

This PDF version of the manual is arranged to look like the original A5 booklet.

Page 1 of the booklet is on a page by itself (to the right of this note), pages 2 and 3 come next to each another etc. Page 16 is on a left page by itself.

!Methods

a church bell ringing program

by

Kate & David Crennell

Church bell method ringing demonstration on RISCOS computers.

Contents

The application !Methods animates a band of from 4 to 16 church bell ringers with any of a selection of almost 200 standard methods. If you do not ring church bells yourself, first read the section:
'An Introduction to church bell ringing'.

Program tested on versions of RISCOS 3, 4 and 5 including an A4, 7500FE, Kinetic StrongARM RISC PC, Iyonix and VirtualAcorn* on PCs running Windows. 2 February 2006

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The software to which this manual relates remains our copyright:

*You must not alter the program or manual in any way but may distribute them in their entirety to others for non-commercial use.
The users of such copies should be asked to send us a minimum donation of £10 towards guild bell restoration.
(Cheques to 'Fortran Friends' at the above address).*

Our web page for RISCOS ringing applications is:

<http://fortran.orpheusweb.co.uk/Bells/>

If you know of any other ringing applications for RISCOS, please let us know so that we can add them to these web pages. There are also useful links to a glossary and to 'Learn to ring' pages.

We appreciate comments and suggestions for improvements from users who have sent us a donation towards bell restoration.

We thank John Norris for his help in showing how to use *place notation* and both he and Alan Griffin for their explanations of some of the more complicated methods and help in improving the ringing style in the animations.

* Available from <http://www.virtualacorn.co.uk>

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Type conventions.

This program uses the usual RISCOS conventions in the text with respect to mouse buttons:

<Select> the left mouse button
<Menu> the middle mouse button
<Adjust> the right mouse button

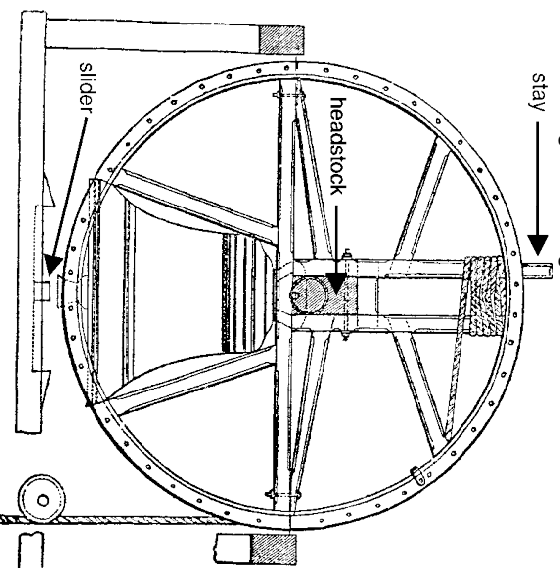
Words normally spoken in the tower are enclosed in double quotes, e.g. "Look To".

Italic text is used for technical terms used in bell ringing and in the program.

Bold text is used for headings and when defining keywords in program windows.

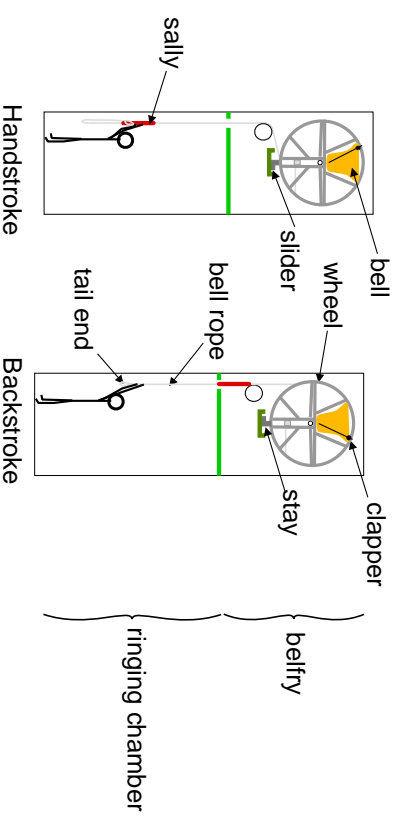
An introduction to church bell ringing

Church bells hung for change ringing are mounted on a 'headstock' supported in bearings. A rope wrapped around a wheel attached to the headstock allows the ringer to swing the bell.



