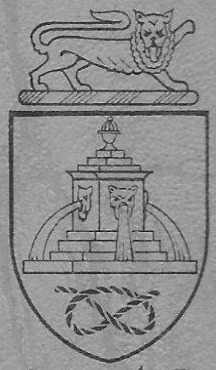
PURE & WHOLESOME WATER FOR ONE HUNDRED YEARS

THE STORY OF THE STAFFORDSHIRE POTTERIES WATER UNDERTAKING

1849



1949

1949

THE CENTENARY
OF THE
STAFFORDSHIRE POTTERIES
WATER UNDERTAKING

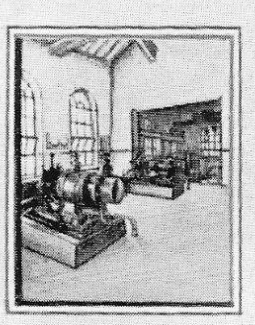
"Praised be my Lord for our brother the wind, and for air and cloud, calms and all weather, by the which Thou upholdest life in all creatures.

Praised be my Lord for our sister water, who is very serviceable unto us and humble and precious and clean."

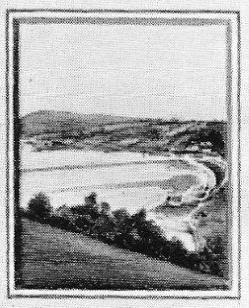
St. Francis of Assisi.

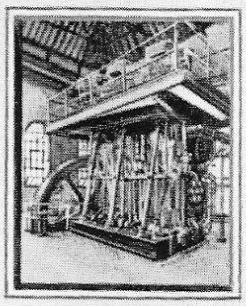
STAFFORDSHIRE POTTERIES WATER UNDERTAKING

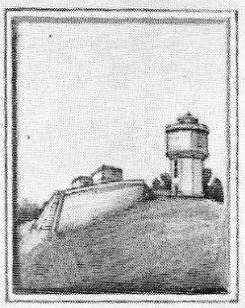
1849 1949

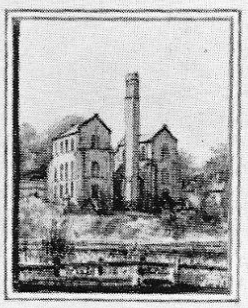


COMMEMORATION OF A CENTURY OF PROGRESS IN WATER SUPPLY









1849
Chairman: William Davenport.
Engineer: Liddle Elliot.
Secretary: Charles Baines.

1949
Chairman: Alderman John Henry Dale, J.P.
Engineer & Manager: Charles Victor Brown, M.I.C.E., M.I.Mech.E., M.I.W.E.
Clerk: Edward Burgess Sharpley, O.B.E.

Commemorative Plaque—Unveiled by the Chairman of the Staffordshire Potteries Water Board (Alderman J. H. Dale, J.P.) at the opening of the Centenary Exhibition, Hanley, December 16th, 1949.

Staffordshire Potteries Water Undertaking
1849—1949

Staffordshire Potteries Water Works Company

ORIGINAL DIRECTORS AND OFFICIALS

William Davenport (*Chairman*)

John Ridgway (*Deputy Chairman*)

John Alcock

Samuel Alcock

Charles Alkins

William Baker

Timothy Dimmock

Thomas Fenton

Herbert Minton

Thomas Phillips

John Pratt

Hugh Henshall Williamson

Nicholas Price Wood

Engineer:—Liddle Elliot

Secretary:—Charles Baines

Staffordshire Potteries Water Board

MEMBERS OF THE BOARD AND OFFICIALS 1949

STOKE-ON-TRENT CITY REPRESENTATIVES:—

Alderman J. H. Dale, J.P. (*Chairman of the Board*)

Alderman A. Austin
Alderman H. Barks
Alderman A. Baxter
Alderman H. Beresford
Alderman G. L. Greaves, A.R.I.B.A.
Alderman W. Hancock
Alderman H. Hopwood
(*Vice-Chairman of Works Committee*)
Alderman H. Leason, A.M.I.E.E.
Alderman G. W. Parton
Alderman G. J. Timmis, O.B.E., J.P.
(*Chairman of Works Committee*)
Alderman P. Williams, J.P. (*Chairman of Finance Committee*)
Councillor G. Battisson
Councillor A. E. Bennett
Councillor L. Bridgett

NEWCASTLE-UNDER-LYME BOROUGH REPRESENTATIVES:—

The Mayor (Alderman W. Evanson, J.P.)
The Deputy Mayor (Alderman W. A. Knowles, J.P.)
(*Vice-Chairman of the Board*)
Councillor A. Byatt
Councillor (Mrs.) M. Gater
Councillor H. Jennings
Councillor C. H. Robertson
(*Vice-Chairman of Finance Committee*)
Councillor N. Wain

STAFFORDSHIRE COUNTY REPRESENTATIVE:—

Councillor J. Riley

STONE RURAL DISTRICT REPRESENTATIVE:—

Councillor G. W. Wilks

Clerk
E. B. Sharpley, O.B.E.

Engineer and Manager
C. V. Brown, M.I.C.E., M.I.Mech.E., M.I.W.E.

Treasurer and Chief Financial Officer
A. L. Cheetham, A.C.A.

Deputy Engineer
D. C. Summerton, B.Sc., A.M.I.C.E., A.M.I.Mech.E.

THE EARLY YEARS

An old-time higgler or hawker of water.

BEFORE telling our story it may be helpful to give a brief glance at the background of contemporary events of those early years.

Only five years before our story begins the first public telegraph system had been erected, but the telephone was not yet invented by Bell—it was not installed in London until 1876 and the Water Works Company was in 1888 discussing whether or not they should have the apparatus installed.

Robert Peel had re-organised the Police Force in London in 1830, and 1839 saw the advent of that great benefit to commerce—Rowland Hill's penny postage.

The latter part of the 18th century had seen the extension of a boon to the pottery industry, the canal system, the development of which had been promoted by the great Josiah Wedgwood with the eminent James Brindley as the engineer.

The railway system was weaving its spider-like web over all the countryside—indeed some of the first premises to be supplied by the new Water Works Company were the railway stations of the district.

In different, but no less important vein, the year 1832 had seen a serious epidemic in London of the water-borne disease, cholera, and in 1848-49 another cholera epidemic cost 18,036 lives; 20,000 died from the same disease in still another epidemic in 1853.

These events may perhaps be said to have played a part in our story for the promise of greater safety for person and more security for property, coupled with the improved, quicker and cheaper transport and communications afforded by the canal, the railway, the telegraph and the penny post, undoubtedly brought improved trade and industry and with it increased population in the industrial areas, particularly those near to the coal fields.

THE BUCCLEUGH—HEALTH OF TOWNS—COMMISSION (1844)

The influx of workers to the towns placed an additional strain on the existing water supply systems and health services, and in most cases they were quite unable to meet the ever increasing demand. The problem became most acute and in 1844 a Royal Commission, The Buccleugh Commission, was appointed to enquire into the state of large towns and populous districts in England and Wales. The terms of reference included "The supply of water in such towns and districts whether for purposes of health or for the better protection of property from fire". Out of some 50 towns and districts to which the enquiries of the Commissioners extended, there were only six in which the water supply arrangements were in any sense good, in

thirteen towns they were indifferent and in thirty-one bad. The Commissioners *recommended* that it should be rendered imperative on local administrative bodies "to procure sufficient supplies of water for all domestic, public and sanitary purposes; that water companies should be required to comply with the demands of local administrative bodies on equitable terms; that local administrative bodies should be empowered to purchase water works by agreement; that new companies should only be established on condition that the local administrative body might subsequently purchase the undertaking; that where pipes were laid down all houses capable of benefiting by them should be rated in the same way as for sewerage and other local purposes, the owners of small tenements being made liable for the rates; that for increasing the protection of property from fire, there should be a constant supply at high pressure".

The Buccleugh Commission obtained its information in part by a Questionnaire of sixty-two questions to be completed and partly by personal inspection by Members of the Commission.

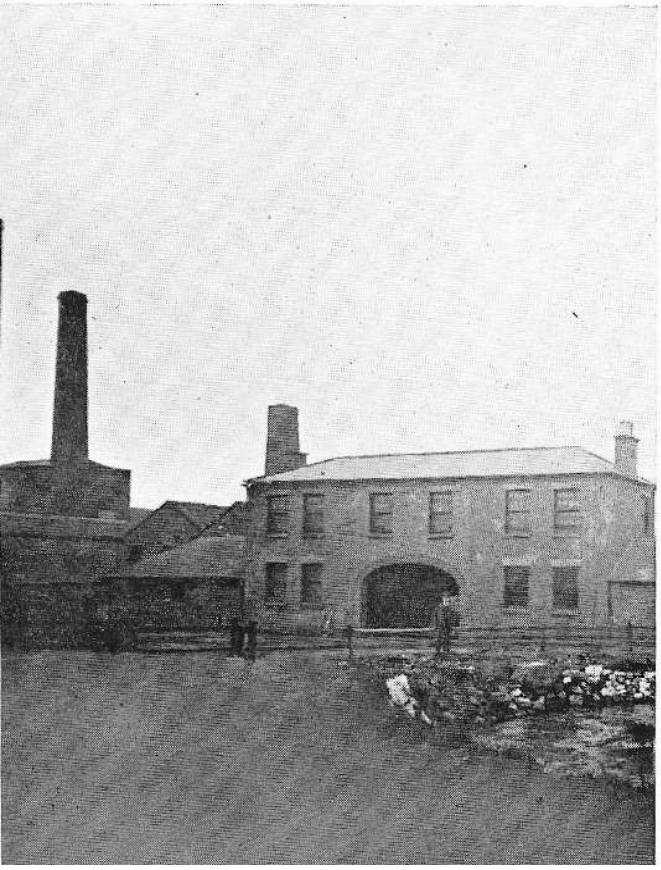
From the notes made by the Member of the Commission, R. A. Slaney, who visited this district and the completed Questionnaires returned by Committees of inhabitants of Burslem, Hanley, Longton and Newcastle, together with further information on the subject gleaned from other sources, a picture can be given of the conditions prevailing in the year 1844.

Burslem

The Commissioner's notes on Burslem state "Great complaints of want of water near Old Church, obliged to carry it from spring, a quarter of a mile off and scant supply there."

Answers to the Questionnaire give us the additional information that the supply is obtained from "two reservoirs, one in Hanley, and the other in Burslem. The water is conveyed in pipes and may be had by all who pay for it. There are also several springs in the vicinity from which the inhabitants fetch water." "Of the 3,013 houses in the town and suburbs about 2,000 are supplied."

Mr. Smith's Water Works, Hanley (on left in background).



"There were frequent complaints of deficiency of supply during the summer months, until the Burslem water was laid on; but this is now remedied by the addition of that water and is constant."

"The water rate is ten shillings per year for small houses; larger ones higher in proportion."

From other information it is evident that the two reservoirs referred to were one in Market Street, Hanley, owned by Mr. John Smith (referred to later), and the other at Hill Pottery, Liverpool Road, Burslem, to which Mr. Samuel Alcock pumped water. It was supplemented by water from Bycars Mill.

Residents in the 'Hamill' area obtained their supply from Mr. Clewes' Colliery.

Hanley and Shelton

The Commissioner noted that "the water brought in pipes is of very indifferent quality, purer water is brought in water carts and sold at a halfpenny per pailful. Good water is much wanted and might be had from a pure spring at Washerwell." ("Report of Local Committee").

"Marsh Street all complain of want of water, water purchased at a halfpenny a pailful."

The Committee's answers give us additional information. "The water supply is obtained from an old coal works in the adjoining valley, from which the water is forced by an engine to a reservoir on the top of the hill from which it descends by service pipes for domestic use. The water is of very indifferent quality. Good water is greatly needed."

"There are about 4,663 houses in Hanley and Shelton and about 1,200 have a supply of water."

"The poor are in many cases greatly in need of water; they buy from the hawkers for drinking and fetch it from pools, or collect rainwater for washing and other domestic purposes."

"The water rate is 12/- per year for small houses and 16/- to 21/- for the larger."

"The water is turned on for only three days a week."

From other authorities we find that the old coal works (called "Hanley Water Works") referred to was owned by John Smith and leased to William Palmer and was situated on the canal side between Ivy House Paper Mill and Dresden Mill. The reservoir into which water was pumped fronted on to the north side of Market Street, to the east of Old Hall Terrace, Hanley.

People, including the higglers, obtained their supplies from two public wells in Well Street, Hanley, and from springs at Washerwall (or Washerwell).

The late Mr. William Scarratt, in his "Old Times in the Potteries", gives the following information by an aged person as to the inadequate water supply in the Potteries in the first half of the 19th century:—

"She was living in Mill Street (Etruria Road), in 1845, and, requiring a canful of water one Saturday night, went to the top of the street,

Wooden water pipe laid in Newcastle, end of 18th century.

and met with a man hawking his bucketful of the precious element. She asked him to sell her a pennyworth, and got a refusal—all the little he had left he had promised. She tried to buy a halfpennyworth—this was also denied her. And at last, after some persuasion, she got a farthingsworth ! And her husband thereby had a cup of tea on the Sunday morning. Potatoes were often boiled in the "carrey" water that lay in the adjacent fields—the yellowish fluid possibly having been pumped out of the ironstone mines.

"Others living in Hanley had to get scrubbing water from the canal or where they could—distance not being considered—but almost all kept what they could of rainwater in tubs.

