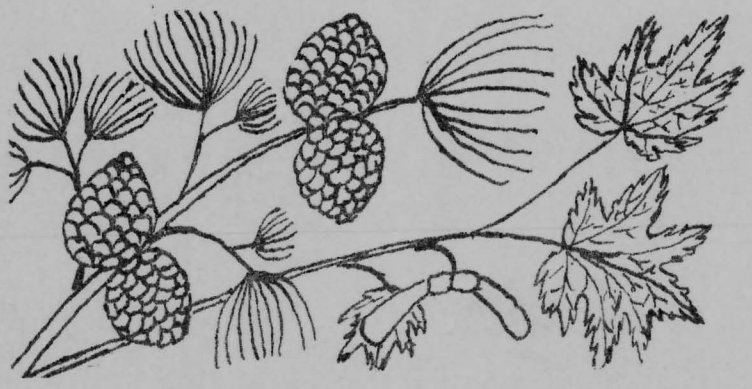
APRIL 1960

The Violin Makers' Journal

THE OFFICIAL MONTHLY PUBLICATION OF
THE VIOLIN MAKERS ASSOCIATION OF BRITISH COLUMBIA



Devoted to the development and encouragement of the art of violin making

The Violin Makers Journal

A Non-Profit Periodical . Published Monthly

By The Violin Makers Association Of B.C.

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Vol.3..No.6.....April, 1960

EDITORIAL PAGE OF *The Violin Makers Journal*

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EDITORIAL

HOW TO LIVE TO BE 100:

The natural instinct for life preservation is perhaps the strongest impulse implanted in our consciousness.

Place us in the most uncomfortable and unhappy environment, heap upon us the misery of sickness or the loss of loved ones, or the many disappointments of life. Let us take on the troubles of Job himself, still we cling tenaciously to life. Very rarely will we declare "I wish I were dead!"

But in our more rational moments when we see the approach of old age, with its attending discomforts, we secretly hope that before this period of "Sans teeth, sans eyes, sans taste, sans everything," arrives we might some night instead of sleeping the "Sleep of the just-"---" just sleep to wake no more."

Provided, though, we can to some extent avoid the miseries listed above, there are very few of us who would not extend our life span if it were possible.

The progress of medical and surgical sc
cing is such strides that this extention of time may be quite possible. I suppose it is quite feasible to believe that with the transplanting of vital organs and methods of rejuvenation, death itself may be overcome. The "old machine" might be kept going indefinitely.

In "The Vancouver Sun", one of our local newspapers, there appeared early this month an article touching upon this theme, but from a slightly different angle. Here is the "clipping". Quote:- "If you want to live to be 100, forget yourself," advised Professor Alain Delore, who has made a lifelong study of centenarians.

The long liver is generally the unselfish, enthusiastic person who is too busy enjoying everything around him to bother about his own litte problems, pains, desires and opinions, he said.

Most centenarians work to a ripe old age and then have important hobbies that keep them out of mischief and boredome" end quote.

The last paragraph is perhaps one that applies to violin makers in particular.

Never was there such an absorbing hobby. If we live to be 100 we will never make that perfect violin, for there never was a violin whose tone could not be even better. Live to be 100 and we will still never be sure just what makes a violin "tick".

Yes we have in violin making an interest in life. Life to us is all too short. Boredom is an unknown factor. We often pity those of the rich executive class who have made a "Success of Life"? but on retirement discover they have been too busy making money - and now have no interest in life. Nothing really to live for.

Perhaps we who have been less (?) successful have much to be thankful for. In establishing a definite hobby we have created a grip on life - an interest that will help us to smile at old age. . Especially is this true of those who combine an unselfish motive. I refer to those who are not satisfied in endeavoring to make that perfect violin but must needs impart to others all their knowledge. Surely they will reach the 200 mark!!

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LOCAL NEWS.

BY HAROLD BRIGGS.

Hello Everybody:

In the January issue of our Journal The Rev. Geo. Wright suggested that consider branching out into a North American Violin Mak
wide organization, and at our February meeting, quite a lot of time was spent in discussing this idea from Various angles. It is to be brought up again after more information is obtained about the set up in the Scandanavian countries where the violin makers have a nation wide organization.

Mr. Wright affirmed his agreement with the statement of Mr. Peder Svindsay that the best violin has not been made yet, and stated his belief that with all the scientific knowledge at our disposal regarding the testing of wood for resonance, moisture content, accoustics and all present day knowledge of making and applying varnish, he believed we should now be able to make violins the equal or superior to those produced by Strad. Our President, Mr. Heyworth, however pointed that it would not necessarily follow that we could equal Strads work. For in sculpture no one has succeeded in surpassing the work of the ancient Greeks, made many centuries ago, and in art he did not believe any one else had ever I can also point out another example, two of the greatest living organists, Albert Sweitzer and E. Power Briggs (no relation) claim that many of the old cathedral organs are much better than anything being produced in the present day.

It was pointed out, that due to an oversight we had neglected to send a word of appreciation to Western Music Co. for permitting us to have a display of our work in their store. The Secretary was instructed to forward a belated letter of appreciation and also to enquire into the price of paying for our share of the advertising of this exhibit.

Our Secretary read a letter from Dr. Steffenoff of Portland, Orgeon telling us

of a group of people there who were very much interested in our club and who would like to form a somewhat similar organization there. They suggested that they would be glad to have a delegation from among our members visit them and explain just how our organization works. They volunteered to supply overnight accommodation for a limited number and suggested as an alternative that some of their number could visit us at a time when they could attend one of our meetings. It was agreed that our club should do everything possible to help them get organized and that we have further correspondence with them to work out det

The question was brought up of choosing the winner of "Jenny Lind" - the lovely violin made by the late Mr. Ernie Lindberg, who requested our group to select the person to whom this instrument was to be awarded. This violin, together with the bow and case donated by our club was to be awarded to some student of the violin either male or female a resident of Vancouver between the ages of 10 and 15 years, who was deemed the most deserving among the festival winners. Since the festival was due in a few days, the choosing of the winner was left to a committee composed of Mr. Peder Svindsay, Mr. T. Hawes and the executive of our club.

I was specially interested in an article in our January Journal by W.L. Laubi where he mentions the use of a weed called horsetail to polish a violin with. We have lots of horsetail growing around here. I do not know if it is the right variety to polish fiddles or not but you might be interested to know that if there is any gold in the soil on which it grows, it will absorb enough gold so that if a sufficient quantity of the weed is burned, an analysis of the ashes will show traces of gold. Now it doesn't necessarily follow that you will have discovered a gold mine wherever you find a patch of horsetail growing, but if you use it to polish a fiddle, that fiddle just might be gold plated.

The Vancouver Province says an Inferiority complex could be a blessing if the right people had it. So now, before you get all mixed up perhaps you should stop thinking - if you think you can.

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SPOILING BY OILING.

by Cliffod A. Hoing

I know that some people are apt to dash into print with mere opinions on subjects of which they sometimes have little or no practical experience but I can assure Carmen White that all I write for the Violin Makers Journal has the backing of more than thirty years experience in violin and viola making and repairing.

Linseed oil HAS been tried (and many other things) that is the reason I condemn the oil. There are many contradictions in the writings by Carmen White in his articles. If as he says "it is not so important which filler is used" they why use linseed oil? Nothing could be much worse! Then again, something must make contact with the wood if a violin is varnished at all, so it is foolish to talk of "untreated wood" in s

It seems he knows most of the snags, which he mentions in the January issue of the Journal. Knowing the difficulties is half the battle, so all he now has to do is to find how to overcome them. Best wishes Carmen.

Having a regular job should be one consolation to him. In that, he is far better off than many professional makers who spend half their lifetime making a reputation and very little. money.

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VIOLIN ARCHING

by Martin Starkman

To a great measure the tone quality and carrying power of a violin is dependent upon its archings. The masters of Cremona knew this and employed this knowledge with great care. The archings of their instruments were not arrived at by chance, but rather were scientifically, artistically and ingeniously worked out.

Though it is relatively simple for a violin maker to accurately duplicate the outline of a violin as well as its graduations, the precise duplication of archings is quite another matter. The usual method employed is to erect a sheet of stiff paper or cardboard above and in line with the arching to be copied. The stylus of a drawing compass is run over the arched surface while the pencil end of the compass describes the arch on the cardboard.

It is practically impossible to obtain an accurate duplication of an arch in this way because the stylus wanders from the arching line and the pencil end cannot always be held perfectly perpendicular to the plane of the plate. In short, it is impossible to achieve accuracy by unguided freehand means.

Few violin makers seldom, if ever, have the opportunity to minutely measure a fine masterpiece. They therefore must rely on the measurements and diagrams made by others without knowing just how accurate that information is.

If we attempt to use the arching t
violin making, we encounter difficulty because the surfaces between the template areas do not run to fair curves. We must alter the template areas to obtain continuity of surface. If anyone doubts this, let him recheck the archings after the plate is scraped. Obviously something is wrong with the template curvatures given us, and that is most probably the

Realizing this deficiency in his arching templates the violin maker uses them only as a guide doing the major portion of his work by eye. However, it seems inconsistent to accurately graduate the thickness of a plate when its exterior surface has been formed "by eye".

