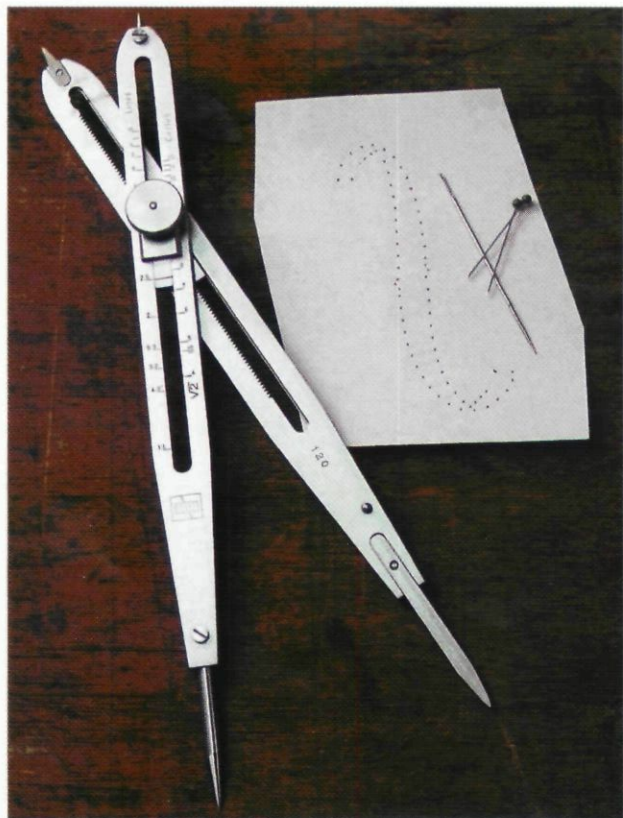


## POSITIONING AND CUTTING F-HOLES

**ANDREW RYAN** demonstrates the use of two traditional tools in f-hole design

I am always searching for tools that help create elegant solutions to workshop problems. Here are two traditional ones, mostly unknown to contemporary violin makers, that are helpful for laying out f-holes: the proportional divider and the pounce template.

The proportional divider, a pair of legs connected by an adjustable pivot, allows a given length to be divided or multiplied by a set ratio. The pounce template is a sheet of paper that carries a design pierced into it with a pin. Stradivari occasionally used this method to transfer patterns to decorated ribs. Although no one has documented or even suggested the use of the pounce template in the work of Giuseppe Guarneri 'del Gesù', my own research convinces me that he employed this simple tool with powerful effect. Pinpricks that border his f-holes, and other constructional artefacts, convince me that he used the glued centre joint and the rabbeted neck heel, to which the



The proportional divider and pounce template

unworked top was butted, as references for his external f-hole layout. Measurements taken from the centre joint would determine the f-hole's horizontal spacing and those from the neck heel their vertical position. This is in marked contrast to Stradivari's internal method.

With these thoughts in mind, here is a method, not a historical recreation, that hopefully is useful and remains close to the spirit of Giuseppe Guarneri 'del Gesù'.