"At the Gasworks a free supply of clear water constantly ran from an iron pipe. The source can only be conjectured; here many came for a canful, even when the wells and pumps failed. At last, even this ceased to flow (somewhere about 1875), but at that date difficulties had altogether ceased, and the towns were well supplied, and had been for some years."

Longton

The Commissioner reported that there was a good supply of water from reservoirs through pipes.

The Local Committee's answers amplify this information by stating that the supply is obtained from springs about a mile distant from the town, which is collected in impounding reservoirs and is conveyed through iron mains and leaden service pipes to almost all of the 2,000 houses in the town. The proprietor is the Duke of Sutherland and the water rate is 7/- to 10/- per annum to private houses. It also states that the supply is "constant but some parts of the town can only be supplied during certain hours".

Newcastle

The Commissioner stated that "although the water is generally good in quality, frequent complaints are made by the poor women that public pumps, from which many are supplied, are out of order or give an inadequate supply. Part of the town is supplied by pipes, and the whole might in the same way be easily furnished with this indispensable necessary at a moderate cost, from an unfailing source."

St. Cœna's Well, Wall Grange.

Also he stated "Fine spring wells, want cleaning" and "All on the Stoke Road badly off for water."

The answers to the Questionnaire supplement this information by stating that "there is a water-works which pumps water from the old red

sandstone to a reservoir situated in the higher ground by a forcing pump attached to a steam engine; it is then distributed to the various dwellings by finding its own level through cast metal and wooden pipes. The Works are owned by a private individual who rents them along with a flour mill. Of the 2,039 houses in the town and suburbs 215 have their own tap and 168 houses are supplied from 14 common taps."

The rate for a carry supply was one penny per week, the rate for private houses varied from 5/- to 21/- per annum and up to £4 per annum for public houses and hotels.

"The water from the works is opened on from 9 a.m. to 3 p.m."

"There are 17 good public pumps."

Wall Grange Water Works, about 1854.

Further information about the municipal supplies in Newcastle is that in 1759 Jonah Brittain, pumpmaker, of Audley, was ordered by Newcastle Quarter Sessions to keep three pumps in repair, viz: the Iron Market Pump, the Horse Mill Pump and Lower-street Pump. For this work he was to be paid £1 1s. every 5th of November for a term of 40 years.

In 1796 Mr. Joseph Tilstone placed proposals in writing for supplying the inhabitants of Newcastle with water by means of pipes to be laid in the streets. He requested that the Corporation "grant a lease of the right of laying such pipes, etc. according to certain terms and conditions". A lease was granted.

The supply was pumped from a spring called Browning's Well to two reservoirs in Merrial Street. The proprietor of the Works was, in 1849, E. T. Fielder. The reservoirs were demolished in about the year 1935 for road widening.

Tunstall

There is no information in the Commission's report about Tunstall but it appears from other sources that prior to 1849 "the inhabitants obtained water from 'Round Well', the 'Sugar Well', the 'Lady's Well', and the Town Pump which was often out of repair. The water was said to be of good quality but was liable to fail in dry seasons, as in 1835. In the summer, people often sat up all night to obtain a supply, having to fetch and pay for a canful for breakfast. Each house had a raintub for washing purposes."

A portion of the town had a supply laid on from a water supply system owned by a Mr. Hargreaves. The reservoir for this supply may have been in the neighbourhood of Station Road and Bath Street.

Stoke-upon-Trent and Fenton

The Commission has nothing to say about Stoke-upon-Trent and Fenton. Mr. Liddle Elliot, the Engineer to the Water Works Company, however, giving evidence

before the General Board of Health in the year 1850, stated, in respect of these two towns:—

"Stoke has no public supply; there is one public well and two public pumps; the railway has destroyed one well."

"Fenton—This place may be said to have been almost destitute of water excepting such as falls from the heavens and in summer the want is most severe; the manufacturers have frequently to prevent parties from carrying away the condensing water for use."

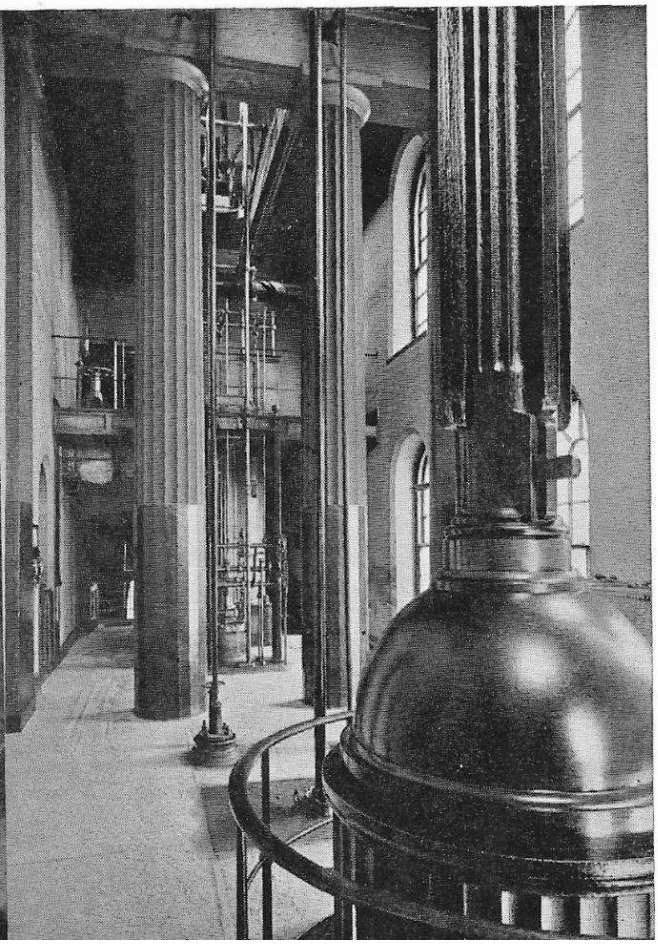
THE HISTORY OF THE UNDERTAKING

The Formation of the Water Works Company

There is nothing in the records of the Water Works Company to link its formation with the Buccleugh Commission's report issued in 1844, but it is surely more than a coincidence that the opening pages of the Company's First Minute Book record an account of a meeting held in the Town Hall, Hanley (on the site of the present Lloyd's Bank) on the 23rd October, 1845. This was a "meeting of the subscribers to the fund for obtaining a survey and report by a competent Engineer as to the capability of the district to afford a sufficient supply of water for the Townships of Hanley and Shelton and such other districts of the Staffordshire Potteries practicable". At this historic meeting the following subscribers were present:—

Mr. Dimmock (Chief Bailiff), Revd. Mr. Grant, Mr. Wright, Mr. Robert Wright, Dr. Head, Mr. W. H. Yates, Mr. Sands, Mr. Edwin Allbut, Mr. George Coxon, Mr. Theo. Smith, Mr. Amos, Mr. W. Hill, Mr. H. Pidduck, Mr. John Keeling, Dr. Haslam, Mr. Clementson, Mr. Keeling, Mr. T. Bale, Mr. E. J. Ridgway, Mr. Ridgway, Mr. Thomas Hill, Mr. W. Yates, Mr. Mountford, Mr. Gerrard, Mr. Goodwin, Mr. Edward Walley, Mr. Wilson (Druggist), Mr. Doody, Mr. R. Stevenson.

"Stafford" Beam Engine, 1849—1932, Wall Grange Water Works.



It was decided to engage a competent Engineer to survey the district with the object of obtaining a sufficient supply of water for the townships of Hanley and Shelton and other parts of the Potteries. As a result of the meeting "a friendly communication was made with the authorities of the other townships of the Potteries similarly circumstanced as to Hanley and Shelton in being defficient of pure water", and at a meeting held on the 26th November, 1845 the Chief Bailiffs of Hanley and Shelton, Burslem, Fenton and Stoke gave approval on behalf of their towns to a project to provide a better supply of water to the district north of Longton. In November, 1846 the Mayor and others of the Borough of

Newcastle-under-Lyme signified their favourable interest in the formation of the Company.

A leading Waterworks Engineer, Mr. Thomas Hawkesley, was asked to make the survey but, owing to Parliamentary engagements, was unable at the time to undertake the work. The Committee resolved that "the exigency of the case not admitting of further delay" they engage a local Engineer, a Mr. Liddle Elliot. Mr. Liddle Elliot accepted the appointment. His report to a meeting of the Committee on the 27th July, 1846 stated that the spring of water called Cere's (St. Cæna's) Well at Wall Grange on an Estate of the Duke of Sutherland would afford a supply of excellent quality sufficient for the Potteries towns wanting water, and there was good reason for believing that His Grace would sanction the project. The Committee determined that in so important a matter another opinion was prudent. The Waterworks Engineer, Mr. James Simpson, at their request investigated the project and confirmed Mr. Elliot's report.

No. 22 Lamb Street, Hanley. First Office of Water Works Company, vacated 1858.

In August, 1846 a public meeting was held with John Wood, Esq. in the Chair, when the water from the springs at Wall Grange was tasted and found to be excellent and vastly superior to the water supplied to Hanley and Burslem by Mr. Smith. The records also state that Mr. Bates (late of Shelton) brought forward a proposal to supply the district from hills on the other side of Leek without a steam engine to raise the water, but the proposition was not entertained.

It is worthy of note that the Water Board went to Parliament in 1949 to obtain powers for a supply of water similar to that which may have been in the mind of Mr. Bates. There were, however, at that time possibly good reasons for rejecting Mr. Bates' proposal and deciding to proceed with the Wall Grange scheme and the meeting decided to appoint a provisional Committee to bring the project before the inhabitants. The Committee met on 30th September, 1846 and resolved to form a Company and to issue a prospectus, and "that His Grace the Duke of Sutherland be requested to honor the company with his name as its Patron", which invitation His Grace accepted.

The first directors of the Water Works Company numbered thirteen, a number suggested by the Duke of Sutherland, and were as follows:—

William Davenport, Esq., Chairman, Maer Hall.
John Ridgway, Esq., Deputy Chairman, Cauldon Place, Shelton.
Thomas Fenton, Esq., Stoke Lodge.
(*Appointed by His Grace the Duke of Sutherland, K.G.*)
Samuel Alcock, Esq., Burslem.
Timothy Dimmock, Esq., Shelton.
Charles Alkins, Esq., Broomfield House, Etruria.
Herbert Minton, Esq., Longfield Cottage.
John Alcock, Esq., Cobridge.

William Baker, Esq., Fenton.
John Pratt, Esq., Lanedelph.
Hugh Henshall Williamson, Esq., Greenway Bank.
Nicholas Price Wood, Esq., Bignall Hill.
Thomas Phillips, Esq., Newcastle-under-Lyme.

The Company appointed Mr. Liddle Elliot as Engineer and Mr. Charles Baines as Secretary.

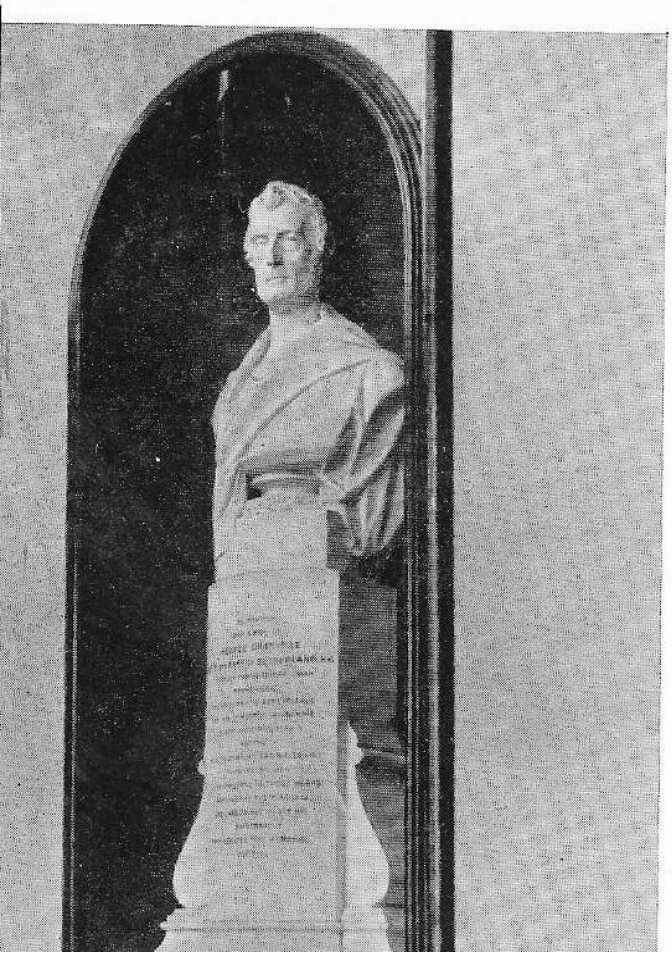
THE ACT OF 1847

Wall Grange Works

The Company promoted a Bill in the next session of Parliament and this received the Royal Assent on the 9th July, 1847. This Act incorporated the subscribers into a Company with a capital of £60,000, named the first directors of the Company, specified the limits of area of the Act, and authorised the construction of works to enable certain springs which discharged into the River Churnet near Wall Grange, to be collected and pumped to a reservoir to be constructed at Ladderedge, thence to be conveyed by a gravitation main to a proposed reservoir at the top of Hanley, from which mains were to be laid to Hanley, Stoke, Burslem, Tunstall, Fenton, Trentham and Newcastle. To compensate the River Churnet for the abstraction of these springs, an impounding reservoir was to be built in the Deep Hayes valley.

