

Bridgwater Town Council  
Blake Museum



Acknowledgement

*The account of the Bridgwater Borough part of the story has relied very heavily on the work of Carl Ricketts and Prof. Norman Biggs, to whom thanks are due.*

Weights & Measures in the Borough  
The objects on display



Set of brass measures stamped 821 and engraved Borough of Bridgwater 1836. All made by Warner and Son, London.

Half Pint, Pint, Quart, 1/2 Gallon, [Gallon not found], Peck, Bushel. Gill measures from the series are missing.

Bushels all stamped with certification marks: Wiv, V, GR ER, and Various dates 1906, 1918, etc.



Measures on display at Exeter Museum. The Gill measures are the four from the right in the front row.

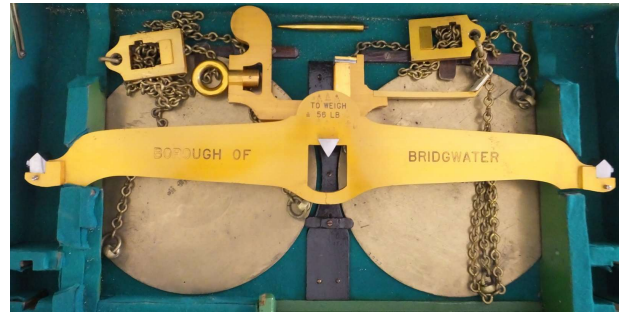


Brass beam scales, marked De Grave, Makers, London and Borough of Bridgwater. These were used in the market for checking traders' weights.



BWRAB: 2011/1/3 Portable scales by De Grave marked 1972 and dated 1908, with

case. These were taken out by inspectors and used at traders' premises



Big portable De Grave scales, not catalogued, with carrying case and folding tripod stand for support. It could weigh 56 lb.

The two portable scales above are not on display due to lack of space.



BWRAB : 2011/11/8 Imperial Yard measure marked Borough of Bridgwater, 1836



BWRAB: 2011/11/5 Quarter (28lb) and Stone (14lb) brass weights in carrying box



BWRAB: 2011/11/6 Series of weights 7lb and below, in carrying case

## General introduction

As far back as the reign of King Edgar (959-975) laws were passed decreeing that money should be standardised and the Winchester Bushel should be the standard of measurement for the sale of commodities like corn. William the Conqueror decreed that all measures and weights used by traders should be certified and stamped as being legal. The local administration was to be in the hands of the Mayor or other responsible official through the Assize of Bread of 1266.

These assizes adjusted the weight of bread according to the price of wheat. The price of bread was always the same, even though the price of grain fluctuated. Instead, when the price of grain increased, the weight of bread was reduced accordingly. For every increase in the price of wheat, the weight of a loaf fell. The Assize of Bread and Ale set the price of ale and the weight for a farthing loaf of bread. The act reduced competition and was purportedly given at the request of the bakers of Coventry, embracing several ordinances of Henry III's predecessors.

Some versions of the statute include an explanatory paragraph which begins:

*By the Consent of the whole Realm of England, the Measure of our Lord the King was made; that is to say: That an English penny, called a Sterling, round and without any clipping, shall weigh 32 Wheat Corns in the midst of the Ear, and 20 d. do make an Ounce, and 12 Ounces one Pound, and 8 Pound do make a Gallon of Wine, and 8 Gallons of Wine do make a London Bushel, which is the Eighth Part of a Quarter.*

So there was a relationship between coinage and weights and measures.

The Standards were held by the Exchequer (established 1221) at Westminster and certified copies were made and issued to the various towns for use.

In the C18, when the counterfeiting of gold coins was rife, a number of provincial manufacturers were licensed to make and sell sets of scales and weights for testing coins. (See later for Bridgewater manufacturers.)

Over eight centuries various amendments were made to the weights and measures laws, and there was a confused mass of conflicting systems.

