LUTHIER'S LUTE

In the final part of this series, **Shaun Newman** shows how to attach the fretting and fingerboard, prepare and fit the tail strap and bridge, before attaching the strings and finally tuning up

In part 2 I described how the lute soundboard should be made and how the decorative rosette is produced. Next came a method for attaching the soundboard to the bowl, binding the edges and preparing the fingerboard.

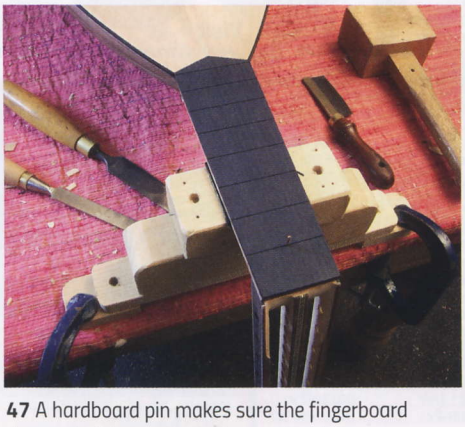
Attaching & fretting the fingerboard

To help prevent the fingerboard from sliding out of line when it is glued into place, a 15mm hardboard pin is passed through the centre of the first fret and tapped into the neck (**photo 47**). The small hole produced will later be covered by the first fret. The lower end of the fingerboard is prevented from moving by the tightly fitting 'V' join. The fingerboard can then be attached with Titebond and held firmly by strong elastic bands, linen tape or cramps. I like to use elastic bands as cramps can slide off due to the curvature on the underside of the neck (**photo 48**).

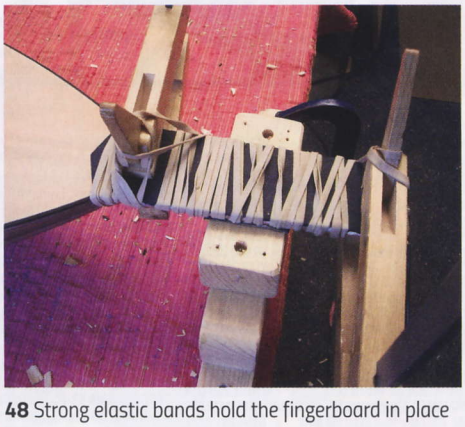
Once the Titebond has cured, the frets can be put into the pre-prepared slots. They are first cut individually from strands of fret wire and each one is cut to around 6mm oversize; this enables one end to be held between the finger and thumb as it is tapped in. A brass or nylon-faced hammer should be used for this task, as a steel-faced one will dent the fret crowns (**photo 49**).

Fret spacings should be as follows (all measurements are from the nut end of the fingerboard and are in millimetres): fret 1 – 34; fret 2 – 65; fret 3 – 95.5; fret 4 –124; fret 5 – 151; fret 6 – 176; fret 7 – 200; fret 8 – 222; fret 9 – 242.5; fret 10 – 263; fret 11 – 283.5; and fret 12 – 300. As with the guitar, fret 12 marks half the string length. The overall string length, i.e. from the inside edge of the nut to the inside edge of the saddle, is 600.5. The extra 0.5mm is to act as compensation as a string is depressed to avoid intonation issues.

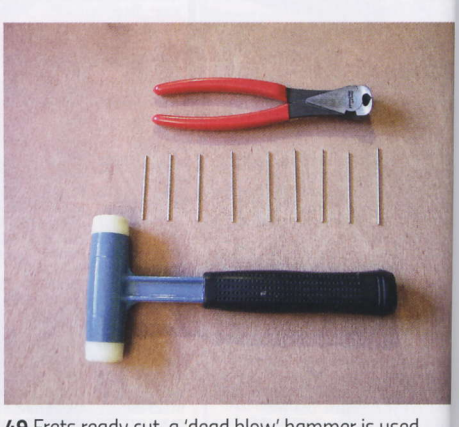
Once in place the frets should be levelled, and this can be done with a flat whetstone skimmed across the tops of all eight of them. Once they are