The construction of these works was put in hand without delay. The new Company was, however, soon in difficulties for the Cornish beam steam pumping engine for Wall Grange made for them by Messrs. Sandys Vivian, of Hale, Cornwall, was unfortunately sunk in the Mersey, the vessel being completely lost with most of its cargo. Another engine of the same type, named "The Stafford", was constructed and the works were in operation in September, 1849. A second engine by the same makers and of almost identical design, named "The Davenport", was erected and put to work in 1854.

Memorial Bust to the Duke of Sutherland, K.G., 1863. Patron of the Water Works Company. Presented to Newcastle Corporation and in Municipal Hall.



THE ACT OF 1849

Longton expressed a desire to participate in the scheme and in 1849 Parliament gave sanction to a further Act which added Longton to the limits of supply of the Company and enabled a lease to be obtained from the Duke of Sutherland of his Water Works at Meir, the supply being obtained from natural springs. These springs issued at a sufficient altitude to gravitate through the town and had been intercepted by the construction of the railway tunnel there. The Railway Company's operations had greatly increased the quantity of water from the springs, though at the lower level of the tunnel. The Company took over this source and together with the supply from the Furnace (Normacot) Springs, they were in 1849 supplying Longton, Fenton and part of Stoke.

The minutes of the Directors' Meeting held on the 21st September, 1849 stated that "Mr. Elliot gave in a verbal report of the state and progress of the works to the following effect—

"The Longton Works all compleat and in full operation.
"The pipe way extended to Fenton and Stoke and 1,000 premises laid on.
"The Compensation and Birches Reservoirs finished.
"The Ladderedge Reservoir satisfactorily progressing.
"The Engine at work to lay the pipe way.
"Burslem and Tunstall (it is expected) will be supplied on or about the 10 proximo.
"Hanley and Shelton about the 20th.
"And Newcastle as before arranged in the spring of next year.
"All which was approved."

Mr. Smith's works in Hanley and the other semi-public works in Burslem and Newcastle remained in operation until the new supply was introduced from Wall Grange, but they were now discontinued. Mr. Smith was compensated and a portion of his mains purchased by a payment of £8,000. Certain of the mains in the other towns were also purchased.

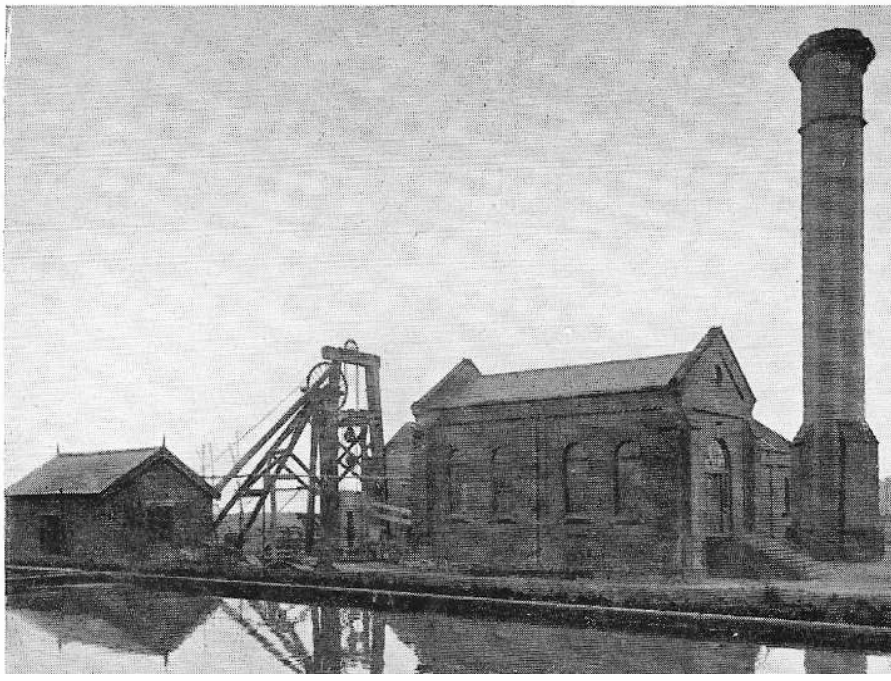
The available supplies at this time are recorded to have been Wall Grange Springs 1,500,000 gallons per day, Meir and Normacot Springs 750,000 gallons per day making a total of 2,250,000 gallons per day. The original intentions of the Company were to confine their operations to the service of the large towns, but the extension of mains to points near to outlying villages and districts encouraged the inhabitants of these places to press for the supply to be extended to them. Earnest and repeated requests induced the Company to abandon their original intentions and extend the mains to these localities.

The Offices—Original and Present

The first offices of the Company were at No. 22, Lamb Street, Hanley; succeeding occupiers being Messrs. Lloyds, Barnetts & Bosanquets Bank Ltd., which Bank was later to be merged with Lloyd's Bank Ltd. The premises were at a still later date to be occupied by Mr. F. A. Buck, Jeweller.

The present office premises are Nos. 37 and 39 Albion Street, Hanley. The office No. 37, Albion Street, was built in 1858 and occupied in November of that year. No. 39 (the premises on the corner of Albion Street and Bethesda Street) was acquired from the Hanley Savings Bank in December, 1889 and alterations to the two premises to make them into one office were carried out soon after that date.

Meir Water Works—Extension 1882.



THE ACTS OF 1853 AND 1861

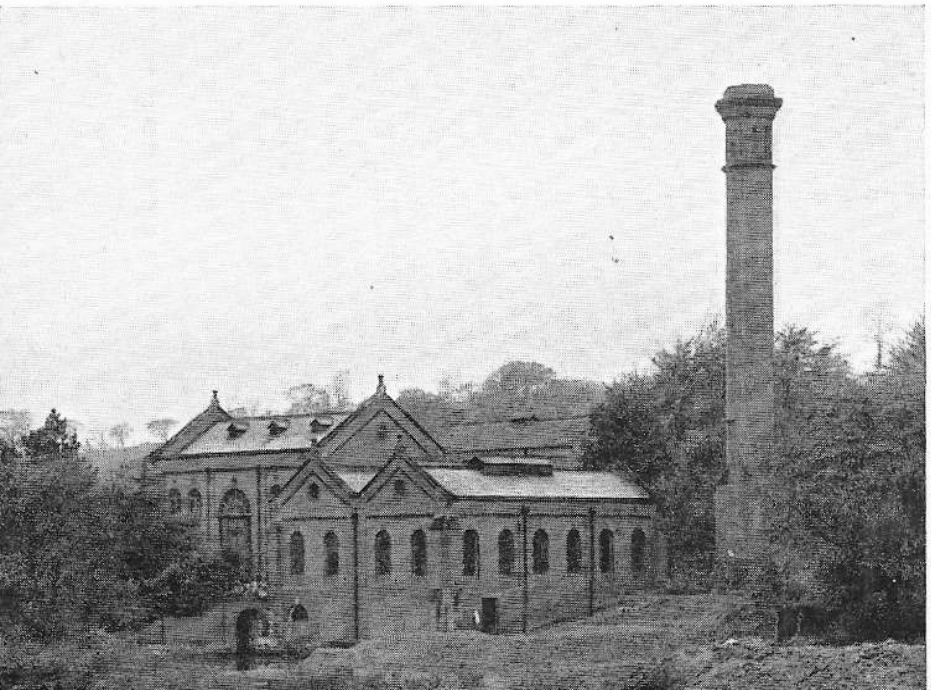
Subsequently the Company was induced by the inhabitants of Kidsgrove and Goldenhill to apply to Parliament for extended powers to enable those places to obtain a supply of water. An Act, passed in 1853, which consolidated and amended the Acts of 1847 and 1849, entitled the Company to charge 40% in excess of the usual annual charge to meet the additional expense incurred by the Company in pumping the water to these places, the elevation of the district being such that it could not be reached in the ordinary course of distribution from the Company's existing works. Steam Pumping Plant was installed on a site in High Street, Tunstall, and water was pumped to a temporary reservoir at Goldenhill, whence it gravitated through mains and services to Kidsgrove and Goldenhill. The Act of 1853 and a later Act obtained in 1861 gave the Company power to increase the share capital to £140,000 with borrowing powers to the extent of £38,750. The Act of 1861 also gave the Company power to obtain a further quantity up to 2,500,000 gallons a day from the Wall Grange Springs, on condition that they construct and maintain additional impounding reservoirs. This power was exercised to the extent of obtaining 2,100,000 gallons a day by the construction in about the year 1858 of an additional compensation reservoir at Tittesworth on the River Churnet. The Tittesworth Reservoir was in place of an additional Compensation reservoir authorised in 1853 to be constructed in the same valley as the Deep Hayes reservoir. Construction of the Tittesworth Reservoir was confirmed by the Act of 1861. The embankment was raised in about the year 1876.

Memorial to the Duke of Sutherland

The Minute Book of the Company gives a full and interesting account of a Ceremony which took place in the "Stafford" engine house at the Wall Grange Works on the 29th July, 1863 when Mr. Sneyd of Keele Hall, in the presence of a distinguished company, 'uncovered' the Memorial Bust executed by Mr. Noble of London of His Grace the Duke of Sutherland, K.G., the Company's first patron. The inscription on the bust is as follows:—

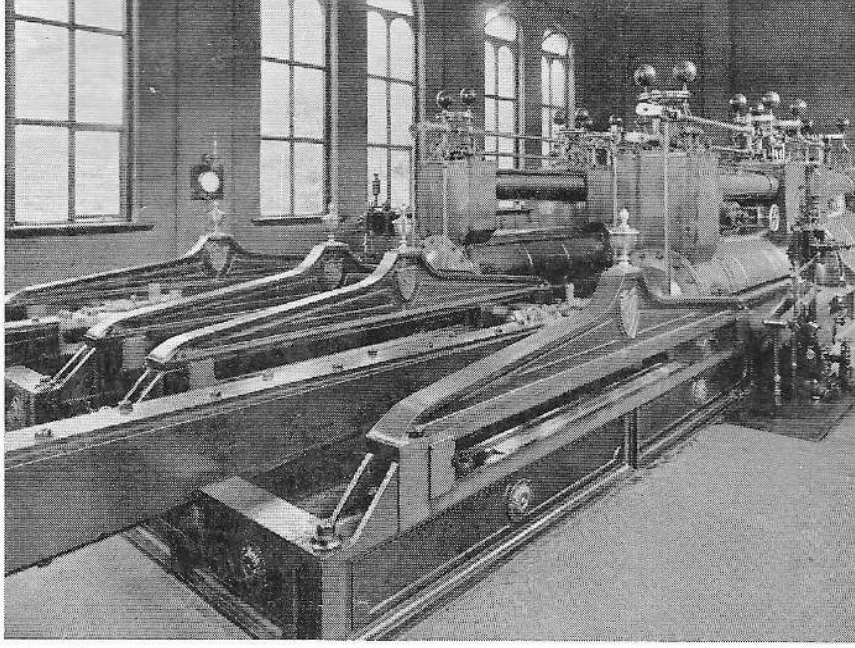
> "To record the name of George Granville, Duke and Earl of Sutherland, K.G., a truly Christian Nobleman whose great and unobtrusive benevolence led him uniformly to promote every judicious design for the health, comfort, and well being of his fellow men, the proprietors of these works commenced in the year 1848 and carried out under his patronage have erected this memorial, December 1862."

Stockton Brook Water Works, 1884.



Meir Works—Original

Applications for supply were being received from many parts of the district and the water yielding potentialities of the area were again explored. The opinion of the Engineer to the Company, supported by reports from Consulting Engineers, was that a supply could be obtained by sinking a well and driving cruts in the new red sandstone rocks near to the



"Davey" Steam Pumping Engines, 1884—1936. Stockton Brook Water Works.

village of Meir. A well was sunk and the yield, whilst not entirely satisfactory, was sufficient to justify the construction of the works. A Cornish beam steam pumping engine was installed to raise the water through a pumping main to a reservoir which was built on the high ground about three-quarter mile distant. The Duchess of Sutherland accepted an invitation to name the Engine and the ceremony took place on the 1st August, 1866. The ceremony followed the traditional form used in naming ships and a bottle of wine was broken upon the engine as Her Grace gave it the name of "Cromarty". The construction of the works was confirmed by Parliament in 1868.

A supply of 400,000 gallons a day seems to have been obtained from this pumping station but this was not sufficient to meet the needs of the district.