## The modern era

When George IV came to the throne in 1820 there was a concerted effort to standardise units. The Imperial Weights and Measures Act of 1824, with amending legislation over the next fifty years revolutionised matters, and all previous legislation was abolished. There were only three weights and measures codified: the Yard, the Troy pound and the Gallon. All other Standards derived from these and from 1835 local Weights and Measures inspectors had the legal duty for comparing and verifying all weights and measures in their districts. Parliament also decreed that any contract that was based on unauthorised weights and measures was illegal and could not be enforced.

From the beginning Parliament established rules for weighing goods in markets. Market authorities were to provide weighing houses and scales for use by merchants and customers, and market weights and measures were to be Standard.

From 1855 copies of the Exchequer standards were held for security at the Royal Mint, the Royal Society, and at Parliament, and all weights and measures inspectors had to pass an examination.

The exchequer Standards of length, weight and volume were used to generate official metal measures of length, the Yard, of volume, from the Bushel to the quarter Gill, and weight, from the two Quarters to the Ounce (See table) Sets of these were manufactured for distribution locally.

The yard was the basis of the inch (1/36), the foot (1/12), the Perch, (5 1/2 yards) the Chain (22 yards), the furlong (220 yards) and the mile, (1760 yards)

The troy pound was the basis of the troy ounce (1/12) the pennyweight (1/144) and the grain (1/24th of a pennyweight). 7000 troy grains made avoirdupois pound. 1/16th of this was an avoirdupois ounce and 1/16 of this was an avoirdupois dram. 14 avoirdupois pounds were a stone, and 28 a quarter.

When "avoirdupois" first appeared in English in the 15th century, it carried a meaning of "goods sold by weight," which is also the meaning of its Middle English predecessor, "avoir de pois." That term derives from an Anglo-French phrase meaning "goods of weight." Some other weight systems are apothecaries' weight, used to measure pharmaceutical items, and troy weight, used for precious metals.

The gallon was the basis of all volume measures, the gill (1/64) the pint (1/8), and the quart (1/4). 2 gallons was a peck, and 8 gallons a bushel.

As well as checking the accuracy of weights, the inspectors also checked the volumes of vessels, like pewter tankards used in pubs, and stamped them as being accurate accordingly.

The 1835 Act caused the creation of several weights and measures jurisdictions within the county of Somerset. The County services, administered by the Quarter Sessions, was split into 7 areas, and administered by police officers, (usually Superintendents) but a number of historic boroughs with their own jurisdiction such as Bath, Yeovil, Watchet, Axbridge and Bridgwater had separate services. From 1858-90 the County areas were increased to 15 and No 12 was based at Bridgwater. These were abolished in 1888. with the formation of the Somerset County Council and the establishment of a County-wide Weights and Measures department. This in turn was amalgamated with the Devon and Torbay service in 2014.

The Metric System was introduced into France at the end of the C18, and was used by the some of the British scientific community from the mid-C19. It was not until the 1970's that metrication was formally adopted for every-day weights and measures

Liquid and dry capacity measure	Cubic inches	Equivalent	Metric conversion
Bushel	2,219.360		36.3682
Peck	554.480	4 pecks =1 bushel	9.0941
Gallons	277.420	2 gallons = 1 peck	4.5461
Quarters	67.335	4 quarts = 1 gallon	1.1365
Pints	34.677	1 pints = quart	0.5683
Gills	8.669	4 gills = 1 pint	0.1421

Above, measures of volume

Measures of length	Equivalent	Metric conversion
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Acre	160 square rods = 4840 square yards	0.4047 sq Hectares
Rood	1210 Square yards	0.0025 sq Hectares
Mile	1760 yards	1609.334 m
Furlong	220 yards	201.168 m
Chain	22 yards	21.1168 m
Rod, Pole or Perch	5 ½ yards	5.0292 m
Yard	1 yard	0.9144 m
Foot	$\frac{1}{3}$ yard	0.3038 m
Inch	$\frac{1}{12}$ foot	0.0224 m

Above, measures of length and area

Weights	Equivalent	Metric conversion
Tons		1016.0464 kg
Hundred-weight	20 cwt = 1 ton	50.8023 kg
Stone	8 stone = 1 cwt	6.503 kg
Pounds	14 lb = 1 stone	0.5436 kg
Ounces	16 oz = 1 lb	0.0823 kg
Drams	16 dr to 1 ox	0.0018 kg
Troy weight	27.344 gr = 1 dram	0.001 kg

Above, measures of weight

### **Bridgwater Borough weights and measures**

Bridgwater was a Corporate town from the Charter of King John of 1200, able to create its own bye-laws and run by a council under the Mayor, with appropriate officers.

