The Violin Makers Journal

JUNE-JULY, 1963

THE OFFICIAL PUBLICATION OF
THE VIOLIN MAKERS ASSOCIATION OF BRITISH COLUMBIA

Mr. George Friess
(see story on p. 4)

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.

Vol. 6 no. 4 JUNE-JULY, 1963

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EDITORIAL PAGE OF *The Violin Makers Journal*

CLARENCE COOPER, EDITOR

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Published at Vancouver, B. C. Address all communications, and make all remittances payable to The Violin Makers Journal, 4163 Sophia Street, Vancouver, B. C., Canada.

EDITORIAL

No doubt our readers are wondering why the last issue of the Journal was so late in coming to them. Unfortunately, our printers were delayed in getting at the printing of the Journal because of a very urgent printing order. However, these things happen and we trust that our readers were happy to receive the Journal, even though late.

In this issue of the Journal, we are reviewing the life history of our first president, George Friess. My association with George Friess has been a very happy one. George has been kind enough to have me as his overnight guest on many occasions when meetings have been called of the Association in Vancouver. He is a man who instinctively knows violins as if in holding the instrument and feeling it he is able to detect any flaws in its character. I have had occasions to examine some of his repair work and I know the care with which each job is done.

A very interesting meeting was held by the Association on Saturday, July 13th. Mr. Ragnar Helin, the president, gave an account of a jig he uses to determine the angle of the neck with the fingerboard assembled for the purpose of gluing in the neck to the body of the violin. Needless to say the questions and comments were varied and long-lasting. We have asked Ragnar to let us have an article describing this jig and we hope to see it in a future Journal.

The Pacific National Exhibition to be held in Vancouver between August 17th and September 2nd will again feature the Hobby Show. Mr. P. Svindsay is forming a committee to look after the Association's exhibits in the Hobby Show. We suggest that those who wish to exhibit should write to Mr. W. A. Gough, Recording Secretary, at the Association's address, 4163 Sophia Street, Vancouver, B. C.

The meeting discussed the question of re-printing Volume 1 of the Journal as an intact volume. However, the question was raised how many of our subscribers would wish to purchase this volume? Eventually, of course, it is hoped to re-print each volume so that subscribers may purchase these as they are printed and thus have a whole set. The proposal is, of course, that the Association will bring out an index volume to cover both authors and subjects referring to the volumes and pages where such articles appear. It is hoped that our subscribers will indicate if it would be of interest to them to obtain volumes complete. This would then indicate to us whether we should follow this to completion.

LOCAL NEWS

By Al Gough

Hello everyone! I guess you have been wondering what has been going on in our neck of the woods. Well, having become part of our family, you are entitled to be brought up to date. It falls on me to write a little local and other than local news.

First, I want to personally thank everyone for the wonderful way you have gone along with us. Don't think we haven't felt badly that the last issue was so late. Well here we are, almost up to date again, so thanks for waiting. Those who did write to enquire have been very thoughtful and many have wished they could have been here and pitched in to help. Well, we needed it. No kidding, Don White must have been a one-man army. If everyone had written in to enquire, we never would have gotten the job done, as we would have been able to do nothing other than answer letters. So anyone who hasn't received a reply as yet, the reason is that we were very busy getting things reorganized.

Everything seems to be rolling, now, and you can expect things to run on a more normal basis. Just don't forget--YOU make the Journal, we just assemble it. Your ideas, our ideas, practical experiments and their results that can help save someone going over the same ground--good or bad--are what we are here to bring you. We need your help.

As Clarence mentions in the Editorial, we had a very interesting meeting July 13. A good hot discussion and some profitable ideas. We were privileged to have a visitor from Alameda, California, Mr. Lubin E. Jorgens. What an energetic man! He drove up from Seattle twice to see us and says he is going to settle there. We hope he will be able to continue to come. You will enjoy his thought-provoking article in this issue.

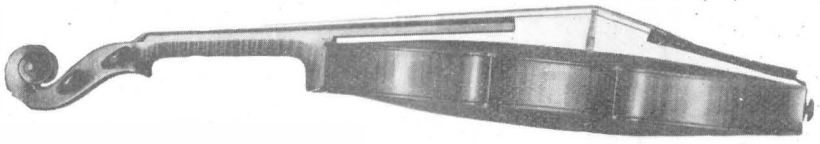
Ced Welstead has written that he will be entering his latest fiddle in our Pacific National Exhibition. We'll be looking forward to seeing this effort of yours, Ced. Especially after the news about the concert played by Tibor Varga on one of your violins. Hooray for the hot Australian sun and soft Guarnerius glue! I hope to see some entries from many others. How about it?

Cardo Smalley will again be the Judge. We are all looking eagerly forward to the show and hope to let you know the results soon afterwards. Ragnar Helin is busily completing a new violin for the show. I sneaked a peak and I think he is going to be pretty hard to beat. Other new fiddles recently brought out have been by Rev. George Wright, Gilson Heyworth, and Albert Dumond. All are very good to my eyes and ears.

I don't know how you, from all over the world, feel about it but I have a feeling that some pretty good fiddles are being made right here in British Columbia with British Columbia wood. This is why I'd like to see more entries in the P.N.E., especially from those we have heard from in the pages of the Journal. I've been working on the local members to get more into the act and give you the benefit of our experience. I'm afraid I can't give you much myself as I'm on my first effort. Special thanks to Harry Wake and Ced Welstead on your encouragement. I was hoping to have it ready for the P.N.E. but with the extra time spent in organizing the Journal, it may be next year. I figure that I have to come up with something pretty good, since I'm more or less at the focal point of so much information from you folks in other parts of the globe and right here in Vancouver.

Harry Wake mentioned in a recent letter that his father who lives on Isle of Man is an accomplished cellist and violinist who studied under John Dunn. He says that although he is getting well on in years he plays his cello every day. Really plays it too, and no fooling around. Although his sight has failed and he can't read the Journal he always looks forward to having it read to him. So our best regards to you Mr. Wake. As you all know it's a labour of love on our part and it's nice to know that it is appreciated.

One final thing. Many of you have sent in your membership fees ahead of time. Many others have not as yet sent them in. Probably this is because we haven't sent you any notification yet. Well this is our fault but there are only 38 3/4 hours in one day and if those who have fees due now would send them in as soon as possible, I can write you about fiddles and not about fees. Much more interesting and entertaining. See you again next issue.



Living makers AND their instruments

by Al Gough

This is the story of the first president of the Violin Makers Association, Mr. George Friess, as it was told to me. I only want to add that George has always been a strong right arm to the Association, and he somehow manages to keep a full time job, a flourishing string instrument repair business, a position as present secretary of the Association, as advisory position to the Journal, a wife and teen-age son and daughter, all going at the same time. In his spare time, he answers correspondence for the association and even somehow manages to help me in my joys and pains of building my first violin. A very remarkable man. Here is his story:

"I was born in 1903 near the city of Odessa, in Russia. My parents were German. Six months afterwards, we moved to Canada and settled in a small farming community in Saskatchewan. My Father was a third generation Cabinet Maker and was highly skilled in turning a piece of rough wood into a thing of beauty. His skill in woodworking was often used in repairing the violins people would bring from miles around. As far back as I can remember, there were violins around me, and even as a small boy, I wanted to make a violin.

In 1916, when I was 13 years old, we moved again. This time to a community where a violin maker named Hoebel lived. He was an old German, well into his seventies, and he seemed to understand my love for the violin. He owned a violin that was believed to be a genuine Jacobus Stainer. He would often let me play it, and soon started me on the fulfilment of my dream, my first violin. Once a week we would spend several hours together, as he undertook to make a violin maker out of me. What glorious days!! He returned to Germany shortly after the end of World War One, before my violin was completed, where he died not long after. I was left to finish it alone, but finish it I did, and even if I were to come up with a "Strad" now there wouldn't be near the same thrill that I had when I first drew a bow across the strings of my first violin.

By the time I was twenty, I had completed two more instruments, but felt that I had to learn more to make a really fine violin. In the next fifteen years, I moved around a lot, and everywhere I went I would search out and see any old Master violin in the area and read everything I could find about violins.

I finally settled in Vancouver where I started a repair business for string instruments. Since then literally thousands of violins, from junk to priceless masters, have passed through my hands. For a period of years there were no violins made, but I did a lot of experimenting with violin varnish. You can still find the odd jar of some dried up unknown concoction, the formula long forgotten, in my shop.

In 1939 I met a young school teacher that I soon fell in love with and we were married a year later. I told her that I was going to make a violin for each of our children. She was amazed that I could actually make such a thing! Since then I have produced twenty-four violins, four violas, two cellos, a bass gamba for the University and semi-completed a treble gamba. I am pleased to say that in local competitions, including the Pacific National Exhibition I have been successful in winning many first prizes. Also the Don White trophy, a Bronze medal, and the Cardo Smalley trophy for Violin, Viola, and Cello. Please note that we only have two children! A daughter, now 19 and a son 17; both violinists.

In 1957 I was one of a group of violin makers who met in the home of Mr. George Wright. History was made at this meeting as we decided to form the Association. I was chosen to head the "steering" committee to set up the structure of the Association. Thus the Violin Makers Association of British Columbia came into being. I had the privilege of being the first president and held this post for two years. After this I served as recording secretary and after Don White's death became Secretary, the post I hold now.

Through the years, I have not only experimented with varnishes but tried many various methods of pre-tuning plates, but was never really satisfied with the results. The

Violin made by George Friess

"Helmholz" method I tried and it was a most frustrating thing to me. After breaking about a hundred capillary tubes I gave up on that method, baffled!

Experimenting with micro-tones and the electric wire method as advocated by Christian Skou didn't get me anywhere. I even tried using a Hearing Aid to get the very minute tones.

My most successful work has been with the methods of Dr. Saunders and Carleen Hutchins and this has produced some prize winning instruments.

You may be interested in hearing about my miniature violin. This was presented to Mr. Cardo Smalley on behalf of the Association at Christmas time in 1961 as a gesture of goodwill. The violin was six inches in length and was complete in every respect, even to the purfling, bow and case. It was given an Honourable Mention in the Pacific National Exhibition.

Bows I have tried and made a few. I think I'll stick to fiddles. If the pressure of repair business ever gives me a chance, I hope to finish the other half of my treble gamba and continue, hot in pursuit of that elusive quality (or quantity?) known as Italian Tone."

.....

The pictures of the instrument shown are of George's latest violin. The wood used for the back and ribs are of Italian Maple with an unusual curl. This instrument took a first at the P.N.E. The tone is very satisfying and responsive. The workmanship and finish are really first rate with very attractive corners and a golden-brown finish that is very clear and brings out the grain of the wood in a way that is well pleasing to the eye. A very typical instrument of the maker. We are looking for George's next effort with impatience. He is wasting too much valuable violin-making time with such nonsense as earning a living to keep his family in beans and bacon. His wife is a most understanding person who actually encourages him in making violins. (I'm sure all violin makers' wives do, don't they?)

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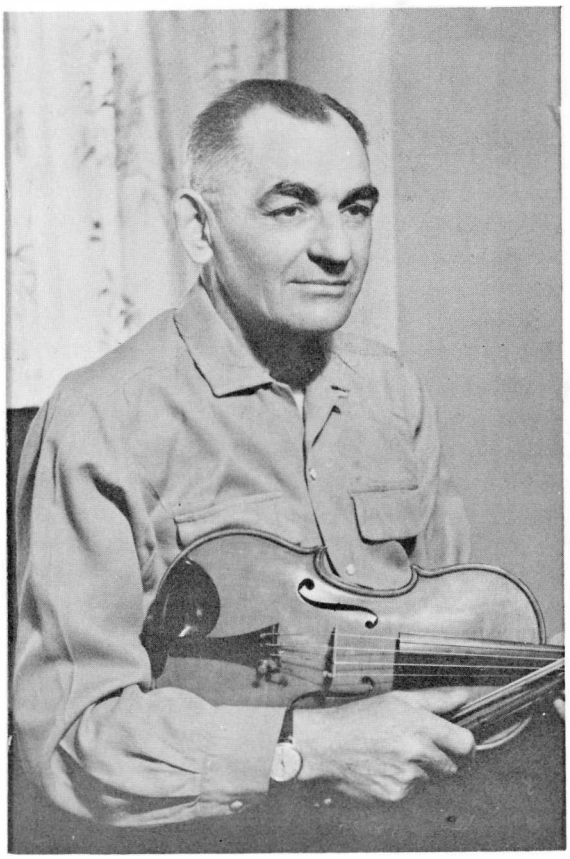


Mr. Friess and his Violin

The Technique of Violin Making

ARTICLE #3 ON FILLING AND VARNISHING

by Jack Batts

Inasmuch as I made a half promise to complete a series of 3 articles on practical violin making with a final article on varnishing and filling (or sizing), I now set about getting the job done. It has been over a year since my last or second article in this series was published in this Journal (Feb. 1962). In the meantime I have been flattered by a great many requests that I write this final article. It has not been due to carelessness that this has not been done sooner, but first, because of a reluctance to place myself in the position of an authority on the subject of varnish and fillers and secondly, because both Carmen White (who furnished the filler formula to me) and I were reluctant to go into print with an idea in need of considerable further experimentation. We have now agreed to offer it for whatever it is worth to the readers of this Journal.

Beginning with the first article in this group of three published in the July, August issue in 1961, I had hoped that some of our readers in need of help might follow these principles through without deviation to the final end and thereby be pleasantly surprised to find themselves capable of making a good fiddle. Please note the word deviation for any departure into another principle will do an injustice to both principles and almost surely bring disappointment with the end product.