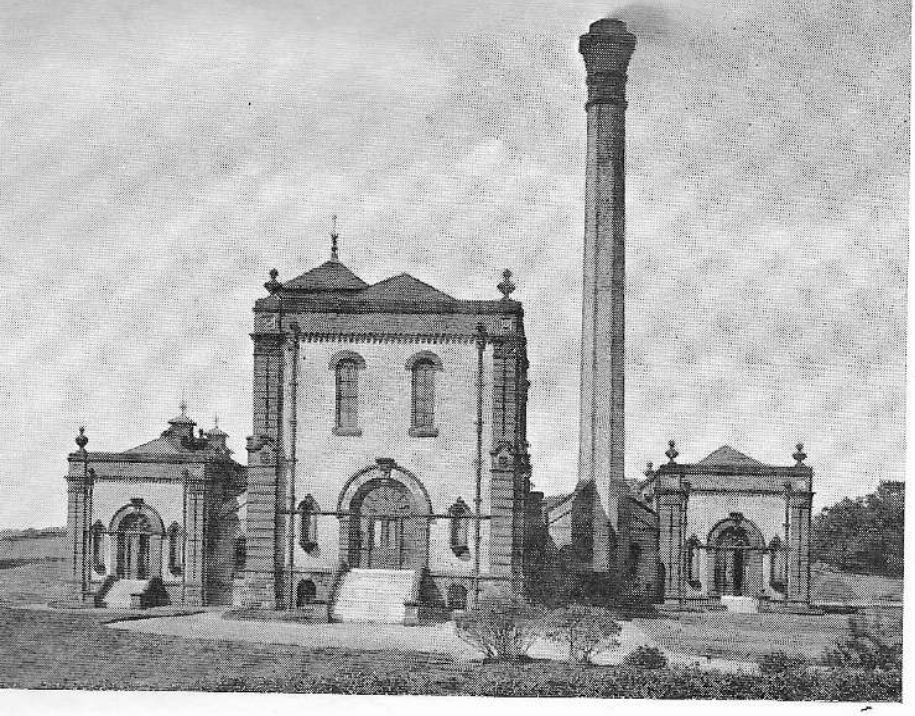
Meir Works—Extension

Another source of supply became imperative and the Company decided to investigate two possibilities, the development of the existing source at Meir and a site near to Wall Grange Pumping Station. It was later decided to abandon the latter site because of engineering and other difficulties and proceed with the Meir project.

In the year 1868 a well was sunk about 160 yards to the east of the existing well and to the same depth, and connected therewith by a crut. Ten years later the new well was deepened, a borehole was sunk alongside the well and an extensive crut was driven from the bottom of this well in the direction of the other well. A horizontal compound tandem "Davey" steam pumping engine was installed and pumping commenced in 1882.

Stockton Brook Works

The Company, owing to the rapidly increasing population, which was at that time (1882) about 200,000, decided to seek for still further sources of supply even before the Meir Works were completed and to purchase land at Stockton Brook and test the yield from a trial borehole there. The test pumping proved sufficiently satisfactory for the construction of the works to proceed. On completion of the works water was obtained from a well with extensive cruts driven through the coal measures into the underlying millstone grit formations. Two horizontal compound tandem "Davey" differential steam engines were installed. This station pumped water through a main to Goldenhill



Hatton Water Works, 1892—1907, completed.

where there was a temporary reservoir to supply Kidsgrove, Goldenhill and part of Tunstall. This plant first pumped water into the district in 1884, but the works were not to be confirmed by Parliament until the Company's 1912 Act.

THE ACT OF 1888

Hatton Works

The increasing demand on the Company's resources due to increased population, the more general introduction of water closets, the ever increasing demands for trade purposes and further extensions into the area of supply, urged the Company to seek for new sources.

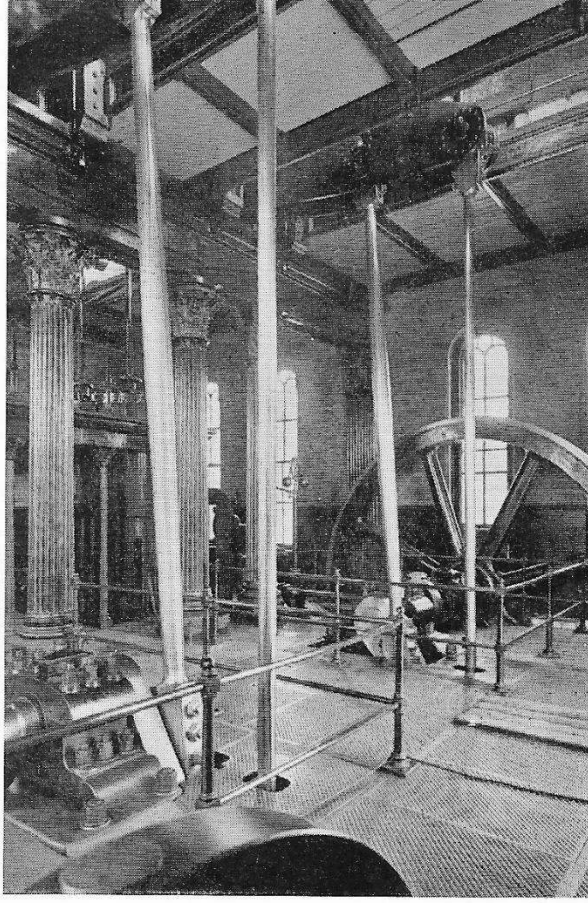
The Engineer to the Company (Mr. G. Day Harrison) made a general survey of the district with a view to ascertaining from what source the additional supply could be obtained. Eventually it was decided that the most favourable site for a new source of supply was in the Valley of the Meece Brook at a point 1¼ miles north of Standon Bridge Railway Station, on the Swynnerton Estate belonging to Mr. Basil T. Fitzherbert of Swynnerton Hall. The Company decided to go to Parliament for powers to construct works but before doing so they entered into a provisional agreement with Mr. Fitzherbert to enable the site to be tested.

Two boreholes were sunk into the new red sandstone formations. The yield of water from these two boreholes, which are about 100 yards apart, was found to be over 1,500,000 gallons a day, at that time flowing naturally at the surface of the ground. The analysis of the water proved it to be of excellent quality and of a moderate degree of hardness.

In 1888 the Company went to Parliament to obtain powers to acquire land and construct works at Hatton, to lay mains to Hanchurch and to construct a reservoir there, and to lay a main thence through Trentham and Hanford to Trent Vale. Additional capital of £180,000 was also authorised by this Act. This Act also extended the limits of the Company to include a very large area in which the Company had certain rights and obligations. In accordance with the terms of the agreement with Mr. Fitzherbert and in order to provide a supply to Swynnerton Hall and village the Company constructed a tower of ornamental design in brickwork at Swynnerton.

The Hatton Works were constructed in stages over a period of almost 20 years. During this period six wells were constructed and five boreholes were also sunk. In addition extensive cruts were driven between the wells and boreholes.

The first stage of the works consisting of the construction of the Hanchurch



Rotary Beam Steam Pumping Engines, 1892—1949. Hatton Water Works.

Reservoir, capacity 2,866,000 gallons, and the erection of two compound rotary beam steam pumping engines, was completed in 1892. The next stage, the erection of a horizontal cross compound rotary steam pumping engine was completed in 1898. The works were completed by the erection in 1907 of a horizontal compound tandem rotary steam pumping engine.

Two pumping mains were laid from the pumping station to Hanchurch Reservoir and thence two gravitation mains, one to Trent Vale and the other to Hanley.

The Bath—Changing Habits

It was in the early years of this 20th century that a change was taking place in the attitude of the general public to the bath. By this time it was regarded by some as a necessity and less as a luxury. In 1849 the fitted bath was not often found even in the houses of the very rich. The turn of the century saw the change from the bath as a rarity to more general installation, but we had to wait more than two decades for the attitude which regarded the bath as essential to any extent.

Increase of Population

It is startling to note that the population in the Potteries towns and Newcastle during the hundred years 1801 to 1901 increased nearly tenfold. The population in 1801 was about 28,000 and in 1901 about 240,000.

THE ACT OF 1912

Mill Meece Works

The continued growth of the district and increase of requirements for domestic and trade purposes indicated that the existing sources would not be adequate and in 1912 an Act was obtained giving the Company power to construct a Pumping Station at Mill Meece, 2 miles on the south side of the Hatton Works and another at Cresswell near to Blythe Bridge.

The first borehole at Mill Meece was sunk in 1900 and proved to be obviously on the wrong side of a known major fault in the vicinity. Further boreholes and a well were sunk between 1903 and 1909 which confirmed the new red sandstone formations. Other geological peculiarities of the site necessitated the re-siting of the permanent buildings in relation to the boreholes. In 1914 a horizontal compound tandem rotary steam pumping engine was erected, and in 1915 a new pumping main was laid to Hanchurch Reservoir. In the same year another well was sunk and a crut driven from the bottom to the existing well, but the 1914/18 war brought further operations to a standstill. Pumping to supply commenced in 1919.

Construction of the works was not resumed until 1927, when two boreholes were sunk from the bottom of the second well and another engine of similar

design to the existing engine was erected and commenced to pump in 1928.

It was decided not to proceed at that time with the construction of the Cresswell Works and the powers granted under the 1912 Act lapsed.

THE ACT OF 1922

In 1922 an Act was obtained, reviving powers which had lapsed owing to the war, to construct an additional reservoir at Hanchurch alongside the existing reservoir. This Act also authorised the laying of an additional gravitation main from Hanchurch Reservoir to Newcastle. This Act also permitted increased charges to be made for domestic and trade purposes. The main was laid in 1925 and the construction of the additional reservoir, having a capacity of 6,000,000 gallons, was completed in 1927.

THE STAFFORDSHIRE POTTERIES WATER BOARD ACT, 1924

The Formation of the Water Board

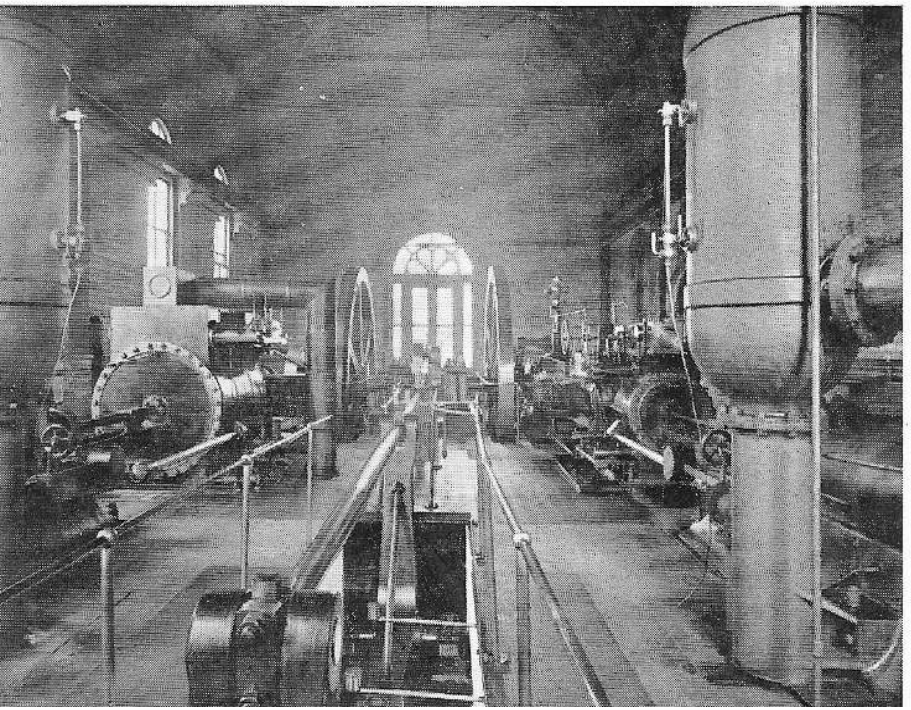
The Local Authorities in the district had for many years desired to take over the Company. The first approach to the Company had been made in 1899 but no agreement was reached.

In 1924 the Town Councils of Stoke-on-Trent and Newcastle and the then Wolstanton Urban District Council promoted a Bill to purchase the Undertaking of the Company. The "Staffordshire Sentinel" of April 29th, 1926 is quoted as follows:—

"The House of Commons Committee passed the Bill, but intimated that the Company had fulfilled its obligations and that the Bill was passed chiefly because it seemed to be in keeping with the 'spirit of the times'. In view of this pronouncement it seemed doubtful whether the House of Lords would pass the Bill."

"At this juncture the late Councillor W. A. Cowlishaw, Secretary of Parkers Burslem Brewery, 'took a hand' in the subject. In his earlier years he had been associated with the business of Mr. G. F. Paddock, Solicitor, Hanley, and a very kindly feeling always subsisted between them. Mr. Paddock was Chairman of the Water Company and conversations took place between Mr. Cowlishaw and Mr. Paddock which were all the more kind and frank because of the old friendship. This led to an agreed scheme for the purchase of the Company's Water Undertaking and the formation of the Water Board."

Horizontal Cross Compound Rotary Steam Pumping Engine 1898—1949. Hatton Water Works.



