The Violin Makers Journal

MAY - JUNE, 1964
~~AUGUST - SEPTEMBER, 1964~~

THE OFFICIAL PUBLICATION OF
THE VIOLIN MAKERS ASSOCIATION OF BRITISH COLUMBIA

Issued as an Educational Feature to encourage and develop the art of violin making.

The Violin Makers Journal

A Non-Profit Magazine Published every six weeks
by The Violin Makers Association of British Columbia

MEETINGS HELD THE SECOND SATURDAY OF EACH MONTH AT 4360 MAIN STREET.

MAY - JUNE, 1964

Vol. 7, No. 3

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If you do not receive your copy of the Violin Makers Journal within reasonable time, please advise us. Please notify the Secretary of the Association at 4163 Sophia Street, Vancouver, of your change of address.

EDITORIAL PAGE OF *The Violin Makers Journal*

CLARENCE COOPER, EDITOR

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EDITORIAL

We do not seem to be able to get out of the impass of always failing to get our journal out in good time. The material is slow in coming to us and our printing is delayed for various reasons. These things we are striving to remedy and would ask our members not to be discouraged. Do not be discouraged because, when you receive the journal, you will find it worthwhile and I think it contains things of interest to you. We do not want to give you a journal full of platitudes but rather concrete facts and the instructions on how to do the job.

It has been most difficult to get good material on our modern makers--this is very disappointing because we feel that our journal is the only one to give the story of the present day makers and their thoughts and characteristics as violin makers. We feel that history is being short-changed and the people in the future will have no source of reference.

While we have complained because of the frustration in not being able to give more and more promptly we are most happy with the material we are able to present in this issue.

We have, in this issue, an interesting story on the "Violin of Inspiration" built by Rev. G. Wright for a young lady, Barbara Lye, a member of his parish for whom he made this particular violin and in which he placed her name. Miss Barbara Lye played this violin at our Christmas Concert and gave a very excellent program. The instrument had an excellent tone and this lady's performance on it justified Rev. G. Wright's statement that the playing was inspired.

Our friend, Mr. Lapwood, has suggested certain articles as a basis of discussion of problems and comparisons on which we hope our members will express their opinions.

Rev. G. Wright has made more progress in the construction of his double bass and has contributed pictures and descriptions of his further efforts.

Carl Farseth has written an interesting discussion on the subject of strings and prepared a table of string thicknesses. These are the sort of things we need and express our appreciation for it. Mr. Farseth also asks if anyone would write an article on the "Italian Dip" in the finger board. We hope someone will respond to this. Dr. Nicholas has sent us some interesting facts in his letter from Italy.

In our fiddle fix section, Harry Wake has a good article on the center frame joiner. Mr. A. Thurlow has made certain good suggestions on purfling and the pinning of the plates to the corner bouts. Mr. Franko has suggested a jig for the holding of the ribs to the corner bouts.

Mr. Ced Welstead has sent us two very interesting articles. One on the cutting of the "FF" holes which is most interesting. We can appreciate the tedious work that went into the experiment and the keen observations of the effect each phase on the experiment produced with the removal of small portions of the "FF" holes. This article on the "FF" holes is one of the best I have ever seen and we compliment Ced on his patience. The second article is an answer to Carman White on the comparison of the old violin with the new. This article is well worth reading, during which you should pause of a moment's meditation.

Mr. Kirkwood of Forfar, Scotland, has sent in some thoughts on violins.

Mr. C. C. Parker, a fellow exponent of the violin geometry and mathematics, was kind enough to send a letter of explanation to parts of his article on violin geometry in the December issue of the journal. I owe Mr. Parker an apology for not giving him the opportunity to have a second look at his material before printing it--but it was so good to read and informative I felt the members would be impatient to have the opportunity to read it.

Mr. Hopkins has given us some comments on observations made by A. Gemunder on the thickness of the plates.

LOCAL NEWS

By Al Gough

We have held two very interesting meetings during May and June. One thing was noteworthy at both. A discussion was held on the fitting up of the violin. At the May meeting the topic of the evening was the fitting of the violin bridge. Arthur Jones very ably expressed his understanding of the finishing and fitting of the bridge and the result obtained when variations were made from the dimensions he mentioned.

The proposal to hold an exhibit in the Pacific National Exhibition to be held in the fall was discussed. Mr. Friess told the June meeting that he had invited Mr. Cardo Smalley, Assistant Concert Master of the Vancouver Symphony, to attend this meeting. Mr. Smalley had acted as the judge of our instruments in the previous years. Mr. Smalley was kind enough to outline to the meeting the basis of judging instruments and what constituted a good instrument. He stressed the necessity of fitting up the instrument according to standard.. Mr. Smalley was kind enough to state what he considered the standard should be and your editor has carefully noted this for a later edition.

The June meeting was really interesting... it was "cello night". We were treated to a feast of cello playing On this occasion, Miss Audrey Piggot, a renowned teacher and player, a principal cellist of the Vancouver Symphony Orchestra, was most kind in attending the meeting and playing all the cellos. Miss Piggot was most generous in the length of time played on each instrument. Mr. Gordon Young played on each of the instruments for us so that we had a chance to compare further.

The most fortunate part of the meeting was that Dr. Iseli brought with him a superb Guiseppe Gagliano cello to which the other instruments could be compared. Miss Piggott had brought with her the Pressenda cello which she plays in the symphony. There were seven cellos made by the members. The standard of the members' cellos was quite high and we know that they each went home happy with their own instruments.

* * * * *

We were sorry to hear of the death of a member, J. Putter of Victoria.

THE VIOLIN THAT INSPIRED A GIRL

by Rev. Geo. R. Wright

Barbara Lye is the eldest daughter of Mr. & Mrs. Lye of 2925 West 11th Avenue, Vancouver, B.C. There are four girls and one boy in the family and they are all active members of our church.

Barbara holds a special place in my heart because she was born with a tremendous handicap of poor vision. Perhaps you will realize more clearly when I say her mother and father told me she has about 25% vision with the help of glasses. The parents are very anxious that all their children receive a good musical education and, because of Barbara's handicap, encouraged her in the choice of violin. As a tiny tot she showed signs of a good musical ear and from her first lessons could play her half size violin in tune. She often was asked to play a little solo in Sunday School or at a Young People's gathering. It always sent a pang of anguish through my heart when I saw her struggling under her handicap, having such difficulty to see her music.

When Barbara was about eleven years old, she had need of a larger instrument and her father asked me to quote a price on one of my handmade violins. While contemplating this, I thought: "Here is my opportunity to do something to inspire a little girl and perhaps ease the burden of her handicap." I suggested to her father, rather than sell one I had already made, I would like to purchase professional maker's tone-wood and make one especially for her. The cost to him would be only the material. I would like to make a gift of my labour and time. He said no one could refuse an offer like that, so we agreed to go ahead.

I remembered reading somewhere that Stradivari once said: "Only the Lord and Stradivari knew how to make a good violin." When I started to work on this violin, this thought occurred to me. I knew the Lord spoke to a fig tree on one occasion and it died immediately; why couldn't He bless and make this wood alive if He wanted to. With these thoughts in mind, and hoping the Lord would help me to make a good instrument, I lay my hands on the violin several times during the making of it and prayed: "Dear God, will you please give this violin an excellent voice so this instrument will inspire Barbara." I had printed her name inside the Violin; that was the one surprise I left for her to discover for herself.

She seemed to enjoy the violin from the time she received it. A short time later, at a recital, her teacher made special mention that Barbara was fortunate to have a handmade violin. Also from time to time senior students admired the beautiful voice of her violin. Another teacher who owned an old instrument remarked how well her violin muted. Then one day she discovered her name inside. These, and many other such incidents, were the unfolding of the answer to my prayer - - - she was being inspired. She showed renewed diligence in her practicing. She has progressed by leaps and bounds until now, at sixteen, she has developed technique in bowing and a smooth rolling vibrato, that many an artist would envy. Yes I believe Barbara is well on the way to a successful musical career, in spite of her handicap.

Probably I should tell you all the Lye children are taking music lessons which is a big financial outlay each month The father is a hard working postman and their mother works part time, in order to finance their musical education. The mother is a member of the Parent's band at one of our night schools, playing clarinet, and the father is a natural born gospel pianist. Three of the girls are studing violin, one girl and the boy play the piano, so in due time they will have a lovely home orchestra. How wonderful it would be if more mothers and fathers would sacrifice for their children in this way.

Barbara was invited to play at our Violin Makers' Christmas concert recently and her music was greatly appreciated by all.

I have asked Barbara to write her feeling for her violin in her own words, also I have asked our editor, Mr. C. Cooper, to give his opinion.

Her violin has been played along with a number of good instruments including a couple made by the old master, and it holds its own with the best of them. I am sure it is the best violin I have ever made, and I DO BELIEVE it is because God guided my hands to do the right thing.

COMMENTS BY BARBARA LYE

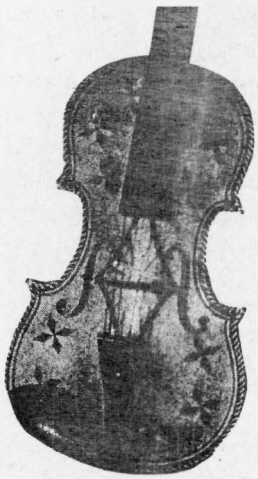
After my seventh birthday my parents decided to start my musical education and helped me choose the violin as my instrument. Like most children, I did not like practicing. After my repeatedly asking why I had to take lessons, my father said, "Because you are my daughter and I say so." To settle the question, finally, he said I could quit when I was sixteen and so my main ambition from that time was to reach sixteen and stop taking lessons. Being very young and anxious to end my daily practising, I did not fully appreciate the time and work Mr. Wright put into making a violin for me, although I was very proud of it. Two years after receiving this violin I was accepted into the Douglas Stewart orchestra for strings. At one of the rehearsals, prior to the first concert I participated in, one of the viola players
Symphony Orchestra asked many questions regarding my violin. It was passed through the viola section and several of them played a short passage on it. I was very surprised and proud that MY violin would draw special attention when there were a hundred other violins in the orchestra.

When I discovered my name inside the violin was misspelled, (though phonetically correct) I thought Mr. Wright a very funny man, although it deepened my sense of ownership. Recently a boy was showing off his violin, which had his name engraved on the back and I surprised him by showing him my name inside my violin. He said: "That's not fair, your violin was made especially for you." I remember on one occasion when Mr. Wright was installing a new bridge, the sound post fell down and he replaced it with a longer one. When I got the violin back, I noticed a change in tone and was hopping made at him for three weeks. My teacher also noticed the difference in my violin and remarked it had better balance of tone on the "G" and "D" strings. I realized then how much my violin meant to me and I didn't want anybody, not even the maker, tinkering with it.

So, you can see by these things that the violin is an inspiration to me and, now that I am sixteen, I am eager to continue studying music which is Mr. Wright's desire coming to reality.

Barbara Lye

from the



STRINGED INSTRUMENT MAKERS' FORUM

by Ron Lapwood
Willesen, London, England

Writing articles for the Journal tends to fall into several well worn and familar channels which can, after a time, lose their grip on the Reading Subscriber by reason of their repetition, this tends to monotony. It occurred to me that it might be a good idea to run a bi-monthly series of argumentation calling each article by the name above this present effort.

Let everyone send in their points of view on stuff previously put in the mag, the fact that nearly everyone begs to differ could provide plenty of fireworks:-

1. There are the arguments constantly raised about varnish, spirit or oil, or both, and the one about colouring matter, etc.
2. Plate thicknesses and bass bar arguments which have gone on so long and still many are not sure they are right.
3. Whether the belly should be flattish or have a dome like a Stainer on it (some Stainers had good tone).
4. Then there is the battle about strings:- Gut vs wire, or metal strings vs nylon, etc. and the same with bows.
5. Then the Old Violins vs New Violins addicts are still with us.
6. The carved head lovers vs the volute diehards.
7. And many more points too numerous to need any help from me, so join in the Battle of Words and Ideas, it may help to clear up the Pet Theories, Old Wives Tales and, so called, Trade Secrets to the benefit of all concerned.

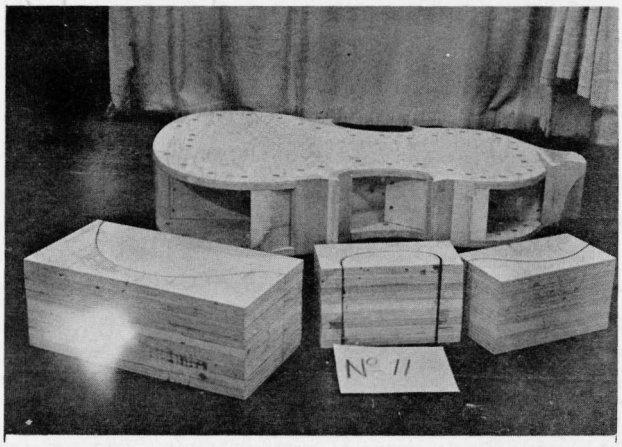
Cheerio and Good Violins.

Build a Double-Bass

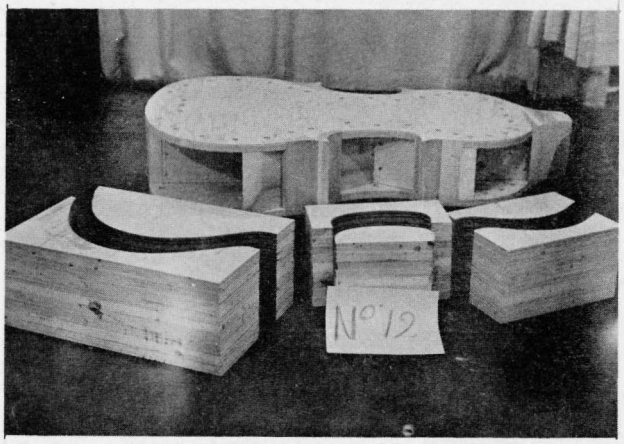
- PART 2

by Geo. R. Wright
4163 Sophia St., Vancouver, B.C.

After the frame is completed, you will need 3 cramping blocks for shaping and gluing the ribs. - See No. 11. This shows the blocks opposite the upper and lower bouts, also the C's of the form. This will require about 3/4 of a sheet of 3/4" plywood (I used Cottenwood). I will make up a cost sheet when I have finished.

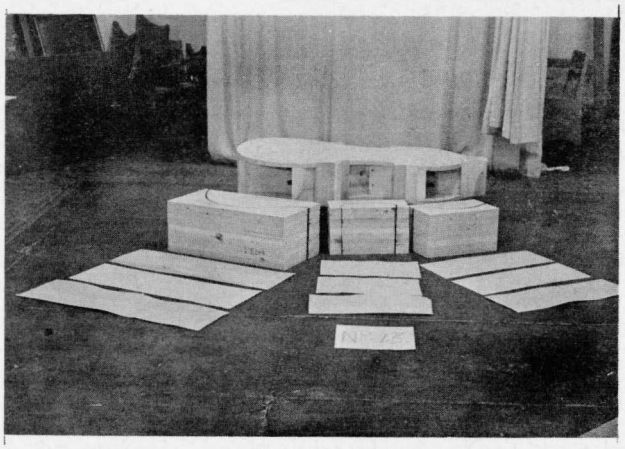


No. 12 shows the cramping blocks opened up so as to simplify the idea - I cut this 3/4" plywood into 3 different sized pieces, i.e. 22" x 11" - 13" x 7¼" and 13" x 6". These pieces were then glued together in their 3 respective sizes and made to match the thickness of the form which tapered from 7 5/8" at the bottom to 6 1/4" at the top (this top dimension may be debated) as the regular-made Bass has a curve in the back rib line which would lake it much more difficult to build. In gluing up these 3 cramping blocks, I made sure they were a little deeper than the form so as to give a margin to trim off the ribs.



