

The Working Methods of Guarneri del Gesù and their Influence upon his Stylistic Development

Text and Illustrations by Roger Graham Hargrave

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The Labels

Before closing the body of the instrument, Del Gesù fixed his label on the inside of the back, beneath the bass soundhole and roughly parallel to the centre line. The labels which remain in their original position are for the most part set slightly further away from the ribs than those of Stradivari.

Labels from instruments of the late period of Giuseppe Filius Andreae and from the first period of Del Gesù are scarce. The only authenticated⁹⁶ examples of the elder Giuseppe's label after 1719 are to be found on the two cellos of 1729 and 1731, as discussed earlier. It may be significant that all the known "Filius" labels after 1710 have the first three digits of the date printed, and do not go beyond 1719. Normally they would not have been appropriate for the next decade, but on both cello labels, the printed 1 has been altered by hand, to a 2 and a 3 respectively, to permit the insertion of the correct dates of 1729 and 1731. The Hills favour the idea that during the 1720s, a time of financial crisis for the Guarneri workshop, the instruments were generally sold unlabelled.⁹⁷

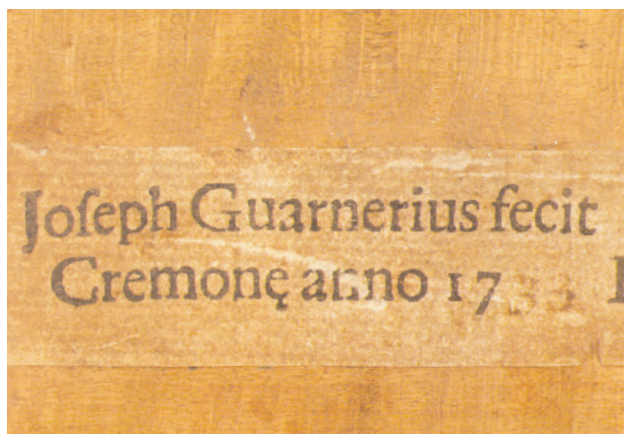
Del Gesù's own early instruments may well have possessed labels, which have since been lost or deliberately removed. In his book on Stradivari, Fétis

mentions an early form of Del Gesù label,⁹⁸ later rejected by the Hills as spurious.⁹⁹ The strongest evidence for its existence is found in the earlier notebooks of Count Cozio Di Salabue, who mentions four violins by the younger Giuseppe, all labelled and dated, from the period 1727 to 1730. These labels bore the words Joseph Guarnerius Andreae Nepos fecit Cremona anno... The Latin term "nepos" means both "grandson" and "nephew", and it was therefore an understandable assumption to make that the younger Giuseppe was in fact the nephew of Andrea, and therefore a cousin of the elder Giuseppe Filius Andreae. Indeed this is the interpretation given in several nineteenth-century violin books, whose authors were influenced by Fétis.¹⁰⁰ No trace of the labels recorded by Count Cozio remains, apart from a facsimile in rather poor condition that was once a part of the Wurlitzer collection, and reproductions in Antoine Vidal's book, *Les Instruments à Archet*.¹⁰¹

In the light of the facts now known about Del Gesù's life, it seems most likely that after leaving the family workshop he did indeed use the "nepos" form of label. He probably felt it necessary to distinguish himself from his father, the other Giuseppe Guarneri. Both his father and his grandfather employed the phrase *sub titulo Sanctae Teresiae* on their labels.¹⁰² This was probably an indication of the address of the

family workshop, “at the sign of St Teresa”. In 1731, after the apparent retirement of his father and the establishment of his own workshop, Del Gesù adopted the new label by which we know him today, with simpler wording and the IHS symbol. This symbol may have indicated the location of the new workshop, possibly identified by a similar inscription above the door. A practical address was generally used in the days before street numbering.¹⁰³

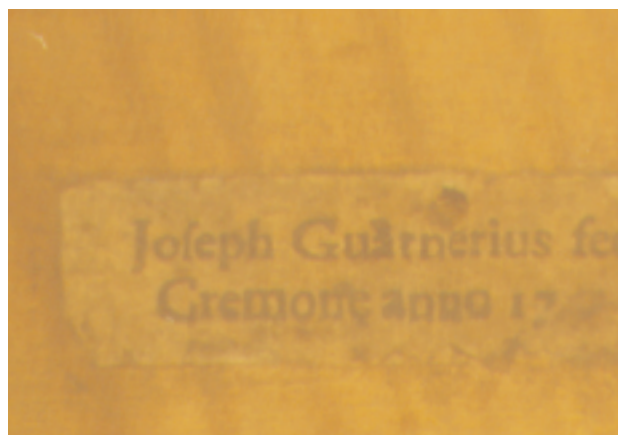
When Del Gesù’s work became highly sought-after in the nineteenth century it is likely that many early violins with the ambiguous “nepos” label were “upgraded”. This was simply done by removing the offending label, and only in some cases replacing it with a suitably dated copy of the IHS label. The “Danccla” and “Stretton” violins fall into the latter category. Both carry facsimiles of the IHS label with the date 1726 – a date now thought to be too early for either violin, and certainly too early for this form of label. There are many accounts of labels being removed and switched for commercial gain, but occasionally this was even done with “good intentions”. Either way, the practice has had a disastrous effect on the study of the instruments today.¹⁰⁴



Label of the “Soil” del Gesù, 1733.

The IHS label is well described by the Hills,¹⁰⁵ and it is the only authentic form of label found in the violins made by Del Gesù for the rest of his career. The Hills judge the typeface to be consistent throughout, and probably from the same printer as his father used. The “nepos” labels are rather more difficult to assess. If the imitation label from the Wurlitzer collection is any guide, the font was smaller and more compressed, as on the earlier labels of Giuseppe Filiius Andreæ. On the other hand, the reproduction “nepos” label given by Vidal is in the familiar type of the IHS labels. The main distinction is that Del Gesù reverted to the spelling of “Cremone,” with a cedilla beneath the second e which his father used on earlier

labels, but after 1712 altered to “Cremonæ”, with a final diphthong. The printing of Del Gesù’s labels is a little irregular, and several letters are often out of line, in a way which seems to indicate that they were arranged in groups of three to five on the block. For example, the final h of “Joseph” is aligned with the capital G of “Guarnerius”, but either raised or lowered relative to the surrounding letters, and “Cremone,” is generally slightly broken after the first e. The cross and IHS device also seem to move slightly closer to the rest of the wording on certain labels from the last period. The cross itself is not fixed to the IHS; it usually appears directly above the middle of the H, but is sometimes displaced towards the right-hand side of it.



Label of the “Ole Bull” del Gesù, 1744.

The printed form of Del Gesù labels extends to the first two digits of the date, 17, after which he inserted the year in ink by hand. One, two or rarely three short pen strokes, or in some cases a semicircle, are usually found beneath the date on authentic labels. These have been the subject of much speculation; although today they are often faded or obscured by dirt, they are plainly visible under ultra-violet illumination. A simple explanation might be that Del Gesù was merely trying the pen nib before writing the date in a firmer hand. Whatever their true significance, these pen strokes are useful in identifying original labels, of which there are today comparatively few, in particular among the relatively large group of violins ascribed to the later years. The violins of 1744 have only two apparently authentic labels between them, those of the “Ole Bull” and the “Prince of Orange”. Once more, the tampering of avaricious dealers is probably to blame: a second-rate fake violin might only require a genuine label to ensure its acceptance as the genuine article, whilst a genuine instrument without its label would still be saleable on its own merits.

The focus of attention on Paganini's 1743 "Canon" may well have had an effect on label swapping. In 1838, an English player, an admirer of Paganini, bemoaned the fact that he could not find a good Del Gesù to buy. All had been "bought up", especially those dated around 1740, and the only ones he was offered were the "early instruments of smaller pattern".¹⁰⁶ It is not difficult to imagine dealers swapping later labels for earlier ones in order to satisfy such a client. Cozio himself removed labels from instruments, retaining them for his own reference collection.¹⁰⁷ The unfortunately widespread practice of rethicknessing instruments also placed labels in peril and would certainly have involved their removal, if not their destruction or replacement. It is for these reasons that some of the greatest Del Gesù violins, such as the "Alard", no longer have authentic labels and many others have had their labels altered or moved.