In 1280 the owners of two thirds of the lordship claimed gallows, tumbrel, pillory, waifs and strays, wrecks of the sea, *the assize of bread and of ale, ...*, return of writs within the county, and a gaol.

By the later 14th century the borough court met 12 or 14 times each year. The court appointed 2 reeves, 2 bailiffs, 2 *aletasters*, 2 *breadweighers*, a janitor for each of the 4 town gates, and keepers or wardens of 12 streets or other areas into which the town was divided.

In the early 18th century the corporation appointed annually 17 constables, each in charge of an area which had not changed

since the Middle Ages, 2 *bread weighers*, 2 *surveyors of the market*, 2 shambles wardens, 2 sealers and provers of leather, 3 inquisitors of hides and skins, 3 *salt weighers*, 1 packer of herrings, and 2 *aletasters*. By the 1780s five men were holding all the port and market offices between them, in 1805 four men, and in 1811 three.

A survey made in 1819 showed that Bridgwater used the Winchester Corn Bushel, presumably administered by the market wardens. The Reform Acts of 1832 settled the boundaries in relation to Parliamentary representation, and the Municipal Corporations Act of 1835 created the system of election of councillors by the ratepayers, open public meetings and audited accounts. This lasted until the local government reforms of the 1970s which resulted in the reform of the County Councils, the establishment of District Councils and the abolition of some 250

Municipal Borough Councils like Bridgwater.

Under the 1835 Act responsibility for the administration of Weights and Measures was transferred to the new council. Two Surveyors of the Market, John Hoare and William Webb (who were appointed annually) administered the system.

The market buildings and dome were erected on Cornhill in 1826 by Mr Thomas Hutchings, to the design of John Bowen.

Kelly's *Directory of Somerset* 1890 noted:  
*The Market Hall and Corn Exchange, on Cornhill, form a handsome edifice, with an Ionic portico, and surmounted by a dome and lantern. The sheep market was held in West Street; adjoining the cattle and pig markets, constructed in 1889. The market on Wednesday, for corn, sheep, cattle, pigs and vegetable produce, is well attended; there is also a small market on Saturday for general produce, such as vegetables, fruit and meat. The fish market is open daily.*

On 26 February 1836 the Town Clerk, John Trevor was issued with a full set of Standards from the Exchequer (No 821) A full set comprised 27 different standards, 1 Yard Measure, 16 Avoirdupois weights from 56lb to 1/2 dram and 10 measures of capacity from a bushel to 1/2 gill.

The borough's stamp was BW  
VR  
B

The borough was granted in 1880 a UV Number of 378 to replace the borough's stamp

In 1839, Joseph Francis was reappointed as the inspector. Edward Cogle Priest was appointed as the inspector by the Recorder in 1848, as was James Boulting, a painter and plumber, in 1853, and he is listed in

1859 [and in 1875. He served until 1876. He had an annual salary of £10 + £15 emoluments, During 1866 he stamped 1763 weights, 113 liquid and 2 dry measures, and secured 2 convictions with fines and costs of 19s

Charles Sendell was appointed as inspector in 1877. He was recorded as a housepainter in 1881, and was listed as the from 1883 until 1899, although he did not qualify.

He was succeeded by William Kitch, who qualified in 1899/1900, and served until 1921, when authority was transferred to the county. The UV number 378 was still listed for the borough in 1928, but not in 1939.