In any continuous arched surface of finite bounds, the curvatures of archings that define the surface, taken approximately at uniform intervals and parallel to each other, have a geometric relationship each to its adjacent curvature. In the case of the violin surface, the geometric relationship must be the same for all parallel archings even though the widths and total heights of archings are not constant. The relationship indicates the general shape of the template curve, but does not define its limits.

The foregoing corollary is one of reason. Archings must complement the graduations of the plate. That complementation in conjuction with the enclosed air mass primarily determines the instruments tone. Most patterns for graduation are based upon the guitar shape of the instrument and lines of constant thickness describe that shape. Is it unreasonable to assume that the archings should also follow the guitar shape? If the archings of a plate are defined by a set of templates, each of which is designed on the basis of a single curve, independent of the total heights or total widths of archings, then an "isolocus" contour map on the top or back may be drawn upon which lines connecting the same relative points in the curvatures of all templates result in patterns not unlike the patterns for graduation.

The following is a method for designing a set of accurate templates which when used will produce a smooth, tight, streamlined plate surface with acoustical properties of the highest order.

The author's purpose in developing this method of arching design is not to alter the accepted shape of the outer plate surfaces of the violin but rather to give to the violin maker of today a means whereby he can control the final outer plate surface to a fine degree by the use of very accurate templates.

Taking, as an example, arching template No. 9 of Heron Allen's Plate IV, a line A-A is drawn tangent to the crown of the arching and parallel to the base line BB (Fig.1.). The base line is then divided into eight equal parts and the vertical lines are numbered from right to left starting with zero. The crown of the curve is at zero and the total drop of the curve is the distance from the tangent AA to the base line BB or C (fig.1
the curve exhibits at each of the nine vertical dividing lines. This is accomplished by measuring the distance from line AA to the curve at each vertical line and determing what portion of C it is. These values f r arching No.9 are listed in TABLE I.

From Table I. it can be seen that at the midpoint af the width of the template (vertical line 4) the curve has dropped 0.38 of its total drop.

This process is duplicated for the four remaining principal top archings on Plate IV. of the Heron Allen work and the results are tabulated in Table II. These five cross arching templates are those usually used to completely determine the outer surface of a plate. Upon examination it is evident that there is little or no correlation between these archings. For example, at the midpoint of the template width (vertical line 4) the drop from crown varies from .22 for template No. 12 to .32 for template No.11. These are two adjacent templates, In view of these results it is not surprising that the templates of TABLE II do not yield a smooth continuous surface.

Of the five templates analysed in Table II, the question arises as to which template is it best to adopt for all templates. In order to retain the essential character of the exterior archings, which could be lost by choosing a non-representative template curve as the master, the values of decimal drop are therefore averaged as shown in the last column of TABLE II.

The average decimal drop values are plotted and a smooth curve is drawn through as many of the coordinate points as possible (Fig.2.). This is the master curve and all templates will be based on it. The values of the master curvature are listed in TABLE III.

The longitudinal arching is now determined in precisely the same manner but its determination is not quite a s lengthy as only one
The criterion for the longitudinal arching is smoothness without rapid change of curvature. It is not necessary that the longitudinal arch have a geometric relationship to the cross archings since it does not parallel the cross archings. Plotting the decimal drop values of a longitudinal curve to a scale that accentuates the curvature will quickly indicate just where the curvature lacks smoothness. The longitudinal curve having been corrected a new template may be easily made.

The importance of the longitudinal arching curve should not be minimized. Although its curvature is independent of the cross arching curvatures, longitudinal sections taken throug
cross arching curves, will yield curvatures that are geometrically similar to the longitudinal arching of the center line of the instrument.

From the outline diagram of the violin the centerline to edge distance of each cross arching is determined. Dividing this distance of each template into eight equal parts and obtaining the magnitude of the total drop for each template from the longitudinal arching template, the drop at each vertical segment line is measured down from the tangent line in accordance with the master decimal values of Table III. To simplify this operation the template curves can be drawn on graph paper, the paper glued to thin brass sheet and then cut out.

It is suggested that rather than use the center to edge measurement, the violin maker use the centerline of instrument to center of the groove that is sunk inside the edge. The latter is the true low point of the cross arching curve and the template may then be constructed to incorporate the groove.

This outline of procedure has had as its main purpose the improvement of a set of templates. However, the method is ideal for developing templates of an experimental nature. It enables the luthier to produce an accurate set of templates based on any master curvature he may choose.

Although five templates are usually used in carving the cross archings of a plate, difficulty is encountered between the center cross arching template and the templates immediately above and below it. This difficulty may be obviated by producing additional templates for the transition areas. By adopting the method outlined previously, a cross arching template can readily be made for any point along a plate.

One further word. The values of decimal drop from the crown of all five templates were averaged in the previous example for the sake of illustrating the method. Elimination of template No. 12 would probably have yielded truer results.

(1) Violin Making as It Was and Is - Ed. Heron Allen - Ward, Lock, & Co. Ltd.

TABLE I

Station No.	Drop From Crown In 32nds Of an Inch	Portion of Total Drop Expressed Decimally
0	0	0.00
1	0+	.00
2	1.0	.12
3	1.8	.22
4	3.0	.38
5	4.6	.57
6	6.5	.81
7	7.8	.97
8	8.0	1.00

Arching Template #9 Plate IV

Violin Making - Heron Allen

TABLE II

Station No.	Arching # 9	10	7	11	12	AVG.
0	.00	.00	.00	.00	.00	.00
1	.00	.00	.03	.00	.00	.00
2	.12	.07	.11	.04	.00	.09
3	.22	.22	.23	.16	.10	.19
4	.38	.48	.39	.32	.22	.36
5	.57	.76	.62	.54	.42	.58
6	.81	.92	.86	.85	.65	.82
7	.97	1.00	.98	.97	.87	.96
8	1.00	1.00	1.00	1.00	1.00	1.00

Drop From Crown - Expressed as Decimal of Total Drop

Arching Templates Plate IV - Heron Allen

TABLE III

Station No.	Portion of Total Drop Expressed Decimally
0	.00
1	.02
2	.10
3	.24
4	.43
5	.63
6	.84
7	.97
8	1.00