One final element of confusion brought about by the Guarneri labels is the latest date of Del Gesù's work. In all published accounts prior to the Hills' in 1931, the date of Guarneri's death is given as 1745, a deduction no doubt based on the label of the "Leduc", which is clearly dated 1745. The Hills proved beyond doubt that Del Gesù died in 1744, but accepted the authenticity of this apparently anachronistic label. The reason they give is that the 5 is in fact a badly formed 3. However, the violin is very difficult to reconcile on stylistic grounds with other examples of 1743, and undoubtedly belongs to the very last period of Del Gesù's life. Such "posthumous" labels are not infrequently found in the work of other makers, such as Grancino of Milan, Jacobs of Amsterdam and Norman of London, the explanation being that the workshop was carried on by sons or apprentices of the deceased master. Del Gesù had no sons, and as far as can be discovered, no apprentices or assistants in the workshop (other than his father). The only other possible aid was his wife Catarina.

Carlo Bergonzi II,¹⁰⁸ grandson of the great violin maker, seems to have implied that Catarina did assist Guarneri in his work. On the whole, scant attention has been paid to his remarks, as subsequent research has shown Bergonzi to be an unreliable source. Nevertheless, though not giving her name, he correctly reported that del Gesù's wife was of foreign birth (in fact she was Viennese). Horace Petherick's account of del Gesù's life, written in 1906, mentions "Katarina Guarneria", whose name he discovered on the label of a viola; this was at a time when the identity of del Gesù's wife was still unknown.¹⁰⁹ Perhaps even more

revealingly, he states that such labels were known to other violin experts at the time but were routinely removed from the instruments in which they were found, effectively obscuring any contribution that Catarina Guarneri may have made to violin making. It would have been quite natural for Catarina to continue working in any way she knew. The comparatively early death of her husband left her alone and childless, with no other known means of support. Any partially finished instruments left in the workshop would have been an obvious source of income for her.

The Edge and Purfling

After the belly had been arched and hollowed and the soundholes cut, del Gesù cut a chamfer on the underside of the edge to match that of the back. The belly was then mounted onto the head and rib structure, and with the help of the locating pins and the outline scribed from the ribs, finally glued in place. As Sacconi suggests, the edges were probably still unfinished and the purfling had not yet been inlaid.¹¹⁰

Del Gesù probably began by cutting a trough for the purfling into the still flat edging. Stradivari apparently used two cutters for this process, one for the inner line of the trough and one for the outer. Both of these have survived.¹¹¹ They are highly sophisticated and include a depth stop, which almost certainly means that they were used to cut the full depth of the trough, rather than simply marking the line for finishing with a knife. Once the trough was cut, the waste material was removed with a small chisel. The previously prepared sandwich of black stained and white veneers was then inserted.¹¹² It is again assumed that del Gesù followed much the same method. The entire edgework at this stage was almost certainly still very thick (equal to the final thickness of the corners, i.e. up to 5 mm) and this was probably the reason for cutting each line separately. Del Gesù's early instruments are quite cleanly worked, but by the 1740s the trough for the purfling is rashly cut and the manner in which it opens and closes may well be the result of the two independent cutters. On the "Stretton", the channel is occasionally so wide that slips of maple have been used to fill the gaps. However, on the "Leduc", and in some places on the "Vieuxtemps", the channels seem to have been cut too narrow for the purfling, so that in some places around the outline, the purfling has been crushed into the slot, until the black strip has

disappeared altogether on one side or the other. On the “Stern” of 1737, there is clear evidence that the back outline was cut hurriedly with a knife, and where the edge still shows a series of facets, imperfectly blended together by file or rasp, the purfling faithfully follows the jerking course of the edge.

Del Gesù’s individual strips of purfling were almost certainly glued together in a sandwich before being inserted. His thin, almost thread-like blacks would have proved too fragile to work with as separate strips. Besides, it can be seen that the three strands of the purfling always adhere together, regardless of the width or direction of the slot. In the tighter curves, the inner strips are often buckled in a manner which implies that they were not bent and glued in shaped forms prior to fitting, but were roughly bent with heat or simply creased and forced into place.

Del Gesù apparently followed his father’s working practices very closely: the wood of the black strips is as fibrous as that of the white strands, and is often not perfectly stained. Though to a slightly lesser degree than those of the elder Giuseppe, the blacks are sometimes faded to a pale grey or brown, which contrasts with the darker filler (or varnish) which often surrounds it. Small sequences of splits occur regularly in the wider (white) centre strands, which are traditionally thought to be of poplar.¹¹³ These are especially noticeable where the curves change direction from the bouts into the corner. Minute amounts of varnish or filler have collected inside them, making them all the more obvious. Such splitting is probably the result of the process of producing the veneers by means of a deeply set plane.¹¹⁴

In the early 1730s, del Gesù formed the purfling mitres in his own characteristic way – short and with a small, pinched looking “bee-sting”, pointing generally to the centre of the corner. In later works, his technique becomes less consistent, almost haphazard. The points of the purfling are typically well short of the corner end, and the mitred strips are either forced hard together or fail to meet at all, as can be seen in the “Ysaÿe” and “Ole Bull”. The purfling comes together in the upper and lower bouts with a sloping scarf joint on or near the locating pins. On many instruments there are deep knife marks on either side of the purfling channel where del Gesù has cut the scarf. His small wooden locating pins are wider than the strips of purfling; sometimes they are found inside the line of the purfling, and more rarely outside, but usually the purfling cuts through them, leaving them only partially exposed.¹¹⁵ This feature

indicates that the backs and bellies were fixed permanently onto the ribs (with the help of the pins) before the purfling was inserted.

Del Gesù’s method of inserting the purfling was fairly conventional, if on occasion somewhat wild. It is in the cutting of the edge fluting, the blending of the archings, and the turning of the edges where his individualism really manifests itself. Because of the flawless nature of most Cremonese craftsmanship, it is often impossible to discern the various stages through which any given work progressed. Del Gesù’s less meticulous approach actually reveals how his more conventional colleagues created certain details. This is assuredly the case with his purfling and edge-work. For although his manner of forming the edge was distinctive, his method was almost certainly not unique. In spite of appearances, he was again working in the Cremonese tradition, and whether by accident or design the end product was created by hand and eye rather than innovative technique.

On nearly all his instruments it is evident that a gouge has scored its way around the perimeter of the edges, here and there tearing out small chips from the flame of the wood. It is also clear that this gouge only worked the area outside the purfling – no similar chips or gouge scoops occur on the arched surface within the boundary of the purfling, and the arching proper has been cleanly finished with scrapers. In the transitional period, del Gesù’s edges tend to be slightly wider than those of his father and, as on the “Dancla”, hollowed quite deeply. Soon afterwards, however, the edges become remarkably flat, with very little fluting, as on the “Kreisler” and the “Stretton”. Because the edge is so flat and the arching rises so steeply, a number of instruments from the early 1730s have crescent-shaped marks in the centre bouts on the rise of the arch. These are particularly apparent on the “Kreisler” and were formed by closing clamps. Perhaps the most significant effect of this quickly rising edge is that the thicknesses of the plates were left remarkably strong, especially through the centre bouts. By the late 1730s, the working of the edges is more emphatic and idiosyncratic. The corners are formed with a particularly deep trough, usually the result of two gouge cuts running down into the purfling mitre and along the line of purfling itself. Notwithstanding the deeper working of the edge, the gouging is again concentrated in the area outside the purfling. The archings still spring from a well-defined thickness at the edge of the plate.

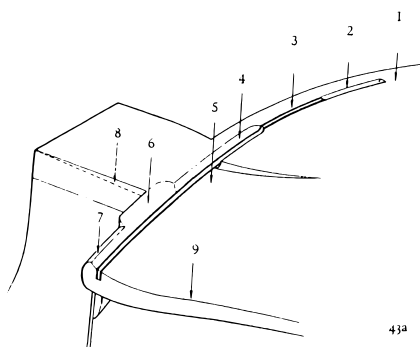


Figure 43a. The development of the purfling, edgework and fluting in the button area of a del Gesù violin.

- 1) The flat platform blended into the otherwise finished arching.
- 2) The trench cut to receive the purfling.
- 3) The purfling glued in place.
- 4) The purfling excavated by a narrow U-shaped gouge to the final depth of the fluting.
- 5) The arching blended up to the line of the purfling.
- 6) The fluting outside the purfling cut to the outer edge with a wider gouge (the sharp point of the outer edge would obviously have been prone to chipping).
- 7) The sharp edge rounded back to create the usual Cremonese style edge. This process effectively lowered the height of the edgework, and incidentally removed any chipping.
- 8) Once the edge had been rounded back it became necessary to taper the button down to the new lower edge. The button would be shaped and blended into the neck and fingerboard at a later stage.
- 9) The bump often left in the arching by the blending process (5) (see various cross-arch drawings).