Now that you have the blocks glued up, it is necessary to place them in position, set the form on them and mark out clearly the outline of the ribs. Be sure to centralize your block so as to give equal strength on both sides of the saw cut. You may have a little problem here - If you do not have a Band-saw, you will have to depend on a friend or a wood factory to cut it for you. (TAKE NOTICE: the Band-saw blade must cut a 1/8" cut because the material I am using and suggesting to you to use for ribs is VENEER which, when made into three-ply, is 1/8" thick. Be very careful in cutting these blocks, because if they are not cut straight, your ribs will be crooked too.

The middle or C block has to be cut in half, that is the inside part of it. Then in the cramping process you drive two wedges into it to give end pressure on the ribs while clamps press it together. This block is shown later on.



Now for the rib material. Procure from some mill, or wood working factory, some Maple Veneer. Also, I used Birch for core between two ply of Maple. The Birch is cross-grained so when you have a three-ply job with the middle one cross - grained, you have a strong job.

No. 13 shows the form with the three cramping blocks all cut to fit - also the veneer all cut to an over-size, ready to be cramped and glued together.

BENDING THE RIBS:- First, I sanded off, by hand, these 9 pieces of veneer so as to make a smooth surface for the glue. Then dampen each side, but do not soak them. Then place them together in order (check carefully) to make sure the flame in the curly maple is slanting the way you want it - and don't forget this all the way through.

Put the wet veneer in the bottom half of your cramping block and press it into shape, then put the other half down carefully, pressing it into shape. Then put on your clamps and leave it for two to three days to dry.

THE GLUING:- Do not use a contact cement or any flexible glue. I used Famoldhide Glue which is water-proof. Weldwood is also good.

Now, GO SLOW, it's easy to get mixed up and get your flame in the wrong direction.

Use a stiff brush to put the glue on and make sure every bit of the surface is well covered and, before placing the rib back in the block, cut a strip of thin plastic sheet, about 1/64" thick and lay it in the cramping block. It will make a slight cushion and also prevent the edges of the rib from sticking to the block. I used plastic on both sides.

I found it necessary to sandpaper the cramping blocks in order to smooth out slight roughness and variations.

It is also important for the glue not to be too heavy, because heavy glue would call for much more pressure in the clamping. I found pipe clamps very good. If you have no clamps make a set out of 3/4" plywood with wedges.

Read the pictures and build a Bass.

VIOLIN STRINGS

BY Carl Farseth
4024 Elliot Ave., Minneapolis 7, Minn.

Strings come in No. 1, 2 and 3 sizes, and it is customary to use the same proportional size for all four strings. The aim is to get perfect fifths. No matter how perfect a string may be (even if it be of the best thickness) it is not satisfactory for double stopping unless of a thickness suited to the particular violin in hand. Since the interval between two neighboring strings is a fifth or half an octave, it follows that the interval between any two notes on these two strings, stopped by the same finger, is a fifth. Pressing a string down on the fingerboard stretches the string, hence raises the pitch; therefore a thick string rises so in pitch when pressed down that it must be stopped farther from the bridge than a thinner string. Therefore all the strings must be of such a proportional thickness that the finger can stop them squarely across the finger board. The strings must accordingly be all thin, all medium or all thick. On a good violin, strings of the best thickness usually produce perfect fifths.

This problem of perfect fifths is most acute on violins where the strings are far from the fingerboard and it usually may be ignored when the strings lie close to the fingerboard as permitted by the stalian life.

The intriguing problem of perfect fifths is argued interminably by violin makers. An added reason for using proportionate strings is that thick string requires a different bowing than one that is thin.

String Gauge:- Deceptive and unsatisfactory.

If by chance your strings are true and satisfactory, note carefully their thickness on wrong side of bridge. Put these markings on a blank gauge. Albert and Millimeter gauges are now the only kinds in general use. Albert gauge was intended for gut E, A, and D, and copper-wound G. After the introduction of metal E, the silver-wound G, and aluminum D, the Albert sizes no longer hold. The gauge now serves a coarse micrometer. Furthermore, no two Albert gauges register the same. Originally the Albert gauges were made by the Albert Music Company of Philadelphia.

The Millimeter or French gauge comes in the form of a slot or narrow "V" and is graduated in twentieths of a millimeter. It is no more accurate than the Albert. The most accurate of the string gauges is the Weichold, which also is graduated in twentieths of a millimeter.

Micrometer:- King of all gauges is the mike.

Before the war the ten cent stores were selling 1/2" micrometers for a dime. Its only drawback is that the player may become too finicky in his choice of strings.

The micrometer is composed of a U-shaped frame and a bolt or spindle. At one of the frame is the anvil on which an object is placed to be measured. The other end of the frame extends into the hub. Into this hub is screwed the bolt or spindle; but this name applies particularly to the end which strikes the anvil. The end of the bolt twirled by the thumb and finger is surrounded by the thimble. The spindle-thimble combination is, of course, fastened together and revolves as one.

The fine readings are along the circumference of the sleeve or ring of the thimble, 0 to 24, each mark one-thousandth (.001) of an inch. When the micrometer is closed the zero on the sleeve of the thimble should line up with the zero line running the length of the stationary hub. Twirling the thimble to the next mark on the sleeve adding another .001 inch, each additional mark on the sleeve adding another .001 inch. A complete turn of the thimble to the zero again, makes .025 inch.

To keep track of the number of times the thimble-spindle combination has turned around, there is a mark for each complete revolution along the zero line on the hub. With the sleeve of thimble even with each mark on hub (and the thimble reading on zero) the hub (rough) readings are: .025 .050 .075 .100 .125 .150 .175 .200 etc. Therefore, the reading of the mike is the highest reading visable on the hub plus the reading on the revolving thimble.
Example 1:- The highest reading visible on the hub is .075, and the 9 on the thimble lines up with the hub zero line. The complete reading is .075 plus .009 or .084.

Example 2:- The .150 is visible on the hub, the reading on the thimble is 20; the mike registers .150 plus .020 or .170.

Place two zeros before the gauged number for the first one-third turn (to 9) of the thimble as the thimble leaves the anvil. Beyond that, place one zero before the number to the fourth cross-line (.100). From the fourth cross-line to the inch mark only the decimal point precedes the number (.100 to .999) and then the decimal point moves to the right of the first digit, 1.000, 1.001, etc.

Remember, for the partial reading on the thimble, two zeros precede the single digits (1 to 9) and one zero the two digits (10 to 24); also, the thimble reading is the micrometer reading before the first cross-line on hub.

Gauging a string every three inches is a test for trueness. A variation of less than half a thousandth (.0005) is permissible. Garnet paper on high spot finishes the job. Music store clerks often test strings by running a Weichold gauge from end to end of string. If the pointer wabbles, the string is discarded

STRING GAUGE TALES (new)

(Gut, gut core strings and steel E - in decimal parts of inch; Kaplan's originally in 1/20 mm.)

SQUIER, ARMOUR, KAPLAN

V I O L I N

		No. 1	No. 2	No. 3
E.	steel	0095	0100	0105
	gut	0226	0246	0266
A.	gut	0284˙0295	0305˙0315	0325˙0335
	aluminum	..	..	..
D.	gut	0394	0413	0433
	Aluminum	0315	0335	0354
B.	silver	0305	0325	0344

V I O L A

A.	gut	)		
D.	gut	)		
	aluminum	)--- same as Violin		
G.	silver	)		
C.	copper	0433	0463	0492

'C E L L O

A.	gut	0453	0472˙0482	0492˙0512
D.	gut	0571	0600	063
	aluminum	0512˙0532	0541˙0561	0571˙0591
G.	copper	0532	0561	0591
	silver	..	..	..
C.	copper	0748	0787	0827
	silver	..	..	..

D O U B L E B A S S

G.	gut	0886	0984	1083
D.	gut	1181	1280	1378
	Aluminum	..	..	..
A.	gut	1476	1575	1673
	copper	1083	1181	1280
E.	copper	1476	1575	1673

WM. LEWIS & SON

V I O L I N

		Thin	Medium	Heavy
E.	steel	0095	010	011
	gut	..	025	...
A.	gut	027˙028	0285˙029	030˙032
	al.gt	027	028	029˙030
D.	gut	037˙038	039	040˙042
	Aluminum	0335˙034	035	036
G.	silver	031	032	033˙034

V I O L A

A.	gut	)		
D.	gut	)		
	aluminum	) --- same as Violin		
G.	copper silver	)		
C.	copper silver	044	045	046˙048

'C E L L O

A.	gut	043˙044	047˙047	047˙048
D.	gut	055	056	057˙059
	aluminum	050	051	052˙054
G.	copper	052	053	054˙055
	silver	050˙051	052	053˙055
C.	copper	072˙074	075	076˙078
	silver	070˙072	073	074˙076

D O U B L E B A S S

G.	gut	080˙084	085˙092	093˙100
D.	gut	108˙111	112˙118	119˙123
	aluminum	105˙109	110˙114	115˙118
A.	gut	115˙159	160˙165	166˙170
	copper	105˙111	112˙117	118˙123
E.	copper	138˙143	144˙148	149˙155

The figures of these tables are evidently based on the three smaller sizes of the Albert gauge, the fourth Albert being a monstrosity. String makers' output is confined to sizes 1½, 2, and 2½, most of the stings being No. 2. Hills recommended averages are: Gut E 025, Steel E 010, Gut A 031, Silver G 032, Gut D 041, Aluminum D 035.

In the Squier-Armour-Kaplan table where two numbers are given for the same size, Kaplan's is on the left. Reduced to round numbers, this table would read: Violin E Gut, 023, 025, 027, etc. The Steel E sizes are calipered from Kaplan strings. Unlike Albert's, Kaplan's Violin A is decidedly smaller than the G. The Double Bass A Gut figures are Kaplan's.

Lewis' table gives tolerance for each string size, making it somewhat more difficult to estimate half sizes. Note in the Lewis 'Cello table, the silver-wound strings are smaller than the copper.

Steel E: Only a few violin houses supply the Steel E in several sizes. No. 4, given time, is guaranteed to wreck any fiddle.

	No. 1	No. 2	No. 3	No. 4
Kaplan.....	0095	0100	0105	..
Hill	..	0100	0105	0112
Lugen Crustal	..	0100	..	0110
Bernhardt	0092˙0098, mostly No. 1			
Silverin--				
sottile? Medio 0095, gross?				

Tenor guitar A is 0093. No. 2 Piano Wire is 011 inch. No. 1 010. No. 0 009. No. 00 008. Small spools of these cost 10 to 15 cents (in 1940)

(NOTE: No. 00 008 is unsatisfactory on a violin)

Most of this article comes from notes written on Herron Allen in the early '40's, with added comments by the writer, so the table contains nothing on "rope" strings.

The chief drawback of gut strings is their weakness in damp weather. Nylon monofilament fishing lines of same gauge should be tried by players. They stretch only for a day or two, and the whistle can be removed by washing them in carbon-tetrachloride (carbona). What nylon strings have done for the guitar, they may do for the violin.

Letter From Italy

by Dr. N. Nicholas
9, Via Vittorio Veneta
Ventimiglia, Italy

Here are a few disconnected jottings which may be of interest to readers of the Journal. Like the majority of violin makers, I was always trying to find the best varnish for my instruments. Also of great importance are differently colored varnishes for touching up old instruments which come for repairs. Therefore, I have been experimenting with a large number of varnishes sold in shops or made at home from formulae given by other experimenters. One of the varnishes which looked right was suggested by George Fry in his book "The Varnishes of the Italian Violin Makers". It was a very nice varnish especially of the so-called Venetian type, but it would not dry properly. He himself says that six months is necessary for proper solidification. I tried all sorts of methods to make it dry quickly but, in the end, gave up. One jar of this varnish which I marked "Improved Fry" was standing in the basement for five years before I discovered it not long ago. I decided to give it a trial and covered a white fiddle after the filler had dried. To my surprise, four hours of winter sunshine made the surface of this varnish completely dry, with a perfect finish and indications of nice coloring. How I have improved it, I do not remember!!

Here is an extract from the "Sunday Times" giving interesting facts about linseed oil. I have had correspondence with several friends in the same trade, and all are looking for a better oil than linseed. I am giving a trial to eucalyptus oil recommended by a New Zealand maker. It dries better into a completely transparent film. Another highly recommended oil is Chinese wood oil. I do not know it.

EXTRACT:-

Twenty-five years ago, Gluck - a lady artist who preferred to be called just that - set aside her own painting to begin a single-handed investigation into why modern paintings seem to be less durable ' ı Old Masters.

Gluck came out firmly against the quality of modern paint. Her principal contentions are that the linseed oil and pigment in paint are not what they used to be - the oil because it is made by a different process, the pigment because it is ground too finely.

Her main target is the linseed oil process. It used to be cold-processed, but for the last thirty years or so the pressers have found that heating the seeds was a more productive method. The heating process, says Gluck, means that the paint attracts moisture. Since it never dries out properly, it is never ready for varnish, or more layers of paint, but when they are added it can lead to cracking.

Gluck is a member of the committee of the British Standards Institution which is considering the points she raises. In 1957 it published a standard on the chemical constituents of pigment but research is still going on into how finely it should be ground and into the oil process.

On the whole, the academic painters are the ones who support Gluck. The modern painter, who wants to use paint straight from the tube, is not at all dissatisfied with the manufacturers. If the Old Master school wants to mix their paints individually, they can get hand-ground pigment and cold pressed oil, produced for restoration work. But it will take them longer and cost them more.

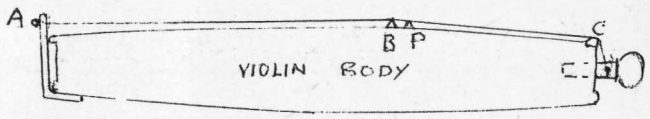
* * * * * * *

This extract shows quite clearly the difficulties encountered when making varnish with ordinary linseed oil. If we make our instruments to stand the test of time as the Old Masters did, we must be very careful in the employment of the different ingredients we buy over the counter. I ordered from a reputable chemist a supply of resins known as Gamboge and Dragon's Blood. These used to be sold in crystal-like lumps soluble in turps but what I got was a powder hardly soluble in anything.

This reminds me of my experiments with Michelman varnish. After prolonged drying of the precipitate, I managed to get a varnish which looked sufficiently transparent. I applied it to a piece of glass and when the film dried put it under the microscope. It showed distinctly that the red color was due to a fine powder suspended in a transparent medium. It would be useful if someone could repeat my experiment and if I am wrong, find out where I have failed. Anyhow, the red of alizarine is too strawberry colored to be pleasant.