Master Curvature of Belly Cross Archings

Plate IV Violin Making - Heron Allen

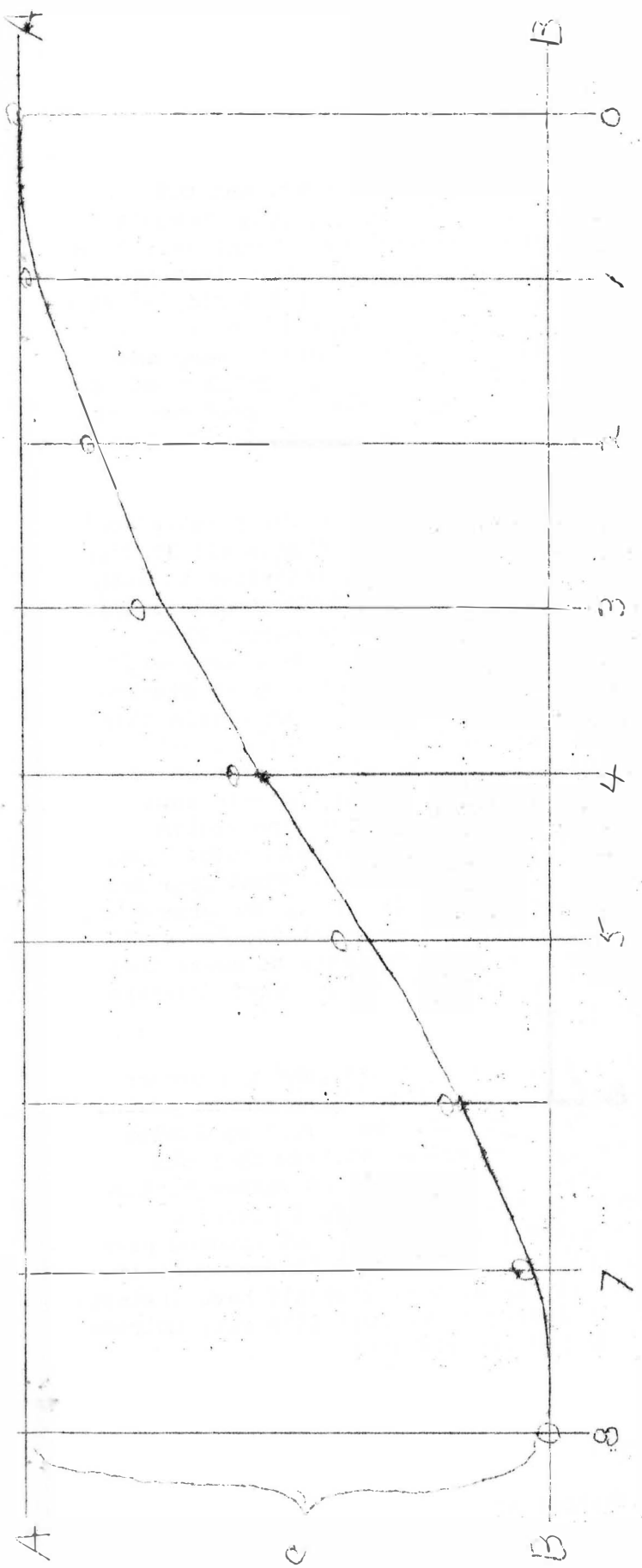

FIG 2

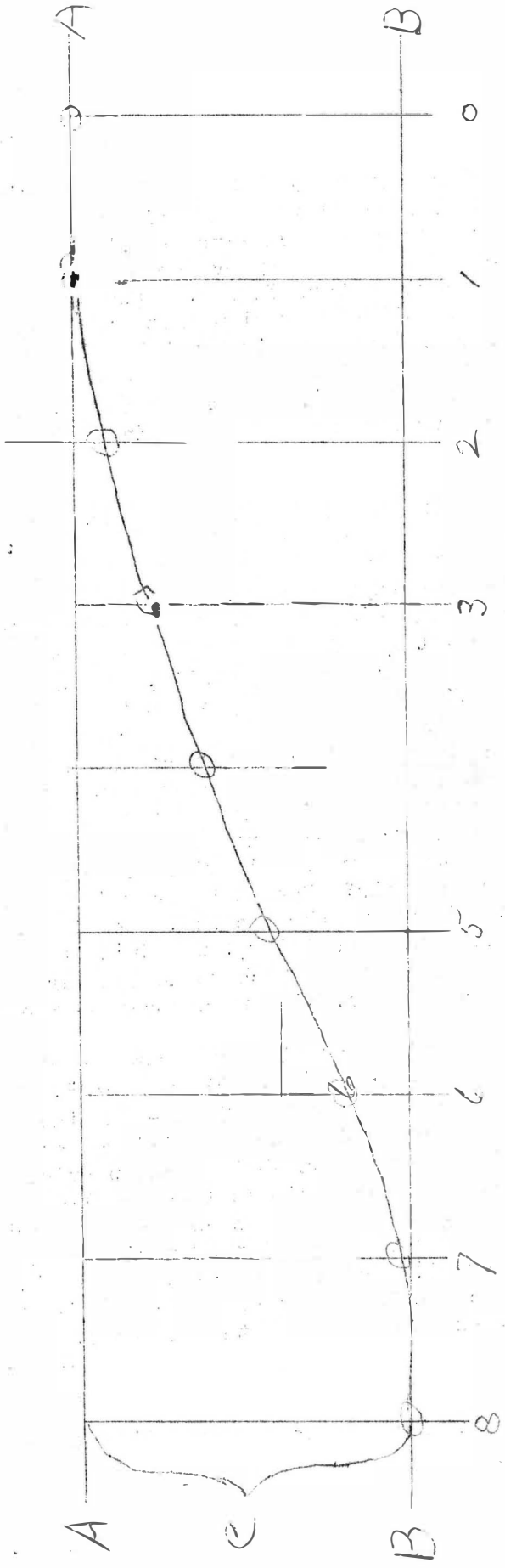

FIG 1.

VUILLAUME BAKED VIOLINS?

by Carmen White

Carl Flesch refers to Vuillaume's baked violins in his authoritative work, and this reference has mislead many violinists and teachers in the belief that Vuillaume baked the wood for some of his violins and that these Vuillaume baked violins are worthless. There does not seem to be any evidence to prove this at all. With this statement from the noted authority, Carl Flesch, a player is likely to say "This one is a baked fiddle" when he plays a Vuillaume violin that does not please him--but then he plays one he likes, he will say, "This one is Not baked". Now, will some of you experts come forward and tell us how to tell a baked violin from an unbaked violin? Did Vuillaume label them as "baked" and"unbaked"? Then, how do you tell? And how do we know that the good ones are the Unbaked ones, and how do we Know that the poor ones are the "Baked" fiddles? Can we really be sure?

Again, why did he ever conceive the idea of baking violins in the first place? Here are a few facts that might explain it: First, Vuillaume saw the famous old Italian violins when they were relatively fresh and he rebarred many of them, according to authoritative reports. Surely, he must have seen something in the wood of these old fiddles that made him think that wood was treated in some manner. And it is on record that he had an artist at the Paris Conservatory to play one of his new violins in a concert, along with a Stradivarius violin, and that the outcome of that test was a great disappointment to Vuillaume. So, he must have heard something in the old Italian violin that made him think that the wood was treated in some way. Again, Vuillaume was a great artist, and his skill and perfection in the craft was just as fine as the greatest of the old Italian makers. He sought out old woods from old furniture in the vain hope that old wood would give him what he wanted. It would appear that if a fine violin could be made from raw, untreated woods at all, Vuillaume should have made such. Yet, it is true that some of his violins sound wonderfully fine, while others sound poor and weak. Why is this? Can it be proved that the poor ones are baked? Well, who proved it, and how? Where are the records? And if we are going to just guess about it, (as Carl Flesch evidently was doing), wouldn't it be more in line with known facts to guess that the Vuillaume violins which sound best are those which he treated in some way? Perhaps he used heat, as Mr. Gilbert advocated--who really knows?

A friend of mine once sent an old French violin for appraisal, and the expert said the violin was made of "baked wood". But he did not condemn the tone and he placed a pretty high value on the fiddle--and the tone was fine, indeed. One great violinist told me that he used to own a Vuillaume and played many concerts on it, and that the public did not know but what he was playing his Strad., and he complained rather bitterly that his wife made him sell the Vuillaume violin! On the other hand, I played a Vuillaume violin in a famous collection which was beautiful to the eye, but sounded poor and weak. It showed no sign of having been baked, but it sounded as if it were full of cotton or wool! Had I been following the "Baked" violin tradition, I should have instantly pronounced this violin as a "baked" Vuillaume! It looked to me just like raw, untreated wood, and appeared too thin in wood. So, what do you experts say?

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"An ill-favoured thing, Sir, but mine own".

...Shakespeare

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THREE READERS CARRY ON THE ARGUEMENT REGARDING STRADIVARI OR STRADIVARIUS

Clifford A. Hoing:

The quotation mentioned on page 26 of the January Journal could be read in several ways. It could mean that "Strad" was short for Stradivarius(or Stradivari) or could be used to refer to a violin made by Stradivari (or Stradivarius).

Sorry that a misprint made it seem that I meant that Stradivarius was a plural of Stradivari. The plural should be Stradivaris.

It is regretted that I did not mention my source of reference but this just happens to be a very familiar point. It was questioned once when I was doing a B.B.C. broadcast and confirmed that "Stradivari" is Italian and "Stradivarius" the Latin version of the same name. You should have seen the reference book they used to check!

Also, and perhaps more convincing to Violin Makers the Hill book on Stradivari gives the derivation etc., on page 3 of the 1902 edition. Hills use the name Stradivari for both the name of the maker and the name of his violins. They call several instruments Stradivaris. Strad labels are in Latin.

Actually I suppose you would never think of calling a Bloggs fiddle a Bloggius or anything else but a Bloggs!

Robert Minster:

In answer to your appeal for clarification as to the correct spelling of Strad's name, I hasten to offer the following quotation from Hill Bros. book: "Antonio Stradivari His Life and Work".

"We propose to touch but lightly on the ancestry of Stradivari, as researches on this subject have been published by Fetis, Lombardini, Hart and others, and have been supplemented by Signor Madelli. All these writers agree that the family name, spelt in different ways, was borne by more or less notable citizens of Cremonas as far back as the twelfth and thirteenth centuries. Signor Madelli gives various documents in proof of this, the earliest one being dated May 13th, 1188, from which we learn that the Priest Alberto, Canon and Chief Warden of the Cathedral of Cremona, lets to Giovanni Stradivarto and heirs two pieces of allodial land, " etc. etc.

With regard to the derivation of the name, Mr. E.J. Payne says, "It is the plural form of Stradivare, a Lombard variety of Stradiere, a tool-man or douanier, a feudal official who was posted on the Strada or high road for the purpose of exacting dues from passengers."

The earliest documentary evidence forthcoming concerning the direct ancestry of the violin maker is furnished by Signor Mandelli, who quotes an extract from the Marriage Register of the Cathedral of Cremona, under date April 10, 1600, recording the marriage of Signor Giulio Cesare Stradivari of the parish of S. Michele Cecchio, etc.

Howard Apps:

It was common, although by no means universal, to use latinized inscriptions but the practise seems to have been abandoned by many of the Italian makers towards the end of the last century in favour of italian wording. In most English books that I have read the form Stradivarius is used; doubtless this come easier to English tongues, but I think there can be no question that the master's name was anything but Antonio Stradivari. Surely the most reliable evidence there is his tombstone! This was aquired in 1729 for the family vault and is now preserved with other Stradivarius relics in the Museo Civico at Cremona. Thename is quite clearly shown as Antoni Stradivari.

FACTS ABOUT VIOLIN MAKING

by E. H. Sangster

After reading nearly every book written in English on the subject of violin making and all the articles in the Journals, which contain many theories and suppositions on violin making trying to account for the superior tone of the old Italian violin I would like to draw every violin makers attention to a few facts. First! no matter what book you read speaking of Antonio Stradivari, states, he was Nicolo Amati's pupil and the greatest of all violin makers, a craftsman who has never been surpassed and probably never will be.

Now take the thickness of a violin dated 1704 as given by Hill & Son's, Back 10/64 thick in the centre graduation to 6/64 at the edges. Top 6/64 all over and this does not mean 6/64 in 3/4 of an inch from the prufling, it means 6/64 right at the purfling all around. Now any violin maker who thinks he is going to improve on Stradivari had better correct his thinking.