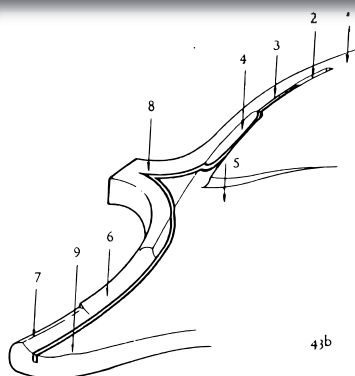


Figure 43b. The development of the purfling, edgework and fluting in the corner areas.

- 1) The flat platform blended into the otherwise finished arching.
- 2) The trench cut to receive the purfling.
- 3) The purfling glued in place.
- 4) The purfling excavated by a narrow U-shaped gouge to the final depth of the fluting.
- 5) The arching blended up to the line of the purfling.
- 6) The fluting outside the purfling cut to the outer edge with a wider gouge.
- 7) The sharp edge rounded back to create the usual Cremonese style edge.
- 8) The corner remained unexcavated at this stage.
- 9) The bump often left in the arching by the blending process (5) (see various cross-arch drawings).

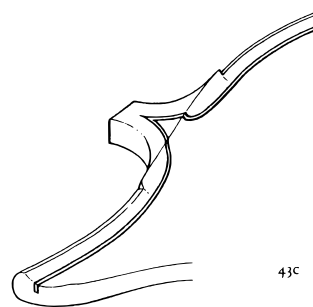


Figure 43c. The fluting ran around the instrument in a Figure of 8 form, following the interior form of the rib structure. The edgework was initially finished up to the corner only.

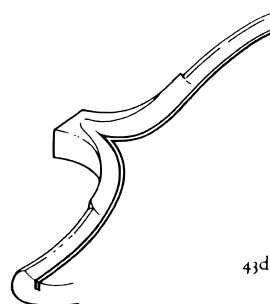


Figure 43d. The corner fluting was excavated, moving away from the outer edge, to avoid the corner end becoming thinner. On del Gesù's later instruments this appears to have finished straight from the narrow U-shaped gouge used to cut the initial purfling channel.

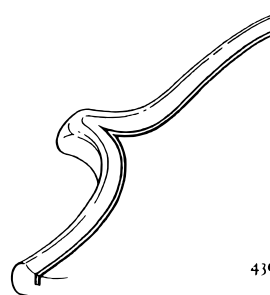


Figure 43e. The corners were rounded back to the fluting and blended into the edgework. (This blending process often resulted in a dip in the edge thickness, occasionally found on the instruments of most Cremonese makers and particularly obvious on the "Lord Wilton" del Gesù.)

By 1741 a new approach is evident, most clearly seen in the “Vieuxtemps”, “Alard”, “Lord Wilton” and “Leduc”, and, interestingly, in the work of del Gesù’s brother, Pietro of Venice. The unmistakable tracks of a very narrow and steeply curved gouge, little wider than the purfling itself, are visible in the corners. The indications are that this gouge was used to cut back the purfling – rather than to prepare a channel for it – and sink it to the eventual depth of the edge fluting (on the “Carrodus” it has in places sunk slightly lower). Although no trace of a similar gouge has been found on the instruments of any other Cremonese maker, it may well be that they – and perhaps del Gesù too, earlier in his career – concealed the method by their finishing. The same may even be true of Stradivari, though Sacconi puts forward the alternative theory that he fashioned his edge fluting with a single broad gouge, cutting on both sides of the purfling at once. However, for most of the time this would have meant cutting against the grain on one side of the other, making it particularly difficult to avoid tearing the wood. Del Gesù’s method eliminated this problem. By using his narrow, U-shaped gouge to cut round the line of the purfling he effectively dropped it to the required depth and separated the two sides of the channel. The arching was then free to be blended up to the channel with thumb planes and scrapers, with no risk of tearing into the opposite grains or of damaging the outer edge (figure 43). On several of del Gesù’s instruments, especially but not exclusively the later ones, a distinct bump can be seen where the blending was imperfectly finished (on the “Doyen” this is discernible on almost all the arching profiles). These bumps are clearly the remains of the flat edge platform and, as Sacconi points out, they are also found on some of Stradivari’s late violins.¹¹⁶

Judging by the flow of Cremonese archings, it seems likely that the edge fluting initially ran across the corners (figure 43b), forming a guitar-like figure of eight.¹¹⁷ The fluting across them may also have been prepared by the tight U-shaped gouge. The inner shape of the rib structure was guitar-shaped too, and it may well be that this was the most convenient method of controlling the edge thicknesses through the soundhole area, possibly using a thickness gauge similar to the one housed in the Museo Stradivariano.¹¹⁸ In fact, the area which is free to vibrate inside the line of the purfling was never worked excessively thin by del Gesù. On the “Stern”, the scooping of the fluting inside the line of the purfling is excessive, to the point where it becomes deeper than the purfling itself. However, del Gesù has com-

pensated by leaving the instrument thicker than normal out to the flanks – especially in the centre bouts, where in places the plate remains up to 4 mm thick to the line of the purfling. Many Amati violins which display a similar amount of scooping are very thin inside the purfling. By contrast, del Gesù’s violins more commonly have a stiffness at the edges which is clearly meant to provide greater strength. Whether this was the consequence of a deliberate decision to alter the performance of his instruments or merely pragmatic workmanship is impossible to say, but its effect upon their acoustic properties was probably significant.

Having completed the blending of the arching up to the line of the U-shaped trough, it remained for del Gesù to finish the edge flute by gouging around the outside of the purfling. (At this stage the edge thickness was still full and even all the way round.) With a few early exceptions such as the “Soil”, gouge marks are to be found on all del Gesù’s flutings outside the line of the purfling; there are no similar markings on the area to the inside. On the later instruments, the process was manifestly carried out with some speed, and on the “Leduc” and “Doyen” the outer edge is occasionally dug below the level of the purfling. On the “Lord Wilton”, the outer fluting has obviously stopped short of the outer edge in places, especially in the centre bouts and across the button. This is an exceptional case: del Gesù, like most Cremonese makers, in general worked his fluting to the extreme outside edge – and with good reason. Finishing his edges direct from the gouge meant the risk of chipping was high.¹¹⁹ If the gouge worked only to what would finally become the highest point of the edge, any chipping would ruin the finished edge when the final rounding was being carried out. But by working the fluting to the outer limits of the edge, any chipping would have been removed as the edge was being rounded (figures 43).¹²⁰

To round off the edge, del Gesù used a rasp and a knife. Traces of both are most obvious in the internal curves of the centre bouts and the corners. He began by making a chamfer on the top edge to match that on the underside, which had been applied before the plates were glued onto the ribs. This chamfer, cut into the edge fluting, effectively lowered the height of the edge. In the early years, the edges were well-rounded and blended into the knife-cut chamfer on the underside. Their appearance is conventionally Cremonese, especially when worn. The very last in-

struments made by del Gesù tell us most about his methods: after about 1742 he became increasingly careless in covering the tracks of his tools. The general trend was for the high point of the edge to creep outward, and in blending the upper and lower chamfers together to form the rounded edge he was often inconsistent. On the well-preserved “Alard”, the original edge has merely had the angles softened, and traces of the rasp which finalised the outline are clearly visible on the flat outer surface. The edge of the “Leduc” is also left virtually square.

Although del Gesù’s later edges are often of uneven thickness, especially in the centre bouts, they are somewhat fuller here than in the upper and lower bouts. The corners are thicker again, often tapering quickly back to a thinner section where they are blended into the bouts. In this respect, del Gesù was following the practice of the Amatis and Stradivari, almost to the point of caricature. The thicker centre bout edges and corners were almost certainly the result of leaving the plate thicker under the fluting through this area: the gouge which sank the fluting was not forced as deeply through the centre bouts. As has been suggested, there were probably acoustical reasons for this, and other constructional reasons may yet be discovered. Purely aesthetic considerations, however, are unlikely to have played a part.