Before change ringing can begin the bells must be 'rung up'. The ringer pulls on the rope in time with the natural swing of the bell, increasing its amplitude until eventually the bell rises to and just passes the mouth up position. A piece of wood called a 'stay' pushes the 'slider' to one side or the other, allowing the bell to rest in the 'Up' position. After the bell has been rung up, the ringer pulls it back gently to the balance point and then each successive pull of the rope turns the bell through a full circle, first in one direction and then in the other. These two pulls of the rope are called 'handstroke' and 'backstroke' respectively, the two together being known as a 'whole pull'. The clapper turns faster than the bell, catching it up and striking it when it is about 3/4 of the way round. Notice how the clapper rests against the rim on opposite sides of the bell at the top of the two strokes in the next diagram.

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These two diagrams show the positions of a bell ringer just before pulling off on the two strokes. On the left is the *handstroke* where the hands are on the thick fluffy *sally*. On the right is the *backstroke* with the hands near the end of the rope. Between these two strokes the bell and wheel do a complete turn. The ringer always keeps the end of the rope held in one hand even while they are both on the sally.

The bell ropes are usually arranged in a circle in the ringing chamber so that each ringer can easily see all the others and notice how their arms move.

The person with the highest note (*Treble*) bell starts the ringing by calling "*Look To*" to get all the ringers to hold their ropes in preparation, then "*Treble's Going*" and finally "*Treble's Gone*" when the bell has passed the balance point and begun to fall. "*Stand*" is called to stop the ringing; the ringers all allow their bells to pass the balance point and rest gently on the stay.

Rounds is the name given to ringing the bells in order from the highest to the lowest note, and is how all ringing begins and usually ends.

For six bells this is written out as the line of numbers 1 2 3 4 5 6 .

Look at our web page:

<http://fortran.orpheusweb.co.uk/Bells/software/change.htm>

to see the animation of the ringers above.

For more information on bells and ringing, look at the web site of the Central Council of Church Bell Ringers: <http://www.cccbr.org.uk>

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An introduction to methods rung on church bells

Church bells have been rung in England for almost 1000 years to call parishioners to church. Originally churches had just one bell, probably rung by the priest who conducted the service. In time more bells were bought and rung and a band of ringers recruited.

About 400 years ago the idea of changing the order of the bells was suggested. Bells are heavy, often very heavy, and a ringer can only make a small alteration to the swing of a bell when it is in motion. However, late 16th century developments in bell hanging made it possible for two bells to change places. The one earlier in the order holds their bell on the balance point in the inverted position long enough to allow the following bell to ring before it. The one later in the order stops their bell rising to the balance point by catching the rope earlier, so that the bell swings down sooner.

At first a conductor called the 'changes' to tell the ringers which pair of bells were to swap. 'Call Changes' are still rung in most church towers from time to time and are often the first thing a beginner learns after rounds. However, early in the 17th century 'methods' began to be developed where the order of the bells was changed according to a pattern memorised by the ringers.

Some of the old methods, such as Grandsire and Plain Bob, are still popular today and are usually those learnt first by beginners because of their relatively simple pattern. Many ringers progress to more complicated methods such as the 'Surprise' ones as they gain experience.

Whether simple or complicated, methods follow the same basic rules:

- no bell may move more than one place at a time in the order,
- no change may be repeated,
- no bell may stay in the same place for more than two changes*.

Some methods have a 'covering' bell - the tenor (the deepest bell) rings last at the end of each change; these are usually the ones rung on odd numbers of changing bells like Grandsire. Methods for even numbers of bells are usually rung without a covering bell.

Method names have two parts; the first describes the method (e.g. 'Plain Bob') and the second describes the number of changing bells:

#bells name	#bells name	#bells name	#bells name
3 Singles	4 Minimus	5 Doubles	6 Minor
7 Triples	8 Major	9 Caters	10 Royal
11 Cinquses	12 Maximus		

* There are exceptions to this rule. E.g. in Bob Doubles 4 blows are struck in the last place

So 'Plain Bob Major' means the Plain Bob method rung on 8 bells.