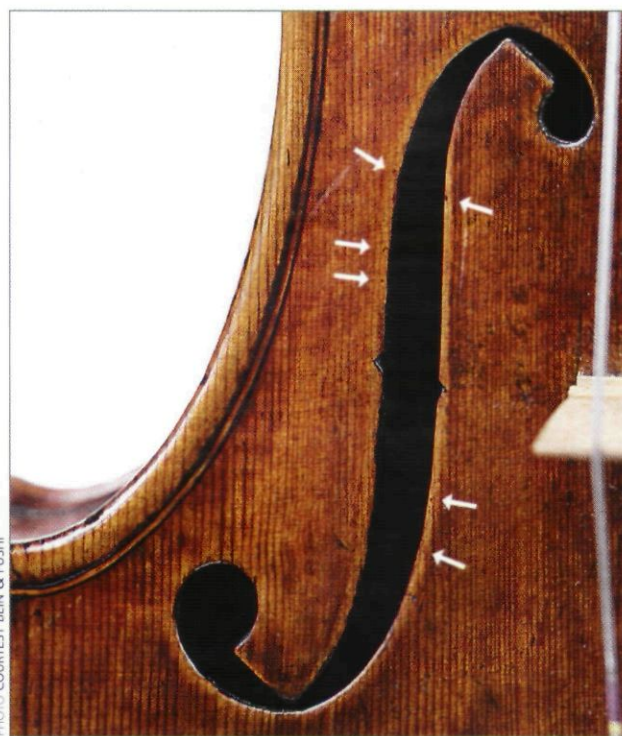


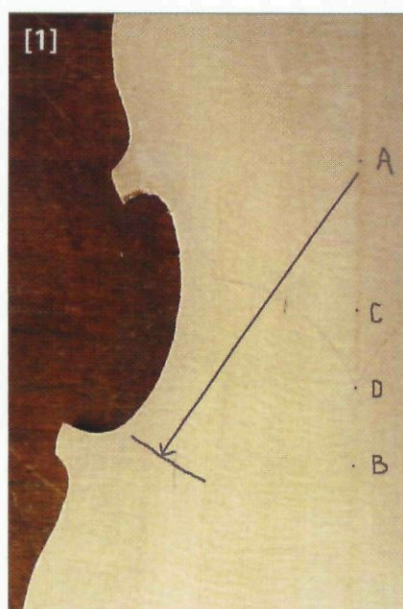
PHOTO COURTESY BEN & FUSHI

Pinpricks around the f-hole of a 'del Gesù' violin – the 1731 'Gillot-Hegedus'

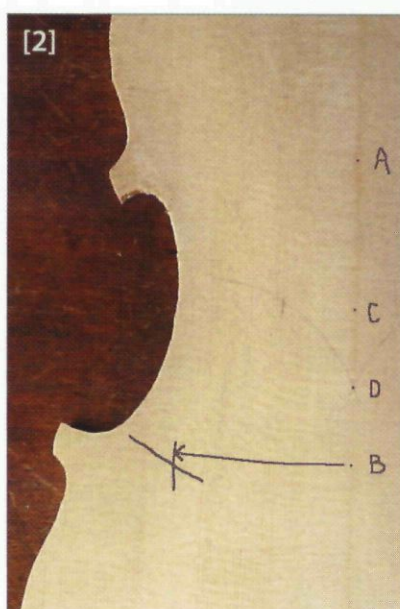
For the instrument shown here I organised the f-holes on an equilateral triangle whose sides were a third of the length of my form. I placed the apex of this triangle at  $\frac{1}{3}$  of the instrument length, using other points within the instrument's geometry as anchors. I began with an arched and graduated top on which all the edge work remained unfinished.

On the outside of the plate I opened my dividers to  $\frac{1}{3}$  of the length of the top, set one leg on the centre joint at the upper edge and marked a point (A) further down the centre joint with the other leg. Next I marked the golden section of the top's length on to the centre joint (point B). I then set my dividers at  $\frac{1}{2}$ , and split the distance between points A and B in two and marked the new point C. Finally I divided the distance between B and C in two and marked this point D. These became the anchor points for placing the f-hole eyes.