I have always stated that when I equal Stradivari, then I will start to improve on him, and I still state it.

On the history of the violin it seems Gasparo De Salo gets the credit for making the first instrument of the true violin shape and his violas are still considered the finest in existence. I do not for one moment believe that he discovered the method to produce the fine tone of his violas. It was known to the viol and lute makers long before they made violins.

The same thing applies to Andrea Amati who was the founder of the famous Cremona School of violin making. We have one clue that points the way to the method used by the Italians to produce fine tone and it was written to Galileo. He ordered a violin from a maker in Cremona. The violin did not come and he got several letters apologizing for delay and in April, 1638 the maker wrote and said (and I quote) "As he wished to send an instrument of exquisite work it cannot be brought to perfection without the strong heat of the Sun". This is just as true today as it was in the seventeenth century.

I wish every violin maker who reads this would try this just once.

Make a violin to the graduation of the Strad 1704 and when it is finished in the white ready to varnish, heat some pure raw linseed oil on the water bath and with a brush give the violin a good generous coat all over. Then hang it out in the direct sunlight every sunny day for all one Summer and in the Winter hang it in a warm room and the next summer varnish it. It takes patience to wait that long but the reward is great. In my opinion this is the reason the method was abandoned after Stradivari's death the makers coming after him could not wait so long to put their violins in the market. I might add here that boiled oil is no good. It must be pure raw linseed oil.

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The great thing is not so much where we are,

But ... in what direction we are moving!

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AN INVESTIGATION INTO THE GRADUATIONS OF STRADIVARIUS AND GUARNERIUS VIOLINS

by Don White

Part 3

In the first article of this series I gave a number of tables showing the graduation of Stradivarius violins taken from Otto Mockel's book "The art of Violin Making". These tables were prepared by Kristian Skou, and did not include all the Strad graduations given in this book. During this last week I have studied all the Strad graduations given by Mockel, and it has been very enlightening. Not in one single instance can I find graduations similar to those given in the usual text books purporting to be Strad graduations. By these I mean those which show thickest portions of plate slightly over 1/8 inch at bridge (or sound post) reducing gradually to about 3/16 inch at edge.

This applies not only to the top Plate but to the back as well. There are always some places where the plates are thicker (or thinner). This definitely upsets any suggestion of a straight, gradual reduction of thickness from bridge to edge.

Further study may reveal a "pattern" that can be worked out in this regard. But it would seem that our biggest problem in this investigation will be to define the places that should be worked thinner.

I have lately received from Mr. Skou an outline of his ideas on what Stradivari and Guarneri had in mind. This I will include in the May article. First I would like to present some information prepared by Mr. Gordon Rooke of San Francisco. Mr. Rooke handles the subject in a very capable manner so I am quite willing that he "carry the torch" for the remainder of this instalment.

MR GORDON ROOKE'S CONTRIBUTION:

It has been my personal opinion for some time that what information that was available on the thicknesses of Stradivari and Guarneri plates was very incomplete or based on what the author thought the thicknesses should be.

There are two articles which appeared in "Violin & Violinists" that I thought would be of considerable interest to you and at the same time add weight to your arguments.

The first article appeared in "Violin & Violinists" April 1944 - page 474, and was entitled "Thicknesses of Violin Plates - Old and New" by C.E. Mertzanoff and J. Westall. Quote:-

"During the last two years with the co-operation of Mr. Rembert Wurlitzer of New York, we have made minute examination and recordings of the plate thicknesses of several Stradivari violins. A study of their thicknesses leads to a discussion that is very pertinent to the present day violin making."

"We have ascertained the thickness of the belly in the area near the bridge is a little less than 7/64th in the examples measured dropping to as little as 5½/64ths and 5/64ths, in a considerable area of both upper and lower bouts."

"By carving the belly thicker than the classical one, the modern maker is sacrificing the freedom and responsiveness in playing qualities that are found in the fine old violins."

"In the Strad backs we have meausured the thickness range from 11½ to 4½/64ths.

We are well aware that the acoustical quality of the used is only one factor in producing a really fine violin. There must be expert workmanship, proper shape and measurements, right thicknesses and pattern of graduation, correct weight and balance, and not least important, proper sizing and varnishing." End Quote.

Continuing the discussion in the November issue of the same magazine (page 217, 1944) in answer to some correspondence, Mr. Mertzanoff offers the following information, Quote:

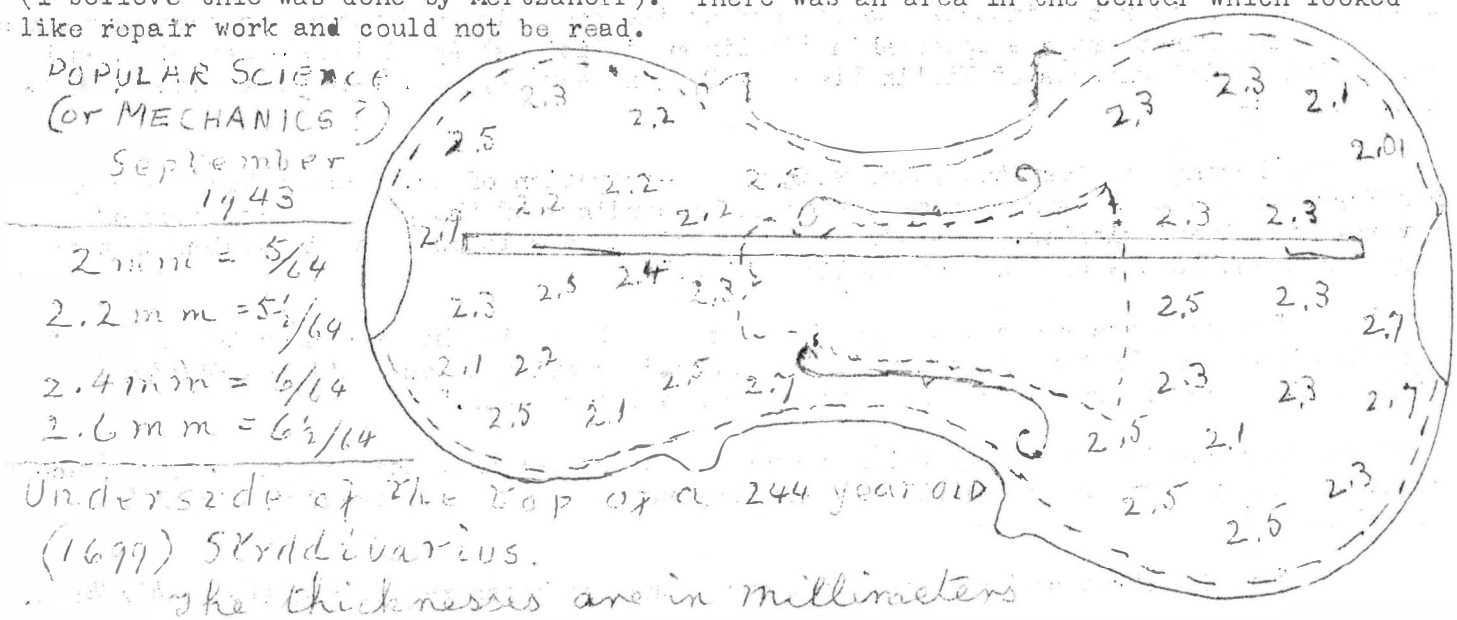
"---- - Mr. Rembert Wurlitzer and I have measured the thicknesses of a number of old master violins that at one time or another had had to be opened for adjustments or repair."

"EVERY FRONT was found to be THINNER in the central area than in the region around the sound holes or at the edges."

"Among the instruments examined let me mention some well known examples such as the Titian, the Wilhelmj, the Baron Knoop Strads, the Amy Neil and the Plowden Joseph Guarneris. These instruments, cherished for their exceptional tonal quality, do not show any sighs of having been tempered with or otherwise mutilated by ignorant repairmen after they had left the master maker's hand.

"The thinner region in the center of the belly was intentional with the maker. Obviously it was done to enable the belly to vibrate more intensely under the impulses of the bridges than it otherwise would were that the particular central area in the proximaty of the bridge left thick. On the contrary, violin backs are thicker in the central area than at their flanks, which goes to show that the functions of the front and back are quite different and follow different laws of acoustics. No doubt that the knowledge of these laws is what guided the old masters in the construction of their instruments; and I would venture to say that the departure from these principles in later times appears to be one of the causes why modern violin making has not as yet equalled that of the classical period, at least as far as fine tone is concerned." End Quote.

I am also enclosing a sketch of top plate thicknesses from a Strad violin (1699) These were taken from an article appearing in either Popular Science or Popular Mechanics (Idon't recall which) and written about C.E. Mertzanoff and J. Westall and a violin which was made according to their theories of wood curing and construction. There was a photograph of the inside of this particular plate with the thicknesses written in chalk. (I believe thie was done by Mertzanoff). There was an area in the center which looked like repair work and could not be read.



