY**

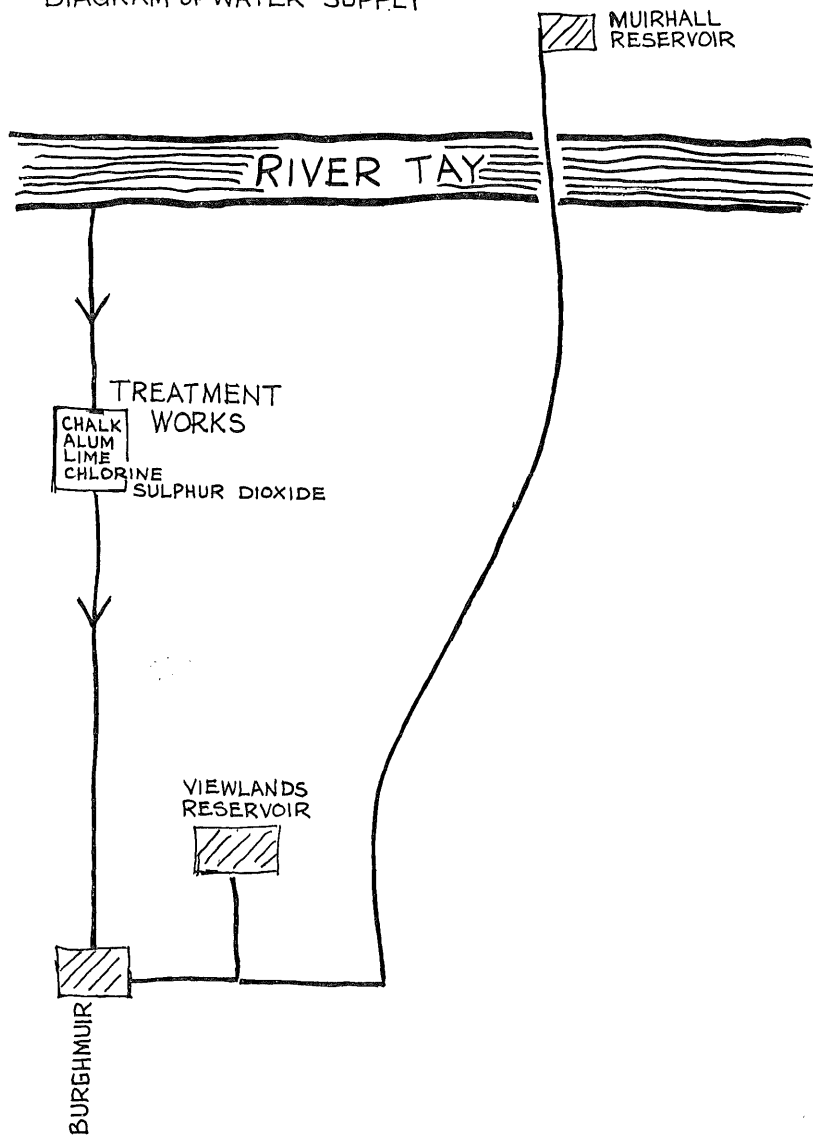
Today Perth obtains its water supply solely from the River Tay. There is an average flow of 300,000,000 gallons of water in the river at Perth. Daily 3.25 million gallons of that raw water are extracted and treated at the Water Treatment Works at Gowans Terrace, Perth. These works have been in operation since they were opened by H.R.H. Princess Alexandra on 12th August, 1965. The present scheme was engineered by Messrs. Crouch and Hogg of Glasgow and the total cost was in the region of £800,000. The main intake of water is just below the confluence of the River Almond and River Tay. It is a concrete structure with a coarse screen to prevent larger debris from infiltrating. There are also rotating band screens which hold back smaller debris. The new water gravitates by pipe to the pumping station on the banks of the river about half a mile from the Treatment Works. Here, two 85 h.p. pumps and two 55 h.p. pumps deliver 185,000 gallons of water per hour through a 24-inch cast-iron pipe to the inlet at the treatment works. At present the works could give a daily supply of 4.5 million gallons of clean water but there is in the Treatment Works a provision for future increase in demand when 7.5 million gallons daily could be treated. In the Treatment Works the raw water is assessed constantly so that the chemical dosage can be altered if required. The raw water is led by the pipe to the clarifying tanks which are behind the main building of the Treatment Works. Here solutions of aluminium sulphate, chalk and chlorine are added. Alum and chalk cause the large dirt particles to coagulate and they sink to the bottom of the tanks while the top six inches of water are constantly run off into the filter beds. Each filter bed has 3 feet 6 inches of sand and gravel. These filters continue the cleaning process of the water, taking off the fine dirt. It stands to reason that the filters become dirty and it is usual for four of these to be cleaned each day. The capacity of each filter bed is 21,000 gallons per hour and there are eight filter beds in use at present with four more built in the filter gallery for future use. The Treatment Works can treat 170,000 gallons of water per hour.

The clean filtered water is stored under the filter tanks where lime solution is added. The chemicals, aluminium sulphate, lime and chalk



are in powder form and hoppers electrically operated measure the powdered chemicals into the solution drums. Chemicals are added as follows: 20 parts per million of chalk, 20 parts per million of aluminium sulphate and 10 parts per million of lime. If necessary, these quantities can be altered. Drums of chlorine gas are stored in

# DIAGRAM of WATER SUPPLY





the Treatment Works so that chlorination of the water can be made. Sulphur dioxide is also added to the clean water to counteract the taste of the chlorine. From the treatment works the clean water is pumped by 400 h.p. electric motors up to Burghmuir Reservoir. This is the main storage and distribution reservoir which is one and a half miles from the Treatment Works and three hundred and sixty feet above their level. The capacity of this reservoir is four million gallons and from there water is taken to two other reservoirs at Viewlands and Muirhall (one million and two million gallons respectively). There is a large reservoir holding 600,000 gallons built below the Treatment Works themselves.

It is a tribute to modern technological skill that Perth's present Waterworks are virtually automatic although the control panel with its indicating and recording instruments can also be operated manually.

Water has been and always will be a necessity of life and we have tried to show here the historical interest of Perth's waterways.