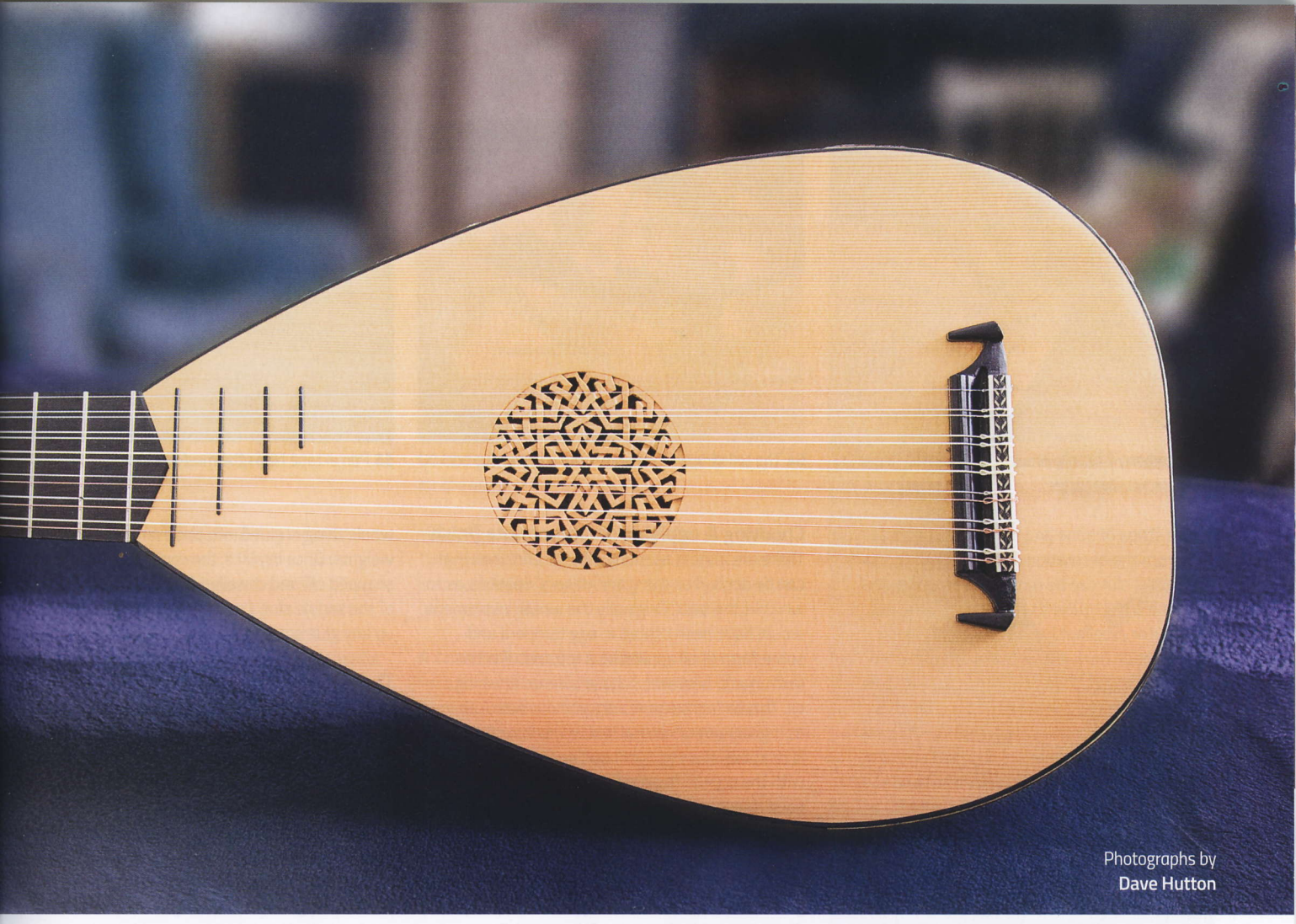
47 A hardboard pin makes sure the fingerboard does not slide out of position as the glue cures



48 Strong elastic bands hold the fingerboard in place



49 Frets ready cut, a 'dead blow' hammer is used to tap them in



Photographs by **Dave Hutton**

all at the same height, the flattened tops should be re-crowned, i.e. the dome shape is re-cut. There are several specialist tools to do this job, but the simplest is to take a triangular file (of the sort used to sharpen saws) and to round off the three sharp edges with a whetstone. Masking tape is applied to the fingerboard between the frets for protection and the file is used in a forward and upward sweeping motion to recreate the dome on the top of each one being treated. A final check is then taken with a straightedge and any fret sitting too high should get further attention along the same lines.

Having completed the metal fretting, attention must be given to frets 9 to 12. These are made from thin strips of ebony (**photos 50** & **51**) and attached with Titebond. Once cut they can be held in place with weights (**photo 52**), and then trimmed to the same height at the metal frets. They are then crowned using a small thumb plane, or the triangular file mentioned earlier (**photo 53**).

Preparing & fitting the tail strap

The tail strap is added to help prevent the ribs from bursting away from the tailblock. It is often cut into quite a fancy shape and can be made as a single strip or in several parts. I chose to make this one in three parts. The strap is made from rosewood thinned to around 1.5mm. I backed it with a sycamore veneer making the edges attractive, but this is not necessary (**photo 54**).