WESTERN RED CEDAR AND BROADLEAF MAPLE

by Leo Larsson

The following may be of interest to the readers of the Journal. First: In the last issue of the Journal two of your writers mention the use of California Red Wood and Canadian Eastern White Cedar. California Redwood has been used for the making of violins but I have never used it. Mr. Hall of Listowell has written a fine article on wood and recommends the use of the botanical names when referring to woods. I agree with him but at the moment I have to break his suggestion when I write the following as I do not have a reference to supply the correct name. The only cedar that I know of that is worthwhile to use as a violin top wood is the Western Red Cedar found in British Columbia, Washington, Oregon and I understand a little is in the northern part of California. This is not a true cedar but is a pine; red brown in color with a strong odor similar to a cedar hence the name. Mr. George Hulme-Mudson the London violin maker used this wood for all his instruments in the closing years of his work. Under tests this wood has a tremendous power of vibration much higher than any other pine, is very light in weight and is impervious to wood worm. If not used for top wood it is perfect for linings and end blocks, on account of the last two qualities. The only objection some may have is the darker color as it is a problem to balance up with the rest of the instrument. An oil sealer will cause the wood to darken more, a tempora sealer works very well, and of course an extra two coats of varnish on the rest of the instrument I have found will usually balance all off just about right. I have used this wood in a number of instruments with very good results. Speaking of western woods another that is of fine quality is the Western Broadleaf Maple found in the places listed for the Western Red Cedar. This wood is light in weight, is very tough but soft, a contradiction maybe, but what is meant is it does not split as easily as the European woods we are now supplied with, and is very flexible even when left quite thick, and the variety of figure would make old Strad droole. The color is quite often a pearl grey and this appearance along with the tough quality of the wood as well as light weight resembles some of the native Italian woods used by some of the old Italiam makers. The disadvantages are it is much more difficult to cut a scrool in some of this wood particularly when it has a large flmae, and for necks it has to be selected carefully because of the springy nature of the wood. It might be better to use the European wood for the neck and scrool as it is more rigid. To sum everything up these two woods are tonally equal to anything that has been used for violin making anywhere.

Second: From time to time we have brought to us for repair, adjustment and maybe appraisal a nice violin. Upon inspection we see a label that confirms our first impression that it is a hand made instrument, but our reference books do not list the maker. Within the last two weeks I have had an instrument brought to me for reconditioning and appraisal and the maker is unlisted but judging from the tone and workmanship he is worthy of a place in the reference books.

My thought is this: The Violin Makers Journal could serve a very useful service to those violin makers in Canada and the U.S.A. who have gone before us if such instruments that were come across by present day makers were reported to the Journal. I would suggest that certain limits or conditions be set up otherwise the demands on the Journal space may become to much. As a suggestion it might be well to list only instrument and makers from 1925 back or if it is known the maker is deceased. Details of the instrument and if some information of the maker is available. This should be limited to the makers of Canada, U.S.A. and some other parts of the world not usually well known. The makers of Europe should be excluded as they usually have their own sources of recognition. Here is the first offering of "A Violin Maker I wish I Knew".

Violin by Herman Hagberg, Olympia, Washington, 1910; name is printed in script type, the rest is hand written in ink making a second line. A small printed tag on rib U.S. Patent #627186. The violin has no linings, (Maybe this is the patent?) finish and

workmanship is excellent, orange-red spirit varnish, flat Guadinini model bare 14", upper 6 11/16", C's 4½", Lower 8¼" bare, Whole back, well cut scrool deeply cut in the throat, sides back and scrool seems to be Western Broadleaf Maple. Top is nice wide grain pine, and overlap of edges is excellent. No thinness of wood in this violin yet the weight with a small chinrest and strung up is only 438.6 grams. The tone is very free, easy to produce singing quality of good volume. Tone appears to be larger when away from the instrument than when playing. Does anybody know anything about Herman Hagberg? He certainly was a fine maker and produced an excellent violin.

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Some are born great, some achieve greatness and some have greatness thrust upon them.

....Shakespeare

- 0 -

SOME POSSIBLE "FILLERS"

by Dr. M.E. Gordon
Stoke, England

It seems strange that so many people can write and talk about "fillers" and pre-varnishing treatment of wood, without giving detailed components, methods etc. I can understand professional luthiers keeping secret the methods learned during apprenticeship, but I cannot understand amateurs, who have nothing to lose, making a secret of their methods.

It seems that there are two methods of pre-varnish treatment.

1. Very fine polishing of the wood and then using the varnish itself as a filler coat. This may be done with: (a) undiluted varnish, forming a surface ground coat or (b) diluted varnish, using perhaps turpentine as a diluent, whereby the varnish soaks into the wood, or is carried into the superficial surface of the wood.

2. Using an actual filler, distinct from varnish, such as: (a) oils, e.g. linseed, turpentine, rosemary, almond, etc., etc.. These oils do soak into the wood and become oxidzed there, before varnishing. (b) Waxes, such as beeswax, queen bee wax, silicone waxes etc.. (c) Inert solids, such as plaster of paris, glue, sealing wax and even latex rubber, and shellac stopper, etc., etc..

It further seems that the object is to give a perfect grounding for the varnish; to preserve the wood; to enhance the figure of the wood; to increase, if possible the quality of tone and responsitivity; and, when the varnish has worn away, to leave a "lustre" surface.

Surely, if all the readers of the Journal sent in their method of filling, and their comments (and the comments of others who have seen the finished article), then perhaps the best method of filling (or not) can be evaluated and the derived knowledge disseminated to all violin makers who are interested in this vexed problem.

Perhaps out of a welter of conflicting thoughts, methods, and theories, some established procedure can be deduced, which would benefit us all, if only in saving time in experimenting.

- 0 -

POINTS FROM LETTERS

by John Lawson
London, England

I read your article on judging violin quality (January issue) with great interest and agree heartily with the sentiments you express. But we must remember that the vast majority of the buying public buys an instrument (of whatever kind) because it looks good. The flashy guitar or the accordian plastered with mother-of-pearl designs are considered first for these qualities. But in a violin competition, judging 100% on tone, admirable though the principle may be, could have its difficulties. First, all the violins submitted would have to be played on by one and the same judge for consistent appreciation. And then, hasn't it been said (in the Journal) that people's sense of tone differs from one ear to the next? This means that another judge might well award first prize to a fiddle previously rejected. To judge on tone alone, one would surely have to evolve a mechanical system for evaluating tone - an impossibility, I think. Of course, the electronics wizards might one day have a go at it. I visualize the following procedure: A Strad will be played with full vigour by a top line artist and the sound fed into an electronic brain. The machine will instantly analyse the tone according to its harmonic values, timbre, loudness, carrying power, sweetness, clarity, etc. By this means, an absolute standard by which to judge the tonal patterns of all other instruments might be brought into existence. All the judge of the future would then have to do would be to play the instrument into the electronic brain's microphone and its tone would be electronically torn down and compared, item by item, with the "perfect" standard stored in its memory bank. Whenever the inferior instrument showed its inferiority, the brain would forthwith produce figures of comparison - and thus the judging of tone would finally be reduced to a mathematical equation!

- O -

"What's my trouble, Doc?" asked the patient.

"I'm not sure exactly what's wrong with you," replied the doctor, "but if you were a violin you'd be condemned."

- O -

TAP TONES AND WHY THEY CHANGE

by Norman Miller
Toowoomba, Australia

In relation to tap tone; how many of us when arriving at a tap tone of a plate take into consideration the ultimate rise in tone when varnish is applied? All kinds of varnish, I believe, no matter how many coats are applied raise the tone of the plates. I should imagine that according to the number of coats and the resultant pellicle of varnish that more would cause the tone to rise higher. Now, are we making that allowance in making the plates "c" and "d" and so on. If we are following the precept set down by some book, presumable following practical investigation and work on a violin by the author, has he allowed for the ultimate rise? I think not, as there is no mention of it in any of the books of construction that I have. Are we not then leaving much to chance. What good is a tone of a plate to a certain note when that note is changed when the varnish is applied, and also in this matter, when it is glued to the rest of the body. Does the tone we are told to get allow for these changed? In the matter also, it would strike my mind that much of the blame given to varnish as being the cause of bad quality of tone after playing the violin in the white and finding it good, to find that when varnish is applied the tone becomes of a worse quality than when in the white. Is it because the tone has been raised, and the pellicle obtained that the tone is worsened and not just because you have applied a varnish that is unsuitable. I do not doubt that many varnishes are unsuitable but I am referring to varnishes that have been proven to be excellent for violins.

It boils down to this; that if you set out to acheive a tap tone that sounds wonderfully well in the white. It is really the wrong tone for the varnished fiddle, and you have made a mistake. It is generally accepted by many that they expect a violin to sound not quite as good when varnished as when played in the white, and are reconciled to this fact, but I think that it need not as the calculations should be made to allow for a rise of half a tone, or a full tone as the case may be. The fiddle would then sound fair in a full tone in the white and better when varnished, which is the aim I think.

All this only serves to reveal even more how complex the construction of a violin is, and how much attention must be paid to all these essentials. Making a nice "box" is not enough and good cabinet making is but only asmall part. I do not mean to imply that one should not worry if the appearance is not good; that should be the aim of every maker that the beauty of appearance should match the beauty of sound in every instrument that he makes. Close attention to all the necessities to produce tone of quality is the major importance and I feel plays its part in achieving the infinite skill that marries construction and skill with the know how of tonal production. This of course Stradivari had in some measure; to a lesser degree Guarneri, as some of his works were rather rugged in appearance.