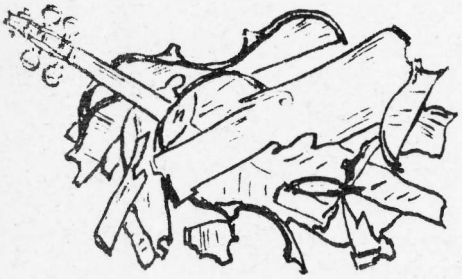
A German firm sent me samples of nylon bow hair and a special resin to use with it. This kind of hair is easy to fit on the bow, it is flatter and stretches well, but the resin is no good. It is greasy like that used for Double Basses and soon sticks to the strings in a thick layer. I have wetted the new nylon with alcohol and powdered it with fine resin (used for horsehair), then rubbing it over a piece of resin. The improvement is noticeable. Reports from orchestral players are favorable for Cello and Double Bass bows with nylon hair, but the violin bow still has some disadvantages.

The other day a violinist asked me why I set the stop position at 195mm. from the upper edge of the belly. I have an explanation which may be interesting to readers of the Journal.



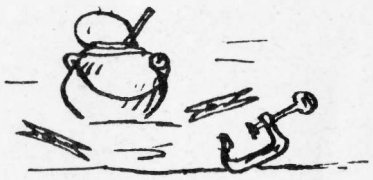
The strip of aluminum bent into an L shape is clamped to the top of the violin. Through the hole at A the violin string (A) is pushed along the top of the belly to the peg inserted in the lower block. At the place of the stop (or bridge) a small triangular piece is placed under the string. By tightening the string we can tune it to a certain note. If the point B is at the right place and part of the string AB is tuned to A4, the part BC will give a C5 note. By moving the little bridge to the point of the sound post P and tuning AP to A4, we find PC giving a D5 note. This combination of notes indicates the most suitable position for preliminary fitting of briege and sound post.

Yours sincerely,
N. Nicholas



Fiddle Fix.

By H.S. Wake.



CENTER JOINT REPAIR FRAME

To reglue an open seam down the center of a violin back or belly can be most difficult and it is, as most of us know, almost impossible to make a perfect job of bringing the two halves into proper alignment; A frame or jog for holding the violin while controlled pressure is applied at the right places can be made in less than an hour from odd pieces and will be found to make a better job a whole lot easier.

The efficiency of this frame is based on the fact that pressure can be applied both from the inside and the outside, directly on the joint line or on either side of it, for the full length of the joint from block to block; small cleats can be glued across the center join on the inside while the clamps are all doing their job of holding everything in place; having made the frame, all manner of adaptors can be devised to increase its efficiency.

Cut a piece of quarter inch plywood 14" x 16" and mark a center line with a pencil from top to bottom; cut a recess ("A" Fig. 1) at the top of the centerline 1 3/8" x 1/4" deep; also on the centerline make the cutout ("B" Fig. 1) 9" long by 1 3/4" wide with the upper edge of this cutout 2 1/2" from the top edge of the board; measure down from the top edge 3 3/4" and mark a line across at right angles to the centerline; mark another line across at a point 6 1/2" from the top and a third line 9" from the top and a fourth line 11" down: On the upper horizontal line, make a mark 4" on each side of the centerline and drill 3/8" holes through the board; on the second horizontal line, mark off 3" each side for 3/8" holes; on the third line mark of 4 1/2" each side and drill through and on the lowest line, 5" on each side and drill through. You should now have eight 3/8" holes through the board; none of these measurements need be too exact as the holes are only for clamping bolts, so use your judgement.

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Now, prepare four wood clamping bars (Fig. 2) from 3/4" X 1 5/8" strip; these will be of four different lengths having holes drilled through corresponding with the holes on each of the four horizontal lines laid out on the baseboard; the first strip will have the holes 8" apart; the second will be spaced 6" the third 9" and the fourth 10" apart; cut off each of the strips about one inch outside the drilled holes; three pieces of 1/4" plywood can now be cut 1 1/2" x 3" for back or inside pressure clamps; drill a 1/4" hole through the center of each for 3/16" bolt ("B" Fig 3)

Our frame is now completed and in order to best domonstrate it's use, we will take a typical case and see what we can do with it. Let's say that this violin has a two pice back that, at some time in the past, has separated at the seam and been poorly repaired; the seam has been glued together but the edges don't match and do not come completely together; there is only one thing to do - open up the seam, clean it out and make a new joint.

First remove the top from the violin and, although this operation can be performed with the Fingerboard on the instrument, you will find your work much more comfortable if the Fingerboard is removed; get the hot water ready. With the top removed, it may be that the back joint will open up easily if it isn't already open; in any case, you must start working the hot water down into the joint from the inside; be most careful not to damage the edges of the joint on the outside or the disfigurement will show no matter how well the joint is brought together; all the old glue MUST be cleaned out of the joint and if it should happen to be WHITE glue, you are in trouble because this stuff is like chewing gum and is most difficult to remove. Having the joint well cleaned out, the violin can now be placed in the frame (Fig. 5) with the back facing upward and the base of the neck in the recess at the top of the board; using 1/4" x 4" bolts up through the holes in the baseboard, place the clamping cross bars in position with temporary cork or felt pieces underneath to protect the violin varnish; you will find that your violin spool clamps with wing nuts are just right for this set up if you remove the upper spool; just tighten the wing nuts on the cross bars sufficient to hold the assembly together.

You will now see that the point of contact of the underface of the crossbar is right on the centerline of the violin, or directly on the back joint line, and that the slightest rocking of the crossbar will place the point of contact on one side or the other, so if the nuts on each end of the cross bar are tightened an equal amount, the pressure will be brought to bear directly on the joint. However, should one side of the joint be higher than the other in this area, by turning the nut down further on that side, the cross bar will be rocked over slightly to bring the point of pressure on the high spot to equalize the seam: Now, should adjustment of the pressure give any trouble and the edges of the seam refuse to line up correctly, turn the baseboard over and bring the small pressure clamps (Fig. 3-4) into action for a little assistance. We made three of these but, of course, any number can be made quite easily; you will notice that the slot or opening in the baseboard ("B" Fig 1) is situated directly over the center seam on the inside of the violin so you can see what's going on; put a 3/16" bolt through the center hole of the 1 1/2" x 3" plywood strip (Fig.3) and thread a nut on the end. Place the strip inside the slot ("B" Fig 1) and hold it up crosswise to bear on the inside face of the baseboard ("B" Fig. 4); while holding the nut from turning, tighten down the screw; as the assembly is tightened with the inside face of the baseboard as a backstop you will see that pressure can be brought to bear by the bolt on any area adjacent to the center seam on the inside of the back; this can now be used as a backup to the crossbar clamp to bring the seam in line. It will now readily be seen how a few of these inside pressure clamps can be used to get a sensitive and positive control of the positioning of the two sides of the center joint in relation to each other.

Having everything now lined up, run the hot strong glue into the joint and adjust the clamps; put pieces of cardboard under the crossbar clamps so that when the clamps are removed, any paper that is left stuck to the violin can be easily removed with warm water; small thin cleats (about 1/4" x 3/8" on the face) can be glued across the center joint on the inside and the whole assembly put aside for a couple of days to set. It will be obvious that any work on the center seam of the violin belly would be done in the same manner except that shorter bolts would be required.

Harry S. Wake

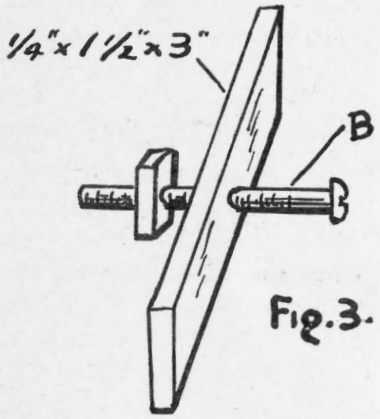


Fig. 3.

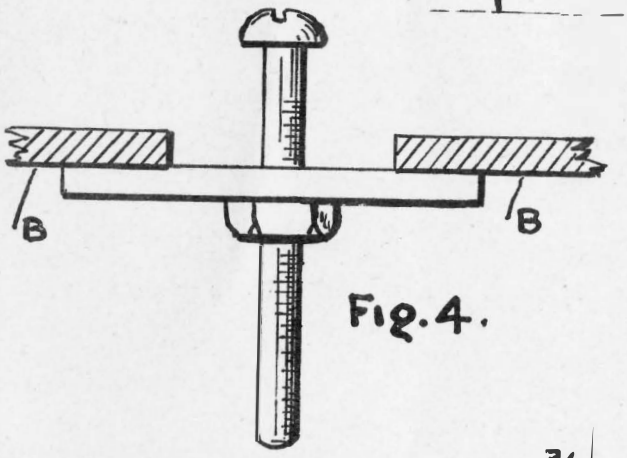


Fig. 4.

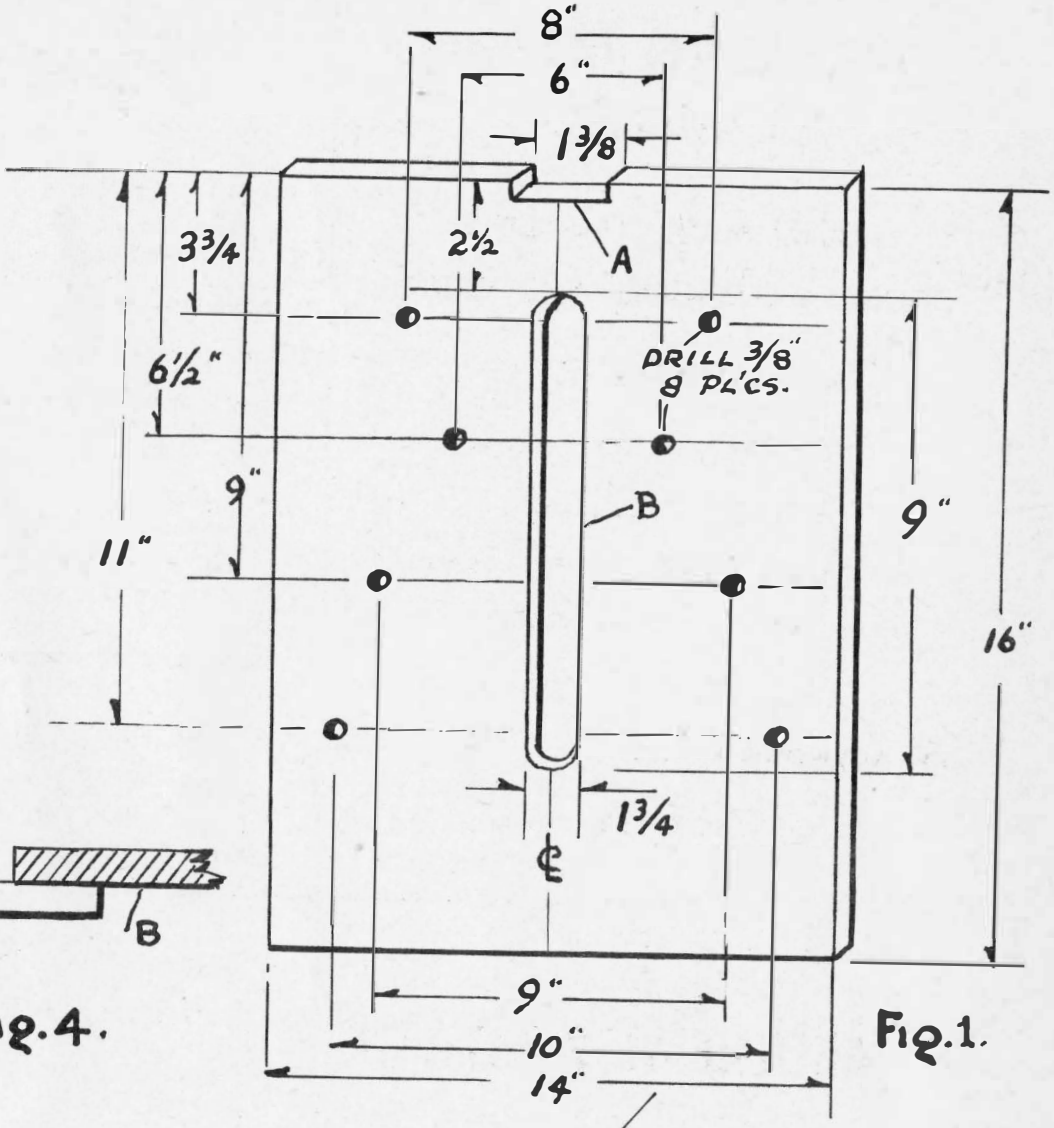


Fig. 1.

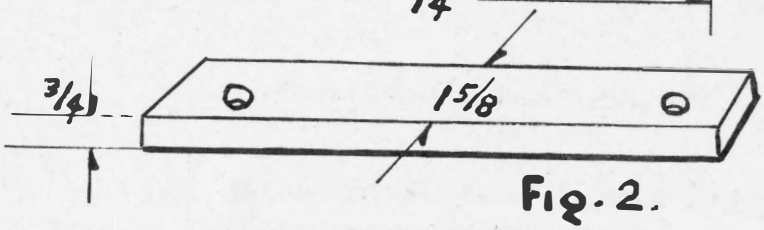


Fig. 2.

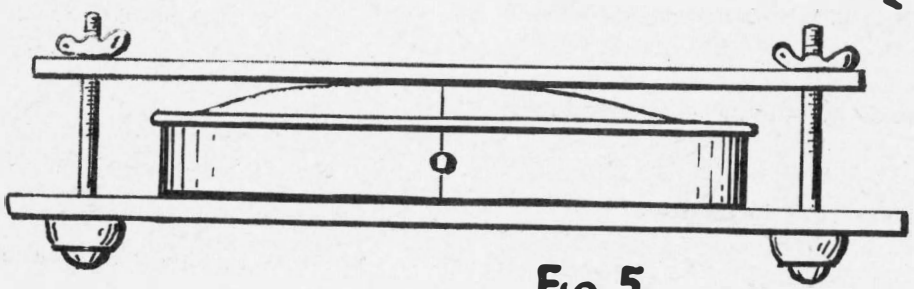


Fig. 5.

MAT'L 1/4" PLYWOOD.

CENTER JOINT REPAIR FRAME.
NOT TO SCALE.

HSW. 1964.

PURFLING

by Alfred Thurlow
19 Thurlow St., Brisbane, Australia

Fit the upper and lower bouts first by inserting Purfling in one corner and then following the groove to the second corner. Cut the second bevel a very little longer than necessary. Then gluing, push both corners into position first and the Purfling can then be sprung into the groove. The middle bouts are also cut just too long, corners inserted first and then sprung in. I find Urea Formaldehyde Resin Adhesive ideal for gluing the Purfling as it is a cold transparent glue and does not swell the wood like hot glue.

