Draw	Time	Band	Peal Speed	Score	Comments	Place
A	1130					
B	1200					
C	1230					
D	1300					
E	1330					
F	1400					
G	1430					
H	1500					

saintlaurencereading

National 12-Bell Contest Eliminator
Saturday, 19th March 2016

A warm welcome to the bands from Bristol, Leeds, Macclesfield, Melbourne, Norwich, Walsall and Worcester taking part in the contest today. The top 3 teams will qualify for the final at Ss Peter and Paul, Aston on Saturday 25th June.

The Judges today are Tom Hinks and Chris Poole.

The sound / strikeometer team are Stuart Flockton and Gareth Lawson.

The judges will be in the first floor room at the North West corner of the church. This means the whole first floor area is out of bounds for the day. We would also ask you not to congregate toward the West end of the church, and if you are meeting to go up to ring (or indeed on your way down after ringing) please keep volume levels down.

Timetable

10.00 Tea, coffee and bacon butties available in the nave

11.00 Welcome and Draw in the Nave, Simon Rudd (representative of the contest organising committee) and Abigail MacLeod (Church Warden at St Laurence)

12.00 First band rings   [typo: first band rings at 11:30]

15.00 Last band rings

Results when the judges are ready.

Refreshments

Tea, coffee and cakes will be available all day in the Nave.

There are a large number of pubs in Reading town centre, the Monks Retreat is the closest (head west from the west door of the church and you will see it it on the left) They are expecting thirsty ringers and have promised to get extra beer in! They also serve food, please ask stewards if you would like other suggestions for lunch venues.

There are limited toilet facilities in the church, so we suggest alternatives in the pub, Marks and Spencers (next door to the Monks Retreat) or Reading Museum (within the Town Hall, next to St Laurence).

The best place to listen to the ringing is the area to the west of the church.

Other things to do.

Reading can provide all town centre amenities including a wide variety of shopping opportunities, a selection of coffee shops, a cinema, and the Kennet and Avon Canal for a stroll. Reading Museum is in the Town Hall next to St Laurence (open 10 - 4pm) housing a life-size facsimile copy of the Bayeux tapestry. Also on display currently are a selection of twentieth century landscape paintings alongside crafts and poetry inspired by them.

Flockton and Rod Pipe. Although the output has been refined over the past few years, the core algorithms of each model have remained unchanged. The models use quite different calculations, but both fundamentally look for evenness in striking. Each model has a way of allowing for the natural variance in speed that may occur across the course of a touch, though neither model has a view on style. For example, handstroke leads may be closed or wide; consistency is what is important. The Strikeometer compares the time stamp of each blow in the touch (from Hawkear) with its ideal strike point (calculated by the models). These deviations are combined to give an overall error score for each piece of ringing.

How is the Strikeometer used in the contest?

Judges use the Strikeometer to aid and validate their own judging, not replace it. Judges will generally present the combined error score from the Strikeometer alongside the results of their own listening and deliberation. The Strikeometer score is not altered in any way by the judges, so it can be used to compare ringing across different venues. To give an idea of the range, the ringing at the 2015 Final at St Peter Mancroft had error marks ranging from 11.4 to 17.2. Since this is a measure of error, low is good and high is bad - though keep in mind that different rings of bells pose different challenges to the ringers!

Why use the Strikeometer at all?

The judges use the output from the Strikeometer models as it provides consistency that they cannot hope to match themselves over a full day of ringing. The Strikeometer judges band number eight with the same criteria as it judges band number one. It is therefore an ideal tool for marking faults, leaving the judges to concentrate on the flow and dynamics of each piece. This allows them to form a more complete picture of the ringing, enabling them to make relevant and useful comments on it. Where teams are close, it is absolutely right that the judges have the final decision as to the ranking. The Strikeometer models provide very useful information but judging is ultimately still a human process.

12-Bell Contest Committee
March 2016

History of the Bells

The tower of St Laurence's contains the only ring of twelve bells in the county of Berkshire.

The first record we have of bells in the tower is in the churchwardens' account roll of 1433 when "little", "middle" and "great" bells are mentioned. Some work was carried out in 1458 when probably another bell was added. There was certainly a ring of four in 1493, when Henry Kelsall left money in his will for the addition of a new tenor bell to augment the bells to a ring of five.

Apart from various recastings and rehangings, the bells remained a ring of five until 1662 when at a vestry meeting it was "agreed that the five bells in the steeple be made into eight tuneable bells and that the Churchwardens doe take care to see it done provided that noe tax be layd on the parishe towards the charge of altering the said bells and provided that the Churchwardens doe bring and secure the said eight bells in convenient tyme into the said steeple without charge to the pishe." The new bells were cast by Henry Knight of Reading.