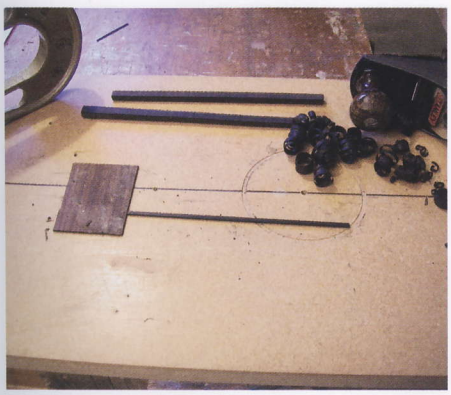
Once cut it has to be bent on the hot iron to exactly match the curvature of the bowl. It is then held in place with strong masking tape. To help the masking tape to grip, it is advisable to put parcel tape on the soundboard and around the lower edge of the bowl (**photos 55** & **56**).

For security, I made some small rosewood dowels and pinned the strap to the tailblock and bowl with them; this really was a 'belt and braces' approach, and not strictly necessary.

Preparing the bridge

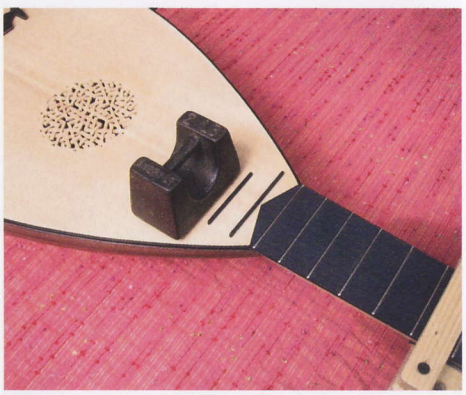
There are many variations on the shape and size of lute bridges. The one made here has a relatively traditional shape but has a saddle similar to ones used on a classical guitar. This enables the action (i.e. the height of the strings above the frets) to be adjusted to suit the player's style. The bridge is prepared from a billet of ebony measuring 150mm long, 30mm wide × 8mm thick. With this bridge, I first placed a sycamore and then a black tulipwood veneer on the underside to offer an attractive edge when the bridge is fitted.

The tie block can be left plain, but I think a little decoration adds something to the overall appearance. The decoration given here consists



50 Ebony frets under preparation

51 Frets 9-12



52 An old grocers' weight is useful to hold the frets in place as the glue cures

53 The ebony frets are brought to the same height as the nickel silver ones

54 The tail strap in rosewood with a sycamore back

55 Parcel tape helps the masking tape to grip

of two strips of bone and some purfling scraps left over from the decoration on the back of the neck. The saddle slot can be removed with a dovetail saw, or a small router as here. I find the Proxxon mini router excellent for this task. The saddle itself is made from ebony and is around 2mm thick × 6mm high. The back edge of the saddle (i.e. the side facing the tail end of the bowl) is sloped downwards to allow the strings to pass comfortably through the holes drilled through the tie block and the bass side of the saddle sits around 1.5mm higher than the treble.

To help prevent the bridge from moving while it is glued in place, two holes each 2mm across are drilled down through the saddle slot around 3mm from each end. When the bridge is positioned over the soundboard, the exact location of the holes can be marked onto the spruce and 2mm holes then drilled through the soundboard. This sounds drastic, but is common practice, especially while fitting classical guitar bridges. The bridge can then be held in place with two cocktail sticks that are passed through the bridge and into the soundboard (**photo 57**).

Here, the bridge is only dry fitted to ensure all fits. Once satisfied all is well, the area beneath where the bridge will sit is masked off ready for the finish. A piece of wide masking tape is placed onto the soundboard and the bridge with its cocktail sticks is placed into position. A scalpel is then used to trace around the edges of the bridge, and the waste tape removed leaving a patch that exactly matches the shape of the outline. The edges of the tape must be firmly pressed down to prevent any of the finish from leaching through and reducing the effective gluing surface.

Choosing & applying an appropriate finish

There are almost as many different finishes that can be applied as there are makers' opinions as to which is the best. Originally the whole instrument would have been coated in egg tempera and some form of oil applied as a top coat. For this instrument, however, I chose Liberon finishing oil. This oil has become very popular with luthiers as it gives a very natural feel to the instrument, is relatively easy to apply and does not interfere with the sound. Too may stringed instruments have the sound locked in through inappropriate finishes, such as thick varnishes.