THE STAFFORDSHIRE POTTERIES WATER BOARD

The Staffordshire Potteries Water Board took over the Undertaking on the 1st January, 1925, the purchase price being £840,000. The first members of the Board were:—

STOKE-ON-TRENT COUNTY BOROUGH REPRESENTATIVES:—

Alderman A. Brookhouse
Alderman F. Collis (Chairman of Board)
Alderman J. W. Cooper
Alderman P. Elliott
Alderman F. Hayward
Alderman H. Leese
Alderman S. Sproston
Alderman S. Walker
Alderman J. Warren
Alderman T. C. Wild

Councillor G. H. Barber
Councillor W. A. Cowlishaw (Chairman of Finance Committee)
Councillor J. H. Dale
Councillor F. Trigg
Councillor T. S. Whitfield (Vice-Chairman of Works Committee)

NEWCASTLE-UNDER-LYME BOROUGH REPRESENTATIVES:—

Alderman S. Myott (Chairman of Works Committee)
Alderman H. W. Whitfield

Councillor A. Moran

WOLSTANTON UNITED URBAN DISTRICT REPRESENTATIVES:—

Councillor J. W. Clare
Councillor W. Ford (Vice-Chairman of Finance Committee)

Councillor W. J. Hassam
Councillor R. S. Showan

STAFFORDSHIRE COUNTY REPRESENTATIVE:—

Alderman A. Hassam (Vice-Chairman of Board)

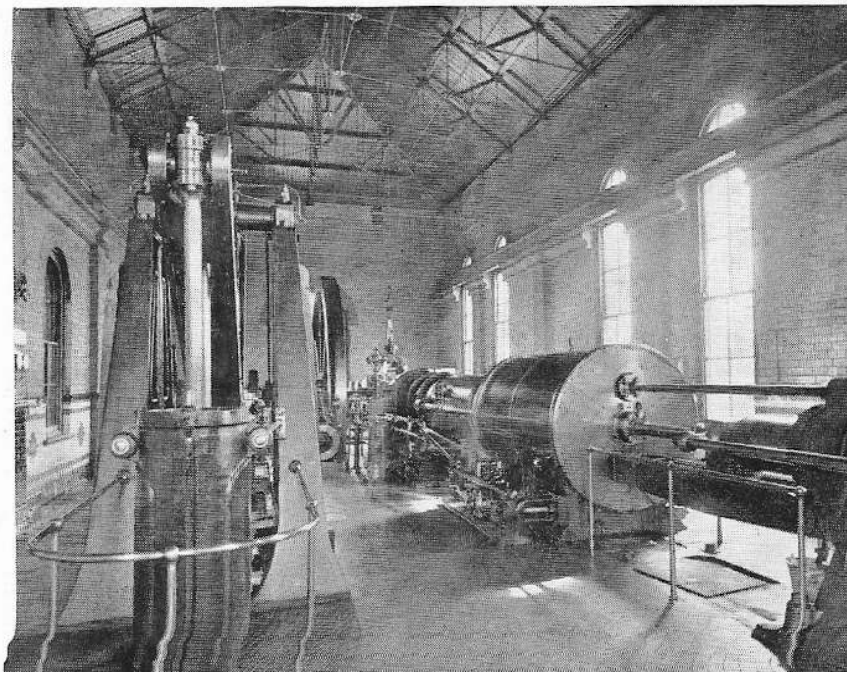
STONE RURAL DISTRICT REPRESENTATIVE:—

Councillor T. Giles

Mr. R. C. Frain, the Engineer to the Company, was appointed Engineer and General Manager and Mr. E. B. Sharpley, Town Clerk of Stoke-on-Trent, was appointed Clerk.

The Water Board proceeded to put into operation plans effecting changes in distribution, renewals of plant and constructing further service reservoirs, which

Horizontal Compound Tandem Rotary Steam Pumping Engine 1907—1938 Hatton Water Works.



included Meir Reservoir (3,148,000 gallons capacity) and Hanchurch Reservoir (6,055,000 gallons capacity).

THE ACT OF 1928

Cresswell Works

New sources were, however, needed and the Board decided that they would promote a Bill in Parliament in 1928 to revive the powers obtained by the Water Works Company in 1912 and allowed to lapse, for constructing a pumping station at Cresswell and laying a pumping main from Cresswell to the existing reservoir at Meir, to obtain powers to lay a gravitation main from Meir Reservoir to Blurton to deliver the additional water into the district.

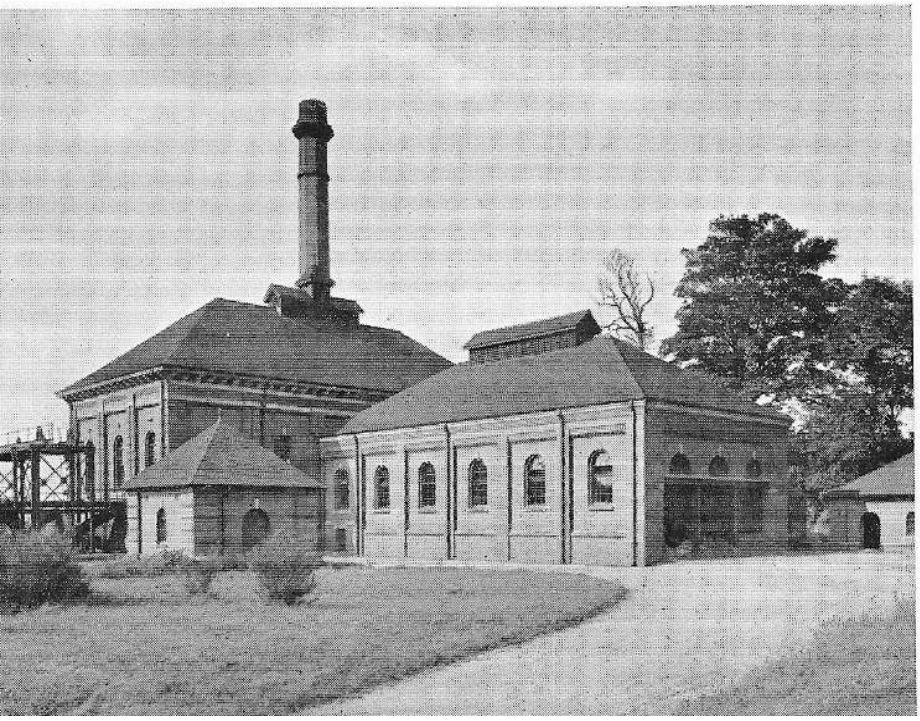
The Board sought powers in the Bill to protect Cresswell Pumping Station from the abstraction of underground water in a surrounding protective area, also to protect the underground supplies at the various pumping stations of the Board from possible pollution from the surrounding areas. These proposals aroused much interest, not only locally but nationally, particularly the clauses dealing with the protection against abstraction of underground water, which were opposed by the Mining Association of Great Britain, local Collieries, the Mineral Owners Joint Committee, the L.M.S. Railway and others.

The House of Lords' Committee sanctioned the Bill after excluding the proposals dealing with the protection against abstraction of underground water, which would have been valuable protection of a kind never before granted by Parliament and a precedent in water legislation. The Committee also required amendment of the clauses seeking protection from pollution from the surrounding areas.

The protection against abstraction of underground water has now been given to the Board along with other Water Authorities by a statutory instrument entitled "The Stafford and Derby Area (Conservation of Water) Order 1948", made under Section 14 of the Water Act 1945.

The works at Cresswell completed in 1932 consisted of two sets of steam driven pumping plant, each comprising a direct acting vertical inverted triple expansion rotative steam engine, a deep borehole pump (of the concertina bucket type), and a high lift pump. This plant pumps from two boreholes, sunk into the new red sandstone formations.

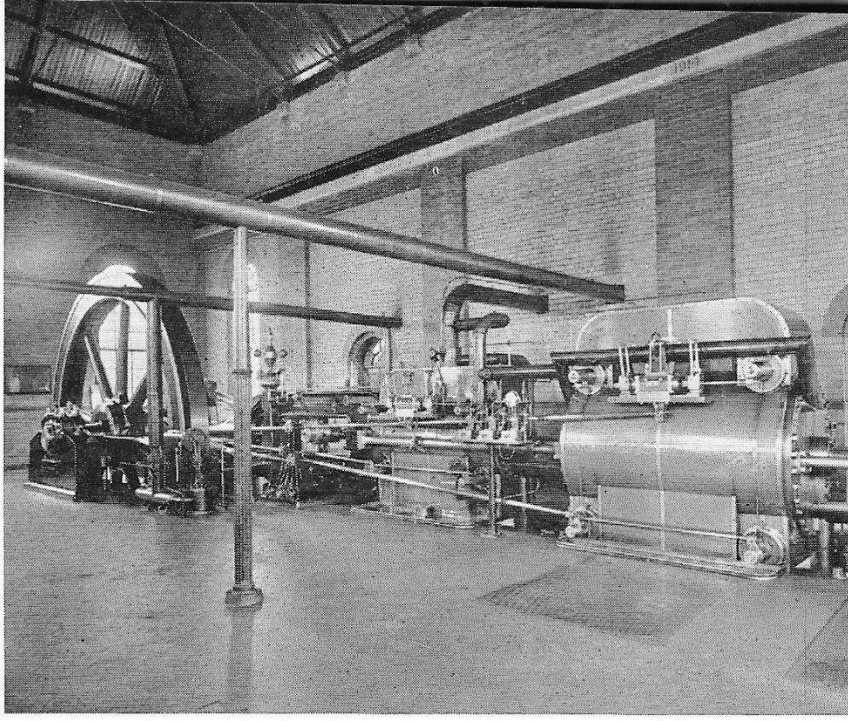
Mill Meece Water Works, 1914—1928, completed.



RECONSTRUCTION OF WORKS

In the 1930's the Board embarked upon a scheme of reconstruction and remedial work at all the main pumping stations, which was suspended during the war years but has now been restarted.

This work, of an apparently unobtrusive but sometimes hazardous nature, presents to those engaged in carrying it out many problems calling for considerable



Horizontal Compound Tandem Rotary Steam Pumping Engine 1914. Mill Meece Water Works.

ingenuity as an uninterrupted supply must be maintained.

Wall Grange Works

The original beam steam pumping engines, which it will be remembered were erected in 1849 and 1854 and had been at work almost continuously since that date, were in 1933 replaced by three electrically driven surface pumps. This plant was installed in the original "Stafford" beam engine house which was re-modelled. The "Davenport" engine house and boiler house were demolished about the same time. A suction reservoir was also constructed.

Meir Works

In 1933 the Cornish beam engine erected in 1865 and the horizontal compound tandem "Davey" differential engine erected in 1882 were dismantled. Two sets of electrically driven plant, each comprising a well pump and a surface pump, were installed in the "Davey" engine house which was re-modelled by an extension of the building to enclose the well. A suction reservoir was also constructed.

Stockton Brook Works

In 1936 the two horizontal compound tandem "Davey" differential engines erected in 1884 were dismantled and replaced by two sets of electrically driven plant, consisting of a vertical spindle well pump and a surface pump. A standby diesel engine driven D.C. generator and two rotary converters to convert the electric current from the supply authority from A.C. to D.C. were installed. The engine house was also re-modelled to enclose the well.

From 1886, from which date the pumping had been regular from this station, the yield was constant until the year 1916 when it started gradually to decline until about 1937, since when the yield has fallen off considerably.

It is difficult to prove the reason for the falling off in the yield, but it is thought that it may be due to the steeply inclined shale beds or other stratum having gradually slipped down into the crut, thus preventing the water from the millstone grit formation reaching the well. It was considered that any remedial work in the crut was too hazardous to accomplish and therefore permission has been obtained from the Authorities to sink two boreholes near to the pumping station to penetrate the millstone grit rocks at a greater depth than the existing well and crut and by this means make use of a larger area of underground storage.

Number one borehole was commenced in 1946 and progress has been very slow owing to the difficult nature of the strata.

Hatton Works

The reconstruction of the Hatton Works was commenced in 1937 when there were installed two D.C. electrically driven surface pumps and two diesel driven D.C.

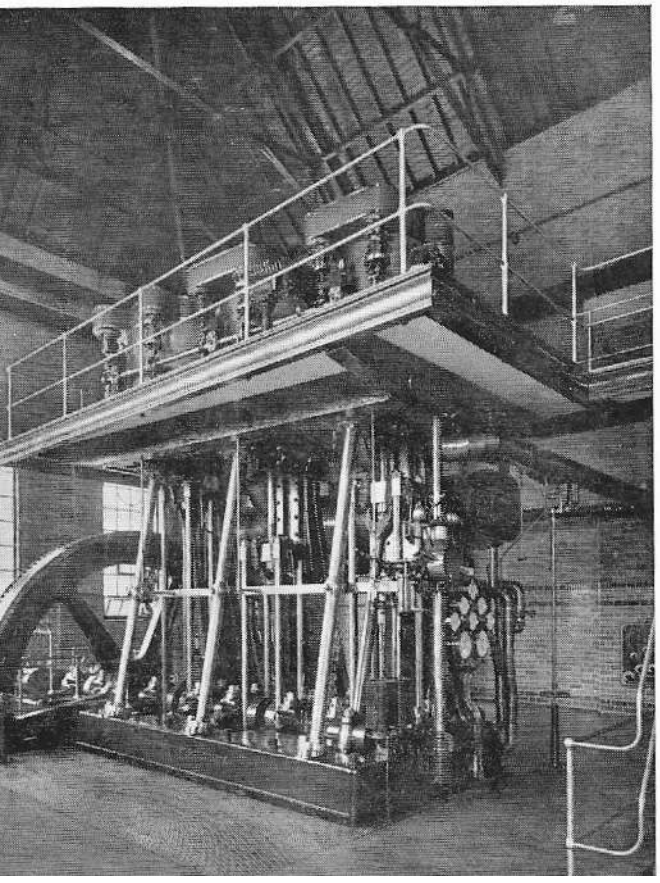
generators in a temporary building adjacent to the main building. Two D.C. electrically driven well pumps were installed in the well between the existing beam well pumps. The electricity for the above pumping plant and the lighting of the whole station is generated by the diesel engines.

The second stage of this reconstruction was completed in 1940 when the horizontal compound 'tandem' rotary engine erected in 1907 was dismantled and replaced with two sets of A.C. electrically driven plant consisting of well pumps and surface pumps operated by current from the Grid.