I feel that every violin maker should formulate his own design and incorporate as many of his own principals as possible. Strad did it with his designs, copying firstly Amati, and then progressing to his own which he brought to his ideas of correctness. Without a doubt it is nice to copy one of the old masters but I feel that it is being muchly overdone, and a maker worth his salt will formulate his own outline and thicknesses and archings etc. and in so doing remove the shackle of being obliged to follow rather blindly the precept of another. I really think that there is much more merit in seeing a "White" or a "Miller" made to "White's" or "Miller's" design that the same workers attempt (no matter how meritorious) at Strad or some other. Even if the result is identical both for tone and appearance as the one copied. I still feel that much more would have been acheived by following ones own design. Let the individuality of the maker shine through. Each maker should be squarely on his own two feet not propped up by the rather unimaginative aping of one who was successful in his own right by the

personal skill of his own individuality. To copy Strad truely and exactly, one must be a long lean Italian, thinking the thoughts and directing the brain hands and eyes etc. exactly as Strad did. This of course is impossible, so in my opinion why be "John Doe" rather inanely striving to ape the results acheived by Tony Strad. Make a violin to Strad's design if you must, but then O.K. from then on aim at your own or perhaps, dare not, better Strad's design I feel that you are missing perfection in shape etc. it is generally so accepted in violin circles, but if you do not know why Strad made his shapes and various thicknesses and archings and follow only measurements taken from one or another, you are not really allowing your brain to have full rein in the understanding of the working of the wood to its best proportions. Try and start from scratch, and design your own outline, archings, and thicknesses following a line of reasoning to a conclusion that will be yours alone and I feel greater satisfaction will be felt with the final result and greater understanding of how violin wood should be treated. The wood on which you are working remember, not that piece that Strad had.

Possibly you will think that all the above is an excuse for my using my own design. No, not an excuse, but a reason! Also I bemoan the fact that there are far too many Strad copies in the world. Has the average maker ever thought that he immediately places his violin on the same level as those generally rather noxious looking factory specimens labelled (sometimes) "Strad Copy" or copies of Antonius Stradivarius facit etc. Most of us feel a glow of pride and affection and this is proudly brought to as fine a conclusion as we are capable. Is not this feeling clouded somewhat by the thought that it is only a copy at best, and that 90% of the pride is dependent on someone elses brains. I feel that there is a great let down here.

Of course there may be some who will say that it is perhaps the cowards way out, and that one was not successful in producing an instrument as good as a Strad. or could not cut the f holes as well. That is dull thinking I feel, and would come generally from those who do not wish to accept the fact that a modern maker can be a good maker, and bitterly decry anything that dares to be different from their ideas, which, I feel are instrumental in stifling the endeavour and progressive thought of violin construction by modern workers. Most of us dare not utilise our own conceptions for fear of being ridiclued by those in charge of violin matters. I do not mean that we have to conceive anything outlandish, and odd; there is no need to deviate from the accepted principals, but let them be 90% our own and not the other way round; 10% us and 90% Strad or some other. Maybe the percentage is greater, for there is so much of our own that creeps into our work that it rather proves my point that to copy Strad is next door to impossible for that very reason. It is our individual touch that spoils our imitation of Strad, why not then let that individual touch become our very own? I think it will remove the dull ache of doubt and you will find that the fiddle is far better as a result. Anyhow quite frankly, I would rather make my own design that was fairly good, than a copy that was really good. I mean as regards tonal quality. I think that the next one to my design would be really good, and thus satisfaction would be progressively greater. At least that is how it is proving to be! From another point of view there is this to consider. I remember reading it in a violin magazine some years ago.

"How is it that other first class instruments, Italian and others, have appeared under false names, and there are more of these than one thinks. Not only violins of less famous Italians, but Strad imitations as well, made by perhaps Lupot, Vuillamue, Panormo, Bachmann and others, have been rechristened and named after the great master. This was possible for the very reason that they were "genuine" in their tone. Apart however from the fraud of the thing a grave injustice is done thereby to their real makers. The creations of average or mediocre worth stand to the account of these men, whilst their best are appropriated by the Italians in majorem gloriam.

It is mainly because they have copied Strad that this is possible, and as borne out by the recent disclosure of fraud by Werro and others in this respect. So in a sense it is a makers own fault that he loses his deserved recognition when his good works are

"stolen". If it was his own design it would be less easy for this to happen. Also in reference to Reichers as mentioned by your un-named correspondent in the November issue of the Journal. I quote from another magazine author.

"The case of August Reichers is an example that even the very skilful makers can err on the question of genuineness. He says in his book that he repaired 300 undoubtedly genuine fiddles of Stradivarius and that he had in addition handled many more. According to the most careful estimates of the Brothers Hill there are still about 540 Strads known today which are scattered over the whole world. On this assumption it would appear that most Strads must have needed repair during Reicher's active period and that their owners must have conspired to send them all to him for repair. If he repaired as many as 100 this would have been quite a number. I think they were probably less than 30. As Reichers was a man of a modest and unassuming character I imagine he was honestly mistaken and that most of the violins he speaks of came from some German "Stradivarius" or other".....

It pays then to listen and discuss things with beginners and be humble enough to listen to what they have to say. If of course it is your principal to let the other fellow tell all he knows and not give away anything in return, so be it; but then what a sorry place the world would be if this was so in everything. I feel sure that even Mr. Hoing would not be quite as successful if he did not learn something from someone else. This is not an an attack on Mr. Hoing, I admire his ability, and agree with many of hisopinions in violin making. I am only expressing my opinion of a point of view.

I think too many makers are using their top plates too thin. I think that 6/64ths of an inch is far too thin for a modern or any other violin, and to have the centre to this thickness or even thinner with the edges 1/8th of an inch is past my understanding of tone or vibration districubtion. I rember that Otto who has some fame as a violin maker and who investigate at great length the construction of old masters said:

"It is certain that the perfection of the violins by famous makers is due to the fact built their instruments to plain and simple rules as follows:

The thickest part of the belly was that found beneath the bridge. In moving away towards the sides its thickness continued to decrease in such wise that it was no more than half that of the belly in the places where the latter rests on the ribs and blocks.

In the length of the instrument the thicknesses of the instrument was preserved throughout the length of the bassbar, finally coming to an end towards the upper blocks and lower blockes in a thickness that was exactly half that of the belly.

In their breadth it would appear that the cheeks of these instruments were only one-fourth as thick as their bellies, especially at the linings.

These proportions are the sole ones which are capable of giving a violin the strength, brilliance, and sweetness of tone desired for the instrument."....

One fourth of seven sixty-fourths or six sixty-fourths is not very much indeed, and would be less that 1/32nd of an inch or not much more than 1/64th of an inch so it would appear that anything less than 1/8th of an inch is too thin, and even perhaps 1/8th is too thin for the actual centre if you are to be guided by the general acceptance of violins of the old masters. In Jalovec's book "Italian Violin Makers" he gives several plans and diagrams of violins the thinnest of which is $3\frac{1}{2}$mm. in the centre most are 4mm and even 5mm for the Top Plate.

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COMMENTS BY KRISTIAN SKOU

Soberg, Denmark

I think your "Investigation into the Graduation of Stradivarius and Guarnerius Violins" should be very interesting - and what if the list of true thicknesses could be augmented. I am thinking on the case that a professional maker - or several such - among your readers has to open an old Italian violin for repair, If then he would take the necessary measurements from the plates and write down these measurements into thickness-diagrams for publication in the Journal - would that be unrealistic dreams? Now and then the repair requires that small bits of the original wood have to be removed from the plates. If the maker would not throw that wood away, but send it to me for x-ray investigations, I should be very glad. I am very interested in the change the wood undergoes in the course of time.

And here is an answer to Mr. W.G. Hall, Listowell.

The background for my little article on the use of words in English for Pine, and Spruce, was that the editor asked me, why we in Europe built violins from Pine, and you in America used Spruce. I pointed out that the divergence is not real, but only a divergence in the use of words caused thereby that Spruce (Picea) in European English is commonly called Pine. Mr. Hall suggests that I am thinking on general terms used around lumberyards - no, I am not (I have never been at an English lumberyard). I am thinking on the terms used in literature - not scientific botanical literature, but such technical literature as commonly is accessible to violin makers. Take only the old honourable "The Strad". Here they speak about Pine when they mean Spruce. Or take the Swiss advertisements here in the Journal of "Swiss Pine", "Alpine Pine" and so forth. No European maker would believe it to be Pine (Pinus) that is offered for sale. Mr.Hall suggests I err in translating the German word "Haselfichte" as "Hazel Spruce" because the writers Abele, and Niederheitmann say "Hazel Pine". These writers do not say that. They have written their books in German, and the German has been translated into European English - therefore the term "Hazel Pine". But of course - if "Hazel Pine" has been accepted as being the English Word for "Haselfichte", I as a foreigner am not entitled to correct a word in your language. Nevertheless, "Haselfichte" (Picea alpina) is Spruce - not Pine. It is, as I wrote, a subspecies of Common Spruce (Picea abies). If Mr. Hall prefers to call it a variety I have no objection. There is no well-defined distinction between the two terms, and in German literature "Haselfichte" now is called a subspecies ("Unterart"), and now a variety ("Spielart").