In most methods all the changing bells except the treble follow the same pattern but start at a different point on the path. The treble usually has a simpler 'plain hunting' or 'treble bob hunting' path. In a few methods, known as 'principles' all the 'working' bells follow the same path. (The most famous of these is 'Stedman', invented by Fabian Stedman in the 17th century.)

In ringing text books the paths of the treble and an 'inside' bell are drawn in. Traditionally the path of the treble was drawn in 'red' and the path of an inside bell in blue and ringers still talk of learning or ringing a method 'by the blue line'. The diagram on the right shows a course of Plain Hunt Doubles with the 'blue' line through bell 3. (In monochrome the red looks much darker than the blue.)

A 'plain course' is the number of changes needed in this pattern for the bells to get back to ringing rounds. Usually the 'plain course' of a method produces fewer changes than the total number of possible permutations of the numbers because bells can only swap one place at a time. Grandsire Doubles, for example, has only 30 changes in the plain course out of the 120 changes possible. A conductor can call 'Bobs' or 'Singles' at appropriate points to access the remaining changes. With five changing bells, a 'Single' swaps the position of two bells; a 'Bob' affects the position of three bells. A piece of method ringing which includes these calls is called a 'touch' as opposed to a plain course.

On higher numbers of bells, where there are thousands of permutations, 'Bobs' and 'Singles' may be used to produce musical touches of convenient length.

There are many books on change ringing methods where you can find further information. Details can be obtained from the Central Council of Church Bell Ringers who maintain a bibliography on the Internet, start at: <http://www.ccbr.org.uk> and follow links to Publications and Education.

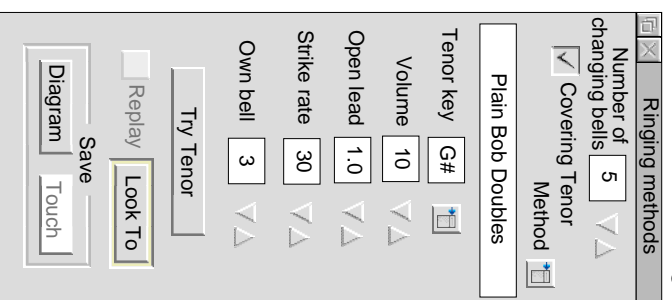
Program running instructions

This Desktop program shows an animated set of Church bell ringers . It allows users to demonstrate bell ringing methods on any number of bells from four to sixteen and to learn to watch the ropes.

Start the program by double-clicking on the !Methods filer icon to load it on to the icon bar . The program detects the screen mode of your desktop because it needs at least a 16 colour mode. The program works better in *multi-sync* modes. Although it may run in other modes, the ringers may appear squashed.

Methods	Click <Menu> over the icon on the icon bar to see 3 options:
Info	displays a small window with program details
Help	displays a window mostly with running instructions
Quit	stops the program

Click the <Select> mouse button over the icon on the icon bar to see the main window with the running choices which are saved between runs:



the number of changing bells,
whether there is a covering tenor,
menu of available methods,
selected method,
the note of the tenor [B:c#],
the volume of the sound [0:15],
the length of the 'open lead' gap [0:2],
the strike rate [5:60],
selected ringer for display [0: #bells].

Figure 1. (The main window)

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Number of changing bells allows you to change the number of bells used in the method by clicking <Select> on the 'up' or 'down' arrows, or <Adjust> will change it the other way. This number does *not* include any covering Tenor bell. The minimum total number of bells is 4 but the maximum depends on the screen width.

Click over **Covering Tenor** to select whether the lowest bell always rings at the end of each change or takes part in the changes.

Click over the icon to the right of **Method** and select a change ringing method from the menu of those available for the selected *Number of changing bells*. This method name is displayed in the space below.

To change the pitch of the ring, click on the icon to the right of **Tenor Key** and select one of the range of possible keys expressed in musical notation*.

Click on the arrows next to **Volume** to change the volume of the sound (Maximum 15, Minimum 0) Asking for zero volume will cause a warning message: *The bells are silent with volume=0.*

Click on the **Try Tenor** button to hear the sound.

