

The Bells of St Mary, Graveley



St Mary, Graveley has a very interesting ring of bells in a 15th century tower. The oldest was cast by one John Dier when good Queen Bess was on the throne in 1589, and the 'new' trebles cast by Mears & Stainbank in Whitechapel, London, in 1889 in the reign of Queen Victoria, around the same time that Jack the Ripper was busy in the very same part of East London.



John Dier of Hitchin was hanged for murder in 1603, and the story behind the original bells themselves is even more curious. By 1442 a local Priory at Little Wymondley had bought a set of four bells, and the tower that held them was noted as being repaired (badly) in 1530 after suffering some serious damage (we've had a bit of that around here, a few towers were knocked down by earthquakes in the late 1100s and early 1200s).

The Priory was suppressed in 1536 and the total weight of the bells noted at 24cwt (1220 kg). They were then sold to Graveley parish by the Augmentation Office, but in 1557 a document was drawn up by a John Clark, a bell founder of Thesthewrth (now Datchworth), on behalf of the

parishioners, claiming that they only had 18cwt of metal in them and the parish had been cheated by Henry VIII's government. What exactly happened after that is unclear other than the 3rd of the four was recast by John Dier in 1589, (pictured above with rare modern 'canon retaining' headstock) and then a little later on, in 1605, it is believed that the 2nd was recast by Robert Oldfield of Hertford, presumably because John Dier was no longer available. There were then various recastings until the two new bells were added to make a six in 1889, and an older one was recast in 1894.



The six bells were finally rehung in 1929 by Gillet & Johnson from Croydon in the oak frame made by J Gray of Hertford in 1889 which was fitted when the ring was extended from a ring of four to a full circle ring of six that same year. The new Gillet & Johnson cast iron headstocks used self aligning double row metric bearings which had only just been invented. The bells have remained as rehung

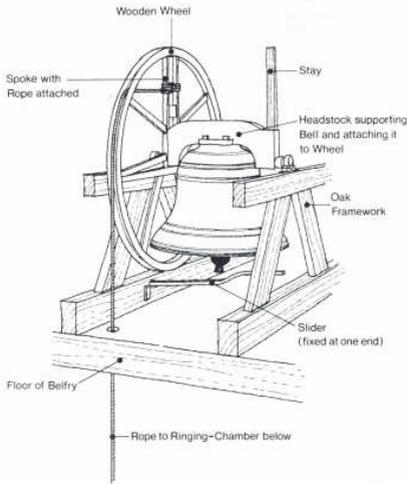
ever since, apart from routine maintenance, with an overhaul and bearing replacements in January 2004, and the odd set of new ropes in between.

Church bells are usually made from bronze or 'gunmetal', an alloy of 78% copper and 22% tin, and the heavier the bell, the deeper its tone. The gunmetal bells at St Mary range from the lightest, known as the treble at 4cwt, 1qtr, 21lbs (225kg) to the heaviest, known as the tenor which tips the scales at 9cwt (457kg). Inside each bell is a free swinging clapper, made from cast iron that is pivoted from a fixing at the top of the bell, and cast into the clapper is a 'ball' that strikes the inside of the bell at speeds of up to 600 mph and makes the sound as the bells are being rung.

Dates & Weights. Bells are usually noted by the weight of the tenor, the largest bell, and its musical key, which at St Mary is 'A.'

Bell	Date	Diameter	Weight Cwt-Qtr-Lbs	Cast by
Treble	1889	26.5/16"	4-1-21	Mears & Stainbank
2	1889	27.13/16	4-3-03	Mears & Stainbank
3	1605(?)	30.1/2"	5-2-00	Robert Oldfield(?)
4	1894	32.1/8"	6-0-08	Mears & Stainbank
5	1589	33.3/4"	7-0-00	John Dier
Tenor	1830	36.1/8"	9-0-00	T Mears

High in the tower, 30 ft above ground level and over the clock mechanism, the bells are mounted in the frame with cast iron headstocks and large bolts. The headstock itself pivots on the bearings mounted on shafts at each end. At one end of the headstock is a large wheel, through which the rope passes and is tied, and at the other end is long square piece of ash known as a 'stay' which holds the bell in place when it is 'up'.