Common Spruce is a species with an almost enormous variability from giant trees to dwarfish bushes. Beissner gives in his book: "Handbuch der Nadelholzkunde" (Handbook in the Knowledge of Conifers) a description of 70 different subspecies, varieties and forms. "Haselfichte" in itself varies a good deal, and some pieces of wood from that subspecies (but not all) have the characteristic "wavy grain" caused by narrow groves undulating along the stem of the growing tree, and following cambium after cambium in the growth. I should think we have here a parallel to curled Maple tree, Where the soil has been stamped compact round the trees (along the roads, in parks etc.) a large percentage of thre trees are curled. But what in the last resort has caused the curly growth, could it be excitation from mechanical pressure, reduced supply of air or water to the roots, acid or basic reaction of the soil etc? That is a problem for the ecology botanists to find out, for in natural, fertile soil in the forest we hardly find a curly maple.

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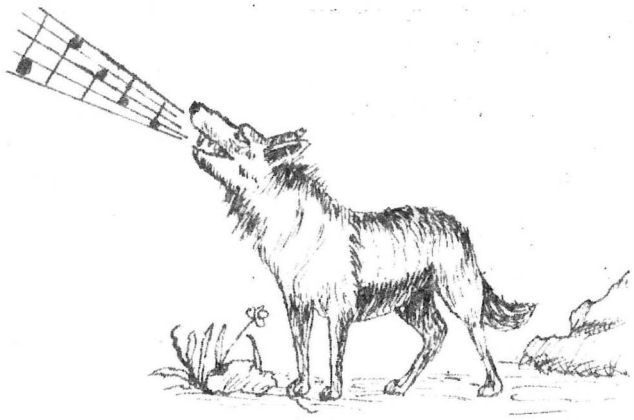
Most family arguments have two sides

but no end.....

- 0 -

WOOLF NOTES

by The Editor



MOSTLY ABOUT MYSELF:

I was beginning to worry over this months issue and had almost reconciled myself to the fact that it might be delayed till the end of April but here it is almost on time. Our publication date is set for the first Saturday of each month, so we are just two weeks late.

The reason for my fears? First a nasty attack of this beastly Flu. Then when I had almost recovered "I sat on a chair which wasn't there," and cracked two ribs falling on the corner of the seat of said chair. Well that's all over now and I feel almost myself again.

One week at home, away from work, did give a a chance to catch up with my correspondence. That always bulky pile of letters from you kind readers.

THE INVESTIGATION INTO STRADS GRADUATIONS:

A large number of the letters I have received this month make mention of this little series I am attempting. In fact for the next two instalments I won't have much to say. I can let others carry on the argument. Earl Sangster writes an article for us this month and you will notice that while he does not leave thin places, he does carry his full thickness right out to the edge. Several other first class makers follow this same principal and some take just a little off the top cheeks. Kristian Skou says "You can use 'The Saunders Groove' but only do it on the G string side and not at the inner bout. This seems to help in strengthening the lowest string."

I had occasion to give minor repairs to a very fine old violin two weeks ago. There was no makers name or date. This violin after a few adjustments sang like a bird. Looking through the tail-pin hole it appeared, judging by the amount of light showing through the top plate, that the top was the same thickness all over excepting the two top cheeks. These were exceedingly thin, almost like paper. We have always been told that a violin with thin cheeks would soon "play out". Here was a violin over 100 years old still giving a lovely tone with good carrying power.

THE HELMHOLTZ NOTATION:

This quote from a letter received from Norman Miller of Australia will explain itself. Quote:

"I have just received the January issue of the Journal and hasten to advise

you that as much as I appreciate the publishing of my letter on the Helmholtz notation you have forgotten to type in the correct designation and the list of letters and their relative notations are very confusing and practically useless.

You, have forgotten to put the very necessary small numbers after each letter such as A^1 etc. A^2 etc. a^1 and a^2 b^2 and so on. If you refer to my original letter in this matter you will see that the numbers are all there.

I would suggest that the letters and number be combined as follows $\frac{a}{2}$ or a/1 or a/2 or b/3 and so on.

We apologize to Mr. Miller and will rectify by re-publishing the notation in full next month.

DR. SAUNDERS ANSWERS ERNEST COWELL:

Last fall Mr. Cowell of Norwich, England asked some very "leading" questions. Dr. F.A. Saunders, in a letter to me answers some of these. Quote: "The bouts of a Violin are different in size because they ought to have as large an area as possible (to emit more sound) but the smaller one has to allow a hand to come over it to reach high notes. Why isn't the rear one still bigger? I don't know, it might be better but it seems symmetry is desired.

The bridge comes where it does because the highest notes are emitted most strongly by the area of the top which lies between the F holes, and is therefore very free to vibrate and able to emit the short sound waves efficiently into the air.

The best position of the Sound Post is traditional, as was the belief that the earth was flat. Maybe there is a better position; I am looking over that problem. I am not so sure it gives the best results where it is now. However the changes produced by moving the post are very small.

The true purpose of the Bass Bar is to transmit the vibrations of the bridge foot above it to the distant areas of the top; and also to help bear the forces produced by the strings."

MR. WILLIAM HALL TALKS ABOUT WOOD:

I count Bill Hall among my most interesting correspondents. We discuss politics religion, philosophy and other subjects, sometimes we write complete letters without mentioning violins. Here is part of a letter in which he does talk shop. Quote: "Very little is known, I fear, among our readers about the Canadian Forest Service which does a splendid job. Overseas readers possibly think we here live in the backwoods. This is not so, culturally or from technical and scientific standpoint. Our Forest Service is an example.

To know the species of wood is most important, and if we have a scientific body that does that for us why not take advantage of it? It has always been a source of astonishment to me that so much good talent is wasted on unsuitable wood. The forests that supplied the old masters are still in existence...In southern Germany real good tone wood grows (in the Karmendel Range of mountains) and it is in this region that the "Hazel Fichte" is grown. There is general agreement about its qualities among violin makers in the "old land". Mr. Skou mentions Larch. The old Mittenwald's used this wood but it hasn't the real violin tone. Some of the Klotz Family, it is related, also used it to the detriment of their name. There is a lot of nonsense written about makers finding this wood in the most out-of-the-way places and situations."

MR. ROELOF WEERTMANS BOOK:

This months instalment of the Roelof Weertman Book follows on the next page!

CHAPTER VIII

To prove our contention that the back and the top should deflect the same amount under the same load, we must demonstrate that under those conditions the natural frequency of oscillation for both the maple back and spruce top is the same. We repeat the formula $T = 2\sqrt{\frac{WL^3}{3EIg}}$, where $D = \frac{WL^3}{3EI}$, then $T = 2\sqrt{\frac{D}{g}}$. Since D in both cases is for our sample .5cm then T or period of oscillation must be the same. The back and top will vibrate in unison then if properly proportioned, if the load is equally borne by each one. The load referred to of course is the bridge pressure.

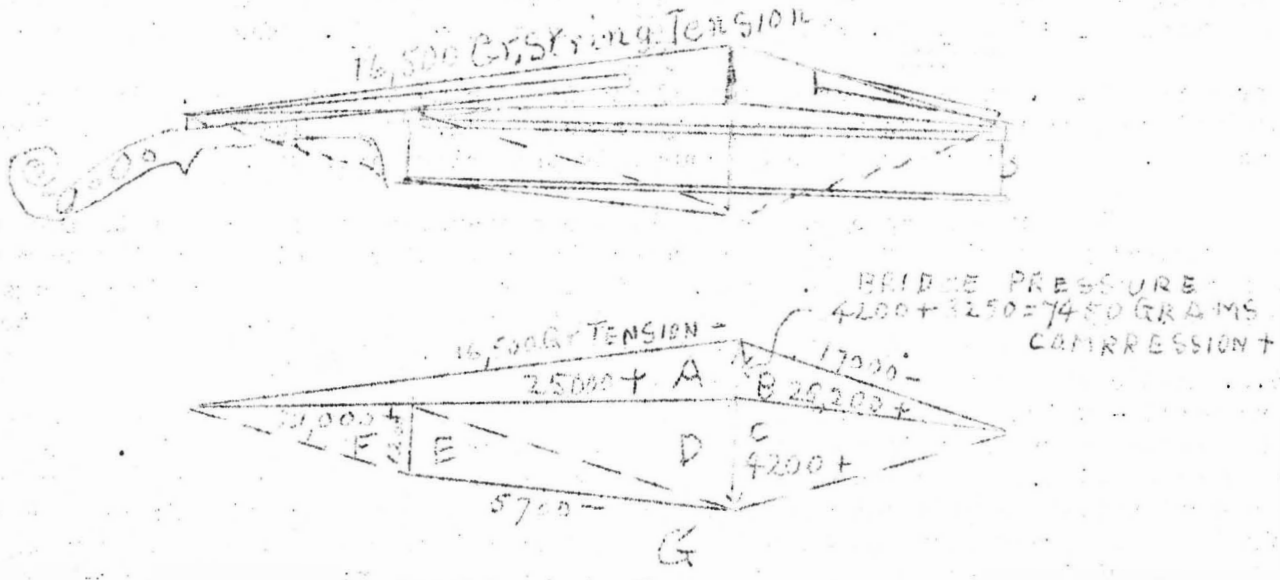
The samples employed were rather good examples of wood chosen to make a fiddle and generally speaking if a piece of spruce has a greater specific gravity than another bar of spruce of the same dimensions, it is likewise somewhat more resistant against bending. The same holds true for maple. On the face of it then, all we need to do is finish the back about 1.4 to 1.5 heavier than the top, properly balanced of course. The S.G. also can be determined by simply computing the volume of the rough slabs of spruce and maple - weigh the slabs; then divide the number of cubic centimeters (volume) into the number of grams (weight) and we get the mass or specific gravity S.G. using our samples as a guide, a very reasonable assumption can be made that strength and weight are proportional, and while not absolutely so, there is enough variation in arching and thickness or graduation design to offset any liberties we may take. However the purpose of these writings are to remove guesswork, wherever we can; as enough near-insoluble problems remain that cry for attention. We wish to calculate the actual shear and tensile stress in the top. We know the downward pressure of the bridge on the top. The resisting forces diffuse all over the surface, interrupted by the "f" holes. Due to the buckling effect that the pull of strings effect, the top is also subjected to compression stresses and the back to tension stresses. We may superimpose a simple framed structure upon the picture of a side elevation of a violin. Knowing the vertical resultant of the 2 forces in the strings on both sides of the bridge - the resultant being the upward force that acts thru the bridge and the angular displacement of the strings with the vertical, we may substitute lines of force in lieu of the top - the sound post and imaginary temporary lines of force in lieu of the back. The magnitude of the forces is proportional to the original stress but opposite in sign to keep the structure at rest. The opposing forces are parallel to the lines of force. See Fig. IX.