Please do not expect me to answer any complicated questions involving chemistry. I know almost nothing about the subject. But even with this handicap, I have been able to make some beautiful varnish following these instructions which should offer some encouragement to anyone wishing to try these methods.

The following varnish instructions laid out for the building of this Michelman varnish and filler were, as I said, given to me by my good and respected friend Carmen White. I had previous to this spent one summer and one winter staggering about in a maze of ignorance unable to cope with the simplest chemical formulas. And from these descriptions I then (with some further experimentation) built the most beautiful varnish it has ever been my pleasure to put on a fiddle. By the application of the forthcoming method of filling being duly applied under it, I got tone and edge plus sensitiveness never before experienced during my 20 or more years in the violin business.

It is true that only 3 years have passed since my first use of the filler. However, Carmen had used it prior to this time. Now I fully realize that this is a short period in the life of a violin, but each violin that either Carmen or I have made during this time has shown only improvement with no hint of binding or becoming excessively acute which is a condition worthy of some consideration.

Carmen White spent a few days with me this last August 1962 giving us an opportunity to evaluate the results of the use of the formula offered here. He brought 4 new violins which he had made and which were filled and varnished as stated. We took 2 of mine (same varnish and filler), 4 of his and went to the Shyrock Auditorium on the Southern Illinois University Campus. I do the string instrument repairing for this University and have been fortunate in having the co-operation of the music department. While Carmen and I sat well back in this large hall, Prof. John Wharton, a fine violinist, Prof. of violin and concert master of the University Symphony, played these 6 fiddles. (This was during a rather humid spell in August, not the best condition to give a fiddle the benefit of the doubt.)

While Carmen's violins were not built on the same principles as mine the overall resemblance in tone and carrying power of the 6 violins was remarkable. Surely the filler and varnish had a great bearing on the similarity. As we listened, each of these fiddles filled the auditorium with rich and powerful sounds. It would have taken a good ear to have heard any difference in the 6 violins. Although we heard each violin bounce sounds off the back wall, the player's impres
ded by heavy drapes was that none of them was exceptionally strong.

This of course is an old story. A rich intense sound is the one that carries. A blustering splattergun of a fiddle will sound loud to the player and fall dead at the footlights. A violin should be heard in an auditorium to appraise it. Any fiddle will sound strong in a small, empty room and one might be excused for thinking the edge or bite of a fine violin to be excessive under the same conditions.

At this point a paragraph devoted entirely to applause of Mr. Joseph Michelman's 28 years of dedication to this cause, would not be amiss. He has given us years of hard work - (The benefits of his knowledge of chemistry, and has used the facilities of his laboratory, all of which has been no little expense, "I'm sure."). Although he well understood that this formula would not produce a product that could be bottled and sold, he continued to labor at the task until the following fine results emerged.

These instructions were given to me some 3 or 4 years ago by Carmen White, and with his permission and that of Mr. Michelman, I pass them on to the serious violin makers with my personal recommendation that they be given a fair trial.

So far as I know, the method of using a dilute Michelman varnish as a filler was first used by Carmen White and then was given to me. I have since used it with very fine results. While Mr. Michelman does not "Contend that this filling method does not have merit, he does feel that the linseed oil method is better because it will result in better penetration."

I offer these instructions just as Carmen wrote them - feeling that they have outstanding value to the practical violin maker, not only as a formula but its very simplicity will enable one to make this fine varnish and filler without any background in chemistry. Mr. Michelman has just completed a drying cabinet using "Black Light" as a means of curing this varnish where sunlight is not available - also a fine aid in dust-free varnishing. This cabinet is fairly simple to construct and the cost of material is under $40.00 in the States. There is an article in The Strad magazine - March 1963 by Mr. Michelman describing this new drying equipment.

Before going on to the instructions, let me once more urge those of you capable of producing good violins in the white, to take advantage of this hard earned formula to keep those good new violins good after varnishing. This varnish is not a magic potion, it will not improve a clumsily made violin, but it is my opinion after considerable time spent in use and experimentation that this when properly made and used, is a wonderful piece of work and a great contribution to the modern violin maker.

I feel certain that those who have learned to build this varnish and apply it properly will join me in a hearty congratulation to Mr. Michelman, and here I must offer my thanks to Carmen for these concise instructions for the building of Michelman varnish as well as his idea for the filler. After all what could be more natural than a simple dilution of the varnish for a filler? If indeed this formula is similar to that used by the classic Italians, why then would they not have used such filling method?

I must confess that I am strongly tempted to quietly continue using this formula, clasping it greedily to my bosom. It would and possibly will be many years before the violin making industry will arouse itself to try such a radical change in varnish construction, but these formulae are not mine to keep, and our desperate need of good violins leaves no place for the luxury of self-satisfaction. Therefore, with every confidence, I urge you to proceed as follows:

The following items and materials are those needed for making Michelman's Varnish. Most of the chemicals and some of the other items can be procured from your local druggist.

1. Inexpensive set of gram scales that will weigh up to 100 grams.

2. A measuring graduate up to 25 c.c.

3. One ordinary medicine bottle from the drug store will measure from 50-400 c. c.

4. Mortar and pestle - medium size for grinding the dried rosinate. Grind immediately before use.

5. Cooking vessel - 1 gallon capacity for preparing potassium rosinate, preferably enamel or pyrex.

6. Suitable cloth for filtering. Suitable cloth can be found by trial and error.

7. Several larger bottles for holding the solutions. Large wine bottles are excellent due to the ease of pouring from them.

8. Potassium carbonate, tightly stoppered.

9. Aluminum chloride, tightly stoppered.

10. Iron chloride, tightly stoppered.

11. Calcium chloride, tightly stoppered.

12. Bottle 20% alizarine paste.

13. Five or ten lbs. lump rosin (WW grade).

14. Dipentine (double distilled turpentine).

15. Boiled linseed oil.

16. Bottle raw linseed oil.

17. Powdered alum ammonia.

Note: Good results can be had by using ordinary turpentine from the hardware store.

You do not have to be a chemist. Any high school student of chemistry can make this varnish. The process for making Michelman's varnish will be given first of all, because the filler is a mixture of Michelman's transparent varnish, thinned, with just a little yellow color. The making of the filler will be given last.

Michelman's Varnish

I. Take a large cooking vessel (about 3 quarts) and put in 300 cc water, 13.8 grams potassium carbonate, and 34.8 grams powdered rosin (from the lump rosin) -- boil 5 minutes stirring all the while, then add 300 cc more of cold water to chill, stir well. Pour into a large bottle -- you now have 600 cc of rosin dissolved in lye water (potassium carbonate). Label.

II. Make up 5% solutions of each by putting 5 grams of the substance into 100 cc of water and shaking: Al. Chloride, Calcium Chloride, and Iron Chloride. A good solution consists of 25 grams of the substance in 500 cc water. Label each bottle.

III. Take your jar or part of a jar of 20% Alizarin paste (a thick dirty orange colored paste) and dilute it with 9 parts of water -- this makes a 2% alizarin suspension in water -- label it -- put in a few pieces of glass and shake well before using.

IV. To make varnish: Take 200 cc of the rosin solution (preparation I, above) and pour it into a pint jar -- put in 3-5 cc of your 2% alizarin solution for yellow, 7-9 cc for orange, and 12-16 cc for RED. Stir well. Red will be the color of Welch's grape juice -- no matter, it will LIGHTEN when you pour in your other solution.(DO NOT TRY TO JUDGE COLOR HERE BY APPEARANCE OF THE SOLUTION: A SOLUTION WHICH WILL GIVE YOU YELLOW VARNISH WILL LOOK RED.)

V. Now, pour into IV above, 120 cc of a mixed aluminum-calcium solution. Here is what you do: Into a clean bottle, pour in 500 cc of the 5% Aluminum Chloride solution you made above -- now, pour in 150 cc of the Calcium Chloride solution -- so this bottle contains 500 cc of the al. and 150 cc of the Cal. solutions - you made them in II above. Now, from this bottle of the MIXED solutions, pour 120 cc into your jar of colored rosin solution (IV above). You will see the gum form like mud or butter--it will be colored. Shake up well -- filter through finely woven cloth --add clear water while filtering, and stir while filtering -- take the colored mud or gum and spread it out to dry several days in a cool dark place. Avoid light to avoid oxidizing.

When dry - be SURE IT IS DRY -- remember, several days, not hours! To make varnish, take 2 grams of this colored dry gum, put it in 5-7 cc turpentine or dipentine, stir till dissolved (20 to 30 minutes), then add 2 cc boiled linseed oil -- and apply immediately to the violin -- enough for a liberal coat. Do not try to make up more than you need at once -- and this varnish jells in about 3-5 hours, so it CANNOT BE MADE UP AND KEPT IN A BOTTLE. The dried gums can be kept several weeks -- Michelman says several months if you put them in a bottle and keep them in a cold place, as a refrigerator.

For brown varnish -- use 200 cc Rosin solution (Preparation I - no color) and 120 cc 5% Iron Chloride solution -- filter and dry as above. For red-brown, use alternate coats of red and brown. Also, you can use the Aluminum Rosinate made with 5% alum solution, but to use the Aluminum Chloride and Calcium solutions gives you a harder gum - no printing or sticking! Finish with pumice stone, rub with this and RAW linseed oil -- finish by rubbing lightly with a cloth dipped first in denatured alcohol and lemon oil or raw linseed oil.

Suggestion: You can use Artist's grade STAND OIL. (This is boiled linseed oil.) If you will mix it with an equal weight of turpentine first--(it is thick). Add 4 cc of the mixture to 2 grams of the dried gums for varnish --dissolve your gum in turp. first, then add the 4 cc of oil-turp mixture. I have used Devoe's stand oil with good results.

You will soon learn to co-ordinate your varnishing and finishing so that you have your dried gum waiting for you when your fiddles are finished -- in this way, there is little delay in varnishing. YOU MUST DRY THIS VARNISH IN THE SUN. Hang your fiddle on the clothesline-- in the bright HOT SUN. One day dries a coat hard! Seven to ten coats should be applied.

Formula for Making Filler

Use a mixture of Michelman's transparent varnish, thinned, for the filler, with just a little yellow color. I recommend aluminum rosinate for this filler, but you must use AMMONIUM ALUM, and NOT Potassium Alum-- be sure of this. Put in enough alizarin to get a fine yellow color -- about 2-4 cc to 200 cc rosin solution - then, 120 cc of 5% AMMONIUM ALUM solution for precipitating -- be sure to wash the gum thoroughly, stir while filtering, and allow to dry thoroughly. Two coats of this filler are usually sufficient. After this has been thoroughly dried in the sun (one day per coat), proceed with the aforementioned varnishing process.

Further Advice

For those who have not had the unpleasant task of removing unsatisfactory varnish from a violin.

Do all sampling on clean planks until you are sure you have learned to handle this method of varnish making.

I have planks hanging on my shop wall with this varnish from pale yellow through orange, light red, red,

red brown, and dead brown, to almost black. They are as rich as a Rembrandt.

This manuscript was submitted to Mr. Michelman for his approval or criticism and he was kind enough to offer some further help in bringing the formula right up to date. Evidently this is basically what is known of the Michelman formula.

One could write an article which would take up this whole Journal dealing with the building of this varnish. Permit me to add these last suggestions: They may save lots of trouble.

The "colored mud" can be twisted in the filter cloth to expel as much water as possible before laying in a dark, cool place to dry. When thoroughly dry, grind to a powder in a morter and add turpentine--continue to grind. I have found it difficult to dissolve every particle of this powdered rosinate and have always added the linseed oil (now we have the varnish) and poured it through a straining cloth. Twist the cloth to save the varnish which would otherwise remain in the cloth. That which has been squeezed into the container is finished "Michelman Varnish" and to me worth its weight in gold.

Spread with a good varnish brush. Work quickly in a draft-free, dust-free room.

Place in the sun (in the absence of a drying cabinet) 8 to 10 hours for drying each coat. Usually 7 to 10 coats and 2 coats of filler is sufficient.

218 E. Broadway,
Johnston City, ILL.

A FANCY CELLO PEG

by Joseph V. Reid

I am enclosing a new blueprint* showing how I propose to make up cello pegs from rosewood. I prefer them to ebony. The piece is first roughed, as shown, in a wood lathe and the shank given its final taper 1/2" to 7/16". Peg is then inserted in the jig holding device for lathe (machine lathe) and held securely with a 5/16" set screw. The device is then placed in a 3 jaw clutch of an engine lathe and finish profile is next accomplished by use of special profile cutter having the formed cutting edge indicated by the hatched area. The only way to judge this ornateness is to make up a full set and fit them into the cello peg box. To scallop on each side of the turned peg - the peg is transferred to the milling machine fixture and held securely in the milling machine table vise. The scalloping is done by using an end mill with radius of 15/16" or an end mill having a diameter of 1-7/8". I would appreciate your comments on this original design of peg head.

I noted a profound statement on page 23 of the Journal. According to Deulin the changes in graduation should occur on the outside of the plate, never on the inside. It will be interesting to learn how he carries this technology out in practice.

My cello number 2 is proceeding slowly. I am using block cherry for the back and the sides and of course citrus fruits topwood. Am on the trail of Lombardy poplar. If I get some the cello number 3 will use same for the back and sides. I have written one of top officials at our Canadian Marathon Plant at head of lakes. Also another chap in Long Lac area. This man's job is in selecting timber for pulp and paper mills. I am hoping I can find a source of old well-seasoned and preserved lombardy poplar beams. Will let you know if I am successful.

R. R. #2,
Grimsby, Ontario.

*For blueprint, see centre pages.