As Stradivari rolled the edges, he was faced with a problem at the corners. If he had simply worked the fluting of the corners to the outer edge, the corner ends would have become thinner as the edges were rounded over. Stradivari’s solution was to move away from the edge and the corner end as he entered the corner with the fluting.¹²¹ Del Gesù used the same logic, but his execution was less refined. In his late period he simply rounded his (admittedly narrower) corners back to the U-shaped gouge cuts which had originally excavated the purfling channel. His blending, into the “figure of eight” fluting of the bouts, was carried out with similar panache, resulting in the sudden dip in the edge thickness which is particularly obvious on the “Lord Wilton”.¹²² The strong, well-preserved button of the “Lord Wilton” provides further clues to this process. It is significantly thicker than the rest of the edge, another characteristic of the late period. Although very few of del Gesù’s buttons have survived in their original condition, the earlier ones are clearly tapered like the buttons of the Amatis and Stradivari. This feature was also a product of the fluting system.¹²³ In his later years, del Gesù avoided the extra work of tapering the button by moving the fluting slightly inwards from the outer

edge and leaving the button thicker. This process caused a slight thickening of the edgework, similar to but not as extreme as that found on the works of G. B. Guadagnini.

The next step for del Gesù was to make and fit his fingerboard. No original boards have survived, but traces of their presence can still be detected, and are most obvious on the varnishing of the belly. With the fingerboard in place, del Gesù finalised the neck and fingerboard shape and the rounding (and tapering) of the button in one operation. The button width and position had already been established by the width of the neck root. It only remained for it to be rounded, chamfered and blended into the neck root.¹²⁴ In order to do this, Stradivari inscribed a circle, and the point of the compass is occasionally visible in the centre of the button.¹²⁵ The “Leduc” button has a hint of a compass point, but otherwise they are so rare as to be virtually non-existent on del Gesù’s violins. On the earlier instruments, any such point may have been removed as the button was being tapered back.

The Varnish

Perhaps the most discussed aspect of del Gesù’s work is his varnish, which raises even the most ruggedly assembled fiddles into the realms of real beauty. Its appearance is varied but always striking, ranging from the thin and tender pale amber of the “Stretton” to the beautifully layered and rich fiery red brown of the “Leduc”. Fétis regards this as something of a curiosity, and elaborates on the old tale of del Gesù’s mythical confinement in prison, which he maintains made him dependent upon the gaoler’s daughter to obtain varnish for him from whatever source she might. Guarneri plainly inherited his varnish from his father, but whether there was more than one recipe or more than one method of application is not known. What is likely is that the kaleidoscopic array of fine varnishes which he used owed more to personal interpretation than to formula. As with other aspects of his craft, del Gesù was perhaps more adventurous or less disciplined than his colleagues.

Regardless of their composition or application, the effect of the environment on ancient varnished surfaces is well documented. Exposure to light, temperature and humidity can produce enormous changes in the colour, clarity and texture of varnish films. The added effect of cleaning and polishing methods and materials, and the sheer physical damage which two

and a half centuries of playing can inflict, have all undoubtedly contributed to the diversity we now see.

For all the seeming unpredictability of his varnish variations, del Gesù may once again have had an underlying purpose. Visibly, and by slow degrees, he brought his father's relatively dark and sometimes lacklustre varnish to greater perfection. The Hills describe the elder Giuseppe's varnish as "... at times of superb colour and texture, superior to anything left by Andrea.... On the other hand we occasionally come across a varnish distinctly dry in texture and of uninteresting appearance."¹²⁶ They compare the best achievements of Giuseppe filius Andreæ with those of his brother, Pietro of Mantua, who was perhaps the most accomplished varnisher of the family, but they do not equate him with Stradivari. Some late instruments by Giuseppe filius Andreæ have a coating that is dark to the point of opacity, and which does little to enhance the dark local timber of various species which he used in his last period. With rare early exceptions, these coarser varieties of timber do not occur in del Gesù's instruments, allowing him to reap the full benefit of any darker varnish. Though spanning a similar range of texture and appearance, del Gesù's varnish never falls to the lowest standards of his father's and often surpasses his best. In general, it tends to be less transparent than Stradivari's (possibly because its relationship with the wood and ground varies), but its beauty can rise to similar heights.

The varnish of the "Kreisler" is perhaps closest to the work of Giuseppe filius Andreæ in both texture and colour. It is deep brown-red and shows the dry, slightly dull quality that led Sacconi to suspect the use of venetian red colour.¹²⁷ It is applied close to the wood, that is, it appears to have a very thin ground layer. The wood colour or ground is dark and nutty. The varnish itself is thin and although quite heavily patinated it is relatively undisturbed and – unusually – has not been over-polished. Along the lines of figure, rows of tiny pinprick bubbles have developed in the wood pores. In fact, in varying degrees on different instruments, del Gesù's varnish betrays all the common faults – cracking, flaking, bunching and bubbling, as well as the slight opacity already mentioned. Nevertheless, its subtlety and depth of tone, richness and quality more than compensate for such technical quibbles.

The "Baltic" has by comparison a brazen red colour, a distinction of the violins of the middle period. The varnish appears slightly elevated from the

surface of the wood, by a thicker ground or priming layer. There is no sign of the bubbling that breaks the surface of the "Kreisler" varnish, but the violin has been rather over-polished, a fact which tends to mask its true texture and quality. Although the "Joachim" has one of the fullest and most alluring coats of varnish, it too is somewhat over-polished. By raising its refractive index, polishing does tend to increase the apparent transparency of a varnish. This has been known for a long time, and is possibly what Count Cozio meant when he referred to the necessity for the Mantegazzas to "pull out" the varnish of del Gesù, to bring it to best effect.¹²⁸

The "Diable", "D'Egville" and "Plowden" are precious examples of del Gesù achieving the fine balance of ground and coloured varnish to produce a glowing and brilliant effect. In their work on Stradivari, the Hills remark on the importance of the skilful application of varnish as a factor in distinguishing the great achievements of Stradivari from his lesser rivals: the recipe alone does not account for the success or failure of the finished coating.¹²⁹ So it is that even on such fine examples as the "King", areas of fine crazing and clotting can be detected in del Gesù's varnish.

The "Haddock" has lost most of its coloured varnish, and such colour as is left resides entirely in the wood and ground layer. A high polish overlays the original "Kortschak" varnish, which has very little thickness and also appears to have lost much of its colour through erosion. In fact a number of del Gesù's instruments are now a very pale and delicate shade of amber, perhaps because any pigments that may have been present have faded, perhaps because the varnish was originally applied without colour. The "Lord Wilton" has a particularly pale golden amber varnish, rich in depth and texture, despite also bearing a substantial layer of over-polish. It makes an interesting comparison with the "Alard" violin of the same year, which has a similarly coloured varnish but in pristine condition, unpolished yet silky and lustrous. This may indicate that some of the master's varnishes were originally less deeply pigmented. Other examples of great purity include the "Chardon" pochette of 1735 and the "King".

Compared with the "Alard", the "Kemp" has a thinner pale coating, which is, however, very even and still quite dry in texture. At some time in its history it may have been over-exposed to light, since a tiny residue of red-tinted varnish can be seen in the most shaded corners of the C ribs and beneath the edges,

and although it has been described in fairly recent times as orange-red in colour,¹³⁰ this is barely appropriate today.

At its deepest and thickest, in the hollows of the rib curves and scroll, del Gesù's varnish has often remained undisturbed by the polishing rag. Here, in its natural form, it appears quite porous and draws dirt into itself, darkening the colour from the natural red to dark shades almost of brown-black, as on the "Kochánski".

The variation in texture and depth are emphasised by the different types of varnish wear that can be seen. Evidence of chipping and flaking, leaving a hard-edged wear pattern, appears infrequently, mostly around the centre of the back, where it seems that the varnish came away quite quickly, when it was still fresh. The scratches which are superimposed on this seem to have occurred at a later date, after the varnish became harder and more brittle. In other cases, the varnish has been shaded away smoothly by regular rubbing, which has gradually and evenly worn through the varnish layer, exposing lighter coloration.

Like the varnish, the ground or isolating layer also appears to have been applied in different thicknesses. On some instruments the coloured varnish appears very close to the wood. On the "Diable" and "King", the rich vermilion colour seems almost rubbed into the grain, emphasising the scraper marks in the surface of the arching. On others, the "Ysaÿe" being perhaps the most extreme example, there is a substantial colour-free layer separating the coloured varnish from the wood. This is apparent from the wear patterns, where "haloes" of a clear or uncoloured medium border the worn areas of colour. These "haloes" become particularly obvious when the varnish is examined under ultra-violet light. On certain instruments, such as the "Lord Wilton" and the "Hegedus" of 1732, the varnish appears slightly thinner and drier on the head than on the body, and it is possible that less of the ground or isolating layer was applied to these scrolls.