There must have been an active band of ringers at the time who were well in touch with developments in change ringing, as in 1734 the first peal in Berkshire was rung on the bells. It is recorded on a board in the tower as follows:

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July ye 8th 1734
The whole peal of Grandsire Triples
5,040 Changes was rung in
three hours & ten minutes
by them whose names are
here mentioned.
Henry Samples, Treble.
Gyles Newbury, Second.
Joseph Philip, Third.
Robert Booth, Fourth.
Thomas Shurfield, Fifth.
Henry Peaty (Bob Caller) Sixth.
John Wells, Seventh.
William Ford & Abram Biship, Tenor.
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Several of the bells were recast over the course of the next decades until in 1748 the whole ring was taken down and recast and was augmented to ten by the addition of two trebles. This work was carried out by Robert Caitlin of London and provided Berkshire with its first ring of ten bells. In the Reading Mercury of 26th November 1748 it is recorded that "The Reading Youths rang at St Laurence's Church on the ten bells cast and hung by Mr Caitlin of Shoe Lane, London, a compleat peal of 5040 Cators, in 3 hours and 29 minutes." The Reading Youths were very active at this time. Their greatest achievement is recorded in the Reading Mercury of 1756: "Last Monday, being the Birthday of his Royal Highness the Duke of Cumberland, the field-pieces attending on Col. Jordan's Regiment, quarter'd here, were several times discharg'd, and the Soldiers fired three Vollies in the Market Place; whilst the famous READING YOUTHS were ringing at St Laurence's Church, in honour of the Day, Ten Thousand and eighty Quadruple changes, otherwise Grandsire Cators, which was performed in Six Hours and Thirty Minutes, being the first Time of their attempting the Peal".

The bells remained unaltered until 1881 when they were restored by John Taylor of Loughborough. The sixth, seventh and tenor were recast and all the bells rehung in the existing wooden frame. Nothing more was done to the bells for almost fifty years. By this time the bell frame had outlived its usefulness and the bell fittings were again in need of renewal. Therefore, in 1929 the ring was restored and the opportunity was taken to augment the ring to twelve. The money for the two new trebles came from an appeal made in The Ringing World. The new bells were dedicated and formally opened on 20th December 1929.

The first peal on the twelve was rung on 21st April 1930 and was the first peal on twelve bells in Berkshire. The twelve bell peal by the local band was rung on 22nd February 1933.

Since that time the bells have proved popular with both local and visiting ringers. Over 450 peals have now been rung in the tower and there is an active local band who ring at both St Laurence's and at St Mary's.

Hawkear and the Strikeometer - a brief guide

Recent years have seen 12-Bell Contest judges using computer software (known as Hawkear and the Strikeometer) to assist them in the judging process. All who have used this technology attest to its usefulness as a tool to consistently judge ringing over the course of a full day. But what exactly is it? How does it work? How is it used in the contest? Why use it at all? The information below aims to answer these questions.

What are Hawkear and the Strikeometer?

Hawkear is a piece of software that takes a digital recording of a piece of ringing and converts it into a text file, just like you would open in Word or Notepad on your computer. This software was primarily developed by Ian McCallion. Each bell strike in the touch is written to this file. It shows the stroke, the bell number that struck and a timestamp. A sample of a whole pull of rounds is given here:

H 1 0X0000 H 2 0X00be H 3 0X01f4 H 4 0X02bc H 5 0X03d4 H 6 0X0492 H 7 0X0596 H 8 0X064a H 9 0X0730 H O 0X07e4 H E 0X08fc H T 0X0a1e B 1 0X0ac8 B 2 0X0bb8 B 3 0X0c80 B 4 0X0cee B 5 0X0dd4 B 6 0X0ea6 B 7 0X0f64 B 8 0X1068 B 9 0X1144 B O 0X1202 B E 0X12ac B T 0X13ec

This is difficult for humans to make much sense of, so further processing is needed in order to interpret the data into something that can be understood. The software that does this is known as 'the **Strikeometer'**. It takes the data in the text file and converts it into useful information about the touch. It calculates statistics that show how even the striking was over a piece of ringing. It can even be used to print a real-life method grid, showing how each person in the band rang their bell over the course of the touch.

How does it work?

The Strikeometer essentially compares where each bell actually strikes (known from the Hawkear data) with where the bell would *ideally* strike in a perfect row. But how does a computer know when the ideal strike-point is?

For the contest, two different models are used to calculate the ideal strike times of each bell. These models were developed by Stuart