VIOLIN MOULD MAKING

by John

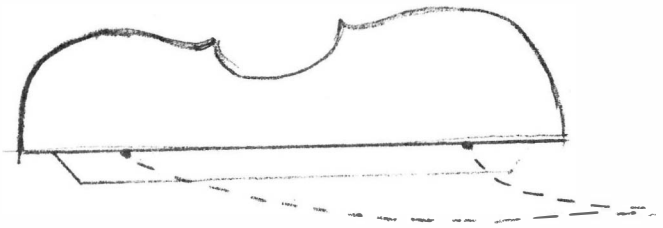
When I make an inside mould I get the wood to the right size, being of two pieces fastened together with screws. Starting from the side where the top goes I first draw a line lengthwise on the centre,carrying this down the ends marking down the centre of the opposite side. My pattern for the mould is made as follows:

The holes are drilled to go in the space between that needed for the end blocks and those for the clamps. Mark these holes on the centre line using pattern where the top goes on mould, then square lines across mould, carrying these down the sides and across the back of the mould, where the lines intersect on the line down the centre on both sides of mould, drill slightly undersize holes for a piece of 1-1/2" finishing nail with the head cut off. When making the mould and also marking for the blocks later, push in the two pieces of nail in the holes on the side you are marking. The location of holes is first marked in the pattern, from this on to the centre line before you square around to other side. With a pattern like this you make sure one half of mould is the same as the other, no clamps needed to hold it in place, the pins through the holes in the pattern make sure of this. The pattern also serves as a check if your outline is worked vertical the pins and pattern are easily used on either the top or back side of mould, no fiddling around if the pattern is on the correct place, it is important that every care should be taken that lines are drawn accurately both lengthwise and across mould to other side. Before the mould is cut out you make the outline using the pattern hooked on the pins the outline drawn on both top and back of mould. Using a jig or band saw always keep the side of mould where the top goes on the bottom or table side of saw. This is not important if your rib height is the same at top and bottom but is if rib height is less at neck end. The ribs should be vertical with the top.

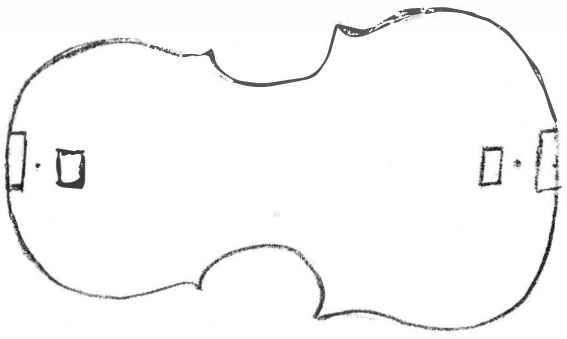
Wishing you and the Journal all the best.

* * * * * * * *

Rib Heights



Holes in Centre Line



COMMENTS ON VARNISH

WELSTEAD'S VARNISH

by H. W. Ratcliffe

Your correspondent, C. F. G. Welstead, in his article on varnishing, seems to object to the use of rosin in a varnish. He goes on to mention a resin that has all the necessary elements as found by Mr. Michelman in his varnishes; he does not, however, say what this reason is. I have made quite a lot of good varnishes using common rosin and had very good results. It is the coloring that is the difficult part, unless one wishes to use Fry's method of nitrification it is not in the power of man to charge an ordinary oil varnish with the depth of color the old masters did, and still have good transparency. I know it can be done to lose a great percentage of transparency, but then what have we got? A paint-like effect like some of the French work. This is not what is required at all. It is quite evident to me Mr. Michelman has devoted quite some time and study in his researches. Although I cannot get his book with the latest information in it over here, I should think anyone using his methods intelligently should get good results with it. I believe Mr. Carmen White has had some good results with it. I have tried most of the varnishes by Fry and condemned them right away. After years of trial they do not try well enough. They are no doubt elastic enough and have the advantage of not leaving any sediment if properly made, likewise the propolis idea. This is a lot of unproved theory. I wrote to Mr. Skou re his method of micro toning and asked him when he had tested a belly for micro tones, what he compared it with for pitch, for to be able to say it is D Sharp plus a little bit more must require some sort of an instrument. I do not know if he uses a Mono Chord or not. However, he did not reply to this question, probably having forgotten about it at the time.

The weather here just now is terrible and it is much too cold to do much work in the workshop, but I hope to test some of the micro tone theories this next summer, if we get any, so for the moment I will close with best wishes.

* * * * * * *

MORE COMMENTS

by Robert Hill

I have just received the March issue of The Violin Makers Journal. As usual, it is most interesting and cannot fail to add to one's knowledge in the art of making better violins. However, I was most surprised that not one word was mentioned about Mr. Welstead's marvelous varnish. I had expected especially to see something about the amount of rectified spirits of turpentine added to the extracted gamboge. I think I wrote you about this earlier. Really, this varnish is a must for every violin maker, it has everything, the wood requires no filling because the varnish can be made so it will dry as soon as it is applied. Indeed, the tone is much better without a filler with this varnish. With the right amount of linseed oil added, the varnish can be conveniently applied so it will dry to the touch even in one day or for as long as one wishes. The varnish is all one can desire and to make it is but child's play. It improves the tone of any varnish. I never thought that varnish had much effect on tone, but now I know for certain that the right stuff is as important and probably more so than any other aspect of violin making.

* * * * * * * *

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NOTES ON VARNISH

"GREEK FIRE"

by Lee McNeese

I am dying to read Mr. Welstead's varnish formula. Can't be sure, of course, but am almost certain he is working on the same idea on varnish that I have been. He says the critical ingredient was very common when the old luthiers were working and the way he says it strongly indicates it was natural asphalt or Greek pitch. The Italians used a lot of it to make Greek fire, which was used in warfare to burn and sink enemy ships. They mixed it with sulphur, nitro, rosin, turpentine, blue vitrol, arsenic, acetic acid and a lot of other things. It burned like gunpowder, stuck to the decks of ships and the fumes from some of those chemicals disabled or killed the men who tried to put it out. Leonardo De Vinci had a lot to say about it in his books. In 12 to 1400 and even earlier, a navy that did not have Greek fire did not have much, if we can believe what some of the old writers said about it, and why shouldn't we? It hit them with the impact of the atomic bomb and may have been very hard for a civilian to obtain in wartime. But it only takes a little to give a golden yellow color with a trace of brown to a small batch of varnish. I have succeeded in getting rid of practically all of the brown tint. If I am right I hate to see the idea lost.

* * * * * * *

MORE ABOUT VARNISH

RED VIOLIN VARNISH

by H. C. Hayes

Xanthorr hoea resin is of a beautiful clear red colour in the lump and is fairly hard. When made into varnish the first coat is yellow, gradually deepening to a reddish-brown, depending on the number of coats. If used in the pure state it dries very rapidly and does not fade or crack. The drying time can be increased or decreased by the amount of linseed oil used. It will take a brilliant polish when dry. When powdered the resin dissolves readily in alcohol and is not difficult to melt. Analysis of resin: Soluble in alcohol 93.5% Benzoic acid 5.6%.

As a basis on which to get acquainted with the resin you could try the following:

Melt 2 oz. of resin and gradually add butyl alcohol, stirring until all the resin has melted and thinned to about the consistency of thin cream.

Stir in one fluid ounce of best linseed oil. (I use old boiled oil.)

Add two fluid ounces of Eucalyptus oil.

In addition, you can wash your pan clean of resin with butyl alcohol, and add it to the varnish.

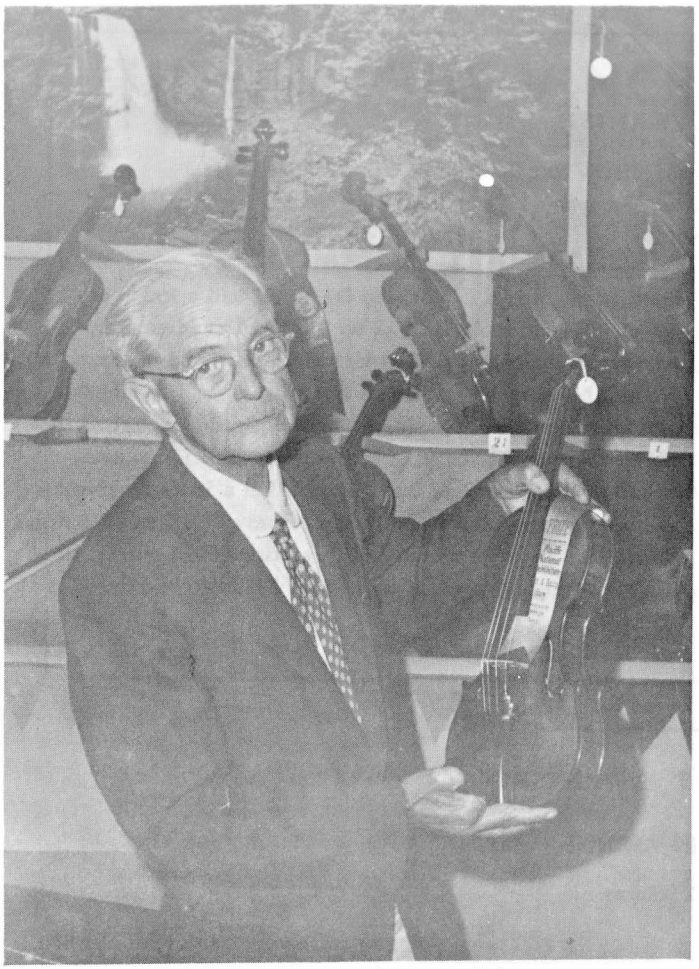
The varnish will gradually thicken, and whatever quantity is needed for each job will have to be thinned. I use one part Eucalyptus oil to two of butyl alcohol.

This varnish will dry in 24 to 48 hours in warm weather. As it is most unlikely that Eucalyptus oil will be obtainable outside Australia, turpentine could be substituted for it, but the varnish may take longer to dry. Eucalyptus oil is a splendid thinner and solvent. I would say that Xanthorr hoea resin is entirely new in so far as the violin maker is concerned, although I have been using it for years. I am still not satisfied that I have got the best out of it, however, there is one thing that you can be dead sure of, and that is Stradivari never used it.

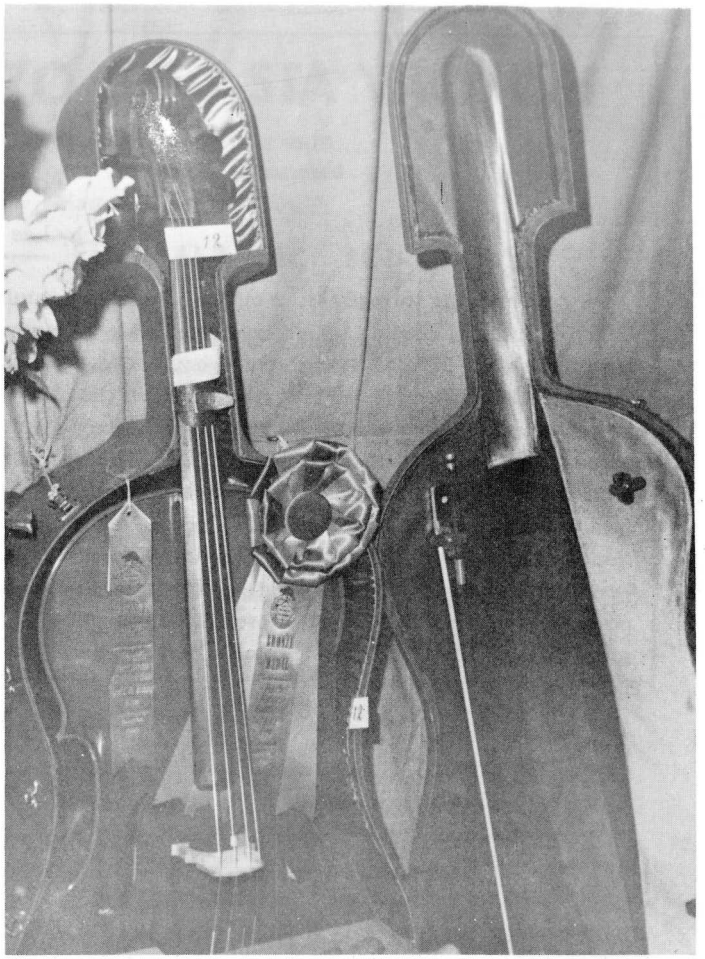
It is probably the best red resin in the world and worth experimenting with.

Good luck and good varnish.