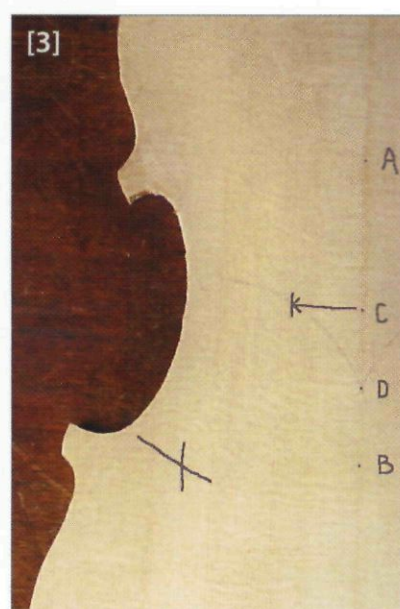
## STEPS 1-5



[1] Scribe an arc where the lower eye should go



[2] The intersection of these arcs places the lower eye



[3] Scribe an arc from point C in the upper eye area

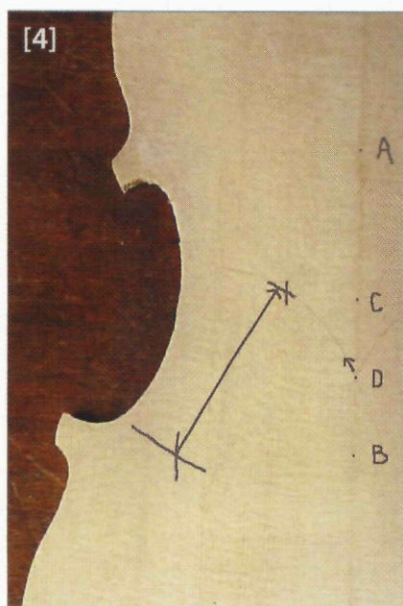
[1] With my dividers still set at  $\frac{1}{3}$ , I opened the wider end to  $\frac{1}{3}$  the length of my mould. Placing a leg of the wider end at point A, I scribed an arc roughly where the lower eye should be.

[2] Turning the dividers over I then placed a leg of the narrower end on point B and scribed an arc intersecting the arc from point A at the lower eye.

[3] I then set my dividers at  $\frac{1}{3}$  and opened the wider end again to  $\frac{1}{3}$  of the length of the mould. I placed a leg of the narrower end on point C and scribed an arc in the area of the upper eye.

[4] Setting a leg on the intersection of the arcs of the lower eye and the other leg on point D, I scribed an arc intersecting the arc from point C. This locates the upper eye.

[5] The centres of the eyes were now laid out and it was time to transfer my f-hole pattern to the top. I fixed the template to the top with a pin at the centre of each eye and using a large needle pierced the top at each pin hole in my template. When I removed the paper a line of pinpricks could be seen in the shape of my f-hole. ▶

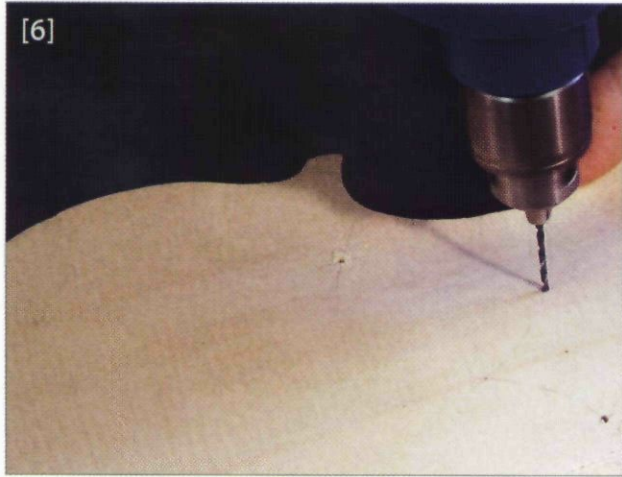


[4] The intersection of these arcs places the upper eye

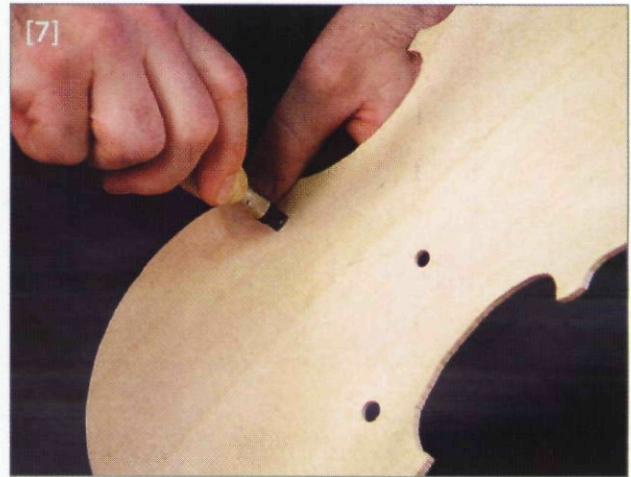


[5] Transferring the f-hole design to the top using a pounce template

## STEPS 6-9



[6] Drilling the pilot hole for the circle cutter



[7] It's best to finish the eye from the outside so you don't chip the edge

[6] One of the most critical features of f-hole execution is perfectly circular eyes – this is most easily achieved with some kind of circle cutter. This simple tool consists of two blades guided by a central pin and is widely available commercially. I drilled the pilot holes for my circle cutter by laying the top in my lap and drilling perpendicular to the arch in the old Cremonese fashion.