Click on the arrows next to **Open lead** to change the pause before the leading bell's hand stroke. Values from 0 to 2 in steps of 0.2 are allowed. The standard open lead has a value of 1 meaning there will be pause of one blow before the handstroke. Closed leads have a value of 0.

Click on the arrows next to **Strike rate** to change the speed of ringing. Values of 5 to 60 are allowed. A *strike rate* of 30 means that 30 rounds are rung in a minute and is about normal for six bells. For 12 bells the normal rate would be about 25 per minute. Lower values of *strike rate* are useful for learning ropesight. Values outside the normal are shown coloured.

Click on the arrows next to **Own bell** to change how the ringers are displayed. A **0** shows them in a line with the treble at the left. Any other number tries to show the ringers as seen from the bell of that number. The two displays are shown on the next two pages. Click over the number icon to change its colour; it will be the colour of the person you are ringing over.

Click on **Look To** to start the animation which takes place in a special ringing window which cannot be moved; it takes all the Wimp time so that the ringing speed is not affected by other Wimp activities.

Click on **Diagram** to save the diagram; this opens a window with icons in addition to those of a standard save window where you can select the bells to be followed with coloured lines and specify whether the strokes are to be labelled with **Handstroke/Backstroke**. Before you have clicked on "Look To", the diagram of a plain course will be saved; if you have conducted a touch, then this new diagram will be saved (see the *Diagrams* section, page 14).

Replay and (save) **Touch** are only active after you have "Called" a touch.

* See also section: *Making minor adjustments to the pitch of the ring.*

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Ringling a Plain Course

The ringling starts half a second after the ringling window is set up.

One *whole pull* (two strokes) is rung before you can start the method. This simulates the time needed in a tower for the ringers to settle down and correct their striking. Watch the ringers hands perform a 'Mexican Wave' as they ring the hand and backstrokes. Ringling stops at the end of a backstroke after you have clicked over the word **Stand**.

At the top of the window your ringers are shown in this figure ringling their method. Instructions telling you how to control the method ringling are at the bottom left. To the right is a scrolling picture of the *diagram* for the touch without the red and blue lines.

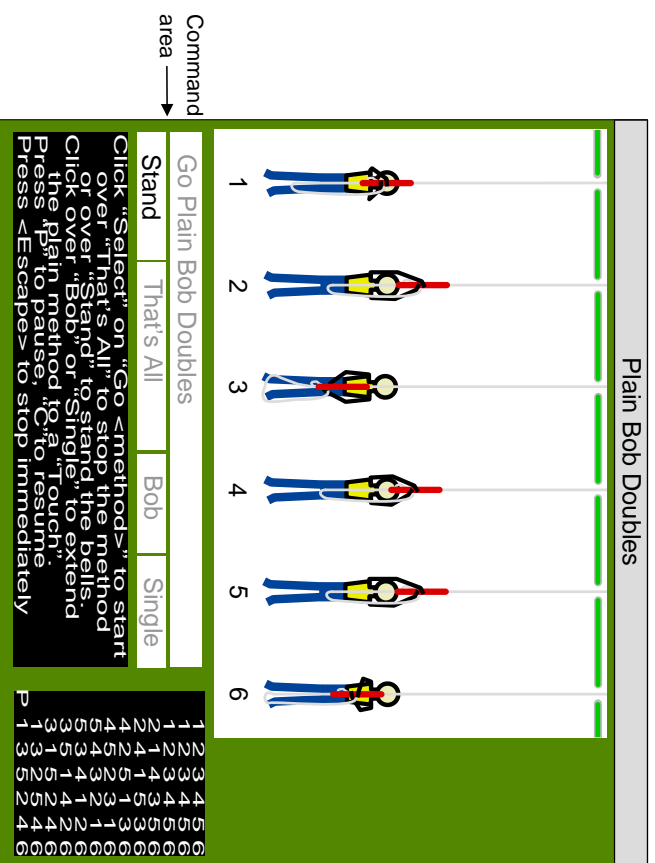


Figure 2a. (The in-line ringling window)

The window showing the ringling circle from the point of view of bell 3 is shown on the next page. All the parts of the window are the same apart from the white area with the ringers. Ringer 3 is shown *from behind* with only the forearms, rope and Sally thus approximating what the ringer actually sees.