72 Gundagai Street,
Coffs Harbour,
N. S. W., Australia.



First Prize Fiddle by our President, Ragnar Helin

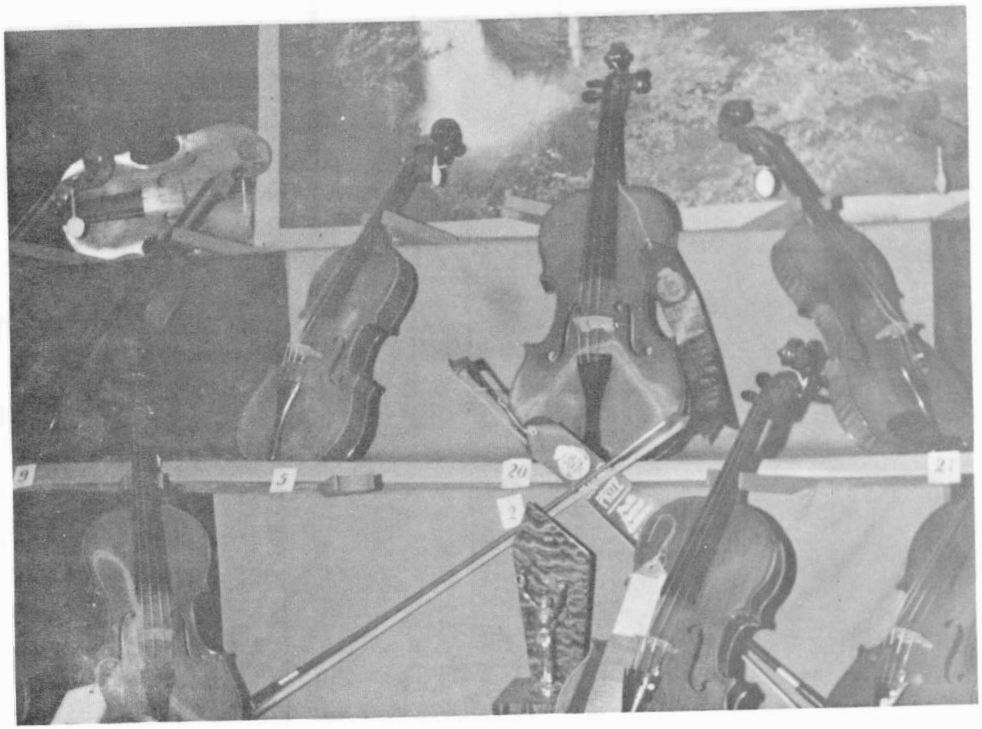


Bronze Medal - First Prize won by Peder Svindsay for Cello, Bow, and Case

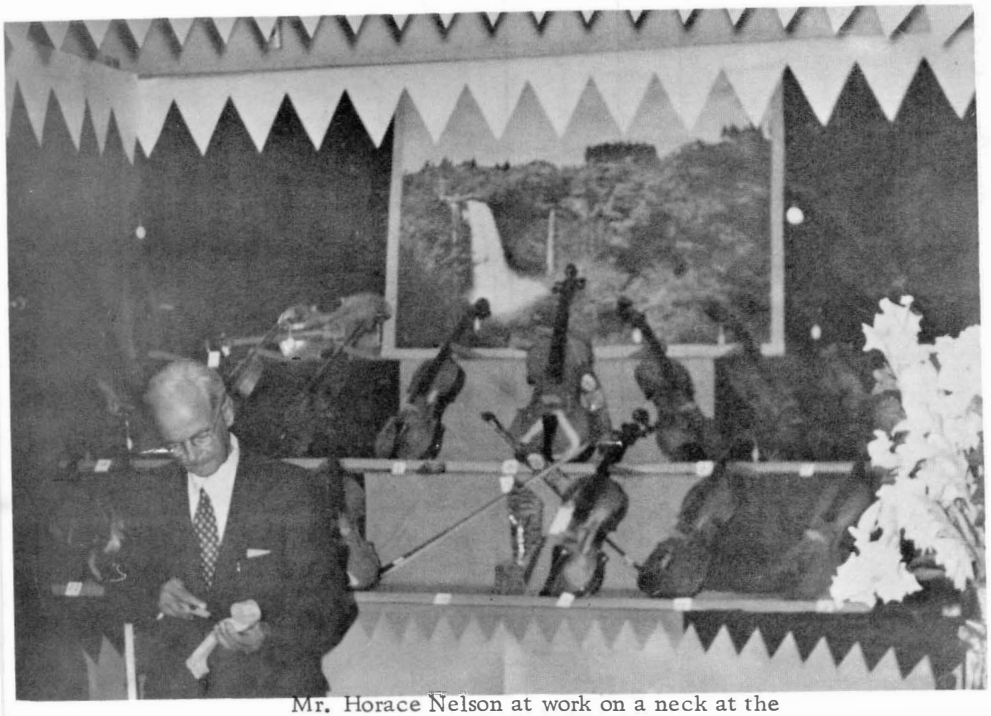
Unusual nail violin made by Geo. R. Wright

A few prize-winning violins and bows

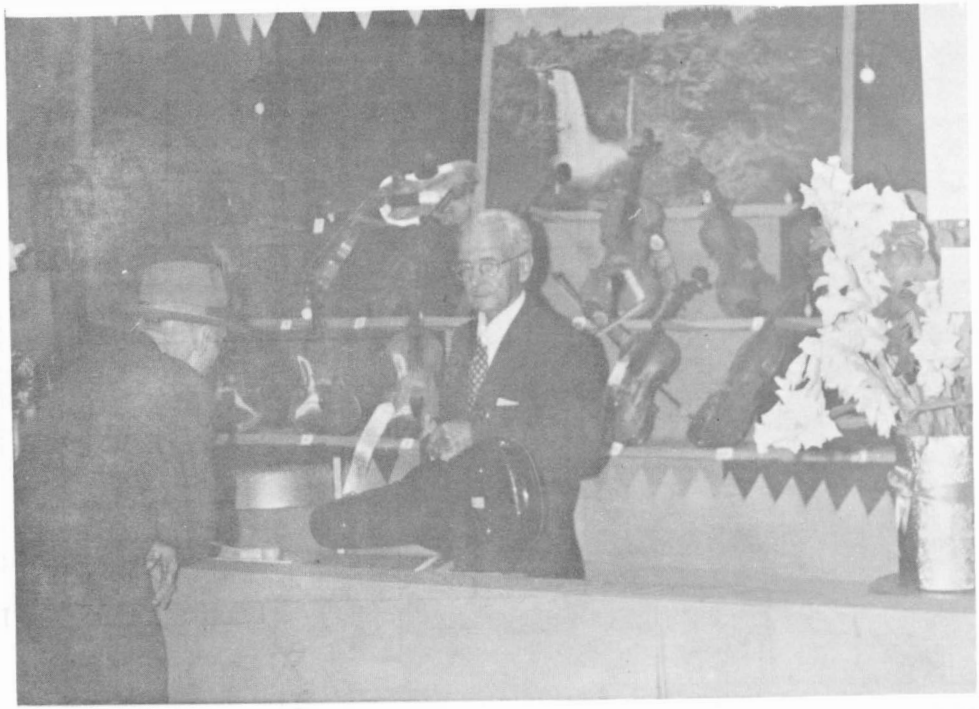
Workbench at the Hobby Show, P. N. E.



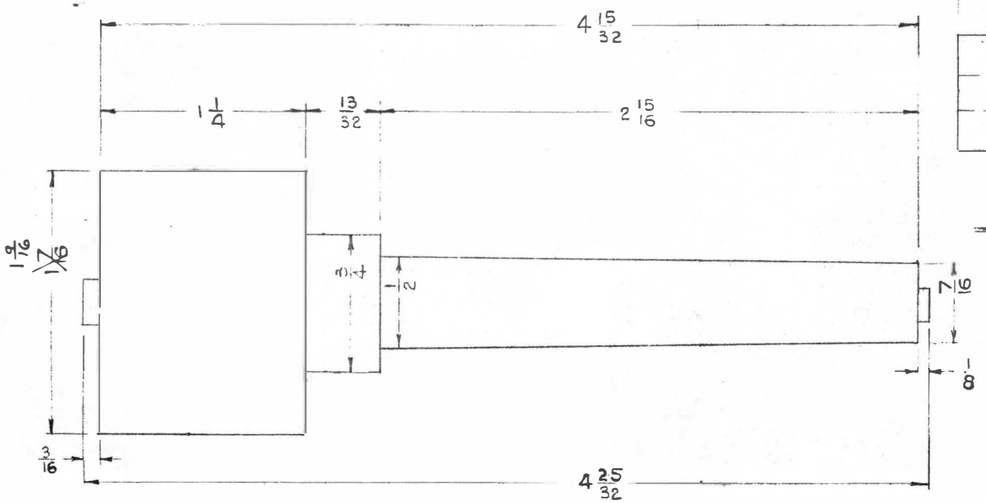
More prize-winning violins and bows



Mr. Horace Nelson at work on a neck at the P. N. E. Booth

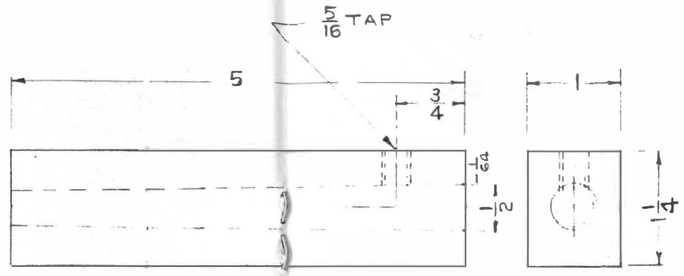


Another picture of the booth with Mr. Nelson in charge.



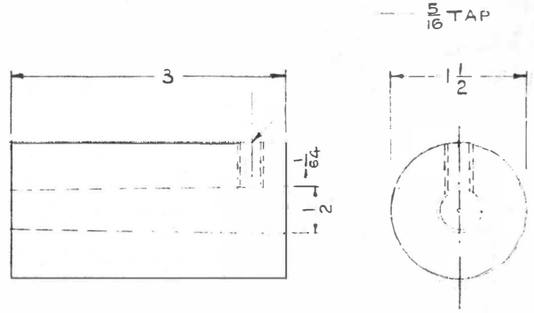
ROUGH CUT

TWICE FULL SIZE



PEG HOLDING FIXTURE FOR MILLING MACHINE

FULL SCALE

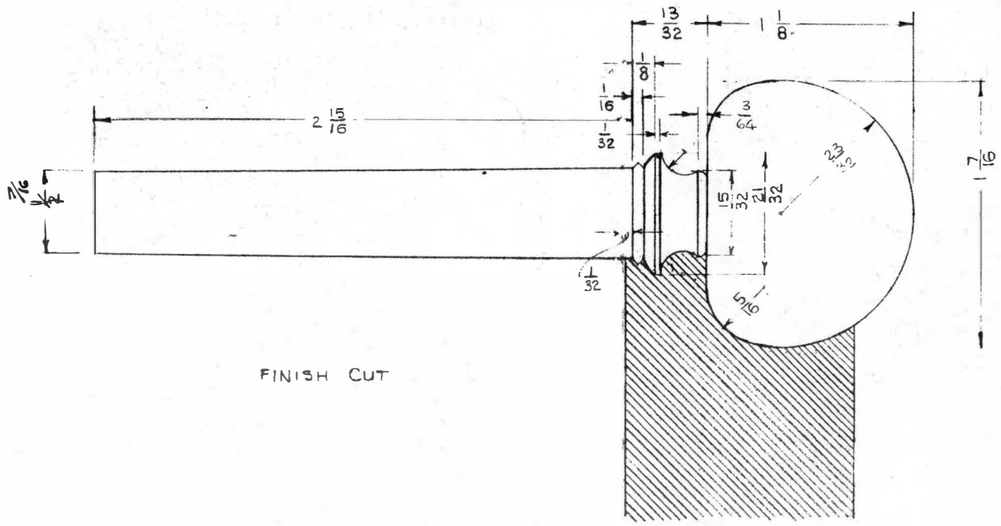


PEG HOLDING DEVICE FOR LATHE

FULL SIZE

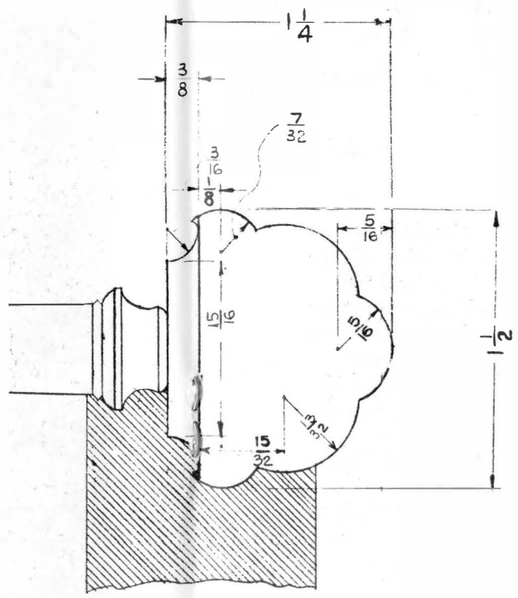
CELLO PEG DESIGN

DEC. 1962 J.V.R.

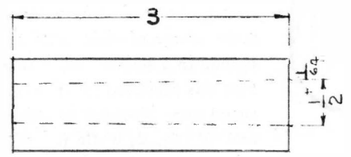


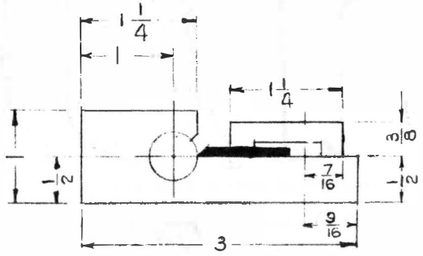
FINISH CUT

CONVENTIONAL DESIGN



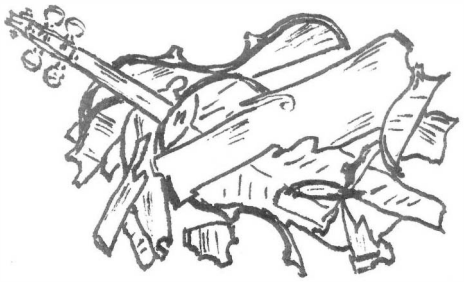
NEW DESIGN





PEG TAPER CUTTING DEVICE

FULL SCALE



Fiddle Fix.

By H.S. Wake.

It has always been a matter of some surprise to me, why many good violin repairmen and violin makers, have never tackled the job of grafting or splicing a new neck on to an old scroll; the idea seeming to prevail among the uninitiated that to make a good graft requires the ultimate in skill, but nothing could be further from the truth; although it requires careful workmanship, it is mainly in knowing how to do it rather than in the actual doing.