Further work of reconstruction was delayed by the restrictions imposed during the war and the work was not resumed until 1948. A submersible well pump was installed in the 'pilot' well outside pumping in series with a surface pump installed in the 'tandem' pump house, both operated by current from the Grid.

It may be mentioned that it was impossible to install the above mentioned D.C. well pumps in the 'beam' well to their full depth in the first place because of the presence of a massive wooden platform which had been used for driving a crut. Owing to the limitation of the yield of these pumps it was essential to remove the platform to enable the pumps to be lowered to their specified depth. This rather hazardous piece of work was safely accomplished by dismantling the pipes of one of the well pumps which themselves passed through the platform to the base of the well. A 350 H.P. electrical submersible pump reputed at that time to be the largest of its type in the world was hired from a local Steel Works and inserted through the opening in the platform. This pump, together with that of a smaller capacity but similar type pump, enabled the water level to be lowered and the platform dismantled and removed, including the supporting beams. At a later date the Board's staff also lowered each of the D.C. electrical well pumps in turn, reconditioning the plant as it was replaced to the specified depth.

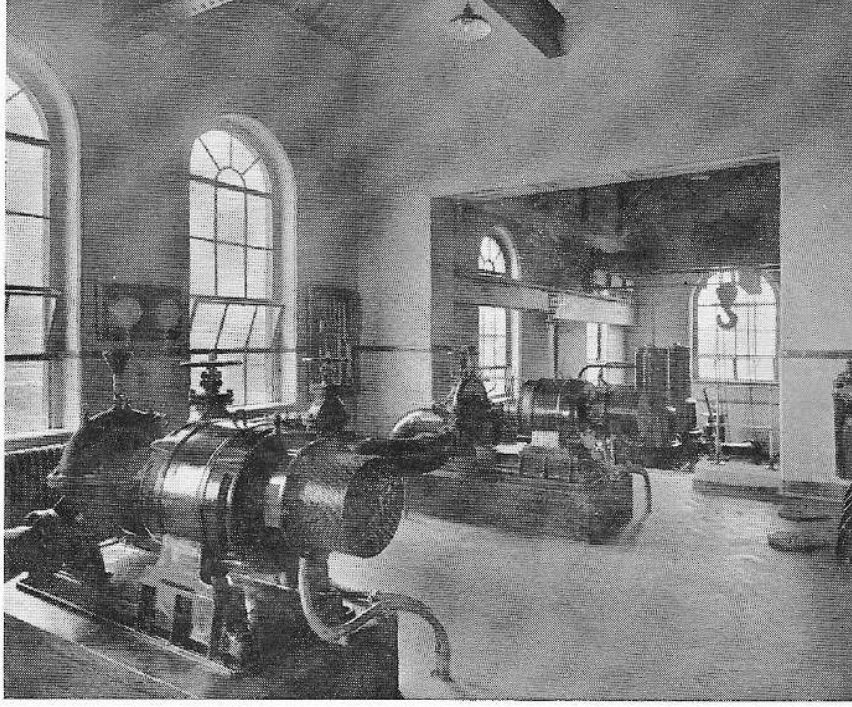
Triple Expansion Rotary Steam Pumping Engine 1932. Cresswell Water Works.



The final stage of the reconstruction has now commenced. The work consists of the stripping and re-tiling of two of the roofs, adaptation of two boiler houses for a diesel generator room, and electrical pumping plant control room respectively; the installation of a diesel engine driven generator, two moving cranes and other subsidiary plant in the diesel room; installation of three electrically operated well pumps in the house occupied by the horizontal cross compound rotary steam pumping engine erected in 1898 (now being dismantled), one electrically operated well pump in the "beam" well house and one electrically operated surface pump in the "tandem" house; the construction of a reinforced concrete suction reservoir of a capacity of 280,000 gallons now completed and being tested, which will ultimately receive all the water from the well pumps and from which all the surface pumps will pump. The existing diesel engine generators and the two electrical surface pumps will then be removed from the temporary building and installed in the main building, in stages.

Mill Meece Works

In 1938 the well pumps of the horizontal compound tandem rotary steam pumping engine (erected 1914) were dismantled and replaced by two electrically operated well pumps; an extension of the main building was constructed and an electrically operated surface pump was installed therein. The well pumps were housed in a temporary building erected over the well. This building is to be replaced in the future by a permanent building.



Electrically Driven Pumping Plant. Surface Pumps and Well Pumps (latter in background) 1933. Meir Water Works.

As both the two steam engines have of necessity had to work for many years without overhaul, two electrically operated vertical surface pumps have been installed (1949) to enable the steam plant to be overhauled and to provide adequate standby plant. This temporary plant will be replaced by a permanent installation in the future.

Cresswell Works

Almost from the commencement of the putting into supply of these Works a noticeable but gradual diminution in the yield from one of the boreholes has been apparent, until in 1938 the yield was little more than half that of the other borehole, which meant that the safe yield of the works was correspondingly reduced. Over the last few years it has been necessary to run the pumping engine with the greater yield owing to the increasing demands for supply, resulting in the engine running almost continuously without overhaul.

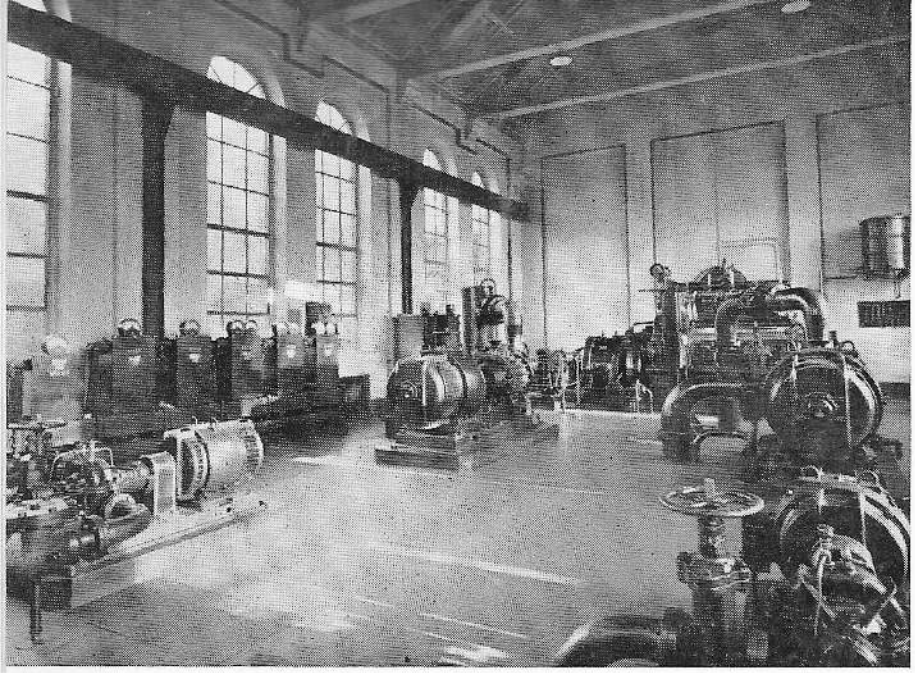
It was impossible to lay off the station in order to connect the boreholes by well and cruts and an alternative scheme was adopted to utilise the original trial borehole and pump therefrom to supply. This was not so easy as it seemed as the borehole was found to be out of verticality. To overcome this, another borehole was sunk alongside of sufficient depth to house a borehole pump and this borehole was then connected by an inclined borehole to the trial borehole in 1948.

A temporary electrical submersible pump was installed and, working along with the main steam pumping engine, brings the yield up to the original figure and allows proper maintenance of the steam plant to be regularly undertaken. Permanent electrical borehole plant will shortly be installed and a building erected.

THE ACT OF 1937

Peckforton, Tower Wood and Greatgate Works

For some time the need for additional supplies had been felt and indeed about 1936 became a matter of urgency. The increased population and the increased use of water for domestic and industrial purposes due to causes which were common to large industrial communities, such as the increasing number of baths being fixed and conversion of water closets together with the increasing number of houses, particularly those erected by the Local Authorities, caused the Board to seek for new sources of supply.



Electrically Driven Surface and Booster Pumps. Standby Diesel Engine Driven Generator (in background) 1936. Stockton Brook Water Works.

Early in 1936 the Engineer to the Board and the eminent Geologist, Professor W. S. Boulton, D.Sc., who had advised the Board for many years, proceeded to investigate and report upon the remaining sites, if any, for establishing additional pumping stations for works of water supply in the Board's area, with a view to suitable sites being included in a Bill to be promoted in the following Session of Parliament. The report generally observed that taking a broad view of the district there seemed little prospect of finding any considerable additional supplies of water along the northern fringe of the Potteries Coalfield, where the millstone grit and carboniferous limestone formations outcrop, and that the Board must look for further supplies to the southern fringe of the Coalfield, where the bunter formation outcrops and where the Board's existing chief supply works are situate, and that the only remaining worth while sites available to the Board were those on the south-eastern side of the Coalfield, one of which was Greatgate some 2½ miles east of Upper Tean; that in looking for possible additional sources of underground water *outside* the Board's area, a great basin of impervious keuper marls, 18 miles in width, extended westward of the Potteries Coalfield and the same non-water-bearing marls stretched for many miles south of the Board's area; further that the *nearest* water-bearing rocks were in the region around the Peckforton Hills of Cheshire, and that they and neighbouring hills formed part of a belt of triassic sandstone separated from the keuper marls to the east by a great north to south geological fault, and recommended that boreholes should be sunk in the water-bearing sandstone west of the fault at two sites, Peckforton and Tower Wood.

A Parliamentary Bill was promoted in the 1936-37 Session of Parliament and was unopposed, receiving Royal Assent in 1937. The Works included in the Bill provided for wells and boreholes at the Peckforton and Tower Wood sites, a reservoir 2,000,000 gallons capacity on Bulkeley Hill, whence the water will gravitate to a large storage reservoir of 10,000,000 gallons capacity at Coopers Green, near Audley, Staffordshire, a re-pumping station sited near this reservoir to enable the water to be re-pumped therefrom to a service reservoir 2,000,000 gallons capacity at Bignall Hill, north of Chesterton; also trunk mains to connect with the existing trunk mains at Tunstall.

The other Works for which the Board obtained powers under this Act were for the construction of wells and boreholes at the Greatgate site; a reservoir at Heath House; and trunk mains to connect with the existing trunk main at Draycott-in-the-Moors, through which water is pumped to Meir Reservoir from the existing Cresswell and Meir Works.

Work was started early in 1938 and exploratory trial boreholes were sunk at the Peckforton and Tower Wood sites, from which valuable geological information was

obtained. Later it was decided to move the site of the Peckforton boreholes west of the original site, for which purpose the Board purchased some 89 acres of land, including a large part of Bulkeley Hill, to ensure that the site was properly protected from possible pollution. Work was commenced at the Peckforton site on No. 1 permanent borehole in 1938 and was partly completed. Before the total depth was reached the second World War suspended operations.

Also the No. 1 permanent borehole was commenced at Greatgate early in 1938 and completed in 1940 after many difficulties, owing to the nature of the strata.

Despite a number of strong representations to the Government Department during the War, further work was not allowed to proceed on the Cheshire Works, but in 1942 the Board was allowed to proceed on the first stage of the Greatgate Works.

Greatgate Works

These works were re-commenced in 1942, as already stated, and an electrically operated vertical turbine type combined surface and borehole pump was installed in a temporary brick house; a pumping main to the site of the Heath House Reservoir; and a gravitation main laid therefrom to connect with the existing main at Draycott-in-the-Moors. Authority has now been given to proceed with the second borehole; the erection of a pump house; and the installation of duplicate plant. Sinking of the borehole is now proceeding.

Peckforton Works

In 1946 authority was obtained for certain preliminary works to be carried out at Peckforton to enable the No. 1 borehole to be test pumped for yield. From the information obtained the Authorities permitted permanent works to be put in hand in 1947.

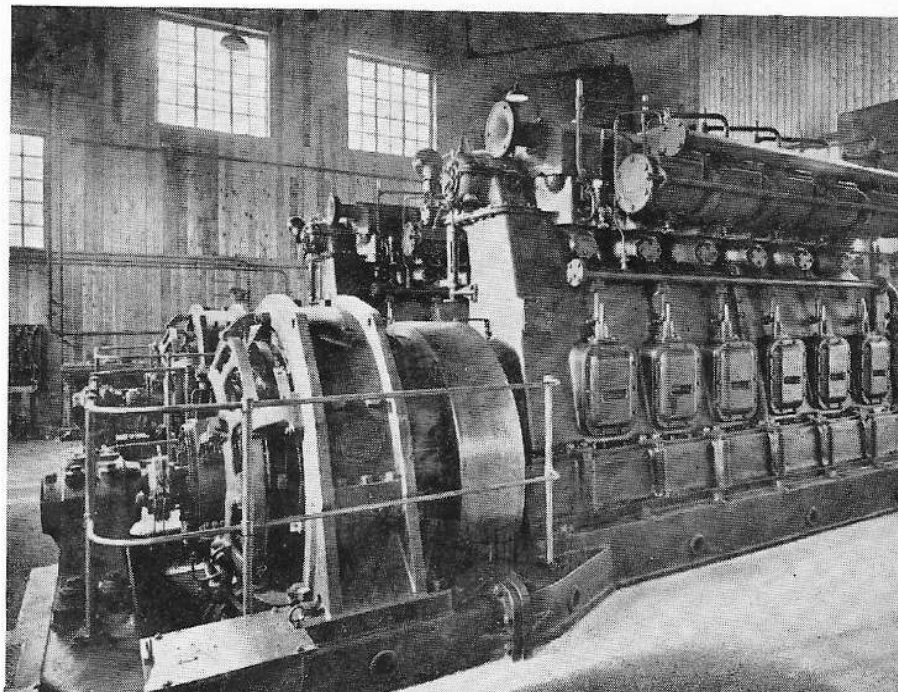
Good progress has been made since that date despite many difficulties and a reasonable estimate is that a supply from the first Peckforton site may be expected about 1952.