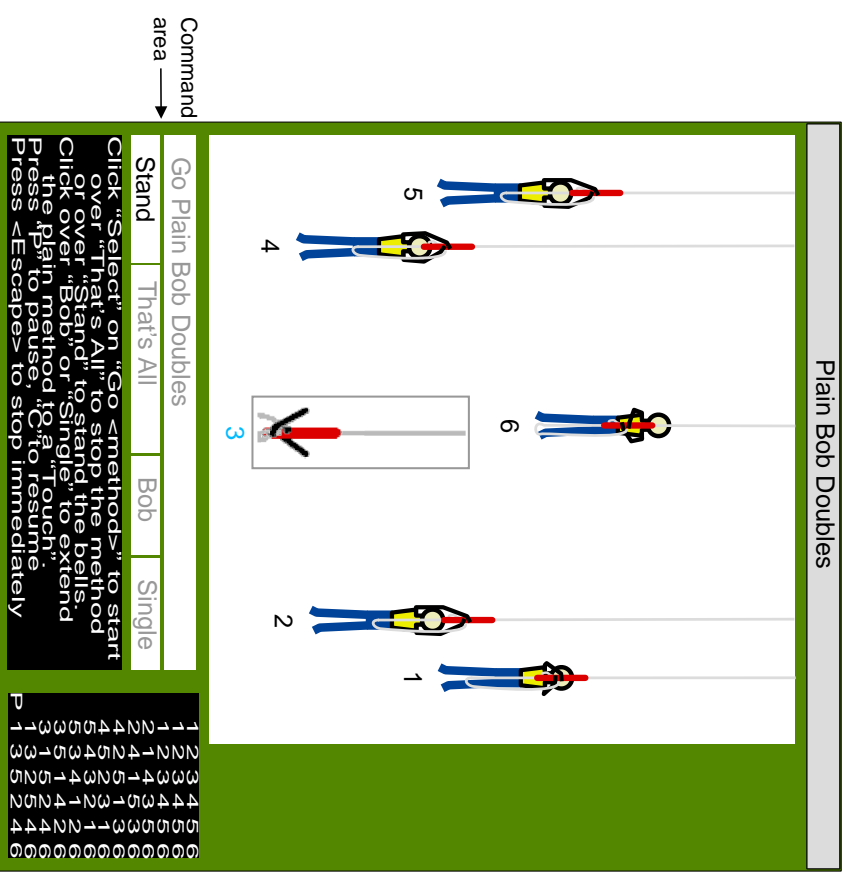


Figure 2b. (The ringling circle display)

Initially the command areas (black or grey text on white backgrounds) are as shown in Figures 2. After the initial *whole pull* of rounds, the text "Go <method>" turns from grey to black (<method> is your selected method) showing it is ready for you to click over it to start the method animation :



then, when the method has actually started, it becomes grey again.

* The *Erin* and *Cloisters* methods on more than 5 bells are special in that "Bob" or "Single" may be called and take effect on the first change of the method. For these you can start the method either by clicking over "Go <method>" or over "Bob" or over "Single".

Press the 'P' key to pause the ringing at any time so that you can look at the ringers' positions more easily; press 'C' to continue the ringing. Click on "Stand" to end the ringing and <Select> to close the ringing window. Then you should see the main window (Figure 1), where you can change the choices or method and try again.

Press the <Esc> key to stop the ringing and close the window immediately but *this emergency action will destroy any touch you may have been calling*. Near the end of the method, the "That's All" will turn black:



click on it to return to Rounds.

"Calling" a Touch

At the appropriate time within a lead[†] the words "Bob" and/or "Single" will turn from grey to black:



then you can click on them to conduct a *Touch*.

Click over "That's All" when you have finished[†], then "Stand" and close the window. Then you can save the **Diagram** for the touch including your Bobs and Singles or you can save the **Touch**. Dragging such a touch file to the application lets you replay your composition by selecting the tick next to **Replay** in the main window before **Look To**. Alternatively you can make up your own touch file with an editor (see "Touch Format" on page 14).

Making minor adjustments to the pitch of the ring

The exact pitch of the tenor (as shown in the *Tenor* key box in the main window) may vary slightly from computer to computer.