Draw the imaginary fiddle. As a series of triangles. Number all panes. Lay off a vertical, the bridge pressure as a measure of length. Following the numbered panels, lay off magnitude of force lines parallel to the corresponding construction lines.

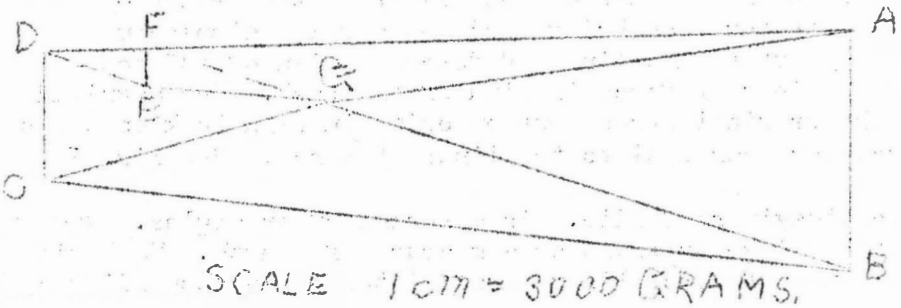
The resulting figure will be an equibrium stress diagram. We will then have visual solution of the stresses present in a violin. The results are overall but do not indicate the strain in isolated small sections of the instrument.

We have seen before that the sound post establishes a bond of mutual support between top and back. Thus the right foot of the bridge bears down with a pressure of 4200 Gr. 2100 Gr. being supported by the top and 2100 Gr. being born by the back.

The left foot bears down with a force of about 3250 Grams. Since the right foot of the bridge allots 2100 gr. to the top, we may assume the top under the left is permitted to be stressed the same amount. Then 3250 - 2100 = 1150 Gr. must be carried by the bass bar. Since the sound post is very near the bridge the top would deflect very, very little under the load of the bridge. Then also we do not want the left part of the top to deflect more than the right part, the bar should be made with a greater curvature than the inside curvature of the top, so that the top, after the bar has been glued in is forced up a little bit, and will settle back to a neutral position after 2100 Gr. reaction to the bridge has been absorbed. All we need to determine then is the extra



LINES OF FORCES DIAGRAM



STRESS DIAGRAM

Fig IX

STRESS ANALYSIS OF A VIOLIN

amount of curvature in the bar. The bar has to oppose 1150 Gr. The bar is some 2 cm long - about one cm deep and a half cm thick. Its moment of inertia is then $.5 \times 1^3$ divided by 12 = 1/24. Since the action of the bridge is somewhat diffused thru the top before it reacted upon the bass bar we should apply the formula for deflection D.

$$\frac{1150 \times 27 \times 27 \times 27 \times 24}{60 \times 76800000}$$ - if the spruce is the same as the sample.

D = .1 cm! However as soon as the bar becomes part of the top, we should re-valuate I and at least consider a Tee Bar construction say the neutral axis is then .9 cm from the base.

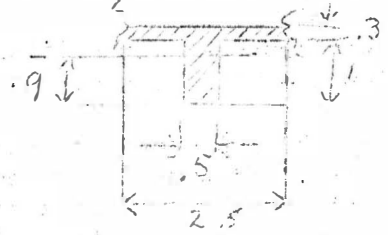


Fig. X

$$I = \frac{1}{3}\{ .5 \times .9^3 \text{ plus } 2.5\,(1.3 - .9)^3 - (2.5 - .5)(1.3 - .9 - .3)^3\} = .17 \text{ cm}^4$$

then $\frac{3250 \times 27 \times 27 \times 27 \times 6}{60 \times 76800000} = .1$ cm.

In between assumptions can be made. A good practice is to allow about 2 mm sag at each end of the bar before glueing in.

CHAPTER IX

VARNISHING

When the violin is finished its needs varnishing to protect it from smudging and to enhance and give it added beauty. If possible the varnish should improve the tone, if not, it should not detract. As a guide to what Stradivari might have used for ingredients, we should know of all varnish gums that were common in his times and also entertain the thought that Strad may have compounded his ingredients from products produced or grown locally. Certainly this was the thought of the chemist Joseph Michelman of Cincinnati who has thoroughly analysed old varnishes. His room-temperature prepared varnishes have all the apparent properties of the old violin varnishes.

However, even today we can easily obtain gums and coloring agents that were common in ages past.

Then also the modern chemical industry makes it possible to furnish coatings that go on mass production fiddles. Violin Repairmen are to be excused for employing this kind of varnish, since it eases their problems of matching small repaired areas to surrounding surfaces. Whether or not one desires to employ Michelman's methods - his book is a must for all who wish to study all about the masters. However I was intrigued with the thought that the actual gums were the solution. Many explorers in the field have that their failure to make good varnish was due to impurities and adulteration of the gums. I found however, after many years of preparing my concoctions; discarding them as unfit, but leaving the jars and bottles on the shelves, and more or less accidently using the solutions again, that most of the secret was in just this aging and settling process. Thru bitter experience I found out that certain gums are allergic to other gums or coloring gums; however with certain precautions we can produce a good and

lustrous varnish.

All gums can be secured from Cheney in Boston or importers like Meer in New York.

Gum Sandarac in Tears - one pound
Gum Copal - East India - Hard in lumps - one pound
Gum Gamboge in Sticks - one pound
One Gallon of High Strength alcohol-denatured or industrial
Raw Linseed oil - pint can
Bon-Ami - powdered
Rotten Stone - powdered
No. 4 or finest steel wool
One Inch wide Fitch hair brush - Metropolitan Music Co., New York
Elbow Grease and Patience - unlimited amount

Be original and do copy the appearance of old instruments. Do not forget that time and usage, maintenance repairs, and touching up have altered the original appearance of all but the finest preserved violins. The colors have changed due to action of light and atmospheric changes. The instruments have attained "patina". Do not forget that your violin, if honestly made may look like that but fakes and imitations will always look phony, as even faked copies made ages ago, still look like copies. The "honestly" made villaumes look better than this French Masters' copies of a worn Strad. So while a brand new instrument may look a little "green", within a year that look commences to change. As the color ddepens in richness. Again as with the building - within the limits set by the ancients - design and build your fiddle as honest as your own signature and do the same with the varnishing; only then will your work show character and individuality and it will be appreciated and esteemed as such even by first class musicians.

CHAPTER X

Have on hand quart and pint wide mouth jars with screw tops. Use double wax paper between top and jar to prevent excessive sticking.

Put in succeeding jars - the quart sizes - about 2 fingers thick the gamboge - dragon blood - sandarac - copal. Then fill the jars with alcohol and store them on shelves. Keep the temperature at 70°F or better. Occasionally shake the jars and stir with a stick. But be careful not to use the same stick, unless wiped clean, from one jar to another. After about 3 months (at least) aging, that is after the last time you shook the jars, we may use the varnish. Having settled the top liquid is clear and need not be filtered.

Dip a soft old cloth in raw linseed oil and wring out; with this cloth wipe the whole fiddle. Then coat the fiddle with two water thin coats of copal. Then apply with same wet brush 2 coats of gamboge. Squeeze brush dry and apply two water thin coats of sandarac. Then apply a coat of dragon blood with same brush. With succeeding coats of dragon blood add some sandarac and a few drops of rancid raw linseed oil. When desired color has been achieved top with 2 coats of sandarac and a drop of oil added. After drying top off with coat of copal.

Sandarac will blend with dragon blood but copal will make it loose its color and make it run and segregate.

Copal will cut thru Sandarac and attack dragon blood unless the sandarac is well hardened. Sandarac and copal will form a jel and dry fast but remain plastic and thick for a long time. After a year it has shrunk to a thin very transparent and lively varnish. If necessary, in between coats - rub down with the very finest No.4 Steel Wool, dipped in a paste of linseed oil and bon ami. Do not worry about the very fine scratches wipe off clean. The slightly oil surface makes a good film between next varnish coats. Finally polish with rag dipped in linseed oil and BonAmi, bye and bye adding rotten stone to obtain a higher gloss.