Draycott Cross

During the War the Board was not allowed to proceed with any major works after Greatgate Works were in operation, but still having to meet increased demands from factories making munitions and other work in connection with the War effort, it became imperative to obtain quickly a further supply of water. It was therefore decided to explore the possibilities of two old mine shafts, sunk in 1896, at Draycott Cross.

In co-operation with the Ministry of Works, who had requested the Board to give a supply

Diesel Engine Driven Generators, 1938. Hatton Water Works.



for War purposes, a pumping test was carried out on one of the shafts, which proved the potentialities of the site and the quality of the water which is obtained here from the new red sandstone formations. An application to the Minister of Health was made in 1944 for powers for abstraction of water from the shafts and the Minister directed an Inquiry to be held, after which the Minister granted limited powers to the Board under Defence Regulations to install temporary plant and to lay a pumping main to connect with the existing trunk main. This work was carried out at that time in conjunction with the Ministry of Works and a supply obtained from this source. In 1946 an application was made to the Minister under the Water Act, 1945 to make this a permanent Works of the Undertaking and this was granted under the Staffordshire Potteries Water Order, 1947. Work is now proceeding on the permanent works. The shaft linings have been completely renewed and plant previously left by the mine sinkers removed from the shafts without any cessation of pumping to supply. Permanent electrical pumping plant will be installed and buildings erected.

Shaffalong Works

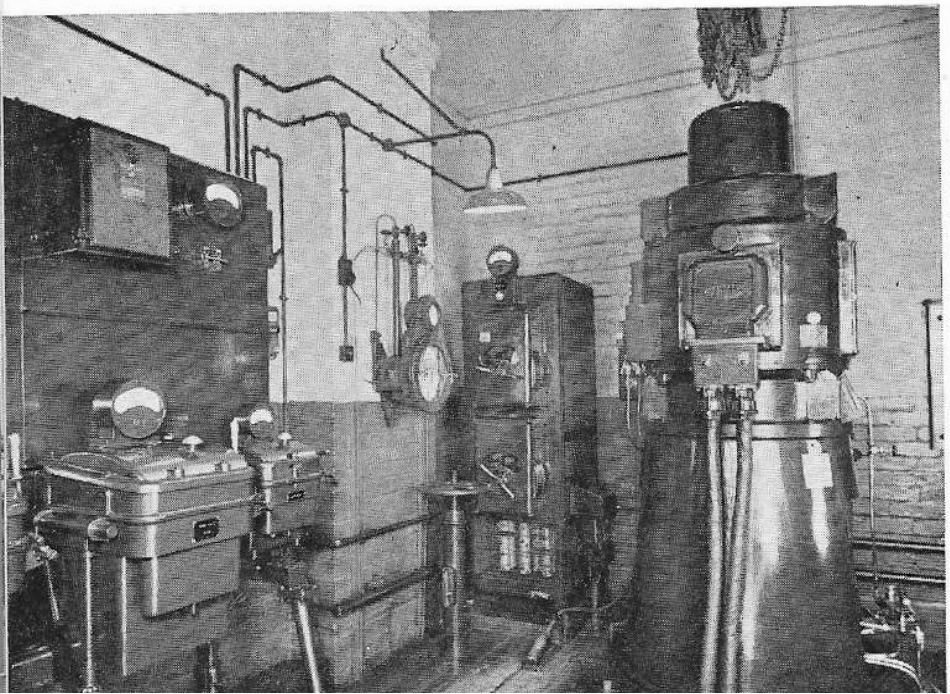
In 1947 the Board, because of increased demands and the fact that there was no prospect of a supply from the Peckforton Works for some time, was urgently requiring an additional source of supply within a short period of time. It was therefore decided to investigate the possibility of obtaining water from two abandoned mine shafts which had been sunk in 1906 by the Westwood Manor Coal Company at Shaffalong near Cheddleton; these shafts were abandoned when the coal measures were reached owing to the available pumps of that day being unable to deal with the flow of water.

Pumping tests carried out by the Board proved that a good supply of water was available. Analysis of the water which was of high bacterial quality revealed a small amount of iron and there was also a trace of manganese.

Powers were sought from the Authorities to install pumping plant, a water tower, filtration and chemical plant to remove the iron and trace of manganese, and to lay a main from the station to connect with the Wall Grange Works, where additional pumping plant was installed. These powers were given by The Staffordshire Potteries Water Order, 1949.

These Works, which were very expeditiously constructed to a great extent by the Board's own staff, made a substantial contribution to the safety of the supply to the district during the almost rainless summer of 1949.

Electrically Driven Combined Surface and Borehole Pump 1944. Greatgate Water Works.



High Level Districts

Practically the whole of the Board's area of supply can be supplied from the main service reservoirs, but for certain high level districts re-pumping is necessary by means of booster pumps delivering in most cases into small high level service reservoirs.

These pumps are as follow:—

At Meir Works water is pumped to Meir Heath Reservoir;
At Stockton Brook Works to Brown Edge and Bagnall Reservoirs;
At Chesterton to Red Street tanks;
At Brown Edge to Hill Top.

Re-Pumping Station

Tunstall Re-Pumping Station, constructed in 1854, converted to electrically operated plant 1923, re-pumps water from Hanchurch Reservoir to Goldenhill Reservoir.

AREA AND POPULATION SUPPLIED AND OTHER INFORMATION

Limits of Supply (1949 Act)

The City of Stoke-on-Trent; The Borough of Newcastle-under-Lyme.
Urban Districts:—Kidsgrove; Stone.
Rural Districts :— Newcastle-under-Lyme; Stone (except part of Parish of Sandon); Leek—(part)—(Parishes of Bagnall, Norton-in-the-Moors).

Note:—The Limits of Supply prior to the 1949 Act included parts of the following: Kidsgrove Urban District, Newcastle-under-Lyme Rural District, and Stone Rural District; but not the Urban District of Stone.

Areas in which the Board have certain restricted rights and obligations

Urban Districts:—Biddulph (part); Leek (part).
Rural Districts:—Leek (part); Cheadle (part).

Constitution of Board at 1950

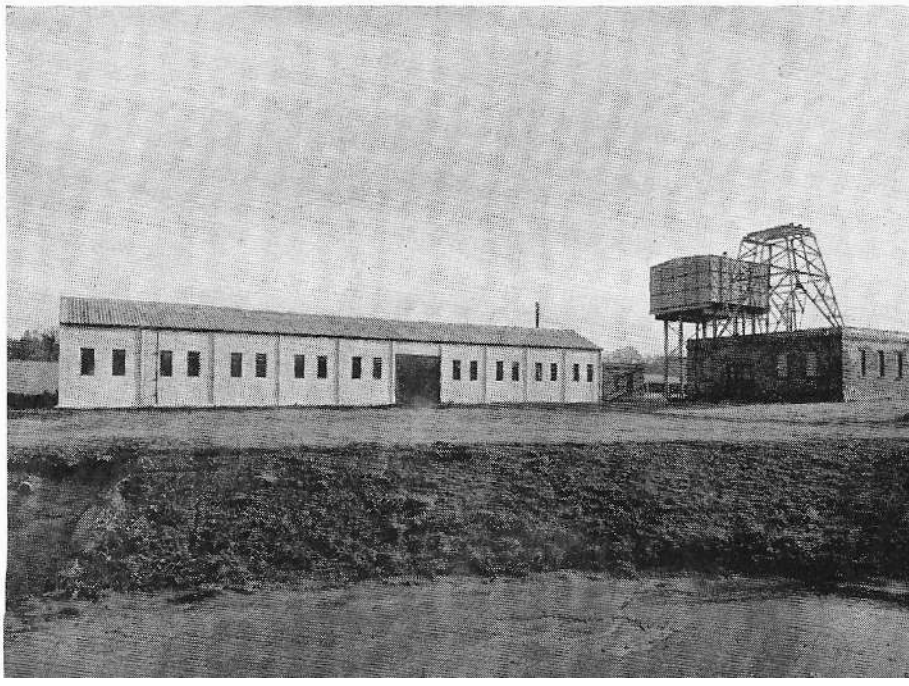
The constitution of the Board under the 1949 Act has been altered by the addition of Members to be appointed by each of the following:—

Kidsgrove Urban District Council; Stone Urban District Council; Newcastle-under-Lyme Rural District Council; Stone Rural District Council.

The Act provides that any Works, Pipes, Plant or Apparatus belonging to any Council included within the added limits shall be purchased and vest in the Board.

In the Board's 1949 Act the area within the Limits of Supply is 215.9 square miles. The area in which the Board have certain restricted rights and obligations is 52.71 square miles, making a total area of 268.61 square miles. The population now supplied is estimated at 372,000, and adding some 31,500 to be taken over in 1950, the population then supplied will be about 403,500.

Shaffalong Water Works, 1949.



The quantity of water supplied in the year 1949 (9 months to September, 1949) was as follows:—

	Gallons per day	*Gallons per head per day*
Domestic, unmetered trade and waste ..	9,361,000	25.16
Trade (metered)	5,004,000	13.45
	14,365,000	38.61

The following table shows the consumption at twenty year intervals from 1849 to 1949:—

Year	*Average Daily Quantity Supplied (Gallons)*
1849	1,000,000 Est.
1869	2,600,000
1889	4,100,000
1909	6,933,000
1929	9,735,000
1949	14,365,000

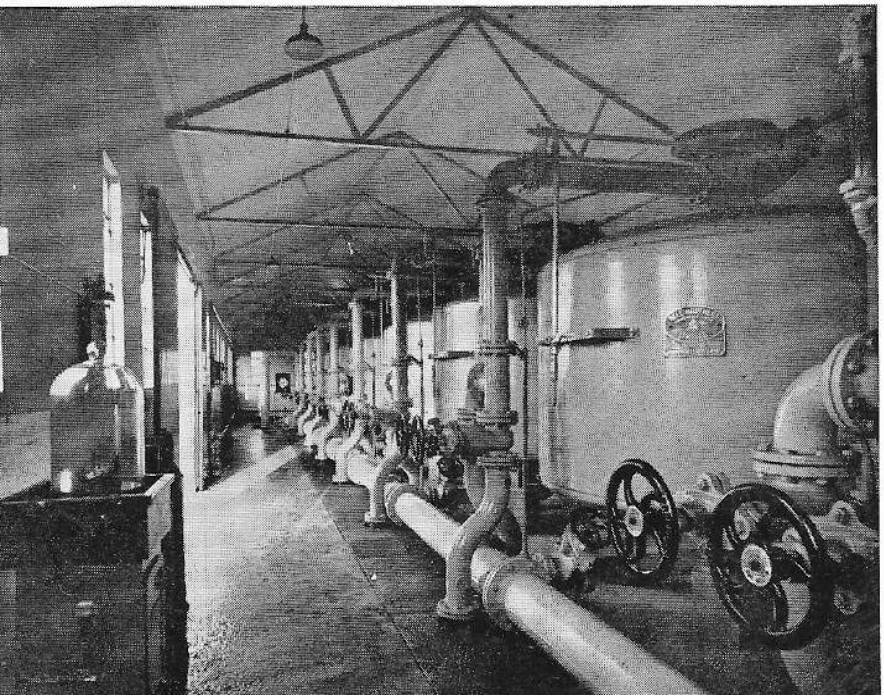
Distribution

There are 17 service reservoirs of a total capacity of 19,000,000 gallons, of which Hanchurch, Birches, Meir and Goldenhill are the principal.

The Board maintains 581 miles of Service and Trunk mains from 2″ to 24″ diameter.

The Board set up a Plumbing Department in 1946 to meet its obligations under the Water Act 1945, and also to place high class craftsmen at the service of consumers. The establishment of this Department is a reminder of the early days of the Undertaking when a similar service was available.

Battery of Pressure Filters, Shaffalong Water Works, 1949.



The Plumbing Inspection Department set up in 1947 ensures that plumbing installations are in accordance with the Board's Byelaws and Regulations. This Department has been of great benefit to consumers by ensuring that the plumbing workmanship is uniformly high class. During the year 1947 1,358 inspections were made, in 1948 1,395, and in 1949 2,550.

A Fittings Testing Station was inaugurated in 1948 where water fittings proposed to be installed in the Board's area of supply are tested and if approved stamped. During the first 12 months 129,042 fittings have been tested.

The principal reason for the establishment of the station was to ensure a high standard for household and other fittings and thereby reduce the possibilities of waste from defective fittings which otherwise would have been installed.

Quality of Water

To ensure the purity of supply at the source and at all points throughout the distribution system very great care is exercised to protect the water from any possible contamination.

The water at the source is already of the highest purity, but to make certain that this high standard is maintained throughout the area of supply, sterilisation by chloramine is carried out at all the pumping stations. To ensure this, regular and frequent chemical and bacteriological examinations of the water at the sources and at points in the distribution system are made by the Board's Chemist.

