



flexibility, has such strong harmonics of its own that it can impose its own quality if a wide band of harmonics is fed into it. So steel strings found On nearly all unrestored Italian bar. psichords sound well if they are thin and flexible. Steel, not iron, is the old word found on English wrestplanks - the word is ancient, for in the Crusades 'steel\* was made by dipping iron into blood, preferably dragon's blood! I always teach restorers, if in doubt, to use the thinnest possible strings, preferably of steel/fen The soundboard is flexible because it is almost free from bars.

When I started, a well-known maker said to me, 'It makes no difference if you shape the bars, 22 rough cut bars on an Italian harpsichord and 22 beautifully shaped ones on another. They both sounded the same'. I bet they did I

Another time I restored a Eirkman formerly restored by a famous maker who had put on 19 bars and concealed lumps of orange boxes under the soundboard where it was weak. Yet the finish, and added pedal mechanism, were impeccable\*. So was the leather voicing. This was the old attitude when I began. The wrest plank, the mathematics, the complicated mechanism were thought to be all important. The soundboard and ease did not count.! As a boy I could not understand why I liked Italian instruments often crudely made and with

\* Unlike the hit string of a piano or clavichord, the plucked string has controlled harmonics, for each octave partial must be no more than half the amplitude, as the energy is the<sup>0</sup> square of this, the harmonics decrease in power.

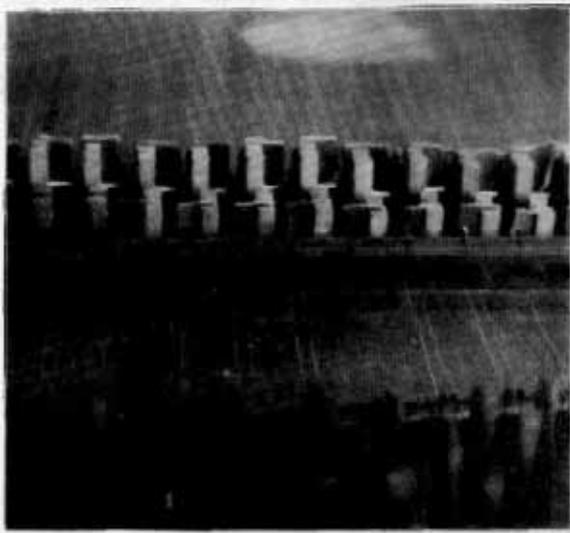
execrable works, but which seemed to me to have a nice sound. I really did not like the noise, known as harpsichord tone, in those days. Years ago I was called "The crank who believes the case affects the tone\*.

Well, these simple instruments produce their tone, I am still more convinced, because of the wood used throughout, the climate in which they were made, the glue and the layout of the soundboard and depth from the bottom to the soundboard, probably in that order. The mathematics of these instruments is simple, a straight wrest plank and wrest-plank bridge - a soundboard bridge only in scale to the tenor and a case which is not exactly parallel to it. It is said that in the fifties I was unable to persuade some Cambridge students to build them. People wanted to work out the maths, the plucking points. The resonant qualities of "a box, which are sometimes so positive that they predominate over the plucking position, were not thought interesting enough in those days.



An Early Italian, three 8-foot stops,  
C/E - c3

I suggested that separate rows of jacks for additional sharps may have given the idea of extreme plucking positions. (EHM Vol. 1, p. 145) This was often achieved by having extra



bridges rather than the later practice of separated jack guides. Many old Italian harpsichords bear the scars which may be of extra bridges, but we have now found one, at last, with the original bridges (photo above).

The inner case of cypress wood is glued to the outer case which has been enlarged to take a second manual. Experts on painting tell me that the painting on the soundboard is 18th-cent French rather like the

Blanchet painting. The soundboard is cypress. The only old wood under it consisted of a bar under the rose, as in the former instrument. Presumably it is the original soundboard. The high quality and apparent age of the bridges suggest that this is a surviving example of the four bridges arrangement.

The bottom shows the signs of the original typical knees and appears to have fitted the cypress case. It has now been enlarged to go under the cypress and to the edge of the poplar outer case.

Usually the scars show the pairs of bridges to have been parallel. In this case the wrest-plank bridges separate in the middle. This is because, as the strings become more parallel with the soundboard bridges in the tenor, the additional length of string between them becomes greater. This is compensated by having the wrest-plank bridges further apart in this register. The bridges on the wrest plank become close together in the bass again as the difference in the length of string between the two





bridges and the tail is not great.

\* \* \*

A very interesting old harpsichord has been found in the South of France. The case is very similar the harpsichord part of the claviorganum in my collection. It is made of poplar, under 1cm thick, and with the bridges of a similar shape to those in the claviorganum. The keys, about 1.1cm, are very light. The compass is about four octaves, although much of the keyboard is missing. These suggest a school of building in France, at the end of the 16th century, of harpsichords similar to a plain Italian. There is a larger expanse of soundboard, Ruckers style barring and no short octave. But this is to generalize from two instruments out of the many which must have existed.

To be continued

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