There are several ways of making the splice of the new neck on to the scroll; the so-called French method, the English, the Italian, and a few others. We occasionally see one as shown in Fig. 1, where the wood is cut away from the inside of the peg box to a feather edge ('a' Fig. 1) and fitted over the neck wood. This results in a wavy line at the joint which never looks very neat. ('b' Fig. 1.)

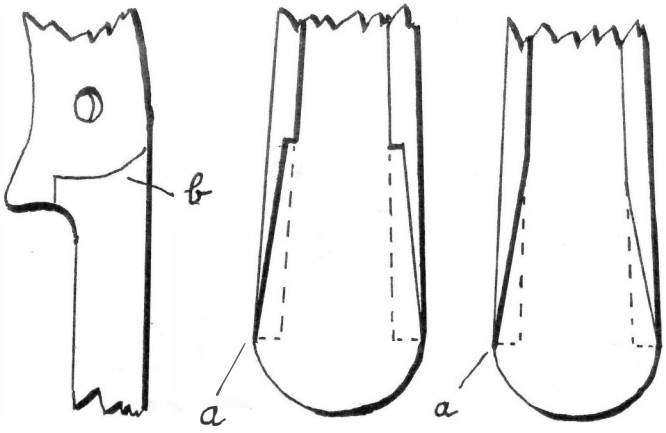


Fig 1

Remove the fingerboard and cut through the neck about an inch below the peg box then very carefully with a fine toothed saw make cuts as shown by dotted lines at 'a' and 'b' Fig. 2. At point 'c' Fig. 2 the cut 'b' is left about 1/16" thickness when the inside of peg box is trimmed, and it will be shown how a clean straight line joint can be made to the neck at this point. At 'd' Fig. 2, it is shown how the inside of the peg box is trimmed to receive the neck block. An alternate method being shown at 'e' Fig. 2. The back inside face of the peg box 'f' must be trimmed flat and true, especially so at the bottom where the cut 'a' was made; and the corners where cut 'a' meets cut 'b' should be close fitting and neat.

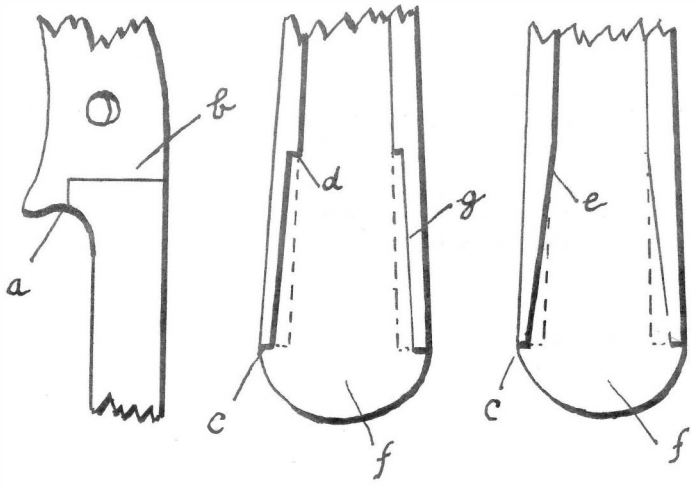
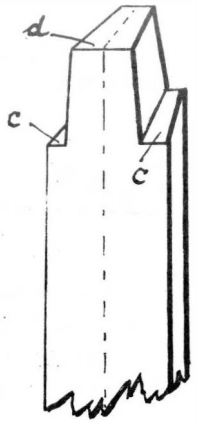


Fig 2

The wood for the new neck is now prepared for fitting to the scroll; the front face is planed smooth and flat, a centerline marked down its length, and the upper end shaped to a squared taper to fit in the portion of the peg box that was prepared for it, Fig. 3, the points 'c' and 'd' being fitted very carefully to corresponding points on the scroll 'c' and 'd' Fig. 2; while making sure that you get a neat butt joint at these places the back 'f' and side faces 'g' Fig. 2 must also fit closely so that only a hairline will show after glueing and trimming. While all this fitting is being done, constant care must be exercised to insure that the scroll is in correct position; it would not be much use having a good fit if the scroll was cocked to one side or leaning too far forward; this is best taken care of when the trimming and fitting is first started by cutting the joint step 'c' Fig. 3 at the correct angle to bring the front of the scroll directly in line with the front face of the neck Fig. 4 any sideward leaning of the scroll can easily be detected by eye if the



HSW

Fig 3.

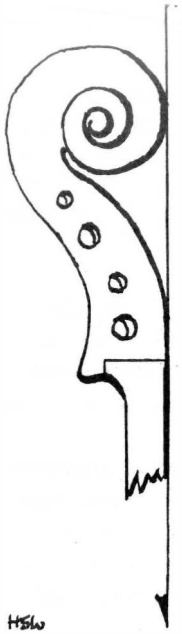


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Fig 4

centerline that you marked on the neck is used as a guide. When all fitting is completed, the taper end of the neck should slip easily in place without forcing out the cheeks of the peg box and the scroll should sit square and true to the centerline. Fresh hot glue is now applied to all fitting surfaces and the parts securely clamped together.

The excess wood inside the peg box is next cut away and the centerline of the neck used as a guide to mark off the neck for trimming. Mark a cross line 3/16" below the bottom of the peg box for the nut, and another cross line 5-5/8" below the bottom of the peg box for the neck length. Some make this a little more and others a little less, but the exact length will depend on how deep the mortise has been cut in the neck block. The most important measurement is from the fingerboard nut line to the top edge of the belly. This must be 5-1/8" when the neck is glued in place and leaning back at the correct angle of seven degrees. The neck can now be cut to length and fitted to the mortise in the block. Make sure that the correct angle is maintained and also the correct length of 5-1/8" from fingerboard nut line to top edge of belly. When all is square and true and the neck ready for glueing in place, the eye of the scroll should be directly in line when sighted along the edge of the fiddle back. Some of the excess wood can now be cut away and assuming that the old neck has been removed from the fiddle, it can be glued into the mortise with fresh hot glue, all finishing being done after the fingerboard has been fitted.

Harry S. Wake

LORD KELVIN

thanks to Gordon R. McDonald

I often say that when you can measure what you are speaking about, and express it in numbers, you know something about it; but where you cannot measure it, when you cannot express it in numbers, your knowledge is of a meagre and unsatisfactory kind. It may be the beginning of knowledge, but you have scarcely, in your thoughts, advanced to the stage of Science whatever the matter may be.

PROOF BY DEMONSTRATION THAT A THICK CENTRE THIN EDGE BELLY WILL GIVE A BRILLIANT TONE

by Arthur T. Walker

Berkeley, California

One thing that seems to still go on a trial and error basis is the effect of different thickness patterns on the quality of tone given by the belly of a violin.

Even after 280 years violin research seems to have progressed very little. One reason is probably because complete knowledge of violin action would enable makers of good toned cheap violins to put a serious crimp in the sales of old master violins by flooding the market with such violins, and this is something the big dealers could not or would not stand.

In the field of study of the theory of violin action, less seems to be known than about anything else with which I have had anything to do. Even Stradivarius did not make good violins every time. Tonewood varied in his time even as it does today, and doubt exists as to whether he had tonewood tests any better, almost three hundred years ago than we have today. Evidently he did not or ALL of his violins would have been good, for some of his violins were substandard.

A reason has been found for the very great variation in tone quality due to the difference in the thickness pattern of the belly. For instance it has been found that a belly thick in the centre and thin around the edges gives a tone that has great brilliance, while a belly that is thick around the edges and thinner in the centre gives a tone that is usually more powerful, due to the fact that the belly is thinner under the bridge, and vibrates more violently, but it will lack the brilliance of the tone of the belly thicker in the centre.

Probably the best way to demonstrate this is to use the bow and arrow method. There are many points of similarity between the action of a bow and arrow, and the action of a violin belly. Each must be made of wood that has the same characteristics such as elasticity, lightness, straight grain, etc. Usually wood that will make a good arrow will also make a good violin belly.

In a bow and arrow, it is the recoil of the bow that propels the arrow. In a violin belly we also have flexions and recoils. They are too small to see but are there nevertheless, and act in the same way.

In our demonstration we make two bows, say two feet in length, and one pound pull. We make the bows weak, for slow motion is easier to follow than fast motion, and speed is not essential in this demonstration. The bows should be made out of the same sized stock, one a little thicker in the centre, the other a little thinner in the centre. Also we make a little arrow to be shot by both bows. The bows are made so that we can clamp them in a vise, and both should be drawn the same distance, in order to get the same "kick". When we shoot our little arrow from these bows we find that the bow thicker in the centre and thinner at the ends will shoot the arrow considerably further than the one thinner in the centre and heavier at the ends. This experiment shows that the recoil of the bow heavier in the centre and lighter at the ends is considerably quicker than the one lighter in the centre and heavier at the ends. In the same way a belly thicker in the centre and lighter at the ends will strike the air in contact with it a sharper blow than the belly thinner in the centre and heavier at the ends, thus producing a soundwave with a sharper crest, which, in turn, means a note of greater brilliancy than the other.

Also, the thinning around the edges gives the centre more freedom to vibrate with the result that we get a tone that is not hampered by surrounding support.

This proves by actual demonstration that a thick centre belly thin around the edges gives a more brilliant tone than one thin in the centre and thicker around the edges.

In archery, it is well known that a bow heavier in the centre and lighter at the end will have a much better cast than one heavier at the ends and lighter in the centre. It is the recoil of the bow that propels the arrow. Much the same action takes place in the belly of a violin, but the action is so small it cannot be seen.

The Adjusting of String Instruments

RETURN TO VIOLIN MAKING

by Lubin E. Jorgens

I have enjoyed reviewing the back copies of the Journal. The information has enlightened my knowledge and imagination to a great extent, especially the practical ideas from the different contributors. I can also see the value of the scientific approach and the successful results obtained from the different methods of tuning plates, or thicknessing them.

My experience in violin making is not very extensive, but my interest has overwhelmed me and I hope that eventually I will be able to make a violin with a real singing tone of good quality. I have made two violins since about 1950 when I started the actual work. My first violin took me about 3 years and when I first strung it up it surprised me very much, the tone was very strong and free ringing also easy of response, but about 6 months after I had varnished it 12 coats it seemed to tighten up, especially on the "A" string and somewhat on the higher register "C" was very dead, also on the octave, and when the "A" and "E" were being tuned, the pitch would seem to lower as soon as the bow left the strings, a sort of sinking pitch. I had used Robert Alton's book for specifications. Plates I tuned by tap tones. "C" for back and "D" for top. Back 11/64 to 3/32, Top 8/44 to 3/32 plus in a general way. Bass bar 10-1/2 x 9/16 in center tapered from bridge line each way to zero 1/4 inch thick, the slant was 23/32 to 28/32 outside of bar to center line. The wood for plates was not too cheap, Swiss pine and Carpathian Maple with medium figure. The varnish was from a Los Angeles firm but I put on three coats of sizing from a commercial paint firm, which may have been my mistake. So now I have removed the varnish and sizing as far as I dared and I am planning to re-tone or re-graduate it according to the scientific methods I have been reading about in your Journal. The second violin I made was according to "Joseph Reid's" book on the Messiah Violin of Stradivan. I used cheaper wood but the tone was much better than on my first violin. I used "Lewis" oil varnish, 6 coats before I strung it up. It was rough in tone but very powerful at first but seemed to mellow with use, but still with the same "A" string tightness, especially on "C" and the same tuning trouble of a sinking after tone after the bow leaves the strings. I have tried thick and thin sound posts, tight and loose and I have changed bridges from hard to soft, thick to thin, and slightly higher and lower but the two higher strings seem to be loud and powerful while the bow is in action but as soon as the bow leaves the strings they quit sounding or go down in pitch slightly as if you pinched them down. I also have four or five other violins which I have collected of a modest quality, not factory made, and I notice the same restriction of the higher register, especially on the "A" string at "C" particularly. I thought this general difficulty or fault might be interesting to you and other violin enthusiasts who may be able to diagnose my trouble. I have fitted my own bridges and sound posts in a general way for many years and I may be on the wrong system of fitting and adjustment. I have an old European violin of quite ancient origin that was given to me when I was a young boy taking lessons, and it seems to have the same trouble as I have mentioned above.

I have taken note of Norman Miller and Henry Littleboy's method of adjustments of bridge and sound posts since reading your Journal and I have been experimenting changes in this respect, but so far I have not been able to affect any improvement in these two violins I have made. I know I will have to make my own experiments and changes in construction and adjustments, but I am in the primitive stage of violin construction and the knowledge and experience that is necessary to improvement or success, so I am pleading for an answer to my difficulties.

Your Journal has been such an eye-opening experience to me and has shown me some of the great possibilities of creating a violin of a more artistic and pleasing sound that I have renewed my interest in planning to make my next violin according to a composite of ideas which have appeared in your Journal. I have completed the scroll and neck and have some real good wood on hand to work with so I am planning to take notes from your Journal contributors and also study the acoustic value of my wood to see if I can eliminate some of my previous mistakes and difficulties.

I have not done any experimenting on my own with varnish. I have depended on what I could buy from reputable firms and I haven't tried fillers or sub-treatments of any kind, so I am studying that angle now for my next attempt so I am depending on your Journal and what the most successful violin makers say is best for coating the raw wood after the construction of the violin is complete.

There is such a diversity of opinions on this subject that it is confusing to the beginner to know which plan to follow for the best and lasting results of a successful and fine-toned violin.