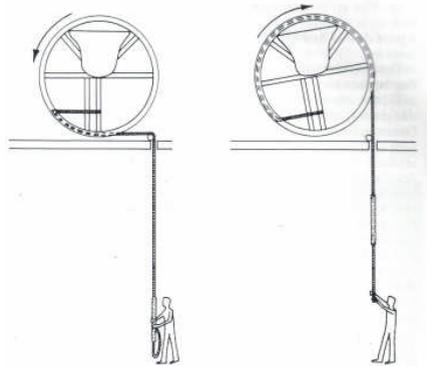


Ringling the bells is a skill that needs to be learned and can take several years to become reasonably proficient, and a lot more to become an expert.

Whilst continental bells that are just chimed with the bell hanging mouth down, British bellringing developed into 'full circle ringing' from the 15th Century and was refined by the 17th Century. An important benchmark was the publication of the books 'Tintinnalogia' in 1668 by Richard Duckworth and Fabian Stedman, and 'Campanologica' by Stedman in 1677 which details Stedman's Principle which he invented in 1657 and the popular method 'Grandsire'.

Full circle ringing starts with the bell 'up', that is with its mouth pointing upwards. To get it to this position it has to be 'rung up' gradually pulling on the rope, until it can be 'set' with the stay resting against the slider – a piece of wood that moves horizontally under the bell when it makes contact with the stay.

At this point the bell is at rest, balanced at 'handstroke' with just a small amount of rope around the wheel. Gently pulling the rope by the sally – the thick woollen part at around eye level, pulls the bell off balance, and it rotates full circle which wraps a lot more rope on to the wheel so the sally rise high in the air, and the other side of the stay meets the slider under the bell. This is known as the backstroke position. Pulling the rope again will bring the bell back off balance and it rotates back up to the handstroke.



The position of the bell rope at hand-stroke (left) and back-stroke (right).

Whilst this may sound simple, the force that the bell can exert on the rope when it reaches the horizontal position is four times its weight – for the tenor at St Mary this means almost two tons of force on a rope less than half an inch thick. This is not something you can stop! The skill in full circle ringing is to keep the bell just 'below the balance' so that it does not set, and then gives a continuous and consistent 'ding, dong' as it swings from handstroke to backstroke. At St Mary there will then five other bells, all being rung at the same time, with the bellringers timing the bells to ring one after the other, from the lightest to the heaviest, on handstroke and then backstroke. To ring one handstroke and one backstroke on each bell – that's 12 dings and dongs in total – takes just over two seconds.

Once basic handling is mastered then Methods are learned, and some of these have romantic names such as 'Reverse Canterbury Pleasure Bob Doubles', or are named after churches, villages, cities or counties. These are not tunes – you can't easily stop and start bells that are this heavy in order to ring notes and quavers – but patterns of movement, where bells change their order one place at a time on each stroke of the bell by the bell ringer pulling a little harder, or stopping the bell earlier in its cycle. For example, they may start off ringing in the order 123456, but then change places as below for the simple 'Plain Hunt on 5', where the tenor is keeping time at the back of each row. You may note that no two rows are the same until you get back to the beginning, and this gives rise to the expression 'ringing the changes'

123456
214356
241536
425136
452316
543216
534126
351426
315246
132546
123456

Plain Hunt on 5 only has ten 'rows' that are different before they are repeated. After this, methods become more complicated, with bells 'dodging' with other bells, or 'making places' – staying in the same place in the order for two or more blows, whilst the others change in front or behind them. With five bells you can reach a maximum of 120 different rows before repetition sets it. With six bells working, this increases to 720 rows, for seven working bells you can reach 5040 rows, and an extent this long is known as a 'peal', which takes around 3 hours to ring depending on the weight of the bells.

Beyond this, each additional working bell will increase the number of rows dramatically. By the time you get to 16 working bells (there are some rings this big!), the possible number of different rows is 20,922,789,888,000, which at 3.1 seconds a row would take over two million years to ring all possible changes in one method, if indeed it could be composed or memorised within a lifetime!

If you are interested in bellringing, then this will be explained in more detail when you have leaned the basics of bell handling.

The bells at St Mary, Graveley are rung for weddings as required, and for services on Sundays. The band practices on Thursday evenings. (R2 28.08.16)

For more details on bellringing times and dates, please contact Mrs M Bracey 07880 792986

For more information on bellringing and its history, please see: <http://www.bellringing.org/>

With thanks to the above web site, 'The Church Bells of Hertfordshire' by G Dodds, 'Hertfordshire Bellfounders' by J Dodds, and 'Discovering Bells and Bellringing' by J Camp.