The finishing oil requires just three coats, and the final one can be rubbed in with 2,500 grit wet & dry paper. This helps to fill any tiny discrepancies in the grain of the wood. For a perfect finish on the rosewood, grain filler can be applied and usually black works best. Around five hours should be left between coats, and the oil will oxidise over the coming weeks to produce a hard-wearing finish that is easy to maintain (**photo 58**). One advantage of using Liberon finishing oil is that minor scratches or grazes can be re-coated, and the re-finish is not noticeable.

Attaching the bridge

After the Liberon finishing oil has dried the bridge can be fitted. The masking tape on the soundboard should first be carefully removed. Sometimes it peels off easily, but to be safe, I usually trace around the edge with a scalpel. The lightest of touch is needed here, as otherwise the soundboard can be weakened if a cut is made into the spruce. The cocktail sticks are passed through the holes in the saddle slot of the bridge and the whole thing is glued into place and held firm with weights. Once in place, the cocktail sticks can be snapped off and chiselled flush with the bottom of the saddle slot. Care should be taken to clean up any glue squeeze-out as it looks ugly if left.

The top nut

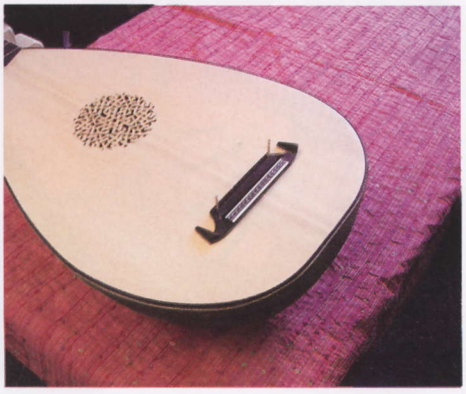
The top nut is made from a small piece of ebony 60mm long, 5.5mm wide × 9.5mm high. The string spacings are filed into the top edge of the nut to around half the thickness of each string (**photo 59**). The two outermost string positions are cut at around 2.5mm from the edges of the fingerboard. The single string position is 5.5mm away from the next one, and thereafter each pair of strings has a 2.5mm gap between them.

Attaching the strings & tuning up

Each string is passed up through the hole in the tie block, and then looped back around and tied in the same way as a classical guitar. There are several clips on YouTube that help if the maker is unsure of the exact method. The strings are then passed through the hole, which must first be drilled into each peg (**photo 60**). The end of the string is then wound up until the correct tension is reached. If gut or 'Nylgut' strings are used it may take up to a few weeks before they stop stretching, so the instrument will initially sound pretty dreadful. After a while, however, as they have all stretched, the clear and bell-like notes will sing out.

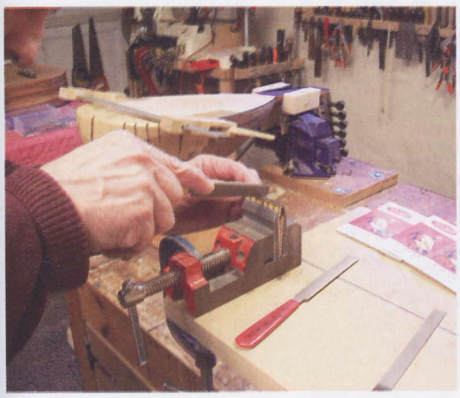
There are many different ways of tuning but for a seven-course renaissance instrument perhaps the simplest is to tune to Ff, Gg, Cc, ff, aa, dd, g, where the first string is at the same pitch as a classical or acoustic guitar's first string held

56 The tail strap heavily taped into place

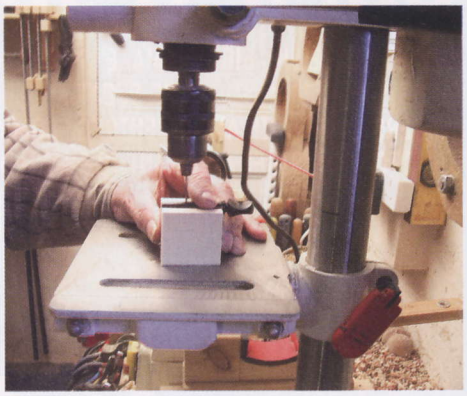


57 The bridge held in place by two cocktail sticks that are later snapped off

58 Liberon finishing oils and Osmo grain filler are used



59 Filing the string slots in the top nut



60 Each peg must have a 1.5mm hole drilled for the string

down at the third fret and the 'dd' strings are one full tone above middle 'c'. The three bass courses are tuned as octaves, and the low 'F' is the equivalent to the sixth string on a classical or acoustic guitar held down at the first fret. The next two pairs of strings are tuned in parallel.