THE MICHELMAN PROCESS

'GETTING IN THE ACT'

(continued from April-May, 1963 issue)

I am sure that Michelman has the answer to the so-called, lost secret of Cremona, and that it is only a matter of learning the technique of handling it. I have worked a great deal with varnishes; with all the gums and resins, all the old recipes laid out in Heron Allen's book, have read all I could find about violin varnishes and have developed a cold process oil varnish that is quite good by most standards and have used it for years, but I am sure the old masters did NOT use these methods and materials and have felt so for a long time. I would like nothing better than to throw all these gums in the trash can and use only the Michelman process; but first I must develop the technique of using it.

I stated that I was not satisfied with the effect that the varnish was developing on my 'guinea pig fiddle'; although I knew the varnish to be transparent enough, I could see that it was not going to be even close to my ideas as to what it should be, so I decided to strip it off and start again.

With the guinea pig fiddle once again in the nude, I gave it a generous coat of the clear alcohol solution of gamboge; this is very yellow and was what I wanted; being a gum it also seals the wood, but as I have previously stated; the wood of this particular fiddle had already been sealed so the gamboge in this case was used principally for its color as a transparent base coat. I expect to develop the yellows by the Michelman process later. I strongly disagree with any soaking of the wood with raw linseed oil; but we won't go into that now. What I am concerned with here is the varnishing technique. How to use this gorgeous stuff to get effect and durability.

After the gamboge treatment, the fiddle was sanded lightly all over and given a coat of the same varnish; you will recall that before stripping the fiddle, I had mixed a double quantity of the varnish and that this second coat had specks in it. Well, after applying this second coat (with the specks in it) I put the remainder of the varnish that was left over in a sealed glass container and placed it in the refrigerator. It remained there for about 48 hours. This left over varnish was used as the first coat over the gamboge and it was excellent; no specks, no gelling; and it brushed on beautifully. Furthermore, it was dry to touch in three hours on the sun lamp machine. This machine by the way does a good job, and it is nothing more than a motor driving a small vertical peg that fits the tail pin hole of the fiddle; the machine turns the violin slowly (about seven R.P.M.) and the sun lamp lights up when the motor is turned on. It is also fitted with a timer that may be set for any period up to four hours. This machine will be fully described in a forthcoming issue of the Journal.

I could see at once that this same red varnish over the yellow ground was going to give me what I wanted. I was now really getting somewhere. I had beaten the solubility problem; this I believe was all in the water used in making the rosinate. Our water in Southern California comes from the Colorado River by aqueduct, and it is just loaded with minerals. The use of distilled water exclusively in the making and washing of the rosinate appears at this point to be the main factor assuring solubility. Maybe I'm wrong, but I will stay with the distilled water from now on anyway. The color does not appear to be any problem, as any shade from the clear, through the yellows (although I haven't made the yellows yet), through the orange to the reds, can be achieved with the alizarin; and the browns with the use of iron chloride. I have used only artist's grade of rectified spirits of turpentine to dissolve the resin, and as this seems to do a good job I will stay with it; I will most likely try the commercial grade of turps later just to see what happens. I have learned that by mixing the double quantities of the varnish and storing it in the refrigerator overnight, the brushability is improved, the varnish flows on better from the brush, and it dries in a reasonable time. In fact it dries faster than my own regular varnish; however I find it a little difficult to do any shading. This I do by 'lifting off' the varnish with the brush in some areas and then blending in the lighter to the darker areas. This blending in was fairly easy with my varnish, but owing to the fact that you cannot brush over the Michelman varnish too much, it makes the shading process a little difficult. However, I expect to overcome this slight problem with practice. I have used until now only the commercial grade of boiled linseed oil; perhaps the varnish will be improved still more by using oil of a better quality.

Another batch of varnish was now made by crushing to a powder 2 grams of the red-orange resin (having 10 cc of alizarin) and 2 grams of the orange brown; these were made according to the Slaby formula (Dec.-Jan. 1962 V.M.J.). They were crushed in a china or porcelain cup and 10 cc of turpentine added. This was stirred for about 15 minutes to be sure that the powder was dissolved, then 5 cc of boiled linseed oil was added and the mixture stirred for a few minutes more. This now appeared to be of good consistency and was placed in a sealed glass container and put in the refrigerator for use the next day. I realise that

both Jos. Michelman and Carmen White have stated that the varnish should be used immediately after mixing, but as I have said, these are experiments to learn the technique of handling and using the varnish, and if I discover that it is better to keep it overnight in the refrigerator, well that is what I'm going to do. "The proof of the pudding is in the eating" and sure enough, on using the varnish the next day it flowed on just beautifully and was set but not dry to touch in about three hours. It was then given about four hours on the sun lamp machine. The remainder of this mix of varnish was put back in the refrigerator to see what would happen. Late the next day the violin was gone over lightly to remove any specks and the left over varnish was applied. This brushed on well and appeared normal in every way. However, there was one thing bothering me. The varnish, although transparent enough, was drying with a little less gloss than I felt it should have, and it was not yet quite all that could be wished for in brushability. I realized that to thin it would help the situation, so decided with the next mix to add a little extra oil.

Another mix was made up as before, using 2 gr. of red-orange and 2 gr. of orange brown, 5 cc. of oil and 10 cc of turpentine, then adding 1 cc extra of linseed oil. After crushing the resin and adding the turps it was stirred for about ten minutes when I was called away for some urgent reason and this mix was left for about four hours. I thought surely that it would be no good, but it was of good consistency when I returned and the resin was completely dissolved, the oil was added, with 1 cc in excess as mentioned above, and it was put away in the refrigerator for use the next day.

This was a great improvement; that little extra oil had done the trick. The varnish just flowed from the brush and it was a delight to use. I was able to flow it on the fiddle, cross brush diagonally both ways, then brush with the grain. I was able to lift off at the shaded areas and blend in easily. No problem at all. This coat 'set' in about three hours and was given the sun lamp treatment for about four hours. This will take a little longer to dry on account of the extra oil that was added, but now I have gloss in the varnish and that was improvement. With three coats now on the fiddle it is beginning to look very good; sure it's red, but it's a good red, and a contrast is developing between the more dense and the shaded areas. Altogether I am very well satisfied with the progress of the investigation so far.

A fourth coat was applied and the shading process continued, care being taken not to overdo it. The varnish brushed on well and was quite satisfactory in every way. When the varnish was set, the violin was placed on the sunlamp machine for about three hours and the following day hung in the sun outside for about five hours. I find that when sunning a fiddle outside, if it is suspended from the tailpin hole it will keep turning slowly in even the slightest breeze, and in this way is sure of getting sunned all over. Tie a nail on the end of a piece of string with the knot at the center of the nail. Push the nail through the endpin hole and tie the string to a support so that the violin is suspended upside down. The nail and the string can easily be removed through the 'F' hole.

The fifth coat was applied and it was now noticeable as the greater depth of the color was developing, that the varnish was still slightly too red for my liking so the sixth coat was of the orange-brown only, to darken the effect slightly. This worked very well. In the meantime some work was being done towards developing yellow resins, and I wanted to prove also Slaby's point that the use of zinc chloride in the precipitant was beneficial, so a clear resin was made up consisting of - 200 cc potassium rosinate solution; 120 cc AL-CA precipitant. No color solutions were added. A varnish was made from this formula and the dried resin was found to be a little slow dissolving. It set to a rigid gel in a few hours.

The formula of Wm. Slaby was now used - 200 cc Potassium rosinate solution - 90 cc AL-CA plus - 30 cc 5% zinc chloride.

The resin from this formula dissolved quite easily and was left overnight. No gelling occurred and the varnish was of good consistency. Now, according to Jos. Michelman, the varnish made from the potassium Rosinate (the sub varnish), should be quite clear. However, these varnishes were both cream white but quite transparent in thin coats. It should be noted that the rosinate solution is also cream white. Perhaps if it were possible to make the rosinate in clear solution, the resultant varnish would also be clear. This series of experiments is continuing.

Having used up all of the orange brown resin, I set to the task of making another batch of rosinate; using the same utensils as before. That is, a large aluminum pan and a wood stirring stick. The rosin was carefully weighed and broken up. The potassium carbonate was weighed up and the rosinate made with the use of distilled water exactly as before, and put aside for use the next day; the exact same quantities for the orange brown resin were then used, that is - 200 cc rosinate solution

64 cc AL-CA plus -
56 cc - 5% zinc chloride
20 cc - 5% iron chloride
10 cc - 2% alizarin -- and this was put aside to dry.

This drying time takes about a week, the last two days being in the closed container in the presence of a drying agent. The guinea pig fiddle was sanded lightly all over in preparation for the next coat, and the resin weighed up. You can imagine my astonishment when I discovered that the resin would not show the slightest inclination to dissolve in the turpentine. Instead of showing the deep red purplish color in the mixing cup, it looked like barn paint. I thought

perhaps the resin had not dried sufficiently, so I put it away for two more days but it still would not dissolve; there was only one thing to do; discard it and try to find out what went wrong.

On looking back, it appears that the only possible cause for the failure of the mix must have been in the utensils used. The ingredients were the same and in identical quantities. Temperatures, etc. were all as before, so the only possible culprit therefore was the aluminum pot. It is quite possible that this may have been slightly greasy because I did not scour it before using. Carmen White suggests in his directions to use an aluminum pot, but Jos. Michelman says to use a pyrex or glass container for cooking the rosinate. Another batch of rosinate was now made, and this time a glass container was thoroughly scoured and used. From this rosinate the above formula was again made up very carefully and the resin put aside to dry in the usual way. After seven days it looked as though completely dried out and as before resembled grape nuts. So with a little misgiving in view of what had happened before, a sample was taken to test for solubility. I guess I must have expected it because I wasn't too surprised (but I must admit, very much upset) when the stuff once more refused to dissolve in the turpentine. This was quite disconcerting but I had learned that the cause of the insolubility was apparently not caused by the aluminum pot as I had suspected. So I had to look elsewhere and my suspicions turned to the moisture content of the resin.

As I have said, the resin appeared to be absolutely dry; it had been dried by the same methods that had been used for previous resins that had been completely soluble. However, I had not taken into account the fact that we had had a week or so of weather with unusually high humidity. Following this train of thought I carefully weighed all the resin plus the container. This was 47 grams. I then spread the resin on a piece of cardboard and placed it in a warm oven with the heat turned off, and left it for about a half hour. I was quite a little surprised then to find that the resin had been reduced in volume to approximately one-half, and that the weight was reduced to 25 grams. I could never have believed that the resin had contained that much moisture. I now once more tried the solubility test, (without any misgivings) and sure enough, it dissolved without difficulty. So now another point is cleared up and I will from now on always dry out the resin completely and thoroughly. In fact I think it may be worth while to make a small insulated drying box. This could be kept warm enough with a light bulb and the box could be divided to keep the resin in darkness. It appears now that all possible causes of insolubility have been eliminated. First the water was suspected on account of its mineral content. It is now felt that this of itself may not have directly affected solubility of the resin, but if the process is to be standardized so that you can know exactly what color resin (or varnish) you are going to get with certain proportions of ingredients, then the basic ingredient, the rosinate, should be made with distilled water, because any minerals in the water would have some effect on the rosinate and the water is not the same in any two places in this world. Next the utensils were suspected and the aluminum pot may or may not have been soiled. Anyway, you can see very easily when a glass jar is soiled and I find that the pyrex container of a coffee percolater which is of about two quart capacity is just right for making up 600 cc of rosinate; of course you have to watch that the solution doesn't boil over. So the glass or pyrex jug for making the rosinate is now to be standard equipment for me. Wood or plastic should be used for stirring. However, some plastics will not stand the heat of the boiling rosinate, so I prefer a wood stick, but you must also be careful of the stick you use, because in one instance I used a stirring stick of California redwood and the color was extracted from the wood and into the solution. Finally, we have seen how critical the extraction of ALL moisture from the resin can be, so, as previously mentioned, the drying oven will be henceforth standard equipment. It was noted earlier that the potassium rosinate solution was of creamy white consistency and color; and that the uncolored resins made from this; that is, those resins in which no iron chloride or alizarin was used, produced a varnish that was also creamy white. It was further noted that experiments were continuing in an effort to produce a clear varnish. In view of what had been learned in relation to the colored resins, I suspected that moisture in the resin might have something to do with this, so 2 cc of the clear resin was taken from the container and powdered; the solubility was poor and the mixture looked like paint. Another 2 cc of resin was now taken from the same batch. This was spread on a piece of cardboard and placed in a warm oven for ten minutes. This was immediately soluble in turpentine to a perfectly clear amber solution. This was the first time that I had been able to accomplish this and once again it is proved that moisture is the key between success and failure.

It was mentioned earlier that it takes about a week to dry out the resin from the paste to the grapenuts stage; this is too long to have to wait and I thought that some means should be found to speed it up. A fresh batch of paste rosinate (or resin as it is at this stage) was spread out on a piece of cardboard about 12 x 14 inches in area and this was placed in the kitchen oven with the temperature set at 200 degrees; however, as the oven door was open most of the time, this temperature was not maintained. In ten minutes the resin showed signs of drying out and cracking into small pieces. In a little less than an hour the resin was completely dried out. After five minutes cooling, 2cc were crushed to a powder which was easily dissolved in turpentine. Now this is really cutting down the time element, and is, I am sure, another step in the right direction.