These analyses indicate that the water maintains the highest standards of organic quality and bacterial purity. It is moderately hard and is not plumbo-solvent; it is free from metals, neutral in its reaction and at all times clear and bright. It is certified as "pure and wholesome, suitable for purposes of domestic consumption".

FINANCIAL

The Original Capital authorised to be raised in the 1847 Act was £60,000, plus £20,000 on Loan, while the Capital Outlay now approaches £2,000,000.

Extensions were made year by year; additional Capital was authorised to be raised in the various Acts of the Old Company and the growth in the Capital Expenditure at ten year intervals from 1849 to 1949 is as follows:—

	£		£
1849	45,821	1899	412,423
1859	142,892	1909	502,772
1869	203,401	1919	579,738
1879	257,435	1924	688,168
1889	325,610		

The Board took over on 1st January, 1925, and agreed to pay the Company the sum of £840,000 Cash and also to take over certain Debenture Stocks. After making other Capital Adjustments, e.g. Compensations, Stamp Duty, etc., the total cost of the assets acquired by the Board in 1925 was £885,428.

	£		£
1935	1,161,908	1949	1,867,756
1945	1,312,770		

This amount of £1,867,756 representing the Capital Outlay in 1949 has been met as follows:—

	£	£
Loans Outstanding	1,363,389	
Borrowed from Internal Funds ..	250,000	
Owing to Bank and Creditors ..	65,186	1,678,575
Loans Redeemed	186,723	
Revenue Contributions	2,458	189,181
		£1,867,756

The amount provided up to 1949 for Redemption of this amount is:—

	£
Loans Redeemed ..	186,723
Amount in Sinking Fund	285,440
Revenue Contributions..	2,458
	£474,621

which is 25.4% of the Capital Outlay.

The Net Debt outstanding is £1,393,135 (being the Loans, etc. of £1,678,575 less the sum of £285,440 in the Sinking Fund) and this is 74.6% of the Capital Outlay.

Borrowing Powers

The Borrowing Powers of the Board now amount to some £5,600,000, which is accounted for as follows:—

		£
Works Completed	(approx.)	1,900,000
To complete Peckforton Scheme	(approx).	1,200,000
To complete Tittesworth and Deep Hayes Schemes	(1949 Act)	1,957,500
To complete other Works	(1949 Act)	363,500
To complete other Sundry Works	(approx.)	179,000
Total	(approx.)	£5,600,000

Income

The Income from Water Rates received by the Old Company in 1849 was £853 for the half-year to Michaelmas 1849, and £1,767 for the next half-year, making a total of £2,620. The growth in Income from Water Rates is as follows:—

	£		£
1859	11,836	1899	44,748
1869	14,325	1909	60,910
1879	24,205	1919	71,346
1889	31,438	1924	128,066

The Board took over on 1st January, 1925

	£		£
1935	178,461	1949	324,789
1945	215,833		

Domestic Charges

The Original Charges authorised in the 1847 Act for a Domestic Supply were on a sliding scale, e.g.—

For a house assessed at £6 — 6s. 0d. per annum
" " " " £15 — 15s. 0d. per annum
" " " " £30 — 30s. 0d. per annum
and for a house exceeding £150 up to 3 per cent per annum.

For each W.C.—up to 10s. per annum, and for each Bath—up to 10s. per annum.

These charges were slightly amended in the 1853 Act, and became—
For a house assessed at £6 — 8s. 8d. per annum including 1 W.C.(=2d. per week)
" " " " £15 } up to 5 per cent per annum excluding W.C's.
" " " " £30 }
" " " " over £50 up to 4 per cent per annum excluding W.C's.

The charges for first W.C's. and Baths were on a sliding scale ranging from 6s. 0d. to 10s. 0d. per annum each depending on the assessment of the house, and additional ones were chargeable at 2s. 0d. per annum each.

This scale remained unaltered until the 1914-18 War, as a result of which various temporary increases were authorised, and after the 1922 Act the Charges were stabilised at a uniform Rate of 7½% per annum on Rateable Value to include 1 W.C.

The next increase was in 1930, when the rate was raised to 8¼% per annum on Rateable Value to include 1 W.C. This scale lasted for several years, and a Reserve Fund of some £30,000 was built up, but consequent on the 1939-45 War, Deficits were sustained. The Board was requested by the Ministry of Health to meet these Losses out of the Reserve Fund, and this was possible until 1948, when permission was granted by the Ministry to increase the charge from 8¼% to 11% per annum on Rateable Value which includes 1 W.C.

Meter Charges

The 1847 Act did not authorise any charges to be made for a supply by Meter, but in the 1853 Act the charges ranged from 8d. per 1,000 gallons for the first 500,000 gallons to 3d. per 1,000 gallons, for all in excess of 2,000,000 gallons per annum.

As in the case of Domestic Supplies, these charges remained unaltered until temporary increases were granted as a result of the 1914-18 War.

Under the 1922 Act power was given to charge up to a maximum of 2s. 6d. per 1,000 gallons, and the actual Charges per 1,000 gallons have been:—

	For the first 500,000 gallons	*For all over 2,000,000 gallons*
1922 - 1929 ..	1s. 3d.	11d.
1930 - 1947 ..	1s. 7d.	11d.
1948 - 1949 ..	1s. 11d.	1s. 3d.

THE SPECIAL ACTS OF PARLIAMENT AND STATUTORY ORDERS

The Special Acts and Statutory Orders giving the necessary statutory powers are as follow:—

The Staffordshire Potteries Waterworks Acts 1847 and 1849 (Repealed)
The Staffordshire Potteries Waterworks Consolidation and Extension Act 1853
The Staffordshire Potteries Waterworks Amendment Act 1861
The Staffordshire Potteries Waterworks Acts 1868, 1888, 1912 and 1922
The Staffordshire Potteries Water Board Acts 1924, 1928, 1937 and 1949

Statutory Orders 1940, 1943, 1944, 1946, 1947, 1948 and 1949.

OFFICIALS OF THE UNDERTAKING

ENGINEERS

Liddle Elliot	1846 to 1869
John Elliot and Edward Taylor (Joint)	1869 to 1872
George Day Harrison (Changed name to George Buckworth Herne Soame 1907)	1872 to 1912
Robert Charles Frain (Deputy Engineer from 1894) ..	1912 to 1935
Percy Wilkinson (Deputy Engineer from 1920) ..	1935 to 1946
Charles Victor Brown (Deputy Engineer from 1935)..	1946 to date

SECRETARIES

Charles Baines	1846 to 1867
John Beaumont Piercy	1867 to 1897
Horace Joseph Wildin	1898 to 1924
Robert Charles Frain	1924

ACCOUNTANTS

Thomas Baker Green	1925 to 1932
Arthur Leslie Cheetham	1932 to date

CLERK

Edward Burgess Sharpley	1925 to date

Our Story Closes

At the beginning of our story reference was made to the proposal at a public meeting, held to consider the formation of a Water Undertaking, that consideration should be given to a supply for this district from the hills on the other side of Leek.

In 1947 the Engineer and Manager to the Board reported on the existing and proposed sources of supply and also the works under construction. His principal recommendation was that the Board should obtain Parliamentary powers for the enlargement and use by the Board for public water supply of the two compensation reservoirs constructed by the Water Company in 1849 and 1858. Now, under the Act of 1949, the Staffordshire Potteries Water Board has been given powers to obtain considerable additional supplies of water by the enlargement of these compensation reservoirs at Deep Hayes and Tittesworth, in the valley of the River Churnet and on a tributary thereof, in the neighbourhood of Leek, by raising the height of the dams and increasing their total capacity from three hundred and twenty-seven million gallons to over two thousand million gallons.

When these works, along with the necessary filter stations, pumping stations, and trunk mains, etc., are completed, the water supply to the Board's area will be assured for very many years.

The decision to establish works of the kind just described, in order to collect and purify surface waters, is a departure from what has been the established order of the Undertaking, since its inception, of obtaining naturally purified water from the underground rocks. The combination of these two well tried systems of supply, in the Board's area of supply, will then ensure a more economic operation of the Undertaking and make the best possible use of the water resources readily available in the vicinity for the benefit of the inhabitants of North Staffordshire.

Let us now praise famous men, and our fathers that begat us.

The Lord hath wrought great glory by them through His great power from the beginning.

. . . . men renowned for their power, giving counsel by their understanding, and declaring prophecies :

Leaders of the people by their counsels, and by their knowledge of learning meet for the people, wise and eloquent in their instructions:

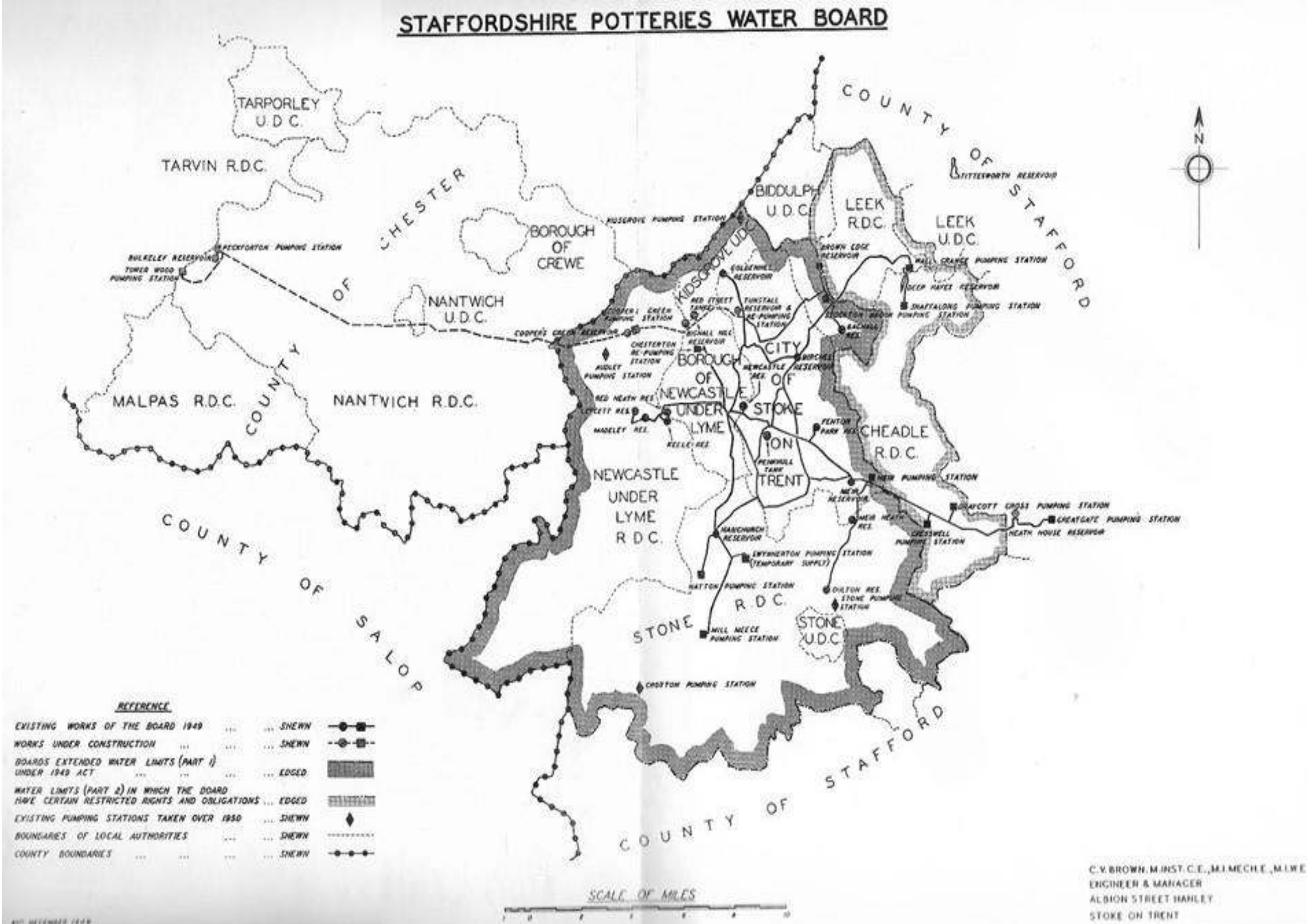
All these were honoured in their generations, and were the glory of their times.

There be of them, that have left a name behind them, that their praises might be reported.

Ecclesiasticus xliv, vv 1-4 and 7-8

Plan of Undertaking

STAFFORDSHIRE POTTERIES WATER BOARD



REFERENCE

EXISTING WORKS OF THE BOARD 1949	SHEWN
WORKS UNDER CONSTRUCTION	SHEWN
BOARDS EXTENDED WATER LIMITS (PART I) UNDER 1949 ACT	EDGED
WATER LIMITS (PART 2) IN WHICH THE BOARD HAVE CERTAIN RESTRICTED RIGHTS AND OBLIGATIONS ...	EDGED
EXISTING PUMPING STATIONS TAKEN OVER 1950 ...	SHEWN
BOUNDARIES OF LOCAL AUTHORITIES	SHEWN
COUNTY BOUNDARIES	SHEWN

SCALE OF MILES

C.V. BROWN, M.INST.C.E., M.I.MECH.E., M.I.W.E.
ENGINEER & MANAGER
ALBION STREET HANLEY
STOKE ON TRENT