PINNING THE RIBS TO THE BACK

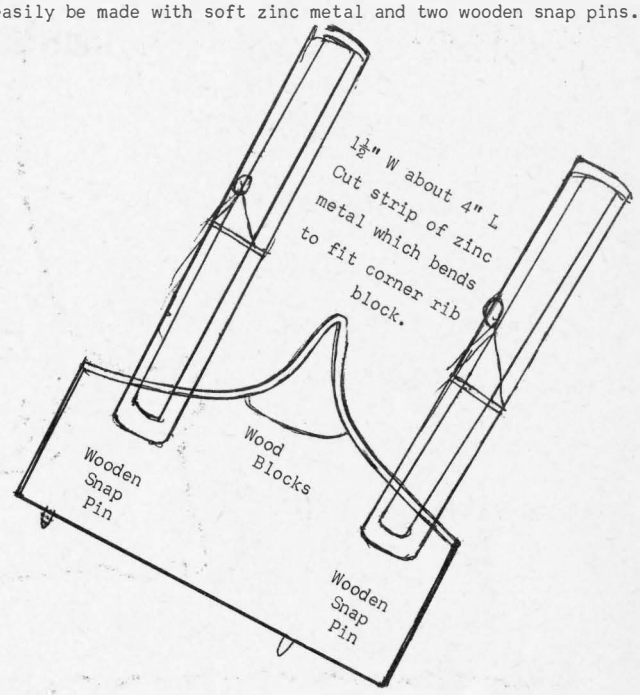
For users of an outside mould, the following method of pinning the ribs to the back has many advantages:

Procure 3/4" Brass Escutcheon Pins of 1/16" diameter and cut pins 1/4" long sharpened to a 45° angle at one end. Sink them into the corner blocks 3/16" from the inside edge and in the end blocks 3/16" from the outside edge letting the pins project 1/16". The back roughly arched and flattened at the edges all round, is left with outline, say 1/4" from the ribbing. Fit your ribs to the back and press the pins of the end blocks only to mark the plate. Then bore 1/16" holes to recess the pins being careful not to drill through the plate. Take your inside template and mark the curve of the middle bouts on the back. Then spring the ribbing to fit this outline and press the corner block pins to mark for boing as above. The ribs should then be perfect in outline and the final overlap of the back can be marked to ensure an even border. While it may not be necessary, I finally replace the brass pins with hardwood pegs. Pinning is of great help in gluing as the ribs remain in exact position when cramping. I use Urea Formaldehyde Resin Adhesive for all the ribbing and also for attaching the Neck. Of course, animal glue is used for the Breast.

CORNER RIB CLAMP

by Joseph Franko, Violin Maker
95 Van Riper Ave., Clifton, N.J.

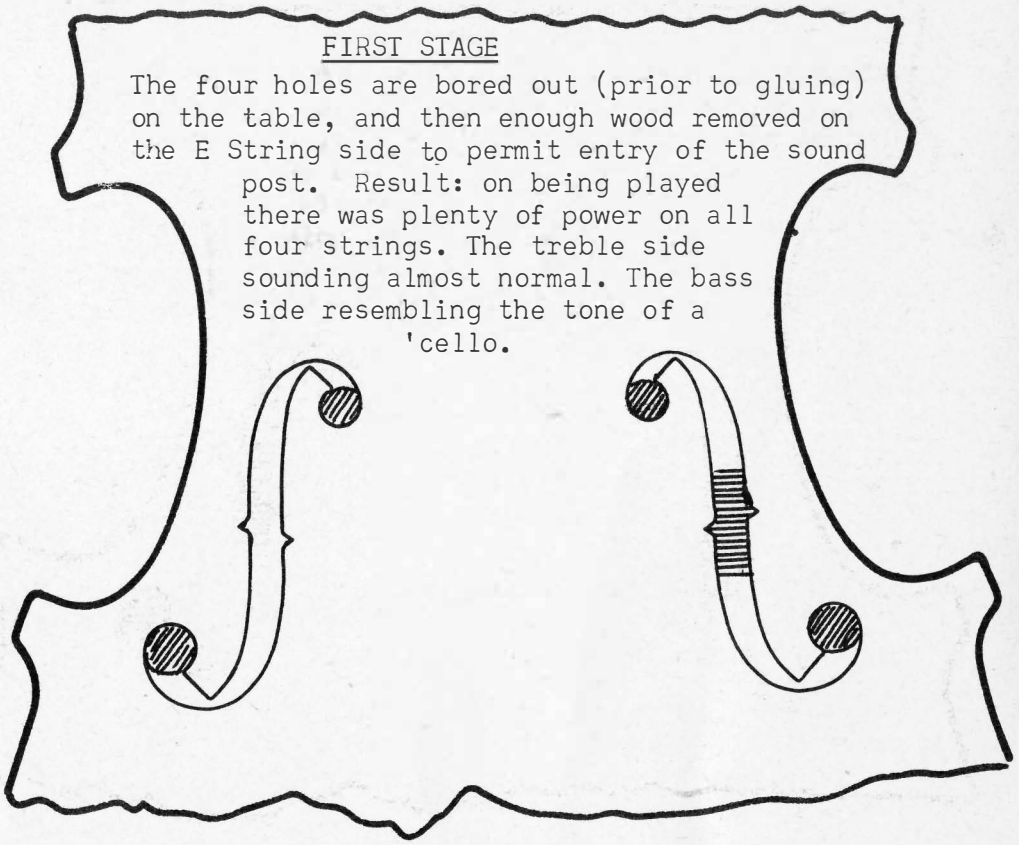
Here is a useful corner rib block clamp which can very easily be made with soft zinc metal and two wooden snap pins.

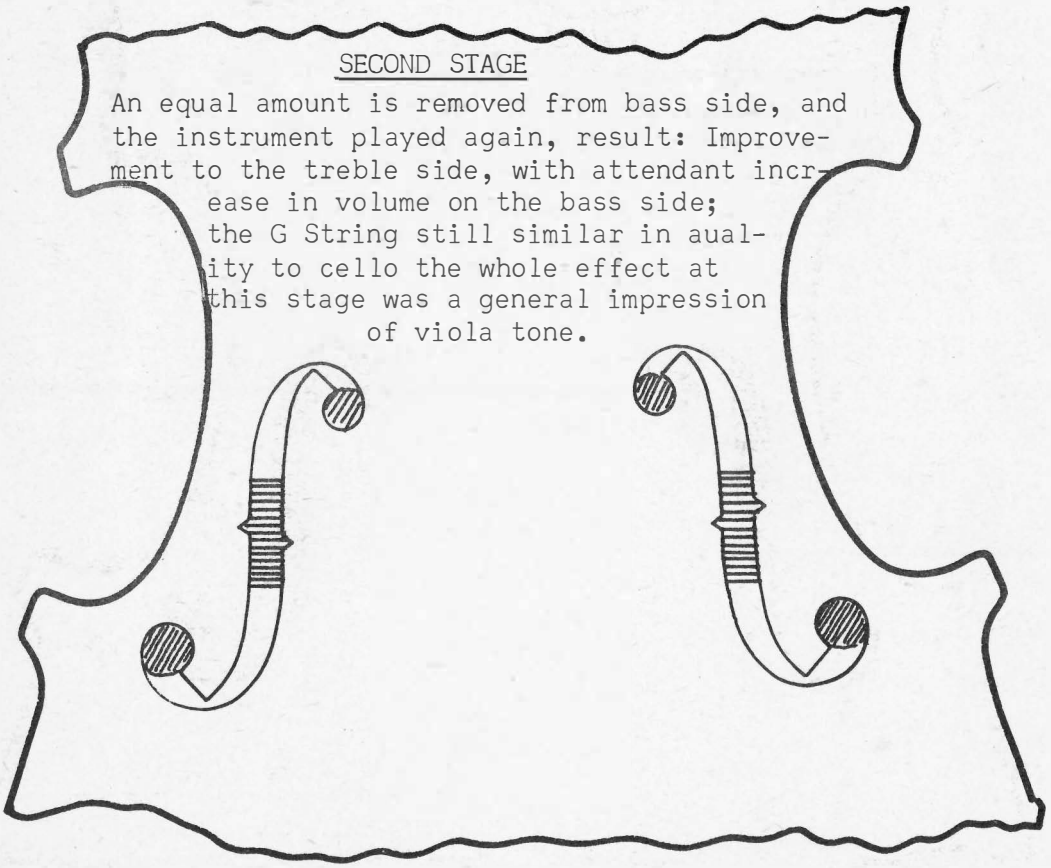


I made four of them for each corner. I find them very handy. Sometimes the corner comes unglued. This clamp will hold the rib in place until the glue sets. It can be taken off every easily and used again.

CUTTING OF "FF" HOLES

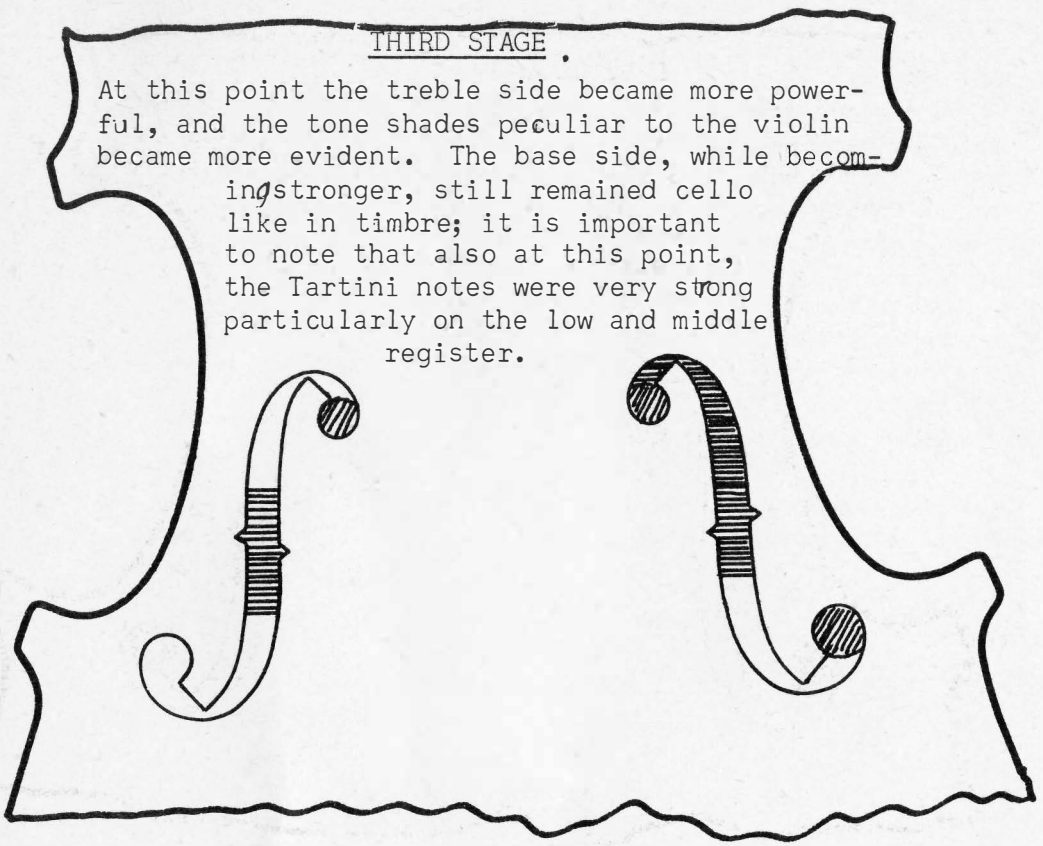
by Ced Wilstead





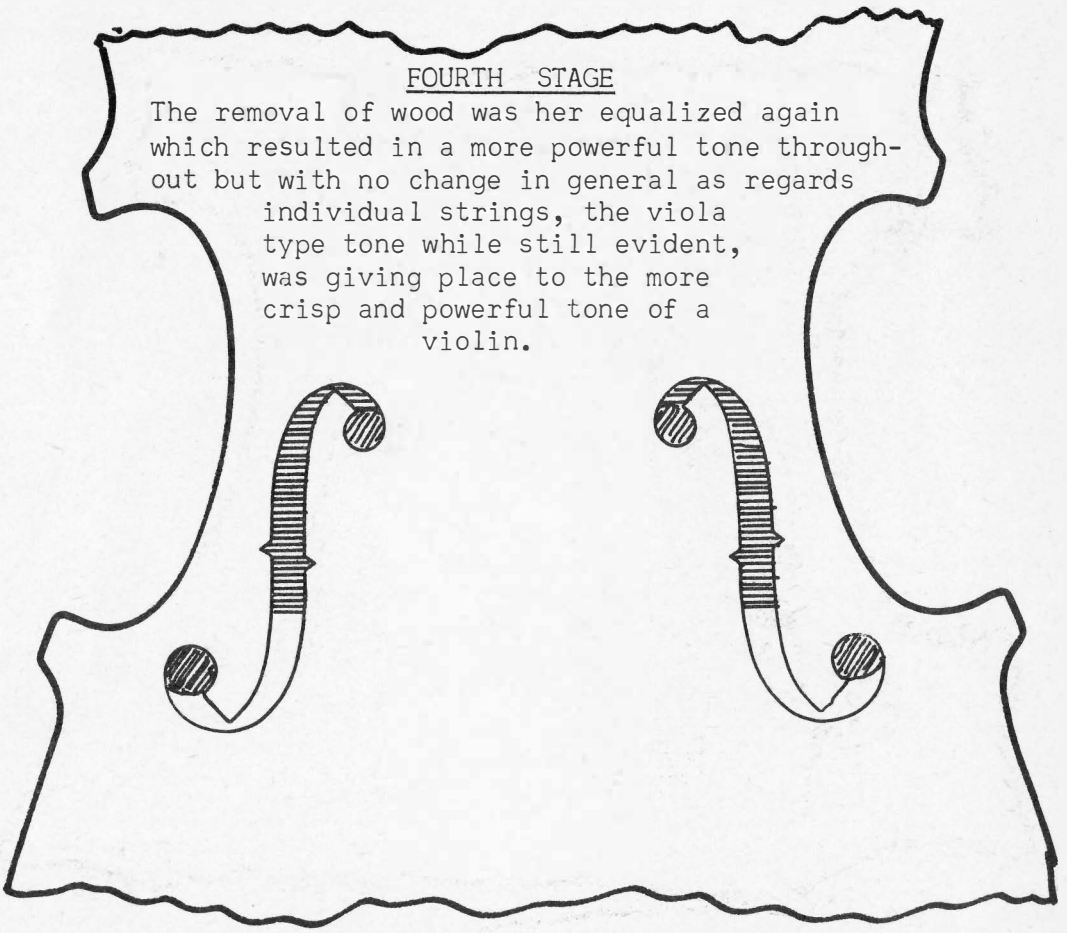
THIRD STAGE

At this point the treble side became more powerful, and the tone shades peculiar to the violin became more evident. The base side, while becoming stronger, still remained cello like in timbre; it is important to note that also at this point, the Tartini notes were very strong particularly on the low and middle register.