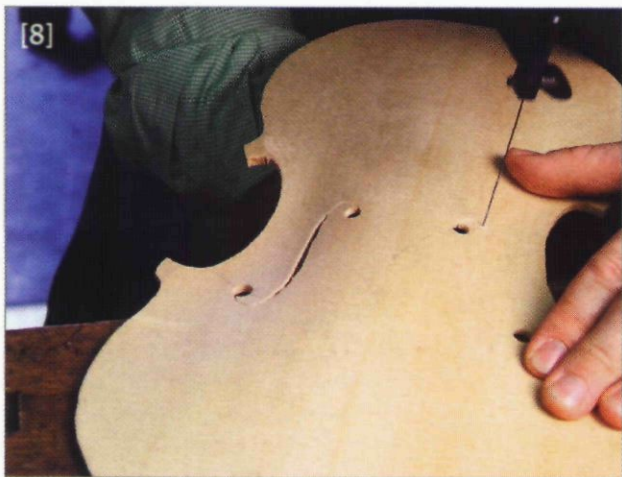
[7] Starting from the inside of the plate, I inserted the cutter's central pin into the pilot hole and cut the f-hole by turning the handle clockwise. It's best not to cut completely through from the inside,

but to finish the cut from the outside, which helps to prevent the edge from chipping.

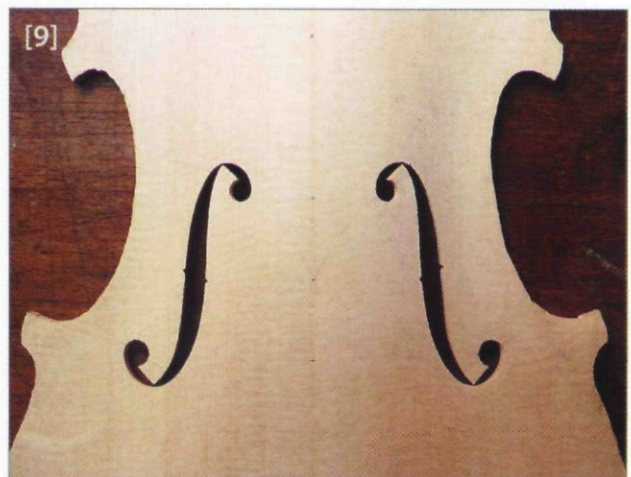
[8] A frame saw with a fine blade (32tpi) works well to cut the rough f-hole shape. The trick here is to make sure you don't drive the saw blade into the nicely cut eyes. I did this by starting the cut at the upper eye and moving along the outer edge of the f-hole, stopping at the tip of the lower wing. Then I removed the saw blade and started again at the lower eye, cutting along the inner edge of the f-hole but stopping at the tip of the upper wing.

[9] I used a knife with a slim profile to cut the f-hole edges. Beginning with the wings, I cut parallel to the grain at the spur and then trimmed the wing back. When cutting it's important to trust the accuracy of your template. Be bold. A large shaving keeps the knife in the cut and guides it in a smooth path.

The finished holes have been precisely and quickly laid out; accurately cut without being fussy. All that remains is to remove the scribe lines around the lower eyes by fluting the wings and finishing the edges. ■



[8] I start the saw cut at the upper eye and move along the outer edge



[9] The finished f-holes are precisely laid out and accurately cut

>> NEXT MONTH STEFAN KRATTENMACHER EXPLAINS HIS METHOD OF FITTING A NECK TO A DOUBLE BASS