You can compensate for this by changing the text file 'Resources.pitch' within the application. Use !Edit to change the one number in this file defining how much to sharpen the note. A value of +(-)341.3 theoretically sharpens (flattens) it by one semitone. Then reload the program.

* Rows in the diagram section of the ringing window which are a 'lead end' begin with a letter- a **P** stands for a *Plain lead*, a **B** for a *Bob* or an **S** for a *Single*.

† If the method ends at a Bob or a Single you must first click the *Bob* or *Single* box, followed by *That's All*.

Format of a methods data file

This is an ASCII file with two types of entry:

1 a single word defining the number of changing bells, e.g. 'Singles', 'Doubles' etc. used in the subsequent method definitions. The file finishes with the line: 'End'.

2 lines defining a method:

these normally contain 8 fields separated by 7 commas, e.g.

```
Plain Bob,5,X1X1X1X1X,12.,14.,123.,W,X
```

The fields in the method definition are:

- the name,
- of the number of changing bells* ,
- the 'in-lead' Place Notation[†] ,
- the Plain 'Lead-end' notation,
- the Bob 'Lead-end' notation,
- the Single 'Lead-end' notation,
- the last two fields are not used by !Methods,
- there are additional fields for the *Stedman*, *Cloisters* and *Erin* methods.

Adding methods

You can add more methods by editing in a new line for each new method into the file. Then you must reload the program. Your method will appear in the appropriate menu for the number of changing bells.

Format of a touch data file[‡]

Line	Example
Number of changing bells	5
Method name	Stedman
Number of changes	33
calls (Plain, Bob, Single)	SSPPP
<i>(this line of up to 255 characters can be repeated allowing 1023 calls)</i>	

* The method definitions are grouped by their number of changing bells in ascending order. The groups are separated by the names defined in 1) above.

† A short description of Place Notation is given in the file: 'Docs.DataFormat'.

‡ See the file 'Docs.TouchFormat' for details on how to use Touch files.

Diagrams

The opposite page shows how to save a 'diagram' and the various options. First select the required method from the main window (page 8), then the optional components. Finally enter a file name and drag the 'Draw' icon either to !Draw or to a filler window to save the diagram as a Draw file.

What is a 'diagram'?

A method can be written out in lines giving the order of the bells to ring at each pull. The sequence of changes starts with rounds and returns to rounds; it is called a 'Diagram'. The one shown on the right of the page opposite is for a plain course of Plain Bob Doubles. It has 40 rows.

Lines are drawn under the changes where the treble returns to 'lead', that is, it reaches the position on the row when it rings first, (the 1st place). Each such lead end is marked with a letter, 'P' for a Plain lead, 'B' for a Bob or 'S' for a Single. The Bobs and Singles will be shown for a touch when you compose one with the program. The optional column on the left (**B** or **H**) tells you whether you ring Back or Hand Stroke for that row.

The path of the treble (bell 1) is usually drawn in red to show the way that bell moves. In monochrome you see the lines are grey but the 'red line' passes through the numbers '1'. The 'blue line' is the path of some other bell (in this case bell 3). In this method the treble follows a simple Plain Hunt path just moving straight up to the back and down to the front again. The changing bells (2, 3, 4, and 5) follow identical paths but displaced as shown by the numbers in circles to the right of the diagram. Whereas the blue line for bell 3 starts at the top of the diagram, bell 2 starts its plain course by following the blue line shown here after the first 'lead', the path for bell 4 starts after the second 'lead' and that for bell 5 after the third.

Some ringers prefer to see the blue line drawn from left to right and compressed, rather than from top to bottom. This is easily done using !Draw and the result is shown opposite for Bob Doubles.

You can also draw coloured paths simultaneously for up to 8 bells, shown for the example of Bob Doubles at the bottom of the opposite page.

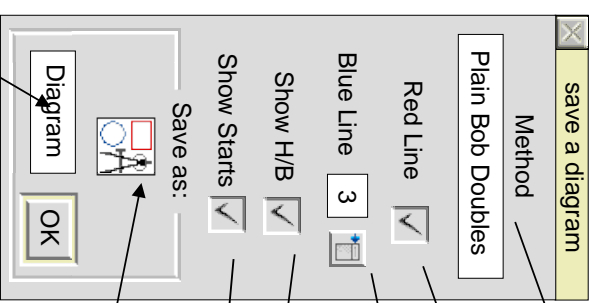
See the explanation in the file 'resources.colours' for how to change the colours of the lines.