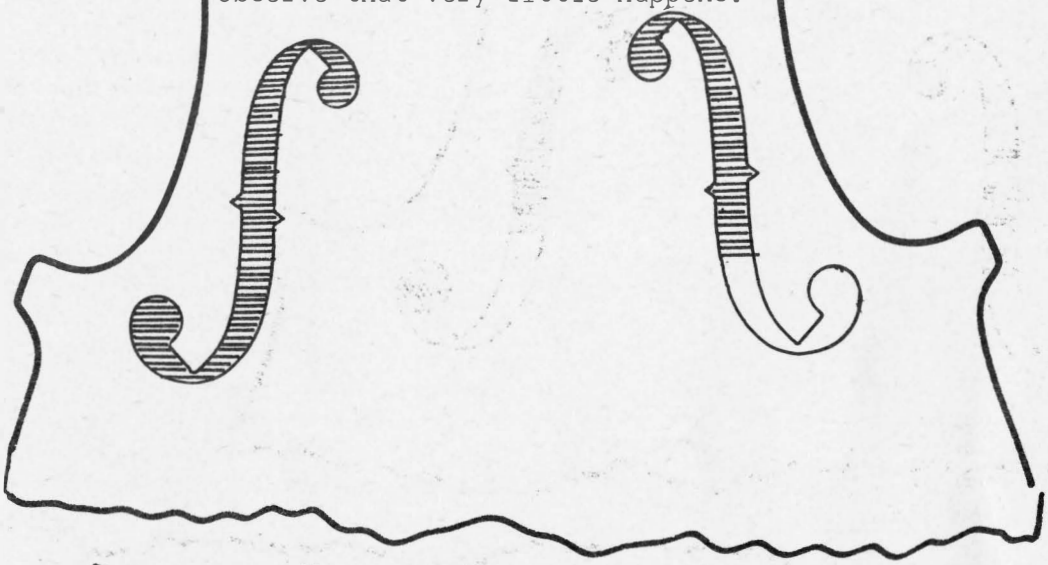
FOURTH STAGE

The removal of wood was her equalized again which resulted in a more powerful tone throughout but with no change in general as regards individual strings, the viola type tone while still evident, was giving place to the more crisp and powerful tone of a violin.



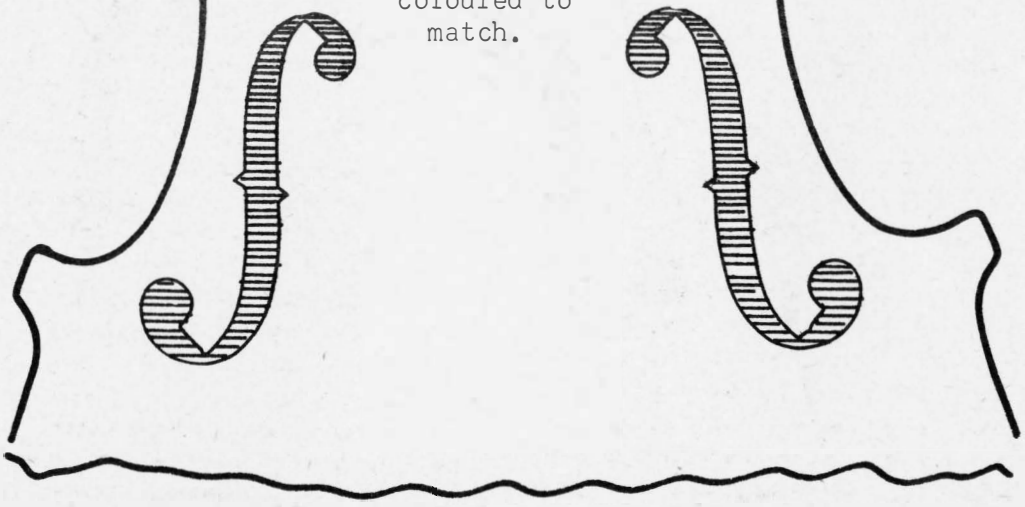
FIFTH STAGE

At this point, the reader may ponder as to the next move; do we remove the next portion of wood from the treble side or vice versa? I have used both departures with little variance in the ultimate results obtained. However, for the time being, let us proceed by removing the wood in the aperture on the base side. You will observe that very little happens.



SIXTH STAGE

We now remove the final piece left on the other side, and then gradually enlarge the entire scope of the FF holes on each side; your ear will guide you as to how much should be done in this direction. This last operation is best completed when the varnishing has been completed and the sides of the FF holes then coloured to match.



Answer to Carmen White

by Cid Welstead

I was much interested in the sentiments expressed in your String Section in the April-May issue of 1963 just to hand.

With your indulgence I would like to deliberate somewhat on your views, which I consider to be constructive criticism, and I feel that more of this type of material on this subject must eventually become an issue as to the merits of the modern violin as against the relics of the past.

Firstly, you must concede the point that your views were expressed just prior to the event which must nullify a host of arguments; the playing of the monumental D Major Concerto of Beethoven by Tibor Varga on a modern instrument, to an audience of 2000. The fact that it happened in Australia is relatively unimportant (I am of course most happy that it did, the same as you would be if Canada had been first) but the important thing is, it really has happened, and regardless of where, and to whom, it must be admitted to represent a major breakthrough, as the barriers are now down, leaving the way clear to other leading players to investigate the possibilities of the modern violin.

The violin used in this performance is my No. 1 and, since this concert, has been used in other performances. At the moment of writing, this violin is on loan from Mr. Varga to Lukes David, professor of violin at the Vienna Academy of music.

It has had a very warm reception over there, being used in many major performances and the belief is, generally, that it is incomprehensible to the European mind that a violin of this calibre could originate from the land of the Kangaroo and Boomerang.

You have pointed out the remarks of Mr. Hoing, and I fully endorse them but, my statements concerning the reluctance of the great ones in giving fair trial to the modern violin must for my part still stand and be emphasised, because when I stated fair trial, I meant just that; it would seem that the argument in this issue between us, is our individual interpretation of the meaning of trial; in my article in defence of the modern instrument, I said fair trial, and I mean by this, the one pitted against the other in dominating a symphony orchestra, and not the cursory examination of the modern violin by a mere "Tickling" in the artists' room after a concert - this procedure is fruitless; this we know about, so to disappear behind a curtain time and again to haltingly ask an opinion as to the merits of our modern instruments, merely sickens one when upon returning home we realize that these great ones have tried to be kind and patronising to those amongst us who feel that something has been achieved in the sphere of acoustics, artistry, chemistry, and a deep and embracing love for the sound produced by a finely made violin!!! What is the usual response to this approach? "H'm, not bad" and then - Nothing - I must wage war for the new instruments because I BELIEVE in them.

I have always maintained that there is only one crucial test for any violin, old or new - the playing of the great Concertos of the masters with full orchestra, there is no other. If, during such a trial, the instrument echoes through the concert hall, and at all times dominates the orchestra even in the stormiest passages, and throughout the performance the player is relaxed and confident then the questions posed prior to the performance are, without stint, automatically answered.

As you have said, the instrument must sigh and whisper and articulate with perfection in the rapid passages and respond to every nuance of tone and mood requisite to the work being performed. The player, during the performance must be able to plumb the depths in the soul of the violin under test without effort - in short, the instrument (Old or New) must respond to the artist's interpretation without being raucous or loud. A notable example against the old belief that only ancient instruments are capable of these characteristics, was during the concert season here in 1962.

A distinguished soloist who visited Australia during this time (I shall of course forebear to mention his name) was in three separate performances of the Mendelssohn, the No. 3 Mozart, The discordant Bartock, striving with sweat and muscle to reach the audience and the only traits exhibited by his famous Strad, of all those mentioned by you, was the sigh and the whisper - the power to dominate the orchestral storms, just did not exist - at no time did this famous beauty shine and reverberate throught the acoustical medium of the concert hall; the G string during the lovely second movement of the Mendelssohn was, for the most part, lost in the orchestral accompaniment - altogether a most disappointing performance.

In the critiques of these concerts, the tone of the player was commented upon thus: "His tone throughout was weak and uninteresting". "In the double fortes he just did not come through" and so on. Now, allowing for the generally accepted incompetence of "Music Critics" it must be stated that these people, generally, never question the instrument being played. Any deficiency displayed is always attributed to the player. We may assume in perfect safety, that the reason why these criticisms are always levelled at the player, is in line with my belief that the art of violin making and violin playing is still in the grips of the Romanticists - the same old nonsense. The critic KNOWS that the instrument being played is a Strad or a Guarnerius, or a something from the past, and his auto-

matic assumption that the player is at fault is mostly incorrect. We all know that any brilliant player can have an 'off' night, and play badly, but this does not completely wreck the tone qualities of the instrument being played, because the tone or any given instrument is a constant quantity within certain limits, regardless of the mood of the player, PLUS the ability of the conductor to control the volume of sound produced by the orchestra.

I must agree with you on your remarks concerning the ability of the modern makers to equal and surpass the workmanship of the old Italians insofar as purfling, choice of woods, scroll cutting, etc, this statement concurrs with my own observations and the strongest point you make is in regards to the varnishing and finishing of the instrument. The finish found on violins made by some of our modern makers is of extremely poor quality and even if the instrument, prior to varnishing, was a thing of beauty, this quality is subdued or hidden beneath an unattractive cloak and destroyed by the general appearance of the finish - I cannot emphasize this enough; I wonder often on this aspect, as to how much a maker really feels about his product - either they regard in secret disdain and frustration their efforts or their judgement concerning the varnishing processes is non-existent - I cannot analyse this queer anomaly of an artistic worker who has the ability to produce a work of art (visually at least) and then destroy the illusion with as much artistry as displayed by a well meaning housewife reglorifying the fading beauty of the music room piano stool, with a half inch brush and a pot of lacquer - this facet of the art completely nonplusses me.

To analyse your statements in Paragraph 2, I must deliberate at some length. You say I have not listened to my instruments alongside known old Italians, by this I interpret that you mean one after the other. Surely you would not have any modern maker subjected to this foolery for the purpose of judgement as to the merit of this or that. This experiment dates back to Savart who played his "Trapezoid" violin against Stradivari, and a panel of judges gave him supremacy over the old violin!!! - and where is this famous trapezoid marvel today? it is not in the violin case of Isaac Stern or Tibor Varga which once more proves exactly nothing. To listen to violins played behind a screen in a small room or even an auditorium, one after the other would be absolutely confusing to both the players, the makers and the judges.

How many times has this pointless act been committed and how many times has the issue been confused? The inconclusive evidence gathered from this sort of nonsense always seems to favour the new violin but those taking part in the trials wend their way homewards with the certain knowledge that this is where it ends - there are no tomorrows where the same violin will take part in a Major performance of some brilliant master Concerto.

Regarding your observations as to whether I posess a "tone memory", I think this is an interesting point. I must say that previous to this, the possibility that I do have this ability had not occurred to me, but it is a good thought, and perhaps this function could become manifest in the same way as "perfect pitch".

Like yourself, I ignore the VOLUME of sound produced and listen for the important things - the "sigh" the "whisper" the singing qualities and the articulation of the instrument during rapid passages. Regarding the reserve of power, I consider this to be the integral factor, insofar as the virtuosi is concerned and any violinist who listens to the great ones, knows that only these chosen few are capable of plumbing the depths which can exist in a fine violin - old or new. The ordinary professional player does not generally seek this power because he, or she, would not know what to do with it - this is essentially for the art of those few who have gone beyond the mere external sensations and dimensions of violinistic virtuosity and reached almost to the ultimate in mental and physical harmony with the vibrations peculiar to the instrument which has more beauty than any other form of music - it is this combination of absolute comprehension of all the factors involved in violin playing which marks the line of demarcation between a great player and the ordinary run of the mill type of player; their reactions to a beautiful articulate instrument forms a unity which eludes description - men like Kriesler, Heifetz, Varga and Stern. If ever the opportunity comes your way to hear the Varga interpretation of the monumental D Major Concerto of Beethoven, you must hear it and add greatly to your musical appreciation.

In my article in the V.M.J. it is to be admitted that I made a strong point concerning the contrast between my own modern instruments and those of the old Masters of Cremona, but before making these statements, I considered well the import of what I was about to write and, unless shown to be wrong, I find no reason to retract or alter my conclusions but rather to enlarge upon them consequent to your own summing up; it must be remembered that most of what I have said includes all those amongst us moderns who have endeavored to produce works of art to equal or surpass the ancients.

Your objections regarding my statements are, apparently, based on what you describe as the " tone memory" of those of us who possess this sense - I had not previously considered the existance of such a thing. I can only say that my judgement is based on my knowledge of music and as an inveterate concert-goer and I am certain that I can fairly assess the virtues of a solo instrument during a concert then compare it with another a week later; each and every instrument has virtues of its own - unlike any other - there does not exist two instruments with identical characteristics. Violins are like people, each one being an absolute entity; there are likenesses, very wide apart,

and then like twins, but the shade of difference is there. I have made two such violins from the same pieces of timber, and when played together in duets they blend so beautifully and harmoniously, but listening to each of them separately, it is not difficult to detect that almost undefinable variation of timbre.

I assume that when you say I must hear my instruments alongside known master violins, you mean I must first hear one performance on, say a known violin of the Golden Period of Cremona, that is, a Stradivarious or Guarnarius, and then the same performance repeated on one of my own instruments; is this not to some degree depending on "tone memory" regardless of the short period of time which would elapse between the two performances? If it must be insisted that a final, unbiased trial be instigated then there is only one method of settling the question of the old versus the new, and with your permission, will outline the procedure in a theoretical trial.

Let us assume that the Concerto for the trial has been selected by a panel of judges, and that the voting favours the Paganini D Major (this would be my choice).

It would be necessary to have two soloists on the platform to share the test performance of, say a genuine Stradivarian instrument, and one of my own or some other modern instrument. For the purpose of this experiment I shall use the Peters Edition of the Concerto.

The orchestra, under the baton of a competent conductor, would require to be kept a little more subdued than in the usual performance, in order to give full play to the two solo violins, and the players. Let us say that the Italian violin shall be known as No. 1 and the modern instrument as No. 2.

After the orchestral introduction, violin No. 1 commences the theme at A and continues until completion of this subject.

At C violin No. 2 takes up the solo part, continuing to G, where again No. 1 takes up the continuity of the theme. At the termination of the following Tutti, violin N. 2 again plays the next subject, from I to N where No. 1 introduces the next subject by playing the first line, then No. 2 repeats this theme, where again at O, violin No. 1 continues to R, and the first movement is completed by violin No. 2. The second movement and the finale are conducted in the same manner, and the adjudication follows.

In this way, both instruments are given fair trial and there can be no argument unless some extremely prejudiced adjudicator wishes to split hairs, making the test subject to the individual style of the two soloists - this could be easily squashed by requesting the performers to exchange violins during the various tutti's!!!

I must agree with you when you state that that the ability of many modern craftsmen to supercede the workmanship of the old masters, generally, but, and this is a very large BUT, the varnish job. The vast majority of the modern instruments leaves much to be desired in this department. One could discuss this aspect of the art at considerable length, without perhaps influencing many modern makers concerning the dreadful finish they impart to their instruments; one gazes in astonishment at the ill contrived varnishing found on the average modern violin - the colours are shocking, ranging from blood red to pale uninteresting dirty browns, and yet it must be acknowledged that the workmanship beneath this streaky or opaque film of tone destroying material is mostly superb.

On many such instruments, the wood has not been properly prepared to receive a beautifying finish and, without this part of the art, no type of varnish can be expected to bring to life the inherent beauty of the finest maple of pine, so it is to be stressed that unless both the making and varnishing of a violin complement each other, the finished product can never reach the realms of real beauty.

It is my considered opinion that violin making and violin varnishing are two distinct and separate phases of the art - many a maker who can create a work of art in the structural sense will in complete ignorance proceed to destroy his creation with some horrible concoction which destroys the appearance and tone of his hard earned success in making a violin which, in its nude condition was a thing of appealing beauty; it is spoiled beyond recall and, amazing as it seems, these craftsmen with the gouge and scraper, purfling tool, etc., appear to be completely ignorant of these things and one becomes aware that to discuss these badly contrived finishes with them, results in embarrassment, generally. Many times I have seen magnificently made violins, which in the unvarnished state leave nothing to be desired; beautiful symetrical scrolls, perfect contra-facsimile outlines, rich contoured archings, together with graceful artistic sound holes, but this is, generally, the end of the road, and their artistry comes to a full stop!!!