Kelly's *Directory of Somerset*, 1919, noted that William Kitch lived at no 7 Blake Street, (Mill Cottage) and was Borough Inspector of Weights and Measures, and of explosives and petroleum; assessor and collector of income taxes and clerk and collector to St Mary's Cemetery – clearly at Wembdon Road.

William Kitch owned No 5 Blake Street, (Blake House), Bridgwater when it was bought in 1924 by the Borough, and became the museum. The mill cottage, no 7, next door, was occupied by the Assistant Curator and in the 1960's it was converted as an extension to the Museum. The lower floor is now the gallery housing the weights and measures display.

The Measures and Scale manufacturers  
John Warner & Sons

The firm of John Warner & Sons was begun in 1739. It was under continuous ownership by the same family for more than two centuries, they manufactured a wide variety of products before finally closing in 1949.

Jacob Warner was a Quaker, and by 1763 Jacob's son, John Warner, was in business as

a bell and brass founder at a house known as the 3 Bells and a Star, in Wood Street, Cheapside, where he was joined by Tomson Warner, his brother. Later they moved to Fore Street, Cripplegate in 1782. The partnership was dissolved. In 1784 Tomson remained in Fore Street, while John went to Fleet Street, where as John Warner & Sons he cast bells, sometimes putting his own name on them and sometimes that of the firm. However, it was from Tomson Warner that the business descended to the modern firm of John Warner & Sons. In 1788 Warner began making bells and continued to do so (with a hiatus between 1816 and 1850) until 1924.

In 1851 the firm consisted of 3 partners – (presumably Robert, Charles and another); it employed 141 men, 1 woman and 13 boys. It received an award at the 1851 Exhibition. In 1856 it cast the Great Bell for the clock tower in the Houses of Parliament (Big Ben) at Norton near Stockton-On-Tees in the furnaces of Warner, Lucas and Barrett. It was transported by rail and sea to London.

During WWII both the Cripplegate site and the Spitalfields site were badly damaged – the land was cleared afterwards. All of Warners' bellfoundry records were also destroyed. Their offices, at Jewin Crescent, Cripplegate, were moved to Spelman Street, Spitalfields, and in 1949 the company closed

#### De Grave & Co of London

In c.1767 Charles De Grave went into business making weights and balances. He continued in business until his death in 1799. His wife, Mary, took over the business, and continued to run it until 1844, using her name and description 'widow of Charles De Grave' on the products.

In 1814 it was listed as 'De Grave Mary, Scale and Weight Maker, 59 St Martin's-Le-

Grand' From 1817 to 1844 the business was known as De Grave and Son. In 1827 it was mentioned as 'Messrs. Mary De Grave and Son' re the new standard weights and measures.

In 1840 M. De Grave and Son advertised that all the scales in Post Offices in the UK are made by them. In 1844 Mary De Grave was succeeded by her son, presumably Edward from 1845 the business was De Grave, Short and Co, presumably involving Samuel Robinson Short. By 1851 William Fanner, scale maker, was living at 59 St Martins with his family and De Grave, Short and Fanner exhibited at the Great Exhibition. After William Fanner's death, the business reverted to the De Grave, Short and Co name. The firm became part of the Avery organisation in 1925

#### Sources.

Ronald E. Zupko, *British weight and measures: A History from Antiquity to the Seventeenth Century*, U Wisconsin Press, 1977.

Ronald E. Zupko, *Revolution in Measurement. Western European Weights and Measures since the Age of Science*. American Philosophical Society, 1990

Robert Dunning, ed, *The Victoria History of Somerset*, vol, 6, 1992 [ the Bridgwater Hundred volume]

Carl Ricketts with John Douglas, *Marks and Marking on Weights and Measures of the British Isles*, 1996

*All the above are in the Museum library.*

Edward H. Milligan, *Biographical Dictionary of British Quakers in Commerce and Industry, 1775-1920*, 2007, pp 459-470 [This has an account of the various members of the Warner family of London, brass and bell founders.]