At the end of del Gesù's life, an even greater variation of varnish is found within a short period. The "Vieuxtemps" varnish is reminiscent of the "Kreisler", with the same dry, red-brown earthy colour and pinholing along the flame. The greatest and one of the purest examples of Guarneri varnish, however, must be the "Cannon". Virtually undisturbed since Paganini laid it down for the last time, and mercifully exempt from the attentions of restor-

ers and polishers, it has kept its naturally worn appearance and offers a tantalising glimpse of its former glory. There is no apparent differentiation between ground and colour, with no clear ground coat in evidence. The wood of the back is dark in tone, like that of the "Vieuxtemps" and "Kreisler". The varnish is thin and slightly opaque, its tone deep and earthy. It is tender, and in places deeply cracked and clotted. Although the front remains largely obscured by accretions of rosin powder, the fact that no one has attempted to remove this has certainly contributed to the purity of the entire instrument. Its companion, the "Carrodus", shows exactly how such a varnish appears when cleaned and polished. The same richness lies beneath but it is lighter in tone and clearer.

The "Ole Bull" varnish is particularly pale and tender and unusually thin in substance, as if del Gesù stopped short of applying the full number of coats. By contrast, the "Leduc" is rich, sensuous and deep red, perhaps the most dramatic of del Gesù's varnishes, and, as it turned out, his final flourish.

Although no specific studies of del Gesù's varnish are currently available, some analytical work has been done on the varnishes of the Cremonese makers, including Giuseppe filius Andreae, which suggests that the varnish they used was a recipe based upon a drying oil and a softwood resin.¹³¹ Traces of pigment have been found in the varnishes of Stradivari. Further investigation of the structure points to the use of a fairly coarse-ground mineral for the lower layer of the varnish, which may have functioned as a grain filler. Grain fillers are not usually thought necessary for close-grained woods such as maple and spruce, but they have long been used by cabinet makers and French-polishers on mahogany, oak and other more open-grained woods. The difficulty that violin makers face is that any top layer of varnish which is intensely coloured must be isolated from the wood, or staining will occur. Given that del Gesù does not appear to have finished the wood surface to a high degree, the use of a filler makes perfect sense.

Various observations can be made about the application of del Gesù's varnish. Beneath the fingerboard, all the instruments have an area of bare wood about 80 to 85 mm in length which appears to have been neither varnished nor sealed. This shows that the varnish was clearly applied with the fingerboard in place, since the area was masked by the board. The uniformity of this measurement also gives some indication that the original board length remained rel-

actively constant. On well-preserved examples the pegbox interiors are also unvarnished and on the “Alard” there is no varnish on the front face of the scroll and throat. Unlike the area protected by the fingerboard, these unvarnished pegbox interiors appear to have been sealed. On the purest examples, the inner edges of the soundholes appear unvarnished, though it is unlikely that they were unsealed, because any coloured varnish entering the edges would have caused staining to the outline of the soundhole. On the “Alard”, there is a thin crest of coloured varnish forming a slight lip along the top edge of the soundhole, indicating that the varnish was of a stiff consistency when applied. Tell-tale signs of a thin or loose varnish, such as splashes, runs or dribbles on the interior of the soundholes, are nowhere apparent. In general, the most striking aspect of the well-preserved instruments, including the “King”, “Cannon”, “Joachim” and “Leduc”, is the evenness of application. The colour of the varnish is spread over the surface without patchiness or streaks and, judging by del Gesù’s workmanship in other areas, this surely tells us that the varnish was above all easy to apply.

The delicacy of del Gesù’s varnish is an integral part of its allure. Yet, sadly, herein lies the reason why so many of his violins, which are otherwise in excellent condition, retain little or no original varnish. The “Haddock” is a case in point. The century-old photographic archives of the violin business clearly document the tragic demise of many once pristine varnishes. Even such magnificent and well-cared for instruments as the “Doyen”, “King”, “Kochánski” and “Hennel” have undoubtedly lost some of their splendour through general wear and over-polishing. Others have been positively denuded. If future generations are to experience the perfection of del Gesù’s varnish then more must be done to preserve its fragile beauty.

Conclusion

For violin makers there are many factors involved in the production of tone, some generally accepted and some yet to be resolved. The classical Cremonese masters certainly understood this aspect of their craft, and none more so than Giuseppe Guarneri “del Gesù”. His greatest achievement lay in the fact that he created instruments with exceptional qualities of sound and playability. As a result, since the days of Paganini and his “Cannon”, del Gesù’s violins have been coveted by generations of virtuosi. In the present day, opinion seems to be evenly divided between

those who prefer the instruments of Stradivari and those who favour del Gesù.

Many cultivated listeners believe that there is a typical del Gesù sound, and they also attribute specific qualities to the sound of Stradivari’s works. However, some del Gesù are said to have the characteristics of Stradivari’s, and vice versa. It is also said that instruments of Stradivari’s late period have a greater affinity with those of del Gesù’s middle and late periods. Indeed, chronologically they are very close, and as this survey indicates they share a great many details in their design and construction. Unfortunately, because so many del Gesù (as well as a number of late Stradivari’s) have been rethickened, the question of comparing tonal character is considerably complicated. Many respected musicians have expressed the view that the del Gesù which have been reglued in an attempt to comply with Stradivari’s thicknesses actually exhibit a Stradivari sound. However, since we have no knowledge of the original sound of these instruments, and because any definition of the Stradivari sound is in itself subjective, it is difficult to justify such a conclusion. It is therefore only circumstantial evidence which leads us to suspect that the key to del Gesù’s celebrated tonal qualities may lie in the thicker graduations, as embodied in the “Cannon”.

In the historic concert given at the end of the del Gesù exhibition at the Metropolitan Museum of Art in New York, eminent violinists gave solo performances on instruments selected from the exhibition. By general agreement, several instruments stood apart as being extraordinary, in particular the “Vieuxtemps”, the “Leduc” and the “Cannon”. While a few instruments were passed over by the musicians because minor details in their set-ups made them uncomfortable to play, the “Cannon” proved irresistible in spite of its thick, short neck and stiff pegs. The players were united in their enthusiasm for Paganini’s favourite violin, but the audience reaction to its individual tone was mixed: some listeners praised it above the rest of the instruments in the exhibition, while others disliked it altogether.

Judging the sound of a violin is necessarily subjective: the characteristics which appeal to one listener may be anathema to another, and an instrument will invariably produce a different sound when played by a different person or with a different bow. There may be an identifiable del Gesù sound, but the simple truth is that while players may be recognised by their individual style and technique, no one has ever

proved capable of consistently identifying instruments purely by their sound. Even something as apparently obvious as the difference between a Stradivari and a del Gesù has continually defied serious analysis, if not poetic interpretation. In conclusion, perhaps all that can be fairly said is that del Gesù's instruments have proven themselves to possess the qualities which are required on the concert platform, and which have touched the souls of countless listeners.

NOTES

The full citations of published works are given in the bibliography.