I am convinced that on reaching this stage of the art, these fine workers in shaping an instrument, should hand the instrument to an expert varnisher who is capable of giving the "Breath of Life" to an otherwise inanimate entity which will never speak in all its power and glory except that the acoustical foundations established be given permanence and equilibrium by bonding the wood structures for all time with a substance compatible with the wood, which has the additional ability to bring to life the scintillating depths inherent in all fine timbers.

To illustrate in brief the vast gulf between a violin maker and a competent wood finisher, I ask you to refer yourself to an old time artist french polisher (almost a lost art

today) who worked many years ago in a piano factory of, say an English or German workshop where magnificent instruments were made before the era of the spray gun and nitro cellulose lacquer. Pianos, on being taken from the cabinet making shop to the polishing department, would be disdainfully eyed by the "shiners" and unequivocally condemned with much profanity and explosively rejected with expletives unprintable regardless of the country of origin - only one thing is certain; the profanity would be of the profoundest available, in the certainty that these..... idiots must be accepted reluctantly as belonging to the human race at all, and that they are completely clueless in preparing a workable surface on which to build a beautifying finish - this I know, because I worked in such a place to gain experience and peradventure became the foreman at the end of one year; a friend of mine took over from me when I left and is still there, lacquer finishing, and another art is becoming lost during man's "progress".

The polisher had to spend considerable time extending the efforts of the cabinet shop before attempting to begin the "filling", "colouring", "bodying in", "bodying up", "spiriting off", "benzoining" and finally "chalking off", for only he knows the requirements as to surfacing finely figured timber, destined through his artistry to dazzle the eyes of those who came to look at the finished product!!!

We must ask ourselves this question - how much more difficult is it to produce the ultimate finish on the curved surface of a violin when using an oil base varnish - there is just no comparison with the difficulties of inducing good behaviour when using this medium. French polish is applied by gradual deposition of gum lac solids dissolved in alcohol, the applicator being a "rubber" of coarse cotton wool enclosed in fine linen; the application of an oil varnish is dependent on skillful brushwork, and still more skillful hand finishing months later, and then the final coating with the same varnish of deeper colour. In other words, the procedure of finishing a piano case is reversed - the colour is applied directly into the wood and then finished with a body of clear polish; the violin has the coloured varnish on top of a clear deep yello strata of elastic properties.

When an instrument I am making has reached the stage where I have deeply impregnated it with pure gamboge in turpentine, plus a minimum of oxidised linseed oil, and it is covered with a rich homogeneous cloak, I regret that to be consistent with the violins of the old masters, I must take the final step and add the final coat of deeper shade. My reactions at this stage often tempt me to go no further because at this point the instrument appears most beautiful - there is something indescribably magnificent about it and only tradition induces me to go any further - this fine deep yellow cloak seems to impart life and fire to the maple and pine, appearing to "marry" the very molecules which constitute the fibres of the wood and resonance increases beyond all hopes. The final analysis seems to be: resonant timber plus a compatibly constituted basic varnish which integrates the two factors for all time and, once applied, cannot again be separated - it cannot be removed from the depths of the wood by means of alcohol, boiled out by means of heat, or scraped in order to remove it. If the last mentioned procedure is adopted, then by the time every vestige has been removed there is only a fine shell of timber remaining - not even enough to withstand the pull of the strings.

A basic varnish compounded from pure gambogin, rectified turpentine and linseed oil, is extremely stable. The combination of the linseed and gambogin in the vehicle appears to eliminate the risk of the pellicle breaking up into fissures, in other words, the continuity of reaction experienced when using ordinary colophony does not occur. I have used colophony in this combination and, unless some metallic rosinate is included, it has remained sticky for years, eventually reversing and de-oxidising and so practically reverting to a liquid state, rendering the instrument to a sticky mess. The chemistry of this phenomenon, I do not understand and to establish the reason is for a far greater chemist than myself. I can only say in this regard that I observe what occurs without comprehending, in the same way as the old masters observed in the past and content myself that the tone of a violin so treated will give a maximum of resonance within a very short period of time; I find it supreme over all other types of varnish I have made, it is durable, flexible and beautiful to gaze upon, completely unlike what you describe as "gum in oil varnish" on raw wood - when this basic varnish is used, it is not raw wood ever again, but a combination of two very compatible factors. I believe as you do, that a well constructed violin of fine quality acoustical timber, treated in such a way as to integrate the fibres of the wood, is the only way to give external life to the king of instruments.

The idea of sealing the surface against deep penetration is to condemn the instrument to a short raucous life and it fails my imagination that in this day of grace and understanding that this conception is still current amongst many makers.

You may remember that in my article "The Case for the Modern Violin" I stated that Edward Heron Allen was my teacher, and my original violin which was, at birth, (prior to varnishing) a powerful instrument. It was varnished according to his concept (originally propounded by Charle Reade). The surface was sealed with thin washes of gambogin in alcohol - it dies within a few short years and became just another noise box, but was never regenerated with the penetrating gambogic varnish in turpentine, remaining a perfect instrument, gaining strength and beauty as it grows older.

Your remarks in Paragraph 3 concerning "Raw wood and gum varnish" I applaud muchly. As I have many times said, an excellent violin can be ruined forall time by the application of the wrong type of varnish and, by the same token, it is not conceivable that an inferior one could become excellent if it was possible to cover it with the varnish of Stradivari!!!

Both factors must complement the other in creating a resonant and permanent diaphragm which will remain capable of giving maximum amplification to the vibration of the strings.

A gentleman recently brought me a Louis Otto and requested that I remove the old crocodile skin in which it was encased, and apply my varnish. It was difficult to explain to him that perhaps the wood was clogged with some incompatible substance which precluded any chance of regeneration by so doing. It is a most unresponsive instrument which will not articulate in any sense at all - even the Tartini notes which should be engendered by playing double forte in thirds and seconds are absent.

I consider of course the possibility that the only genuine thing about the violin could be the label. It is well made from fine wood and the scroll is very symetrical. I have given in to him and will revarnish the instrument just for the purpose of experiment.

After eight years of frustration in endeavoring to get the opinions of visiting virtuosi, as to the potential of my violins, I was unexpectedly visited by Tibar Varga during his concert tour of Australia last year. This was a marvellous experience in more ways than one. When he 'phoned me to say that he intended to perform publicly on one of my violins, I was, as you may guess, completely stunned.

At the performance, I did not occupy a seat because I knew it would be impossible for me to sit still due to my great nervousness. I listened without watching the playing from every doorway in the concert hall and was really convinced that he had at the last moment changed his mind about the whole thing. After the long introduction of the first movement, when the soloist makes his entry with the split octaves (I was at this time upstairs listening from the Eastern Gallery exit) these beautiful octaves and then the arpeggios filled the hall with brilliant crisp sounds, but my heart was not in it, because, as I said, I believed he had seen fit to change his mind.

During the cadenza (Joachim's) I remember wishing that my instrument could really sound this way. As I moved from door to door, I was more convinced that my assumption was correct; I could not see the platform in order to verify my thoughts.

After the final movement, I moved into the rear of the hall, but still could not see the instrument, and Mr. Varga took five ovations; in Australia this is most unusual I can assure you. As the applause ceased in his last ovation, Charles Makerras, the Conductor, raised his hand and called for silence, and then - the revelation - he announced that my violin was the solo instrument and you can guess how I felt.

Mr. Varga requested the conductor to make the announcement after the performance in order that no pre-prejudice could be established; truly a stroke of genius, this.

He was lavish with his praise of this instrument, and used it at other concerts.

I must thank you, Mr. White, for your great compliment in linking my name with Mr. Hoing, when you indicate that you consider our violins to be of high order, but I think you are wrong when you defend the attitude of Joseph Szigeti who condemns the amateur and modern maker, regardless. We moderns are trying to prove something and we cannot do it by ourselves; the proving has to be done by top ranking players who have the understanding and technique to really test any given instrument; your assertion that the opinion of these great artists must prevail is the crux of the whole matter - I think it has prevailed long enough. I do not mean to infer that every modern violin, even by a world vamous maker, MUST be perfect from the point of view of the worlds' virtuosi, but their opinions of our violins should be our quide - not our downfall; to sum up, the defect you mention CAN ONLY BE FOUND BY A TOP RANKING PLAYER, and, indicated to the maker for his benefit, so that the defect can be investigated and then eliminated. You say we have a long way to go before we can hand a new modern instrument to a world artist which has real tone and reserves of power - you must concede me the point that we have <u>arrived</u> for this has been achieved by a new modern violin.

I feel as you do regarding all the electronic jargon which I must confess merely confuses me - after studying these methods and then trying to translate them into common, every day language in order to correlate the findings with the art of violin making, I must confess that defeat is my only reward. By this I do not infer that I am averse to the scientific approach, as I find these side issues most interesting; it is simply that my belief leans well towards the simple laws of trial and error which must have been the watchword of the artisans two hundred years ago and more.

All these sincere and fine people who have endeavored to correlate the mysteries of the acoustics of the violin via the medium of electronics etc, have not (so far as I know) succeeded in producing an instrument thereby which has merited the attention of a top line player - if science only IS the answer, then why all the weighty words and detours to arrive at tangible conclusions and formulae; why not employ the known factors of electronics and simply attach to the bellies of the instrument a magnetic pick-up unit and see if some leading player will app-

roach the platform trailing a length of electric cable connected in turn to an amplifier and control system? This would, in effect, reduce the whole thing to the level of the rock and roll guitar, put an end to all arguments, all artistry, all nostalgia in fact everything associated with the musical art of violin playing.

In the Scientific American during 1963, Carleen Hutchins expounded at some length on these matters without giving us a formula, for which I am grateful.

If such a thing was possible, then we can wave goodbye to artistry and individual craftsmanship because it would then be possible for the scientists to mass produce in any quantity instruments which would be perfect in every respect.

As to whether this would be a good thing or evil, I do not know; of this aspect I can only say that my interest in violin making would come to an abrupt end simply because there would be no stars to chase and capture and the old instruments would have no value save that of antiquity; every student would be able to own an instrument equal to the best available - this poses another question: would this be good or bad? To sum up, we must admit that the laws which governed the ancient masters also govern us today; individual artisanship regardless of the approach or method adopted to produce a violin of fine quality. Those of us who can by individual effort produce a concert violin cannot transmit this knowledge to another. All the students and apprentices of the famous makers of the past did not aspire to the great heights of their teachers; they could learn form and produce perfect imitations (in the visual sense) of their masterly teachers but, without that undefinable SOMETHING which makes a man outstanding from the crowd, they were and are destined for oblivion. This undeniable fact, to me at least, is a great sadness because there are such men today, not only in this particular field of endeavor who are sincere, hard-working, clever, and even brilliant but, minus that tiny spark of inspiration which unerringly guides the hand of a lesser individual. Perhaps this is hyperthetical reasoning, but, to me, it seems the only reasonable conclusion which can be arrived at by using just words - as for the rest, it is inexplicable. I have tried to guide the hand of interested people for I am desirous of imparting what I have learned to others and it is a fact that one can only proceed to a limited extent and then- we are searching for words and explations which elude the spoken word and even demonstration; it seems that without the maple of the back and the pine for the front in one's hand, there is no chance of the material attaining balance and harmony.

These last remarks leave one with the feeling of defeat and failure which must, from sheer honesty, be acknowledged.

Yours most sincerely,
Cid Welstead

THOUGHTS ON VIOLINS

by William Kirkwood
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I want to write some more about the Violin. Something in the nature and form of which its vibrations take, etc. I do not want to teach anyone how to make a violin. I wish I knew more how to do that myself, but as one studies deep into its scientific principles the more one comes to realize that, by their intuition, the Old Masters (I say intuition as I don't think they knew much in their day about science) managed pretty well to involve in their instruments much of the violin's scientific principles and to a far greater extent than the intuition of their traditional copiers seem to realize. --- What I am going to write about, I am anything but clear, but to use my oft repeated phrase, I think again I am at least substantially right.

I have just said that by their intuition, the Old Masters have managed to involve in the violin many of its scientific principles, many of these principles which traditional thinkers fail to see. The main one of these I feel certain lies in the region of the Bridge, Bar, Sound-post and Sound holes and the relative parts of the Body in this connection. Many may harbor such thoughs as getting a better balance of plate area back and forth of the Sound holes nicks, to get thirteen inch length of strings, etc. or even explain it away with structural calculations; but there is far more to it than that. We don't want balance of area back and forth of the Sound hole nicks; anyone with a little thought should see we don't get it anyway; from the narrow spaced front holes of the Sound holes these Sound holes are splayed wider right back giving the major benefit to the bar from the front of the Sound holes, which also includes from the front of the Sound holes. Also, the bottom vibrating plate area as distinct from the top plate area from the front of the Sound holes forward. I can hear the reader saying in this case that there would be more vibration strength going to the the bottom area than to the front area. Well there is more to fill with vibrations in the bottom area than in the top area. (The vibrations cannot go over the edge of the plates as I explained in a previous article - they must exhaust their own force in the plates) and if the top area from the top of the Sound holes is less than the bottom area from the top of the Sound holes and the bottom getting the major benefit from the Bar, then with the lesser top area and somewhat greater bottom area, both areas will be more or less of equal vibration strength.

Why does a violin need to work on this principle I have just outlined? Well, if you bow a thirteen inch string in its centre, do you notthink that its waves would be a bit jumpy and uneven and need stability? And that applies equally to the centre of the Bar and Breast under the Vibrating Bridge and that is just what these get by what I have just outlined; the firmer part of the top in front of the Sound holes gives that stability as remember here you are also bowing the Bar in its centre just the same as the string bowed in its centre and the amount of differential action as outlined gives stability. If you had two equal areas, top and bottom, with the nicks in the centre or rather in between and in the centre of the Bar you would not get stability so consequently the top area of the Breast has to be firmer as outlined, and also consequently smaller to get equal strength of vibrations.

Then there is the Bass Bar and the Breast in this connection. The Bar seems to be spoken about or discussed in a vague sort of way of its action on the Breast - this is misleading and its action with the Breast will never be understood that way. They are always spoken about in a seperate sort of way, when there is no existance of this sort of action at all, they are, you may say, a welded unit, as as such seem to merit a single combined name altogether and to be considered or studied very strictly in this respect. These will never be understood any other way - The Bar itself can never reasonably have much control of the Breast by itself - It seems to me I cannot get words to express the important depth of the meaning of the Bar and Breast which must be considered as a unit and that many may fail to grasp what I mean unless they think deep into this subject themselves.

Then there is the entire vibrations covering the whole plates of the violin. These are churned up with so many intricate thoughts and ways of vibrations and to an extent that they almost suggest simplicity itself which then is: these travel through the violin in all directions just like vibrations in any other medium, irrespective of opposite waves or frequencies and just in the same manner as the internal vibrations of a visible nature though those of a visible nature may kill one another - It is in the text book theory of ordinary vibrations of a visible nature which mislead tradition on the violin.