I now began to think about color once more. The reds were no problem and the brown shades came easy enough with the iron chloride, but I found that combinations of these two does not form an orange color. Alizarin forms a basic red and lesser quantities of alizarin in the formula just dilutes the red to a pink; orange is a true secondary color shade derived from the combination of two primary colors, red and yellow, and as we do not yet have a true yellow we must find one. Jos. Michelman does not mention any particular metal salt that will form a decided yellow precipitate with potassium rosinate; this I would like to find. I have done some exploring along this line and was able to get some yellows but these faded and turned green before the resin was dry. I did, however, find an excellent substitute, but I have no idea as to how permanent the color may be. Powdered colors for oil varnish are sold by the Metropolitan Music Co., 222 Fourth Avenue, New York, N. Y. These powders are soluble in turpentine and a concentrated solution was made from the yellow powder. About six or eight drops of this concentrated yellow is sufficient to make a yellow varnish with the Michelman clear or sub varnish as a base:

200 cc potassium rosinate
90 cc AL-CA plus
30 cc 5% zinc chloride.

This is filtered, washed and dried and made into a clear varnish with the usual proportions.

Resin 2 grams dissolved in 5 cc turpentine and 2.4 cc boiled linseed oil added; 6 to 8 drops of yellow concentrate can be added either before or after the oil.

A few drops of alizarin red varnish if added to the above yellow varnish will produce a true orange shade. Remember that the reds are very intense colors and it takes but very little red to make orange from yellow. I have before me as I write, a very beautiful violin by Nicolas Amati, dated 1663. This was left with me for minor repair and adjustment. It is authentic in all its parts and has a certificate by Hill's of London stating that it is one of the best preserved specimens in existence today; it still has plenty of the original varnish on it and this is what I am getting at. This varnish is a beautiful transparent yellow, with just a slight trace of orange here and there. I wonder if the violins that we are making today will look as well as far as the varnish is concerned, after three hundred years (2263!).

I feel sure that there must be a metal chloride that will form a yellow precipitate as mentioned above from the potassium rosinate solution, perhaps Jos. Michelman can come up with the answer, but for the time being the yellow substitute will serve my purpose. In the meantime, to all intents and purposes the guinea fig fiddle is finished. At least it has sufficient color. The bright red was toned down somewhat with brown, and the shading looks very good. I will give it one, or perhaps two coats of clear varnish (Michelman) so that no color will be removed in the rubbing down. However, before this is done, it will hang for several days in our California sun. I regret now that this varnish is not one of my own violins.

I am, needless to say, delighted with the progress I have made with this series of tests. The results far exceed anything I had hoped for, and if this record of my work should be the means of inspiring or awakening others to the beauty of this varnish, and the thrill of making and using it, I will be amply recompensed for my efforts. In the meantime, the work continues. I have another 'guinea pig' lined up and an investigation of the yellow finish "A La Amati" is the next in order. This work will be reported in due course.

Harry S. Wake

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Congratulations to Ced Welstead

In the Sidney Daily Telegraph of June 14th an account was given of the concert played by Tibor Varga on one of Ced's violins, which was given to Mr. Varga by Ced. Mr. Varga was delighted with the violin and said it was marvelous, superb and magnificent. Mr. Varga proposes to play other concerts on Ced's violins. We rejoice with Ced in his happiness on this miraculous event.

Our Letter From Italy

Well, talking about the things we are both fond of, Italian violins seem to be getting cheaper. When I compare prices advertised in America, or even in England, they are distinctly on the downward slope. Here in Italy it is practically impossible to sell, or even find one for sale, in the range of really good fiddles. But electrical guitars sell like hot cakes. So do television sets. In our regions violin makers are packing up. Chaps in orchestras are very careful with their instruments, so there are no repairs. There are no old instruments left for restoration. The established price for bow hairing is about two dollars. I don't know what you charge in Canada, but here all musicians think two dollars is robbery. I am not grumbling, it does not affect me very much, but I would like you to see the violin maker's life in Italy in the proper perspective. In France it is not very different. But in England I understand that there is a good demand for cheap school outfits, and quite a number of teachers are advertising their existence. If the new generation is getting fed up with the radio and TV, and want an outlet for their sentiments in good music, then we can wait for a wave of demands for our instruments. If we take a look at the past history of music, we can find a distinct movement in waves. Classical music goes up and then down, so it will not be necessary to wait for a generation - or I hope not! I should like it very much if someone in your country could look around and write an article about the prospects for good music among the youngsters of today. The other thing I would like to read in your journal is the impressions of people who have visited Scou and the Norwegian chap about microtone advances. I have followed this idea with great interest, and independent impressions on how Scou violins are behaving are most necessary. I already have three fiddles, two old and one new, adjusted to microtones, but I cannot claim any exceptional results. Continuous change of tone in each violin can drive one to despair. What we want from Scou is not a theoretical explanation of microtones, but his practical experience. The cake is judged by the eating. One of my fiddles sounds like an oboe, soft, pleasant, but not much power.

If every one of us has to go through all the preliminary experiences to get good results, how much time will be wasted! I will send you mine, and hope someone else will write, too.

N. Nicholas

WEST COAST HEMLOCK USED FOR MAKING RARE VIOLINS

Newspaper Clipping sent in
by Albert Blaney

A British Columbia sawmill is supplying West Coast hemlock for the precise and exacting manufacture of violins -- an unusual thing for a big sawmill cutting such stock as stringers, uppers, ladder stock and planking.

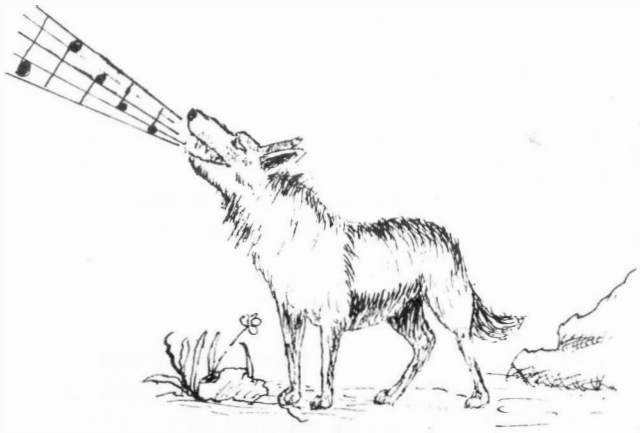
A few years ago a West Coast sawmill manager received a request for a small amount of 1 1/2 x 10 edge grain hemlock. The shipment was destined for Thomas L. Fawick, an industrialist from Cleveland, Ohio, who had made a hobby of collecting rare violins and now was making them. Mr. Fawick's interest in violins caused him to search for some way to produce a violin that would be accessible to the average person without sacrificing quality --the criterion of this delicate instrument. Being an engineer by profession and a prolific inventor by nature, he devised a process for treating wood, making it adaptable for his purpose. His initial small shipment of B. C. hemlock was a simultaneous success in its reaction to his processing.

A large number of Western hemlock violins have now been manufactured. According to tests conducted in a Los Angeles theatre, the instruments are comparable to the revered Stradivarius violins. Top musical celebrities, including Jascha Heifetz made the comparison.

Not too long ago, Mr. Fawick engaged one of Vancouver's outstanding violinists to play for the day shift crew of the sawmill to demonstrate the mellow tones and resiliency of the violins. The crew was definitely impressed and a bit over-awed--after all, they are accustomed to the day-long banshee wail of a planer and not too familiar with the dulcet tones of a hemlock violin!

Wolf Notes

by The Editor



The Interior Brace, by Arland V. Cliff

In regard to brace, believe I saw or heard about something like that years back, had forgotten about it till I read your article. Don't know if it could hurt the tone, but feel it would help, especially on those old, high built violins, where the top gives and fingerboard sags, sometimes even rests on top where it bulges up. The only trouble is that the brace may itself bend or warp sideways or up or down from the pressure and thus become useless. Will no doubt see more about this in future Journals, as others may try or have tried or seen something like this.

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Letter from H. W. Ratcliffe

You ask if I scrape or sand the fiddle after it is strung up. I have only done this once when experimenting with a new system which, incidentally, was of no use whatever. I do not agree about bringing the little micro tones to match one another in back and belly. I should think it would have a good effect on the tone. When the two top strings do turn out unsatisfactorily I have taken off the belly on occasion and lightened the base bar, but I am not sure this is the best way yet. I see Skou uses a bar that is slightly thinned off in thickness towards the ends. This is a very old idea, but I have never tried it yet. I have used Sitka spruce for some of my fiddles. This is of a rather reddish shade and very straight in the grain. It does not, however, cut as well as the usual Swiss Pine. It has a tendency to tear if one is not careful. The tone, however, has turned out quite good. I have done quite some experimenting with the different types of base bar. One which is useless is the one which is supposed to be the same as the belly for shape in reverse. This was advocated by Mr. Nicholas. It is of no use whatever. It makes the belly too heavy and has a muting effect on the tone. The tone is loud and coarse with such a bar. It does not let the fiddle sing and breathe. The same effect is sometimes got by using too much spring when fitting the bar. For best quality of tone I find a bar without any spring at all is the best. I generally make my bars 3/16" thick and I never use more than 1/10" splay, as I think this is just about right for the average fiddle, more of course, if the belly is very thin. One of the chief factors is the right kind of pine for the belly. This, the old Masters had and knew where to get it. They must have had some idea as to the density, etc., otherwise they would have had to work their pine much thicker than they did.

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Editor: Seems that the field is open for discussion on the most successful method of fitting and shaping bars. Any one else?

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Notes on Justin Gilbert and Brayton Bretch

Bob Wallace of Miami, Arizona, says two violins Justin Gilbert made just before he died were among "the best violins I ever heard". If Don White had lived 15 years longer and reached Gilbert's life span, his violins too would be among the best.

For both Gilbert and White were experimenters, the latter probably tarrying longer by the wayside.

Let us recall a few of the hurdles that have slowed us up the last 40 years.

In 1906 Dr. Frederick Castle published his first book top graduation, which reached his public some 20 years later. Joseph Guarneri made all the center of his tops thin, and his violins have stood up as solo instruments for 200 years. Experimenters soon abandon Castle's "pot-hole" tops.

In 1921 William Farrell's stiff-spined backs bid for public acclaim. A violin thick in upper and lower bouts has a weak glassy tone. The tone suffers if a violin back is thick outside the waist.

In the 20's I thought I could improve the tone of a violin by a stiffening rod between end blocks, which is a variation of Farrell's theory, but such a rod defeats the very

balancing of stresses that makes a violin. Fred Craig of Twin Falls, Idaho, clearly sees the fallacy of this theory.

The next step we must take is to learn the constructional secrets of late Stradivari and Guarneri violins. The last four years of his life Justin Gilbert joined the immortals of Cremona. Yonder leads the path to the future.

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I am writing an article on Brayton Bretch who taught violin making by mail some thirty years ago from Oswego, New York. He kept on changing his views often. I have his course for 1918, but would like to hear particulars of one for 1925 to 1933, when he died. Surely you must have run across someone who knows.

I wonder if Justin Gilbert changed his methods the last two years of his life. Some of his late violins won prizes in an Arizona Violin contest a year or two ago.

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

Ed.: Can anyone help? Write a note to Carl, but we're interested, too.

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Comments from Hugh Ramsey, Apopka, Florida

I enjoy the arguments very much, but can't say I agree with all of them all the time.

As a hobby I built at least one violin a year for several years. I am now 78, started when 15 years old. I have made more than 100 and don't use the tap tone method so much talked about in the Journal. There is a very simple way to find the exact tone of the plates when worked out for the top and C for the back. A violin and bow and vice is all you need.

There is lots about varnish. It keeps it clean and more beautiful, and must let the instrument vibrate - but the important part is the filler that you place under the varnish. There is a very simple solution more plentiful than in the days of the great makers of old. It stays on the surface and lets the grain show elegant. Takes 4 days for a coat to expand, and does not suck in the wood of the top. If you ever get to Florida, look me up.

Editor: Sure good to hear from you, Hugh. You said enough to get us interested but not enough to satisfy our curiosity. How about letting us fellows in on your methods? We'd love to be down there with you soaking up the sunshine and swapping fiddle talk!

Violin Making in the Soviet

One of our readers has brought to our attention the report of the work of Mr. M. Zemitis of Riga, Latvia. The following note appeared in the Soviet paper "abroad". Here is the approximate translation:

The attention of passersby on the peaceful Herman Street (in Riga, Latvia), is often attracted by melodious sounds of a violin emerging from the windows of a small two-storey house. Here lives one of the best known Soviet violin masters, M. Zemitis. More than thirty years ago he finished his first instrument and since that time he has not parted from his beloved occupation. In the meantime, the master has worked hard in order to rediscover secrets on beautiful sound which would resemble those of the world-famous violin maker, Stradivarius. M. Zemitis has tried out many different lacquers and colors to cover the violin, which, as one knows, has a great influence on the sound of instruments.

In the last years M. Zemitis has completed more than 300 violins. The important violin players have given good opinions about the instruments of the master from Riga. So the famous musician, Igor Bezrodny, who plays a Stradivarius violin, has said that the instruments of Mr. Zemitis on its merits and sound are closely related to those of the Stradivarius.

Mr. Zemitis is a participant of violin exhibitions and competitions in Soviet Union as well as abroad. At the present time the aging master is striving to improve even more his instruments. As far as I know, Mr. Zemitis has completed a book on lacquers which should be printed soon. In a letter to me he once mentioned several discrepancies between his research and results as compared to Michelman's.