Introduction

1. Further explanation of omitted details can be found later in this text.

The Amati Method

2. When used in conjunction with the violin, the term “baroque” refers to instruments which were made during the baroque or classical period (roughly 1550-1750) and survived in their original condition. Authentic, unmodified instruments are very rare. From the earliest times – even within the classical period itself – they were altered to satisfy the demands of musical innovation. Thus, while broad observations may be made regarding the differences between a modern violin and its baroque counterpart – and, divided as they are by up to four centuries of development in instrument making, the differences are bound to be many – it is, frustratingly, almost impossible to draw precise conclusions: the evidence simply no longer exists. The most obvious changes since the classical period have been to the neck and fingerboards. Classical Italian violins were originally fitted with a wedge-shaped fingerboard; probably to minimise the overall weight of the instrument, these fingerboards were usually made from a soft, light material and were covered with a veneer of harder wood. The neck itself was structurally much heavier than the modern neck, and also varied in length. From the small amount of information available, the following generalisations can be made: the bassbar was much lighter than its modern equivalent, and sometimes cut on the slab; the bridge was similar in concept, but not in design; the tailpiece was flatter, thinner and lighter; even the strings were quite different in both design and material. The entire instrument was lighter in weight and probably under less tension than a modern instrument, and accordingly it was played in a lighter and freer fashion with a smaller, lighter bow. A more detailed analysis will emerge during the course of this work.
3. A small number of Cremonese instruments exist which are in more or less original condition: they include two Amati violas, a viola by Stradivari and one by Andrea Guarneri. Also in the Cremonese tradition are two baroque Stainer violins. Unfortunately, all these instruments have been altered slightly. In particular the neck elevations have been modified, largely by the insertion of thin wedges beneath the fingerboards.
4. *Il Museo Stradivariano di Cremona*, catalogue published by Electa Spa, Milan, 1987.
5. Exhibits at the Museo Stradivariano include paper and wooden templates, tools and several wooden moulds. Most of these items were purchased by Count Cozio di Salabue from Paolo Stradivari, Antonio's grandson. But Count Cozio's interest was not limited to Stradivari. Writing to Count Alessandro Maggi in 1804, he made the following request: “I would be much obliged if you could track these things down for me and also those forms and models from the Amatis which I believe have been passed down to Stradivari as I have found some pieces belonging to them in his own collection” (tr. Dipper and Woodrow, 1987). It seems probable that a significant number of the “Stradivari” relics come from Cremonese workshops other than Stradivari's. However, access to these artefacts is extremely limited, and it may be a number of years before a more accurate assessment can be made. It is unlikely that any known relics will be attributed to del Gesù in the foreseeable future. (See also Sacconi, *I segreti di Stradivari*; Museo Stradivariano catalogue; Pollens, *The Violin Forms of Antonio Stradivari*.)

The Stylistic Development

6. This apparent decline does not take into account the rate of survival of del Gesù's instruments, but is consistent with the circumstances of his life, revealed by the biographical research elsewhere in this work (see pp. 18-20)

The Mould and the Rib Structure

7. Jacob Stainer's apparent use of such a mould is one of the many details which suggest that he was trained in Cremona.
8. Pollens, pp. 10-19.
9. The Hills note that there are nineteen moulds, three of which are for tenor violas (Hill, Stradivari, p. 195).
10. Pollens suggests that the absence of geometric construction marks on the Stradivari moulds points to the use of paper patterns. In the Museo Stradivariano collection, there are several folded paper patterns for guitars, lutes, pochettes, viols and violas. These patterns, like the moulds, have no obvious construction markings on them. Pollens concludes that the moulds were probably marked out using folded sheets of paper which were then cut to create a symmetrical pattern. The use of paper patterns may well have been the method by which empirical adjustments were carried out. From a given standard design, a slight alteration with the scissors could have created a smaller violin, a larger one, a wider model, a long pattern and so on. Paper patterns may have even been responsible for accidental variations; at a time when paper was an expensive commodity, amodest slip with the scissors is more likely to have been tolerated than it would be today. It is certainly reasonable to assume that empiricism, rather than a rigid system of geometry, typified Stradivari's technique of design, and that which was good enough for Stradivari was probably good enough for del Gesù.
11. Marchi, *Il Manoscritto Liutarro*, 1786.
12. Bacchetta, *Carteggio*, p. 36.
13. Even if the overhang variations are disregarded, it is possible that del Gesù created these wider violins by simply expanding the rib structure sideways.
14. If more reliable information about del Gesù's interior work were available, it might be possible to make more definitive statements about the number of moulds which he employed.
15. Unfortunately, most of del Gesù's neck blocks were replaced when the necks were modernised. These measurements are based upon estimates of the surviving “Alard” and “Cannon” blocks.
16. See Pollens, pp. 12-13, Sacconi, pp.50-51, Museo Stradivariano Catalogue, pp. 43-44.
17. Matching outlines to the Museo Stradivariano moulds is fraught with difficulties, perhaps the greatest being overhang variations. In the author's opinion, there are still too many possible variations and unanswered questions to make any definitive judgements about the origins of these moulds. Several other Cremonese outlines appear to fit a number of the moulds very well, including instruments by Andrea Amati, Antonio and Girolamo Amati, Nicolò Amati, G. B. Rogeri, Francesco Rugeri, Andrea Guarneri, Giuseppe Guarneri filius Andreæ and even Guarneri del Gesù. In del Gesù's case, a cursory glance is enough to show that his top and bottom blocks were significantly smaller than the mortises of the surviving moulds, but these too could have been enlarged. In all these comparisons the block positions and sizes and the overhangs were not taken into account.
18. An early work of del Gesù's dating from about 1727 has blocks and linings of willow. This violin is thought to be the instrument to which Count Cozio refers in his note of 16 April 1816, referred to as the instrument of Signor Sacchi.

19. Original block templates still exist for a number of the Museo Stradivariano moulds.
 20. See Pollens, pp. 12-13, Sacconi, pp. 50-51.
 21. The "PG" mould of Stradivari (MS 21) is made of walnut. It is marked in ink with the letters PG and is dated 4 June 1689. Sacconi suggests that the letters stand for "Prima Grande", a definition with which Pollens agrees (see Sacconi, p. 197 and Pollens, p. 29). The mould is pictured in Sacconi, p. 48 and Pollens, p. 40.
 22. The author knows of no example where del Gesù employed slab-cut ribs.
 23. Stradivari seldom failed to keep the flame angle the same all around the instrument. Rare exceptions to this are some of the master's decorated instruments including the "Hellier" of 1679, the "Ole Bull" of 1687 and the "Sunrise" of 1677. One of the few instances when del Gesù did manage to match both ribs and direction is the "Lord Wilton".
 24. The author's own experiments have proven this possibility.
 25. See chapter on woods (pp. 142-3) and dendrochronological report (pp. 161).
 26. We can assume this because of the way in which the upper and lower ribs overlap the centre bout ribs at the corners.
 27. This feature would have also made the centre bout ribs easier to bend.
 28. As we shall see, even in his seemingly unrestrained period, del Gesù relied upon templates for almost every stage of construction; the work of the heads (see p. 140-41) and soundholes (see pp. 148-50) clearly show this.
 29. Hill, Guarneri, p. 81.
 30. Hill, Guarneri, p. 81.
 31. This instrument is illustrated in Joseph Guarnerius del Gesù, the catalogue for the exhibition held at the Palazzo Comunale in Cremona, 9-23 April 1995.
 32. This instrument is illustrated on the front cover of the Metropolitan Museum of Art exhibition catalogue, November 1981-January 1982 (MMA, New York).
 33. The "Gibson" Stradivari viola (c.1734) and a viola by Girolamo Amati II (1703) also have blackened rib ends.
 34. The overall length of a violin back, including the button, is approximately 370 mm. The minimum length required for a one-piece bottom rib is about 430 mm (in practice long enough for a viola). The backs of several del Gesù match each other so precisely that the figure occurs in the same place each time. It seems likely that the billet from which they were split or sawn was very close to the final length of a finished violin back, leaving little room to rearrange the position of the flame. From such accurately prepared billets it would have been impossible to cut a one-piece bottom rib.
 35. See Pollens, mould photographs following p. 34.
 36. The author's experiments support this assertion.
 37. There are many fine scratches on del Gesù's linings which appear to have been made by a rasp or some coarse abrasive. Sacconi (pp. 33 and 52) suggests that Stradivari used dogfish skin. The Preparation of the Head and Neck Blocks
 38. Hill, Guarneri, p.87.
 39. Often even artists' studios were set up for large-scale production. For example, over a three-year period from 1533 to 1536, about 100 identical portraits of Martin Luther were produced by the workshop of Lucas Cranach, all signed and bearing the same date of 1533.
 40. In Hamburg, the instrument maker Joachim Tielke (1641-1724) almost had his shop burnt down to the ground by members of the woodcarvers' guild. Tielke had simply been carving heads for his own viols, rather than purchasing them from a member of the guild. In Paris, Lafille (c.1760) cut many heads for instrument makers, including Salomon and Guersan. Several experts believe that Antonio Stradivari's son Francesco made most of the post-1700 Stradivari heads; since Stradivari's two sons together contributed over one hundred years of mature working time to the family business, of which ninety-six years were while Antonio was alive, some such division of labour may well have been put into practice.
 41. See Hill, Guarneri, p. 82. Almost the entire commentary on del Gesù's scrolls can be summed up by their principal statement on the subject: "And the carving of the heads, how varied do we see them!
- When well disposed he carved them with superb dash - nor was he lacking in precision, though his work was rarely of high finish; here, bold of outline to a marked degree, accompanied by a free treatment of the volute of surpassing charm; there, marred by some touch betraying meanness or the result of careless work... As with the soundholes so with the heads; beyond outlining the necessary essential dimensions, the master trusted entirely to his mood at the moment."
42. See pp. 15-16.
 43. See pp. 12-15.
 44. The "Stauffer, ex Zukerman" is currently housed in the Palazzo Civico, Cremona, and is illustrated in the exhibition catalogue Joseph Guarnerius del Gesù, 1995.
 45. See notes on del Gesù's death, p. 20.
 46. For example, the Hills state: "Stradivari made all his viola heads of the same design as that of the Amati - a design originated, we believe, by Andrea Amati." (Hill, Stradivari, p. 106).
 47. See Pollens, illustrations 34-8 after p. 34; Sacconi, pp. 3, 21, 213, 208; Museo Stradivariano catalogue, pp. 54-6.
 48. Perhaps del Gesù used a rasp to quickly clean up the worst of the bumps.
 49. The fine tips of the chamfers did not survive on del Gesù's heads, and in practice the cutting of the fluting probably removed most markings on the central spine and even the slightest of wear would have obscured the remainder (see figure 19).
 50. A violin in its original state described by Petherick (p. 188) has a neck measurement consistent with that of the "Alard".
 51. See Sacconi, pp. 122-3 and Hill, Stradivari, p. 202. See also Hargrave, "The Method of Construction used by the Cremonese Makers circa 1550-1750", *Violin Society of America Journal*, Vol. 10, no. 1; "The Betts Stradivari", *The Strad*, May 1989, and "1701 Servais Cello", *The Strad*, December 1987.
 52. The "Alard" Nicolò Amati also belonged to the French violinist Delphin Alard, who was J.B. Vuillaume's son-in-law. See Hargrave, "The 1649 Alard Amati", *The Strad*, March 1992.
 53. The presence of a pinprick on the chin of some heads may indicate the use of a paper template. The nature of the head profile meant that the width marking had to be done from both ends, i.e. from the chin first and then from the front of the scroll above the throat. A pinhole can also be found on the front of the scroll on these heads. The use of a paper template might also explain the lack of a scribed centre line. It is possible that pinholes existed on more instruments, but because they were set outside the line of the chin they were removed as the chin was being formed or as the chamfer was being applied.
 54. The author's own experiments have shown that a bow saw, of the type available in the classical period, is ideal for this purpose and is in fact far easier and much faster than most modern methods of preparing the sides of the neck and pegbox. Stradivari's method of marking out the head and neck, as indicated by the surviving templates, certainly allowed for such a saw cut.
- ### The Selection and Preparation of the Back and Belly Woods
55. The generally reliable Hill brothers stated, "The material selected for [del Gesù's] instruments was usually of quite good acoustical quality - what one would in fact expect from a trained maker; but the maple was rarely cut from an exceptionally fine tree as regards the figure" (Hill, Guarneri, p. 58).
 56. The Latin name is *acer campestris*.
 57. See *Biography History*, pp. 10-20.
 58. Fétis (Notice of Anthony Stradivari, English ed., p. 59) says that the maple used by the Italian makers was brought into Italy via Venice, from Croatia, Dalmatia and even Turkey.
 59. Professor Peter Klein shows that a cello belly made by Jacob Stainer must have had material removed from the outside edge of one of the matching belly wedges. Although undoubtedly from the same tree, the bass side has only 165 rings while the treble has 214.
 60. See footnote 3, p. 162.
 61. It is possible that the spruce wedges delivered to del Gesù were split from the log, in which case he may have been able to cut three belly halves from some generously sized wedges. Without the help of den-