As I have just said, there is nothing difficult concerning the vibrations going through the plates of a violin. Here again, tradition makes it seem difficult with their various opinions of how these travel. Davidson in his book "The Violin" says if we take a small cube of pine, place it upon a table, and try its conducting power by placing on it a vibrating tuning fork, we find its resonant powers vary with three different positions in which we may place it, proving to us the three different velocities of sound through it - 1st, quickest along the fibers; 2nd, slower across the fibers and across the layers which mark the growth of the tree and 3rd, slowest of all across the fibers and along the layers. Well as far as the violin is concerned I feel somewhat certain this is another traditional ghost. In the first place, how could a small cube of pine act anyway decisively in such a manner. What Davidson was getting here was the vibra-

tions transmitted from the small cube to the table and I don't think it would matter much whatever side of the small cube he placed the tuning fork on.

Violin vibrations, I feel fairly certain, don't run in the oft suggested different ways of direction; run out at the ends of the fibers; stronger one way than another; run over the ends, etc. In the first place there is series of waves created along the Bar, both ways from under the Bridge, each with a small area or circle and from around the perimeter of each of these, vibrations go straight out to the extremities of edges and, in doing so, create a mass of criss cross or opposite waves with remarkable ease and each get the benefit of along the grain as well as across the grain, it doesn't matter on what part of the plates these are on, and I think I can claim again to be substantially right and as I have said before, violin vibrations are not ordinary vibrations, they are all of a molecular nature, the only vibrations which will transmit sound, and therefore violin vibrations--I only ask tradition to penetrate into that mysterious something which at this day and age they know is at the back of their minds and I even go so far as to say that they know it is the molecules and which they know themselves that these are a bit difficult to understand.

I have just been reading an article in the Arizona Journal containing some remarks by Joseph Read about an Article of mine in the last November issue of the same Journal--I read Mr. Read's remarks carefully and more carefully between the lines. He says he would like me to mention the dates of my previous articles on molecular vibrations as he says I have summed up in one small statement the entire problem.'

I really don't know where that one small statement of the entire problem is in my previous articles as they all bear on molecular vibrations one way or another. As I have said before, I have a very good grasp of how the violin works, far more than I can really put in words and as the saying is "No-one can really understand anything until they can explain it to the man in the street", and I am a bit fixed in that position, although I am now continually finding out more. Then he says I make some very profound and thought encouraging statements which phenoms has long been known. For instance, he says, we know that when certain notes are being played - certain parts of the violin plates are not moving or vibrating at all and the average person believes that when any note is played that the plates are vibrating all over or throughout. Well, the average person is certainly quite right here, and Mr. Read must be putting this down to something in the nature of loose plates or ordinary vibrations. Violin vibrations must cover the whole of the plates - Then he says there is something stable that has eluded us: what does the bridge do when the bridge vibrates. I have remarked on the bridge more or less in my articles but the bridge would require an article by itself, so likewise the Bar. Then he says, How come the tone is even when great pressure is applied to the E and A strings? I will leave this problem to Mr. Read - I am not a musician although I played the fiddle in my own way for some time, have a good but perhaps not a practical grasp of musical theory, but perhaps a deeper grasp than some so called passes on musical theory. Then Mr. Read finishes up by saying that Mr. Kirkwood has hit a nerve when he stated we stopped dead instead of trying to proceed when these obstacles and mysteries and road blocks to our understanding were encountered - I state his sentence, "The reluctance to think long enough in the right but somewhat more difficult direction."

Before answering this last statement, I want to ask "Who created these obstacles, mysteries and road blocks?" Tradition, not me. I have never seen in any of the Journals any real attempt so solve the real molecular action with in a violin, although it is now well known in traditional minds that these have a major bearing in the violin's action. So I uphold my statement "The reluctance to think long enough in the right but somewhat more difficult direction". One must not be scared here - we want to know the truth.

It would benefit tradition to pay heed to a statement by Peter Davidson in his book, "The Violin" - What a man has done that is excellent, it little profits us blindly by rule of thumb to copy. The value to us is in showing us what may be accomplished, and exciting our emulation to equal or excel - making us dissatisfied with lesser attainments. Only mediocrity copies - The artist originates and excellence, like beauty, is not sterile.

Somthing has made we wonder if Mr. Read, when he stated, "We know that when certain notes are being played - certain parts of the violin plates are not moving or vibrating at all", was referring to an article by Mr. Nicholas in the June 1946 issue of the Strad, when a comparison was made between a Strad violin and a good copy of a Strad, showing by some means where the plates were vibrating and other parts where they were not vibrating and a special note where the back was scarcely vibrating at all.

To me, this article of Mr. Nicholas is misleading just like other scientific beliefs of the past that were often proved misleading and often actually wrong, and we all are caught up in this sort of thing just like ancient Aristotle to whom may I say was often at least nearly completely, or in many cases, completely wrong. This article by Mr. Nicholas showing how one Bachhauer in Germany made an apparatus which shows which part of the Belly or Back of a Stradivarius violin and a copy of a Stradivarius vibrates to each note, may be right in one particular, but it definitely does not tell the whole story, part of which should have been clearly seen by anyone. In the first place it should have been clearly apparent to any one when a note of near 700 cycles per second was played, the whole back of the Strad was not vibrating and the other violin (a good one) also shows reluctance of the back to vibrate at this note and also the Belly of each violin

showing very little vibration either, to ask themselves where was the sound to come from. The article makes no note of the copy which at 271 cycles per second was nearly void of any of this (only supposed) type of vibration at all. Well, what value is there in their belief? - very little - Even in these illustrations they show very little vibrations under the Bridge where the strongest vibrations should occur I am not quite clear on these illustrations shown by Backhaus but I believe he may be quite right so far, and I somehow think he is. But there are vibrations and vibrations and the places on the plates showing the supposed no vibrations are certainly producing vibrations.

I would like to finish up with two items which may be of interest. I am making my sixth violin just now--I use an outside mould and after finishing the assembly of the ribs, linings and blocks, I took them out of the mould and, perhaps owing to my method of assembly of these, there was not a bulge on them, so much so, as I just used it as a pattern to draw the outlines on the Breast and Back, then using the compass from the outside of the ribs I drew the projection outline for what was required over the ribs. I just wonder if any reader has done likewise, I had taken in my mould a bit and had no suitable pattern anyway.

The other item concerns a Cello Bridge. A client who had seen one of my violin bridges on a violin at some concert or other, pleaded with me to make him a Cello Bridge. I was perhaps a bit reluctant as I had never made a Cello Bridge, although at the same time I had always been haunted with a desire to do so, so I just made one, I sent it to this Client. He wrote me back saying he was overjoyed and delighted with it as it had made a tremendous difference to his instrument. "The result" just as I always thought, the effective part of these Cello and Double Bass Bridges is placed too high on the Bridge to be effective.

Explanations

by C. C. Cooper

I had quite a surprise when I opened my copy of the Journal of October-November, 1963, and saw my recent letter to you published there.

I am quite happy of course that this information could be made available to our readers, but I would like to convey my apology to them for the briefness and lack of explanation, not to mention the crudeness of some of the drawings.

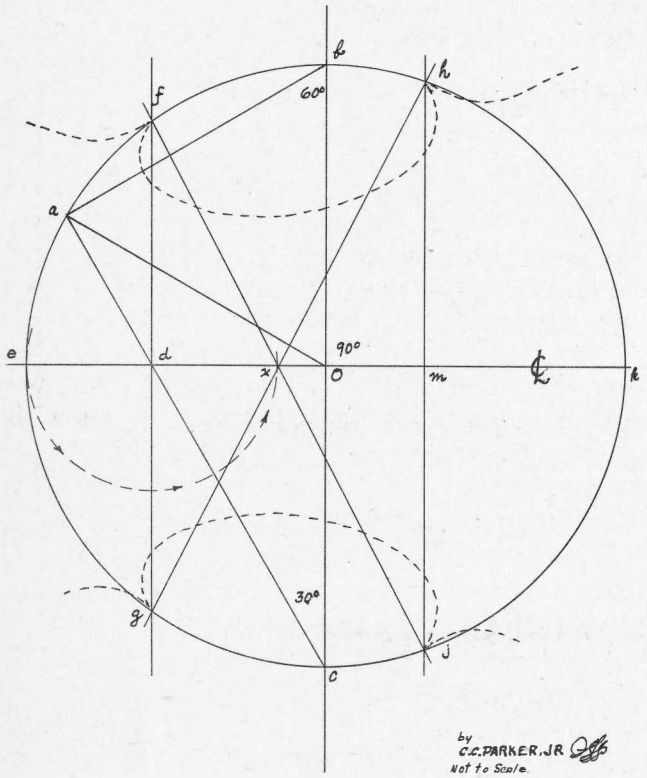
Please publish the following comments on that letter:-

"The diagram referred to in the second paragraph of my letter to Mr. Cooper concerning Violin Geometry (pp 21, October-November Violin Makers Journal of BC) will be found on page 30. I believe that the text of the letter will be a little clearer if it is referred to during the reading.

On page 27 there is another diagram that is left mostly unexplained and I consider this unfortunate, since it is quite significant. It concerns the circle that enscribes the points of the inner bouts, and I do not subscribe to the belief that it's centre will always fall in the exact centre of the violin. This will depend upon the outline in question. To construct this diagram proceed as follows:

1. Construct a circle "O" on a given centerline (line ek)
2. Construct the perpendicular bc at point "O"
3. Construct the equalateral triangle bao as shown in the diagram.
4. Construct line ac to intersect the centerline at point "d".
5. Construct a perpendicular fg at point d.
6. Where this perpendicular crosses the circle at points f and g, locate the points of the upper bout.
7. Locate point x between point d and "O" so that line ed equals line dx.
8. Construct lines fj and gh through point x to locate the points of the lower bout.
9. Construct line hmj.
10. The length of the inner bout will then be equal to line dm and can be calculated exactly using trig.

I have reproduced the diagram here for the benefit of those who may not have their copy of the digest at hand. The small circle at the top of page 27 is in error, so please disregard it.



There is still a great deal that remains undiscovered from a geometric point in the outlines of the old masters, and no doubt some of them did not use a geometric outline at all, I will not argue that point and they probably managed to get a fine tone besides.... However, no one will deny that there is probably a best outline and shape; probably several different ones. And because they exist in space and produce the desired results, they are not chance things but Geometric.

(Even though they may have been evolved by experiment)"

Gemunder's Observations . .

by E. Hopkins

I came across an interesting point regarding thicknessing of violin tops you might like to pass on to the members in a book called "Progress in Violin Making" by George Gemiinder,1881.

Gemiinder states on page 61: " Stradivarius and Joseph Guarnerius have especially obtained a beautiful quality of tone in these violins, yet in order to gain an easy touch of tone, they worked the top pretty tender, and in many instances they made the middle part of the top most thin, probably to further easiness of sound still more." Then adds: "such violins do not answer for concerts."

Gemiinder, by the way, worked for Vuillaume in 1847 for about four years and while these claimed to have repaired Paganini's wonderous violin, as he calls it.

This seems proof enough that some Italian violins at least are thinner in the centre than at the edge.

May I take this opportunity of thanking all those members who make the publication of the V.M.J. possible.

My best wishes,

Yours -

E. Hopkins

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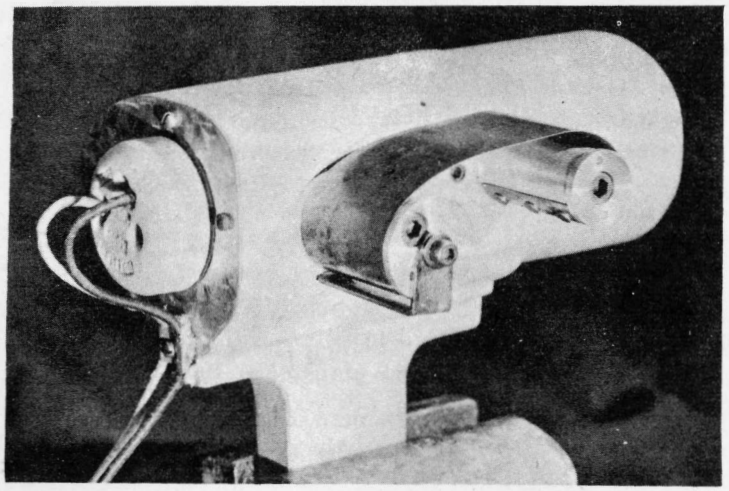

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VARNISH

Ced Welstead's Letter to Gunner Sanborn

New South Wales Australia
January 19th, 1964

My Dear Gunner,

I have finally gotten around to replying to your welcome and interesting letters, and wish to say that the reason for delay is because I have given myself time to investigate your proposals of incorporating your suggestions concerning the introduction of an oil other an Linseed into my varnish formulae.

The Essential oil you nominate, namely, Aetheroleum Cedri e Ligno is not listed in any of my text books under that name, but I am certain that this oil is the natural product originating from the red Cedar trees of Europe, and is, as you say, the oil used in laboratory work in the field of Microscopy and is synonymous with Canadensis Balsamae.

The main constituent of this oil is Cedrene $C_{15}H_{24}$ which is an isomeric body of Cadinene, Caryophellene, and other sesquiterpenes from Oil of Cade, Oil of Cubeb, Oil of Juniper, etc; it is in fact widely distributed as a constituent of many essential oils from all terrains including Australia and, as such, belongs to the many hundreds of various natural oils derived from trees and shrubs there are literally no end to the number of the chemical constituents derived from the field of essential oils - Guenter, the world authority on this subject published a prodigious four-volume treatise which he states still does not cover the whole field of research.

If it is considered to fortify Gambogin Varnish with another resinous additive, then it would be logical to use a compatible substance related to the solvent used to reduce Gambogin to a fluid state, such as old heavy bodied turpentine, some of which has become oxidised to form Pinal Hydrate $C_{10}H_{18}O_2$. You will deduce from this that by using any of the other essential oils or their derivatives will achieve nothing in the direction of increasing the elasticity of the varnish, or increasing the flow potential; it would increase the resinous nature of the varnish unnecessarily, and to a degree that is not in the least desirable; Gambogin Resin dissolved in rectified turpentine, is saturated in resinous products which are compatible with the structures of the pine and maple used in violin making, so it is apparent that the incorporation of any of these products, natural or synthetic, does not in any way increase the elastic properties we are trying to create. There are in this field, only two types of oil which measure up to the requirements of imparting, or rather, extending the elastic properties of Gombogin Varnish; (the dry pellicle of this varnish is by nature somewhat elastic) and these two glycerides are Linseed and Castor Oil, the latter at the moment being the subject of investigation; their chemical properties are similar, Castor being a partial solvent of Gum Draco, and perhaps you will permit me, before continuing, to dwell somewhat on this point; it is very interesting. On combining Castor Oil with Oil of Pine, the specie of Dragons Blood known as Liliacene Dracaena (Canary Islands) can be dissolved to any degree required, the amount of Castor Oil being as small as 5% byvolume - this fact leaves one with the thought that perhaps the final coat on the old Italian instruments could possibly be composed of these two components, <u>because in this media only, does the Gum Draco remain stable under the influence of sunlight!!!</u> The pellicle of this varnish is extremely elastic, and of fine texture; it can be brushed out to a perfect finish and the colour is magnificent.