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Dr. Laffoon's letter to Robert McGowan

In regard to your article in the Violin Makers Journal; I had a violin in the white that I just tuned up when the Journal of January-February came out. It sounded much like a gourd. I turned it over and began sanding on the back for a day and tried it and the "A" and "E" strings were much better. I sanded the back another day and tried it and was amazed at the change. The "C", "A", and "D" strings are fine and of a brilliant tone now. The "G" string is better but not good yet. All this is why I have not made better violins. I am on my twenty-first violin, third viola, second cello. I am beginning to see the light now. You have taught me something. I have read your article three times. P. S. to the Editor: you may publish this article if you can use it. There is one other thing I would like to mention. In the Strad magazine of March, 1963, Joseph Michelman

has an article on varnish where he describes a drying cabinet to dry a varnished violin with ultra violet lights that does a fine job. I have made one and can dry violins in less than one-half day and the violin varnish is not tacky after thirty minutes. It is a fine thing for drying varnish in cold weather.

I sure miss Mr. Don White. Keep the good work coming.

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A Professional's View of The Journal, by Joannes Easadil

Possibly you would wonder what a professional violin maker thinks about what he reads in your Journal. I was apprenticed to my uncle in Vienna, Austria, and he studied under Jau Bapt Dvorak of Prag - Checkoslovakia. I come from an old Czech family and have had a lifetime of violins and violin making for my background. My uncle was an experimenter as was Jau Bapt Dvorak of Prag, Checkoslovakia. I too keep right on experimenting and this I believe is what the majority of the writers who are writing for the Journal are doing. I will go further than this--isn't it a proven fact that the old masters were also experimenting all the time. I have had my hands on many Cremona violins, and from the same period, and I must truthfully say that these men, although Strad, Bergonzi, Joseph Del Jesu were all neighbours, certainly their violins differ one from the other very much, even their own violins differ one to the other, some less and some more so. I believe that when the day comes that we violin makers, professional or amateur, quit experimenting, will indeed be a sad day for the violin industry. I have learned my profession well, but not well enough not to listen to someone else and try his ideas. No one person or group of persons know it all nor will the day dawn that they will, and I will here say that the man who thinks he knows all there is to know is indeed a very sad man as when one knows it all, what use is there to go on living. There is nothing left to learn and who wants to live in a vacuum.

I do not go along with everything I read and I do not expect everyone else to go along with what I might say or write. But this exchange of ideas is what makes the violin profession an everlasting challenge and what can be more rewarding than to finally string up a violin or viola or cello and say "This is the best one I've yet made," only to start another one and strive to make it better than the last one. This has been my ambition ever since I was nine years old and I am still trying to make the next violin my best one.

If all the violin makers will keep on trying to make the next one better than the last one I am sure we will have some fine violins around long after we are gone for others like ourselves to try and make the next one better. This, then, is what I think is what more professional fiddle or violin makers think of when reading the Journal or should think of. If you have something that you think might help, let it be known to the others through the Journal. Some might not agree with what you write but write it anyway. It might help someone and that is all that counts. Yes, I think the Violin Makers' Journal is a fine publication and I hope it has a long and interesting life.

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One thing about ignorance -- it sure makes for a lot of interesting arguments.

THE MUSICAL GUARNIERIS

" Their line of genius extends more
than 200 years "
from The Denver Post, Aug. 27/61

sent in by
Henry Bolln, Douglas, Wyoming

Giuseppe Antonio Guarnieri died more than 200 years ago, leaving the world a legacy of extraordinarily fine violins he had made and signed with the Latin form of his name -- Guarnerius. Some are still in use, priceless to artists fortunate enough to own them.

The violin-maker's genius passed on to one of his descendants, Ferdinand Guarnieri, and his musical talent was inherited by Ferdinand's daughter, Mrs. Ann C. George, and her three children, Cathy, 15, Albert, 14, and Ferdinand, 13. All of them live at 3005 Jasmine Street in Denver.

Ferdinand Guarnieri, now 73, came to the United States in 1911 from his native Sicily. He lived in New York, where he built violins and other stringed instruments after the manner of his great-great-great-great grandfather. He composed some instrumental music, taught violin and played a great deal for his own pleasure. There, too, he met and married Adele, who had a lovely soprano voice but whose family had discouraged thoughts of a singing career because it was not considered ladylike in the Old World culture. Adele had been a playmate of Enrico Caruso when both were children in Naples.

But making fine violins isn't as profitable as it once was.

"My family didn't want me to sell them, they liked them so much," says Guarnieri. "Then, too, it took so much time to build one that I had to charge quite a bit and they didn't sell fast." So he turned to repair and to restoration of old instruments, which he still does. He still teaches, despite his age, and when his family holds an impromptu concert in the living-room he takes part with one of the many instruments he plays -- possibly one of his own manufacture. The one stringed instrument he will not play is the ukelele. He detests them, though he sometimes repairs them.

Guarnieri and his family came to Denver in 1954. Mrs. George plays and teaches piano. She is conductor of the family orchestra, and the organizer responsible for formation of the neighborhood Gold Tones, an instrumental group that specializes in nationality programs, performed in suitable national dress.

Cathy plays violin, mandolin, mandola (a slightly larger version of the mandolin), piano, flute, viol, cello, bass, guitar, piccolo, fife, concertina and glockenspiel. She formerly played with the Golden Symphony, now plays with the East High School Orchestra and band and the Gold Tones.

Albert plays clarinet, cello, bass clarinet, mandola and bass. He is in the Junior Police Band, Gold Tones, Smiley Junior High School band and orchestra.

Ferdinand plays flute, piccolo, fife, concertina, cello and Chinese flute. He plays with the Gold Tones, Junior Police and Smiley bands.

Both boys played with the Junior Police band in Washington, D. C., last Jan. 20 when it marched in the inaugural parade.

The heavy musical outcropping includes Mrs. George's three brothers, John Guarnieri, a National Broadcasting Co. staff pianist; Armand, assistant bandmaster with an Army band in Germany; and Leo, Armand's twin, a bass player. John's son, John Jr., is a singer and dancer in Hollywood.

The Guarnieri talent for music skipped several generations before it came to rest with the Denver family. The elder Ferdinand Guarnieri's family was a telegrapher, his grandfather a lawyer. Both his great-grandfathers were members of the secret Carbonari, which fought for the liberation of Italy in the mid-19th Century. They were forced to flee from their homes in Cremona to Sicily.

No one in the family except the elder Ferdinand now repairs instruments or has the knowledge to make them. The genius that marked Giuseppe Antonio Guarnieri flowered in Ferdinand after disappearing for years, however, and it may do so again, generations hence.

BUILDING UP A VIOLIN OUTLINE FROM FIVE GIVEN DIMENSIONS

by Dr. N. Nicholas
9 Via. Vittoria Veneto, Ventimeglia, Italy.

On page 137 of Ed. Heron Allen's book "Violin making" is shown: "Method of drawing an outline mathematically on a given graduated straight line". Mr. Allen states that it is a reproduction of John Bishop's translation in 1848 of a work by Jacob Augustus Otto: "Ueber den Bau der Bogeninstrumente" of 1817. Why it is called mathematical is difficult to understand, because no mathematical calculations are involved, but purely arbitrary numerical figures are given to follow rather blindly.

After study of outlines of Amati, Stradivari and Guarneri del Gesu, I came to the conclusion that they built their outlines from five preconceived dimensions, using them as interdependent modulae. These five dimensions are: (1) length of the body; (2) width of upper bouts; (3) of middle bouts; (4) lower bouts; (5) distance between corners of C's. Every master used his own dimensions but the method of building the outline is surprisingly similar with very few small exceptions. All curves, radii and straight lines forming the outline are derivations of the five preconceived data. The form of the violin is already there in these five figures.

Let us draw a Stradivari violin outline using these five dimensions. In the Möckel book on violin construction the dimensions of five Strads are given. I took an average of them (each dimension) and have this: Length of body 356 mm; upper bouts 162; middle bouts 110; lower bouts 204; distance between corners of CC's 84 mm. These are the dimensions usually given in violin descriptions and they are sufficient to build the complete outline. On a sufficiently large sheet of paper we draw a straight line and on it mark two points 356 mm. apart. This is our centre line. As we assume that all dimensions are related we can write:

356 - 84 = 272 = length occupied by upper and lower bouts on the centre line. We assume that this length is divided between upper and lower bouts in proportion to their width. If the sum of given dimensions 162+204 = 366, we can write:

$\frac{272.162}{366}$ = 120 = length of upper bout on C. L.

Obviously the lower bout will occupy the remainder = 272 - 120 = 152. From point A we mark 152 mm. and from G - 120 mm. on C.L. Draw lines 2-2 and 4-4 square to C.L. By dividing the line AC by two we obtain the centre of lower bout, and similarly by dividing EG the centre of upper bout. Draw lines through these centres 1-1 and 5-5. The distance between lines 2-2 and 4-4 should be the given CC's dimension, = 84 mm.

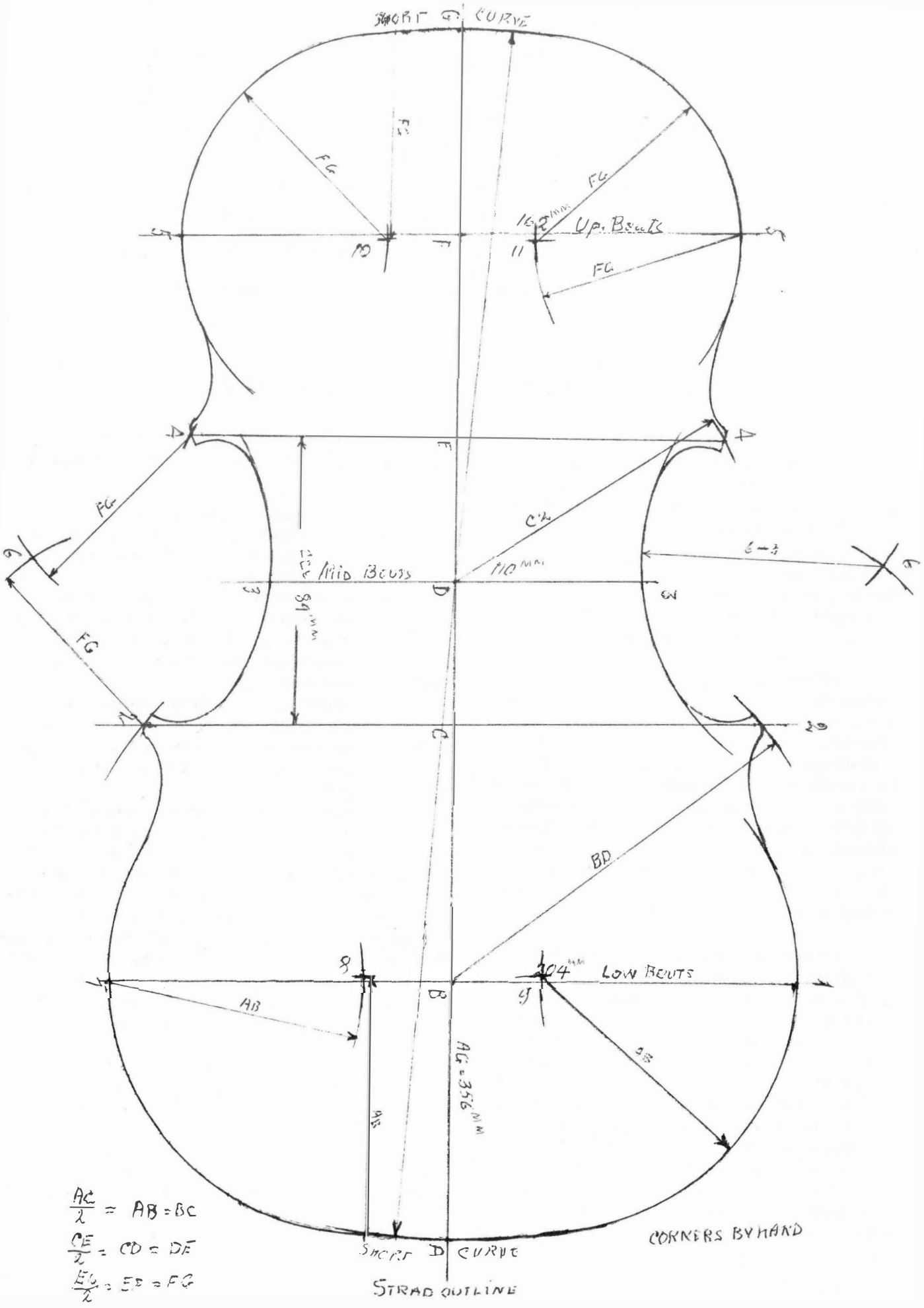
Now all the length of the body is divided into upper bout, middle bout and lower bout. If we divide the line CE in two parts we obtain the centre of CC's. On the line drawn through the centre we can mark the width of middle bouts = 110 mm.

Now we have all the preconceived dimensions marked on C.L. We can start drawing the outline. With radius AD and centre at D we draw a short curve through A. With radius DG and centre D a short curve through G. These are the flat curves of the top and bottom of our violin. For the complete outline of lower bouts we proceed as follows:

Radius AB. To find centres 8 and 9 with this radius we intersect two curves from points 7 and from the short curve at A as shown on the drawing. From these intersections with the same radius we draw half circles of lower bout sides. With radius BD from B intersect line 2-2. It gives us both ends of the lower corners.

Radius FG. To find centres 10 and 11 we do as at lower bout, and in the same way draw the sides of the upper bout. The upper corners of CC's are found by intersecting line 4-4 by radius C - 2 from D as centre.

Curves of CC's are made as follows: Using radius FG from points 4 and 2 we find the intersection at 6. With radius 6-3 draw two curves between lines 4-4 and 2-2. The corners themselves are finished by hand according to the maker's fashion.



$\frac{AC}{2} = AB = BC$

$\frac{CE}{2} = CD = DE$

$\frac{EG}{2} = EF = FG$