drochronology, del Gesù would have matched these extra belly halves by eye. Indeed, although these bellies are botanically mismatched, they appear well matched to the naked eye.

62. For example, on the “Soil” of 1733. See Hargrave, “1733 ‘ex Soil’ violin by Joseph Guarneri del Gesù”, *The Strad*, April 1984.
63. This was, and still is, a commonly used cabinet maker’s trick. It seems likely that del Gesù used the same principle when fitting the neck root to the ribs (see p. 143).
64. The Hill brothers (Guarneri, p. 81) say of del Gesù’s instruments: “A few examples do exist of the normal 14 inch size; in these the widths are invariably narrow.” The measurements of the “Vieuxtemps” support this statement only minimally. From the author’s experiments, the extra length of the “Vieuxtemps” would not necessarily have caused major differences in the width of the instrument. Stradivari’s long pattern violins are another matter: initially the outline appears to have derived from his preceding form, which is considerably shorter, and as a result the upper bouts are markedly narrower.
65. A number of Cremonese instruments show traces of two outside rib outlines at the corners on the back plates. One outline appears to follow the actual line of the rib very closely, while the other does not correspond exactly to the actual rib outline.

Fixing the Neck and Marking the Back Outline

66. It was desirable for the blocks to remain whole at this stage to facilitate the process of clamping the rib structure to the back. The larger the surface area of the block, the greater the stability of the rib structure. On several Cremonese instruments, including those of del Gesù and Stradivari, gouge marks on the back, at the base of the corner blocks, suggest that they were cut back, at least in part, after being finally glued in place. However, there are Stradivari blocks which appear to have been finished with a rasp, suggesting that the blocks were off the back. Both these possibilities could be the result of later alterations.
67. See articles by Hargrave in *The Strad*, June, July and August 1986 issues, and the *Violin Society of America Journal*, Vol. 10, no. 1.
68. See Hargrave, “1733 ‘ex Soil’ violin by Joseph Guarneri del Gesù”, *The Strad*, April 1984.
69. The back button would eventually provide the main support.
70. The “Huberman, ex Gibson” Stradivari has four nail holes through the top block. The measurements indicate that the nails must have been inserted through the blocks at various angles, in order to keep within the confines of the root. Monical’s *Shapes of the Baroque* shows radiographic pictures of the Shrine to Music Museum’s tenor viol by Andrea Guarneri. The three nails clearly enter the neck block at different angles, and the nail holes were almost certainly pre-drilled.
71. The risk of splitting a block without the backing of a through rib was high and potentially very inconvenient. A two-piece rib would in effect allow the fragile rib structure to fall apart. The vulnerability of the rib structure to the nailing process was also known to the Grancinos of Milan, who used two-piece neck blocks to help overcome this danger.
72. In effect the soundholes themselves pivoted upon their own top circles (see discussion in the following chapter).
73. The Shrine to Music Museum is situated in Vermillion, South Dakota, USA. See also Hargrave, “Some Further Thoughts on Clamps”, *Violin Society of America Journal*, Vol. 11, no. 1.
74. See the author’s article on the “Alard” Nicolò Amati (1649) in *The Strad*, March 1992.
75. Following the corner around with the centre ribs, even for a short distance, would have greatly increased his problems with rib bending. However, del Gesù often allowed the more easily bent upper and lower ribs to extend beyond the centre bout ribs, presumably to support the longer corners (see figure 12, p. 136). Occasionally he extended both ribs without mitreing them, to offer some extra support.
76. Although there are traces of the knife tip on the “Alard” ribs, this may have been the result of some reworking when del Gesù was rounding the edge to meet the chamfer. He may even have forgotten

to apply the chamfer.

Arching and Thicknessing

77. Sacconi, pp. 54-84.
78. It may be significant that Omobono Stradivari died in 1742 at the age of sixty-three, and that Francesco died in the following year, aged seventy-two. They were both extremely wealthy and certainly did not need to work, even if they were capable of doing so. It is not known what was happening in the Stradivari shop in the years between Antonio’s death in 1737 and the deaths of his sons, or in subsequent the years leading up to 1746 when Carlo Bergonzi purchased the shop. See Hargrave, “The Milanollo Stradivari”, *The Strad*, June 1998.
79. The violin now known as the “Vieuxtemps” was recorded by Count Cozio on 22 August 1804 at the shop of Monzino in Milan. He made accurate tracings of the soundholes and took comprehensive measurements. He stated that the violin was too high in the ribs and strong in the wood, and had a small voice.
80. An account of the reworking of the “Carrodus” appears in Laurie, *The Reminiscences of a Fiddle Dealer*, pp. 145-9. Petherick (“Joseph Guarnerius, His Work and His Master” in *The Strad*, 1901, reprinted 1998, pp. 186-7) states that the back of one violin dating from around 1742, is “a quarter of an inch bare” in the thickest part of the back, which is certainly over 6mm, and the front “one sixteenth less than the back [about 4.5mm], graduating to the border in much the same way”. It has to be said, however, that Petherick is not the most trustworthy of witnesses.
81. Letter from Nicolò Paganini to Vincenzo Merighi, 20 March 1839.
82. This is described by Sacconi (p. 69) as corresponding to a position slightly shorter than the reverse acoustic centre of the instrument, i.e. less than a reverse stop length.
83. Unusually, the pin on the “Ole Bull” is situated below the central position (see measurement, p. 120).