The small booklet in the Jasper Snowdon series, 'Diagrams', has many printed method diagrams of plain courses. You can buy it from the web site of the Central Council of Church Bell Ringers:

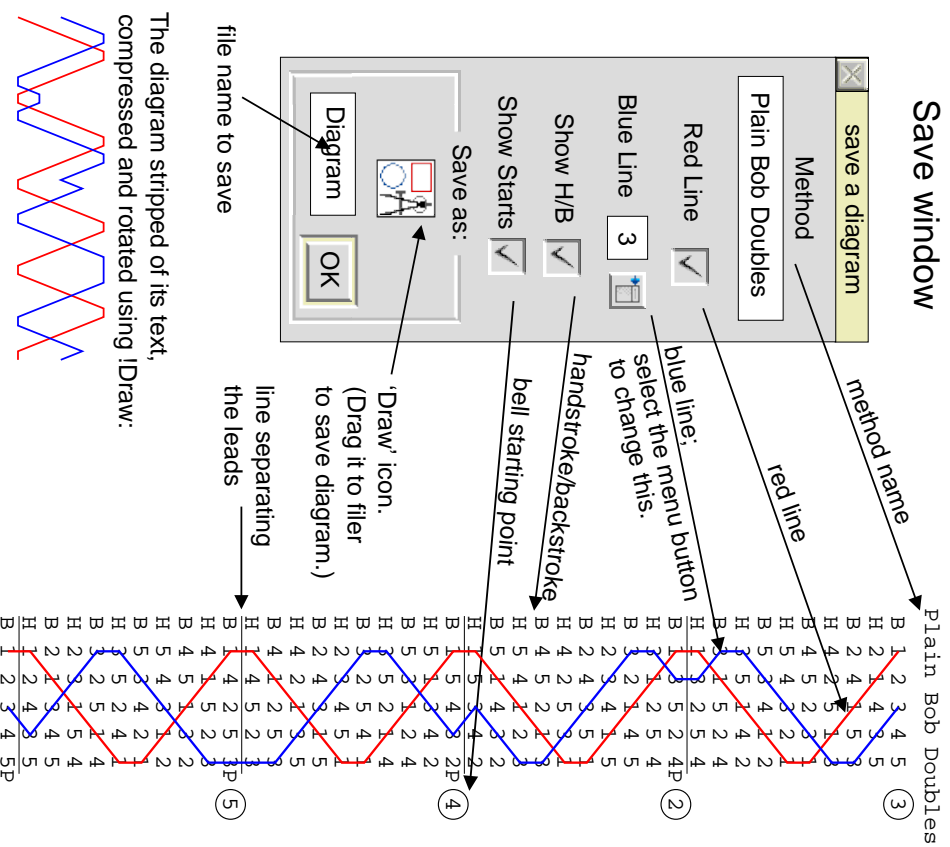
<http://www.cccbr.org.uk>

and follow links to publications.

Save window



Diagram



Disc contents

Within the application !Methods, there are three directories (to see them, hold down <Shift> while double-clicking <Select> on the !Methods folder icon):-

Docs: documentation directory with the following files:

DataFormat	Describes the format of the data file for storing methods (see below, this file also has a description of <i>Place Notation</i>)
Diagrams	A description of the method diagrams which this program can produce as Draw files
Intro	An introduction to church bell ringing
Pitch	How to correct the pitch of the sound. This is especially important if you are using the program on VirtualAccorn
Strokes	A !Draw file showing the two strokes used in church bell ringing
TouchFormat	Format of a Touch file; how it can be used and edited

Examples: example touches files to try

Resources: directory of data used by the program

Churchbell	Sound sample of church bell
colours	colours used for lines in <i>Diagrams</i> . (The format is described within the file).
D16/spr	Animation sprites for 16 colours
D256/spr	Animation sprites for 256 colours
methods	the stored methods
Options	user's settings stored from one session to the next
pitch	change from standard pitch (see above)
Templates	window definitions