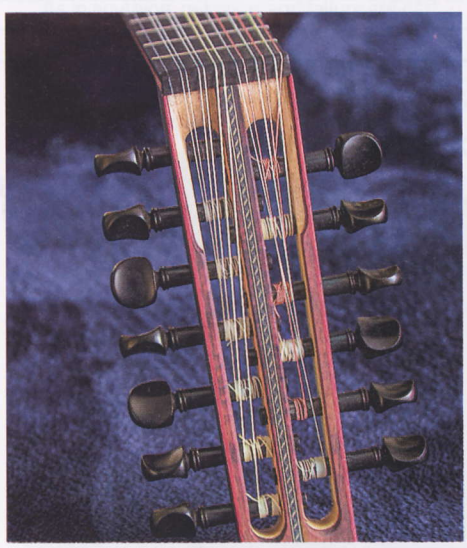
Learning to play and help available

One of the nicest things about the lute, apart from its haunting and melodious sound, is that it can be used for the very simplest of accompaniment or can be played to perform some of the most complex instrumental works ever written. Everyone can play at their own level. A number of tutorials are available on YouTube, and some books can be used to start playing or improve the repertoire. I would recommend that the help of an experienced teacher will assist the newcomer to make sense of the instrument and to gain enjoyment straight away, even if, for example, he or she is a competent guitarist or violinist. As mentioned earlier, I found R.Z. Taylor's book *Make and Play a Lute* very helpful, and although it is now out of print, it is widely available in public libraries. It not only contains plans and templates, but there is also a beginner's guide to playing. Perhaps the most famous and respected written tutorial is *A Tutor for the Renaissance Lute*, by Diana Poulton, first published in 1991. It takes the player from basics up to quite advanced technique and repertoire.

The Lute Society, now 60 years old, exists to promote and develop the lute and its playing. It has a very detailed and informative website with a list of teachers across the UK. If you take out membership, the society will send you a 100-page folder of sheet music and information. They also publish regular journals and the society is a must for anyone thinking of taking up the lute on a serious basis.

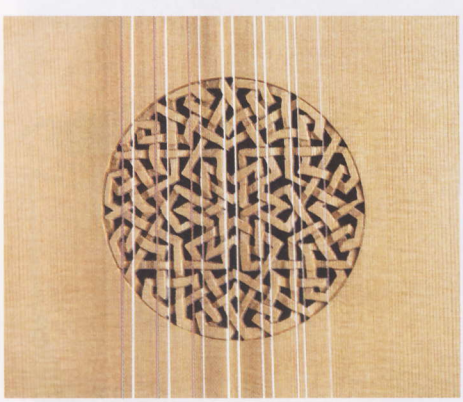
A case to protect your lute

I would not recommend that you make your own case, as even though it is not impossible, good quality cases are commercially available at very reasonable prices. The odd shape of the instrument does make for a challenge in constructing your own, so a look at The Early Music Shop's website will show what is available. A good case is very important to protect what is a relatively light and sensitive instrument (**photo 61**).



62 The peghead in maple and cocobolo rosewood

63 The Liberon finishing oil leaves a soft sheen



64 Rosette detail showing Moorish influence

61 The competed Renaissance lute

SUPPLIERS & SOURCES OF HELP

- The Lute Society for plans, sheet music, literature and lists of teachers – **www.thelutesociety.co.uk**
- Touchstone Tonewoods – for timber and tools – **www.touchstonetonewoods.co.uk**
- Tonetech – as with Touchstone – **www.tonetechluthiersupplies.co.uk**
- Stewart-Macdonald – for plans, tools and all manner of luthiers' supplies – **www.stewmac.com**
- The Guild of American Luthiers – for plans and literature – **www.luth.org**
- David Dyke – for timber and tools – **www.luthierssupplies.co.uk**
- The Early Music Shop – for specialist strings, cases and pegs – **www.earlymusicshop.com**
- The Luthiers Nook – for pegs – **www.luthiersnook.com**
- Madinter Wood – for music, pegs and timber – **www.madinter.com**
- Keystone Timbers – for exotic timber – **www.tonewoods4luthiers.co.uk**
- Strings Direct – for all manner of strings – **www.stringsdirect.co.uk**
- Dictum – for pegs, timber and tools – **www.dictum.com**
- 'In the Making', Vimeo, a film about the work of Steven Gottlieb – **https://vimeo.com/96809354**
- *Historical Lute Construction*, Robert Lundberg. Published by the Guild of American Luthiers, 1972 – possibly the most comprehensive book on lute construction available
- *Make and Play a Lute*, R.Z.Taylor – published by Special Interest Model Books, 1983