The Soundholes and the Bassbar

84. Traces of the rib outline can be found on the belly of the “Soil”. On the back a third inside rib outline was inscribed, marking the extent of the hollowing.
85. See Sacconi, pp. 85-94.
86. Del Gesù’s average was taken from thirty-two instruments. Nicolò Amati’s average is 36.25 mm (taken from 9 instruments) and Stradivari’s 35.8 mm (taken from forty-one instruments). On some earlier Cremonese works, the distance between the top holes was also 36 mm, amounting to one third of the total width of the belly plate. More than likely, the actual measurement used was the distance between the outside rib outline and the centre of the top circle. Although essential for the marking-out process, this measurement is very difficult to gauge once the circles have been drilled and the belly itself has been removed a few times. It is estimated to have been about 30 mm.
87. These distances are as follows: “Sauret” bass pair 60 mm, treble 60 mm; “Ole Bull” bass pair 65 mm, treble 65 mm; “Doyen” bass pair 62.5 mm, treble 62.5 mm.
88. On the edge of the “Leduc” circles, the grain of the spruce has been deXected in a clockwise direction – possibly an indication that del Gesù was right-handed.
89. The Hills also observed the similarity between Stradivari’s soundhole form and that of the “Kreislser” del Gesù. They illustrate this feature using the “Kreislser” bass soundhole and a 1710 Stradivari bass soundhole (Hill, Guarneri, pp. 76-7).
90. The “Betts” and the “Kreislser” are both housed in the Library of Congress in Washington, D.C.
91. A brief survey of Stradivari soundholes brought up no further examples which matched del Gesù’s soundholes.
92. Outside templates tend to open and distort when laid upon the arching.
93. It is a strong possibility that del Gesù’s soundhole template was made up of two pieces. The author’s experiments have shown that it is easier to match the central area of the body if both ends are pin-

ned at the same time. A similar system may also have been used to mark out the head widths (see note 53).

94. Hill, Guarneri, p. 91.

95. The Hills list twelve Cremonese bassbars with limited measurements (Hill, Stradivari, p. 190).

The Labels

96. At the time of writing, the scientific analysis of violin labels is virtually non-existent. In other fields, paper analysis has been able to link many ancient papers to specific mills, and to arrive at an estimate of their age. Analysis of typefaces and printing inks might also shed some light on the authenticity of labels, but here again application is in its infancy. For the present, authenticating labels is still largely a matter for the eye of the connoisseur.

97. Hill, Guarneri, pp. 60 and 76; see also *Biographical History*, p. 10.

98. Fétis, Antonio Stradivari, *Celebrated Violin Maker*, English ed., p. 102.

99. Hill, Guarneri, p.66.

100. In his *History of the Violin*, 1864, Forster states that Giuseppe Guarneri is “commonly known as Joseph, the nephew of Andreas, often called Del Jesu” (p. 232). Hart (*The Violin, its Famous Makers and their Imitators*, 1875, perhaps the best published authority prior to the Hills), correctly surmises that del Gesù was the pupil of Giuseppe filius Andreæ, but describes them as cousins (p. 87). Schebek (*Violin Making in Italy and its German Origin*, English ed., 1877), also describes them as cousins.

101. Vidal, *Les Instruments à Archet*, plate XII, opposite p. 132.

102. Although Pietro Guarneri of Mantua (del Gesù’s uncle) retained the words *sub titulo Sanctae Teresiae* on his label when he moved to Mantua, Pietro of Venice, the brother of del Gesù, relinquished it after leaving Cremona. In Venice, the leading makers Goffriller and later Montagnana worked “at the sign of Cremona” and used the identification on their labels. In Milan, according to their labels, the Grancino workshop was “at the sign of the crown”, and the Testore shop was “at the sign of the eagle”. See short essay by Towry Piper in *The Strad*, September 1924; see also footnote no. 137 in *Biographical History*, p. 23.

103. An edict was passed in Paris in 1761 decreeing that shop signboards were not to project more than four inches beyond the wall. London was the first city to introduce street numbering as an alternative the following year, when all hanging signs within the city were removed following fatal accidents involving excessively heavy and ornate boards falling on pedestrians.

104. The phrase “good intentions” is used guardedly; it is difficult to justify moving labels, and even in the nineteenth century it should have been regarded as unethical. See Petherick (p. 215) for his account of a label of “Katarina Guarneria”; various essays by Harry Dykes in *The Strad* (c.1924); and the practices of Alfred Hill, recorded in the Hill shop diaries.

105. Hill, Guarneri, p. 129.

106. See Phipson, “The Two Josephs of Cremona”, *The Strad*, January 1894, p. 279 (in this story the two makers are described as cousins).

107. This collection survives today and is housed in the Shrine to Music Museum in South Dakota.

108. Recorded by Fétis in Antonio Stradivari, *Celebrated Violin Maker*, English ed., p. 105.

109. This information was uncovered by the Hills, whose more thorough research of the 1930s made Petherick’s work largely obsolete.

The Edge and Purfling

110. See Sacconi, pp. 64-5, 114-17.

111. Museo Stradivariano, MS nos. 679 and 680. See also photograph in Sacconi, p.110.

112. Sacconi states that Stradivari used stained pearwood for the blacks and poplar for the whites. The structure of del Gesù’s blacks and whites, however, seems very similar, suggesting that he may have used the same wood for both. His white wood strongly resembles Stradivari’s; however, no conclusions can be drawn until a scienti-

fic study of his purXing materials has been carried out.

113. Sacconi calls Stradivari’s purXing whites poplar and his linings willow. In fact, without microscopic identification such conclusions are impossible. Both poplar and willow occur in a wide variety of colours, ranging from white through red to dark brown.

114. As the thick shavings emerge from the plane, they curl tightly and split on the outer surface. These splits are hidden when the shaving is Xattened out and glued to the black veneers, but they can reappear when the finished purXing is bent to shape.

115. On some instruments the pins are replacements.

116. See Sacconi, p. 117, fig. 108, showing the unfinished edge Xuting of the “Canto del Cigno” Stradivari of 1737.

117. This feature is particularly obvious on the instruments of the Amati family and those of del Gesù’s grandfather, Andrea. See Hargrave, three-part series of articles on the Amatis in *The Strad*, December 1991, March 1992 and March 1993.

118. See Sacconi, p. 79, fig. 75, showing thickness gauge (MS 661). Also pictured in Museo Stradivariano catalogue, p. 104. The gauge is a remarkably sophisticated piece of iron work. It is capable of measuring the thickness of both the back and belly Xutings in the centre bouts and corner area through the soundholes.

119. This is particularly a problem on the end-grain areas of the bellies and on highly figured maple.

120. See Hargrave, “Classical Edgework”, *Violin Society of America Journal*, vol. 10, no. 2.

121. See Hargrave, “Classical Edgework”, *Violin Society of America Journal*, vol. 10, no. 2.

122. Even Stradivari could not avoid this dip as he blended his corners into the bout Xutings.

123. See Hargrave, “Classical Edgework”, *Violin Society of America Journal*, vol. 10, no. 2.

124. The “Lord Wilton” button is set slightly off-centre. This was possible under the baroque system and, because of that system’s remarkable Xexibility, it was irrelevant to the final setting of the neck in relation to the soundholes and bridge.

125. See the “Betts” Stradivari, Library of Congress, Washington, D.C. and also photographs of the same instrument accompanying Hargrave article in *The Strad*, May 1989.

The Varnish

126. Hill, Guarneri, pp. 50-51.

127. Sacconi, p. 174.

128. Count Cozio di Salabue, B236, 16 April 1816, referring to a violin dated 1727.

129. Hill, Stradivari, p. 178.

130. Hill, Guarneri, p. 103.

131. Some of the most important analyses of varnish were carried out by Raymond White, Principal Scientific Officer of the National Gallery, London, and Dr Claire Barlow and Dr James Woodhouse of Cambridge University.