Grace's Guide to British Industrial History  
[https://www.gracesguide.co.uk/Main\\_Page](https://www.gracesguide.co.uk/Main_Page)  
 for Warner and De Grave Scale Makers

Street & Pyke  
1773-1800

In the 1770s a large brass foundry in Bridgwater was being run by Robert Street and Thomas Pyke. They advertised that they had acquired Standard Weights and were making large numbers of scales and weights for checking gold coins according to the Acts of 1773-76.

Pyke was mayor of Bridgwater 1790/91 and 1810/11, and features in the Chubb portraits

*With the exception of the first, which is from the Museum's collection, the remainder of the Street and Pyke images are reproduced by kind permission of Professor Norman Biggs.*



Above one of John Chubb's portraits of Pyke  
*Blake Museum collection*

**NEW STANDARD MONEY WEIGHTS, 1775.**  
According to the late Act of Parliament, and by Appointment of the KING, stamp'd with the IMPERIAL CROWN, may be had of Messrs. STREET and PYKE, at their Wholesale Warehouse, in Bridgewater ;

**W**HO are preparing at their Brass Foundry, Ten Thousand Sets; Merchants, Shopkeepers, and Others, may be immediately supplied, on the best Terms. Their Weights are adapted for weighing the old & new Guinea, and the Multiplies thereof, with one Weight only, so as to avoid the Use of Penny weights and Grains, found upon Experience to be so very Troublesome and inconvenient, according to the Method observed at Whitechurche's Office, London, with Improvements: Their Steel Beam and Scales for adjusting, which is most accurately and lightly finish'd, is inclosed within a Glass-Case, to prevent the external Air from having the least Effect; and is so curiously contriv'd with Cranks, Springs, Pullies, &c. and so very nice, that an Atom would cause it to preponderate; they destroy every Weight which prove defective, but so small a Trifle as the thirty second Part of a Grain; in short, greater Exactness cannot be effected, and they are confident no Weights delivered to the Public, are more accurate and just.

N. B. They propose lodging in each Town, where their Weights may be sent, an Imperial Crown Standard, the better to try, examine, and regulate the same, and determine all Matters of dispute. Curious Wire, Box, Steel, and other Beams, to any Dimensions or Price, are now finish'd in the most accurate Manner, at their Manufactory, by the best Hands.

**GOLD COIN MONEY SCALES and WEIGHTS,** of various Sorts, are manufactured in the completest Manner, at STREET and PYKE's Wholesale Warehouse, in Bridgewater, Somerset. They have at a great Expence and Trouble, procur'd from the Tower of London, Standard Weights of every Sort; and the Public may depend on the greatest Accuracy and Truth in their Scales and Weights.—They employ near 200 Hands, and complet weekly Fourteen Hundred Sets; and are determin'd to sell as low, or lower than in London, Bristol, or Birmingham.

Statcal and Hydrostatcal Balances, by the King's Patent. Brazery, Foundery, Tin, and Ironmongery Goods. New-invented Bath Hobb Stoves, and with Ovens, of various Sorts and Patterns, with their proper Furniture, are finish'd in the completest Manner at their Manufactory.—Clock Dial Plates finish'd in a curious Manner, Engraving in general by the best Hands.—Clock Makers Brass and Steel Work, Tools and Materials of the best Sorts, &c. &c.

Above Two of Street and Pyke's advertisements



Above, a Street and Pyke scale in a wooden box. Lacks weights



Above, a Thomas Pyke coin balance



Above: Top of an enamelled case containing Street and Pyke coin scales and weights



Above: Metal case containing coin scales and weights by Street and Pyke



Above: Set of Street and Pyne coin weights found by metal-detectorist in Cornwall

### Sources

Prof Norman Biggs, of the London School of Economics, an online paper about Somerset weights.

<http://www.maths.lse.ac.uk/Personal/norman/SOM.pdf>

Prof Norman Biggs, 'Provincial coin-weights in the eighteenth century.' *British Numismatic Journal* 74 (2004) 102-120.

[Describes the guinea weights made by Street & Pyke in Bridgwater on the C18]

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[www.bridgwatermuseum.org.uk](http://www.bridgwatermuseum.org.uk)