

The "Spring" of the Bow

by Frank Della Torre

It is generally admitted, that if the secret of the Tourte bow could be discovered, it would be a simple matter to reproduce them commercially.

It is a question whether Tourte, himself, knew what this secret was that made his bows superior to others as tone producers; he just used a convenient method for their manufacture with great care. Tourte's method for cambering seems always most identical to that once used in forming a farming implement, now almost obsolete.

- A scientific analysis of the Tourte bow shows a difference between these and all others, in the cambering only, the wood and workmanship of some other specimens being practically equal to his in other respects.

Cambering or curving of the stick alone amount to little, till supplemented with hair at a tension equal to the resistance offered by the reverse curve of the stick. These two opposing forces acting against each other, make a balanced implement, or parallelogram, of equal frictional energy, from end to end.

Hair is naturally elastic, and the reserve curve makes the stick artificially elastic, the two giving braced rigidity to the bow.

Flexibility in a bow means weakness, or sluggishness, whereas rigidity or stiffness means strength, for a given weight of wood in the stick.

The desirable qualities for a bow to possess are summed up in one word spring - and it seems almost impossible to define this wood intelligently. It is a quality that must be felt in actual practice by the performer. One phase of it, however, is here quoted at length verbatim, from the manuscript notes on the subject left by Ole Bull.

"The bow, while elastic, should be extremely stiff, so that if dropped upon the strings the rebounds are very rapid. "It should have weight to give force to these rebounds, as in many passages the might of the hand cannot be applied to assist the bow; as in the tremolos, arpeggio and staccato volante. In this last example the bow is thrown upon the strings and runs its length in a series of little rebounds, neither the fingers nor the wrist having anything to do with the result. In order to graduate, as it were, the different colors of sound, we favor certain overtones by causing the hair to act at greater or less distances from the bridge.

The nearer we approach the bridge the more the upper overtones, and the nearer the neck the more the lower overtones will be favored. In the first instance the resulting tone resembles that of the trumpet; and in the second that of the horn and clarinet. With a heavy bow, in forte passages, only slight assistance is needed from the hand. The wrist is not cramped nor stiffened in producing the pressure. In piano passages the little finger should partially sustain the weight, and the stick should be inclosed towards the neck, so that only part of the hairs act upon the strings.

"The great stiffness and elasticity of the heavy bow give a free, clearer tone than can be produced by one of a lighter and more sluggish nature."