To determine the active ingredient or constituent in the Oil of Pine (do not confuse this with "Oil of Pine" from Siberia, as this is a completely different material) a small quantity was distilled and two fractions obtained - high fraction/low fraction. The low fraction transpired to be a mixture of Terpenes isomeric with Terpinolene Limonene, Dipentene etc. all being isomeric bodies of the formula $C_{10}H_{16}$. The high fration was isomeric with Terpineal, probably a mixture of a-dl Terpineal, having the same characteristic odour of this group, having the formula of $C_{10}H_{18}O$. The isomers of this constituent to name a few are: Cineale, Citronellal, Bonneal etc., all of which are solvents of Dragons Blood, but this is the mystery!!! If the red resin Draco is dissolved in any of the isomers of Terpineal, the colour at first is blood red, but after a few days exposure to sunlight, the colour is dispelled, resulting in a clear solution of the original solvent; Why is this so? If the Draco Resin be dissolved in Oil of Pine, or the high fraction obtained from this source, <u>it resists the bleaching effect of the light rays</u>. There is only one conclusion: Terpineal appears to be the solvent in the Oil of Pine, and the other constituents, which are secondary alcohols (Borneal, Fenchyl alcohol, Methyl (havical, etc.) together with some Phenolic Esters, becoming the stabilisers or light filters.

The great variation of these isomeric bodies, and the multiple configurations of the molecular structures are a challenge to our imaginations and powers of deduction, and whilst searching through these things, the uppermost thought in my mind is this: <u>Terpineal is the main constituent of Aromatic Oil of Pine, and was available to the old Italians, and is the only essential oil obtained by distillation which will dissolve Dragons Blood and remain stable under the influence of sunlight, filtered or direct;</u> there is only one other solvent, but unfortunately it has the serious defect of becoming a dry fissured pellicle - namely Eugenal from Oil of Cloves $C_{10}H_{12}O_2$.

An intensive investigation would be in order to correlate all the factors and demonstrate the reason why the giant molecule which constitutes Gum Draco, when mixed with Oil of Pine remains light fast: $C_{20}H_{44}O_2C_6H_5COCH_2COOC_8H_9O$.

One factor appears to project beyond all others in this matter, and it is this: the few constituents which dissolve or partly dissolve Dragons Blood, are all oxides or hydrates of the essential oils; $C_{10}H_{16}O$ - $C_{10}H_{12}O_2$ etc. To extend this research I would be very pleased if there is anyone who can advise me as to where I can obtain a small amount of pure Pinol Hydrate of the formula $C_{10}H_{18}O_2$, it is not available here in Australia, but I believe it is available in Italy, France, etc.; it is conceivable that the old Italians used very old Turpentine as a vehicle for their varnishes. In its pure state it is the perfect solvent and vehicle for Gombogin; possibly in its polymerised form, it is a perfect vehicle and solvent for Dragons Blood?

If it could be accepted in general to depart from the aesthetic aspect of this problem, we could proceed in the following manner: Dissolve the Dragons Blood in alcohol together with a small proportion of Gamboge resin, plus 5% by volume of Castor Oil.

This gives an excellent minutely thin red finish to a violin, having an elastic nature and a light texture - there is only one factor which prohibits this procedure - distribution of this top varnish over the surface of an instrument in an even pellicle when applying it by means of a brush - it is impossible to achieve perfection in this manner. The only method of application is to have the mixture pressurised and spray on this last red coat!!! This is not in the least acceptable to me personally, and besides this objection, the material is not in the nature of an oil varnish which again rules it out of order insofar as violin making is conerned.

Each experiment with Gum Draco has been designed to find a suitable solvent which will completely dissolve the resin, remain light-fast, and lastly, be of a viscosity which lends itself to easy application, not forgetting of course that the mixture must be in the nature of an oil varnish when finally compounded.

This has been no easy task, and much remains to be done in order to attain perfection along these lines; the varnish at present, answers most of these requirements, and is an interesting side issue to my experiments with Gamboge Resin; it must not be assumed that this new avenue I have adopted, is in any way to replace or supercede Gombogin varnish which I still maintain is the logical coating for violins; it is merely at this point an interesting investigation of possibilities, to probe the many theories much discussed over the years concerning the use of this substance by the old Italians.

One fact emerges from my experiments which is paramount; the artisans of the past were restricted in the same way we are today, namely, a solvent which must answer to multiple conditions such as solution of the resin, elasticity, durability, light fastness and correct viscosity. From experiments involving sixty-four essential oils and their constituents, only two possibles have emerged. The third possible (Pinal Hydrate) is the one which interests me most, and upon being able to obtain some of this material, I shall be glad to notify you of the results.

I hope you will forgive the intrusion of these last remarks, as they are not related to your correspondence, but I hope you will find the remarks of this departure interesting.

Reverting to the primary matter concerning Gambogin, I can assure you that beyond the addition of a small amount of Linseed or Castor Oil, no adulteration is in any way desirable or necessary in order to render this varnish glossy and easy of application, for it flows freely if correctly made and used, and will remain stable for years if stored in air tight containers; the viscosity will not alter even if it is left exposed in the glass containers to open sunlight!!!

You mention that Mr. Hammarlund recommends the addition of "Dilutin" to add to the flow potential of Gambogin varnish- I must confess ignorance here, because the compound is not known here in Australia - perhaps you will let me know more about this in the future.

Gamboge varnish compounded with Turpentine as the vehicle, coloured by contact with Magnesium, Copper, and Chromium (for the red colours) and Iron, Silver or Gold (for the brown shades) will, if flowed on to the surface of a perfectly finished violin,offer no difficulties at all; it is but child's play to apply in any temperature and, if the work is done in a dust free atmosphere, it gives the impression, when dry, that it has been sprayed upon the surface; if the whole procedure is carefully contrived, it requires no hand finishing unless individual taste dictates the type of finish found on a french polished piano.

I would like to say before continuing that, regarding the use of Castor Oil in Gamboge varnish, I have not to date used this oil in any varnish which has been applied to any of my instruments - it has so far only been used on test pieces of rib wood, and I am awaiting results after prolonged exposure to strong sunlight. So far, this varnish has promis, particularly because I have used Aromatic Oil of Pine as the vehicle for the Gamboge, which is an excellent solvent, taking up plenty of colour and becuase the Castor Oil will absorb a quantity - both being solvents of the Gamboge and the Draco resin, indicates chemical compatibility; the thin coating applied to the test strips, is at this stage, indicative of much promis?.

I do not wish that you accept my remarks regarding the Aetheroleum Cedri e Ligno as a final judgement, for the reason that my findings may be wrong completely, but I would appreciate your summing up on this question as to whether this material you specify is indeed synonymous with Oil of Red Cedar and Canadensis Balsamae; you say that the Aetheroleum oil is available in two consistencies - heavy and light - this would indicate to me that two fractions have been isolated from the one source and if this is the case, you can be sure that the two substances have an entirely differenct specific gravity, and that the terpene fraction could possibly be very interesting, and I would be very much obliged if you could obtain some for me for the purpose of experiment; it is possible also that the light oil has been adulterated.

Regarding the request contained in your letter of December 28th, I am delighted to co-operate with you in any way possible, so do what you wish regarding these matters at any time - your project with Mr. Carlo will, I am sure, prove most interesting and I wish you both the best of luck.

If your assertion proves correct with the substance you nominate, I think it is the right thing that you should receive the credit for same, so in view of this, I am having a copy of this letter printed in the Journal on your behalf and also for the benefit of the many interested readers.

It would be most interesting if it were possible for you to complete a violin according to your syntonising principle, and send it to me for varnishing - does this appeal to you? I appreciate the difficulties of such an arrangement of course, but will leave you with the thought just the same.

Regarding the opinions expressed by Dr. Emile Leipp of the Paris University, concerning the continuity of the oxidation of Linseed Oil, I have, at this time, no defense to offer, except to say that he is of course speaking of the ordinay Linseed of commerce or the slightly better quality oil used by artists in oil painting.

Today it is possible to obtain some very fine quality specially prepared oil produced here by Meggits Oil Industries.

These special Linseed products are obtained by franctioal distillation under high vacuum. One of these I have recently received, and appears to be of excellent quality for our purpose. The water soluble constituents have been removed, as have the fatty acid content (it is my belief that the fatty acids are responsible for this slow oxidation which makes ordinary Linseed a bad component of violin varnish) and this oil has been named by the producers: Alkalie Refined Linseed Oil. I have not as yet tried this oil, but will of course experiment with it in the near future.

Has your friend Dr. Leipp written anything on his violin accoustics so far; if so I would very much appreciate being able to read of these matters.

I would like to stress that my remarks concerning Linseed do not infer that I advocate its use, but realize that the quantity in a formula must always remain at a minimum; I have always been prejudiced against this material by reason of the objections stated by Dr. Leipp and many others, but used with due caution, it will impart to a varnish those qualities so much sought after - elasticity, gloss, and durability.

Used in conjuction with varnishes compounded from ordinary colophony, it most certainly will remain sticky and fluid for an indefinite period, which is most undesirable in the extreme. Used with varnishes compounded from Gambogin, it behaves in an entirely different way, rendering this type of varnish excellent in every respect.

Reverting for a moment to Aetheroleum Cedri, the main constituent, Cedrene, being one of the many sesquiterpencs of the formulae (as before stated) $C_{15}H_{24}$ is not very useful for the purpose of dissolving the natural red resins - in fact it will only absorb a minute amount of these resins, taking up very little colour - the reverse is the case where Gambogin is concerned - it is soluble in each and every terpene, sesquiterpene, cylic or bicychici, the teriary alcohols and the oxides etc; you will agree that these facts nominate Gambogin as a most versatile material - in fact the only material which will not dissolve this remarkable resin is milk, or perhaps beer!!! The old masters had a wide choice of solvents for it as also ourselves.

There is one thing I must emphasise for your guidance. When purchasing your Gamboge, make sure you get the pure long pines; do not accept powdered Gamboge at a cheap price, for the following reason: Many pen friends from many countries have written me with problems concerning the compounding of this varnish, many of them advising me that the price of Gamboge is less than half of what I pay for it.

Most of this "Powdered Gamboge" has been adulterated with colophony and other materials, and it is most fatal to use this cheap material if you are aining at making a prime quality cloak for your violins.

Well, I think this is all for now Gunner, except to say that a young friend of mine recently returned from Sweden with his Swedish bride, and we were working at the task of writing this letter you in your own language, but we got into difficulties and at at last I was forced to use English; perhaps this will not worry you unduly, as your letters to me in this language are excellent.

Wishing you Violinmakers regards, and again thanking you for your high compliments.

Your sincere friend,

Ced.

ADDENDA

I have received many interesting letters and inquiries from the readers of the Journal, indicating their impatience concerning the article to appear in the pages of same giving full details regarding the manufacture and application of Gambogin Varnish.

Some of these communications indicate that difficulties have arisen re the drying, application and compounding of the varnish.

In this connection, some readers have erroneously concluded that the Journal is at fault because the article has not as yet appeared, and I would like to say concerning this, that the Journal cannot print the article until I have completed it and sent it forward. The task I have set myself in writing on this aspect, is not an easy one, as I must try to fully cover the subject, in order that those who read it will fully understand what I have written; I expect to complete the article early this year.

However, for the guidance of those who have asked specific questions, I shall here give some brief notes:

(1) To impart to the varnish quick drying properties, make up some varnish with the gamboge resin, plus the copper powder (for light red) with 5% of oxidised linseed oil, and reduce if necessary with rectified turpentine to brushing consistency.

(2) Prepare some gambogin varnish (just a small amount) of very thin consistency, and add some powdered Magnesium. Leave this in a test tube (6" x 1") then add a few drops of water, stir this each day, adding a few drops of water until the colour is dark red, and then add some of this to the copper induced varnish; it will strenghten the colour, and accelerate the drying. This thin tinting varnish and dryer can be made also by immersing the test tube in a florence flask (500 cc) and reacting it at 100 degrees Cent. When the compound acquires a deep red colour, it is of course ready for use.

(3) Mr. Knight of California has asked the reason why the varnish wrinkles after it has been laid on the instrument and then placed in the sun. Without knowing exactly the case here, I can sum up this situation thus: Only the priming coats of Gambogin varnish should be exposed to the sun immediately after application. The finishing coats should be allowed at least 48 hours before exposure to direct sunlight What happens is this - the varnish becomes "surface dry" if exposed too soon, with a thin dry skin on top of the underlying liquid state, and of course there exists at this time two different co-efficients - the answer is of course, slow oxidation. When the pellicle has achieved a "dry to the touch" state, it can then be left in the sun for months without fear of wrinkling, in fact, the longer the better for tone.

The priming coats, which consist of Gamboge Resin, Rectified Turpentine, and Linseed Oil, are literally swamped on to the raw wood while very hot, in order to make sure that penetration of the fibres are as deep as possible (I do not agree that the surface should be sealed before varnishing). The instrument being treated is placed in the sun (as hot a day as possible) for many hours, and then impregnated with a solution of the above mixture straight from the water bath at 100 deg. Cent. and immediately returned to the direct heat of the sun every day for a week - it will be observed at the termination of this period, that the violin so treated will have lost considerable weight!!! it would be logical to assume that the process would increase the weight - I have not as yet determined the reason for this phenomenon, it cannot be due to loss of moisture, because, remember that the instrument has been in the hot sun for many hours prior to priming which will drive off any absorbed moisture.

This extreme lightness of the instrument after varnishing (priming) seems to me to be one of the important factors in tonal evolution. When the violin being treated is handled after treatment, it appears to be very light and rigid; it is this lightness and rigidity which is (or appears to be) responsible for the power the instrument developes. My instruments, after completion, even though they are finished with plenty of wood remaining in thicknesses, weigh as little as nine and a half ounces.

The backs, generally, are in the region of: Centre - 5/32"
flanges - 1/16 full.
The tables, "5/40" = 1/8". flanges, 4/40" = 3/32".

These dimensions, you will agree, are quite generous when one is using maple of heavy density (about 84 grains for the standard sample). The weight is taken with the violin complete except for all external fittings (the sound post is included).

The fact that a priming mixture as above, well worked into the wood prior to varnishing, renders the entire unit to a maximum rigidness, becomes apparent after several weeks of sun drying; the instrument acquires from this treatment, a tightness which the science boys nominate as "resistance" and it is my belief that this factor is sixty per cent of the art of establishing a powerful lush volume in this musical instrument. After many weeks of waiting, the instrument being treated, is then fitted up with finger board, strings, etc. and the sound holes are then cut while the violin is strung up and being played (a strange procedure, you say - try it with your next violin and listen to your creation gradually evolve into a powerful sonorous entity).

At first, when all that has been done in this direction is the boring of the four holes to represent the termination of the two FF holes, the tone is most interesting, resembling a muted 'cello. As you proceed (carefully) to remove more and more wood your amazement will be unbounded at the many tone colours you will hear during this procedure, and a great revelation of concious understanding will become manifest to you in the realm of acoustics of this small and beautiful thing, the violin!!!

During this operation, you will find yourself listening to, one moment, the sound of the viola, then the 'cello, then back again to the viola - it is one of the most rewarding exercises in this peculiar art, and must be done with much playing between each small piece of pine removed, until at last, your FF holes are finished (narrow at first) and then gradually widened - by using this method you will have the inestimable pleasure of actually "hearing" your instrument being born and gathering strength as you proceed - in the whole of the art, I have found no experience to equal this one.

I hope these short notes will be of use until I have completed my article on varnishing, and I wish you all the best of luck.

Have included some illustrations re my method of cutting the FF holes.

Yours fraternally,

Ced Welstead