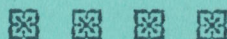


DECEMBER 1960

The Violin Makers' Journal



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



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

The Violin Makers Journal

A Non-Profit Periodical . Published Monthly

By The Violin Makers Association of B.C.

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EDITORIAL PAGE OF *The Violin Makers Journal*

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SCIENCE IS ALWAYS RIGHT

On several occasions the Journal has been criticized for inserting in its pages too much "Scientific nonsense". These critics, asserting experience is the only teacher.

We would like to take this opportunity of taking up the cudgels in defence of scientific knowledge and its application to violin making.

We can declare very definitely that when the "perfect" last made it will be found to embody every scientific principle known to science. "It will be scientifically correct."

Why then should we be afraid of too much science?

Our critics often mention certain scientific investigators who after spending a life time of study are unable to produce a good violin. Many of these individuals are now deceased and unable to defend themselves.

Let it be pointed out that it is not with science but with the scientists! It is a human element - a human failure - for SCIENCE IS ALWAYS RIGHT!

Naturally science has its limitations. There will always be one quality missing, the projection of individual artistic temperament. Bach wrote his fugues to conform to the rules of musical form and counterpoint, and the intuition of a genius to bring the composition to life.

Science could never produce the Mendelssohn Violin Concerto, but it did produce a very fine violin to play it on, for we are becoming more and more convinced that the Old Masters did know the scientific principals necessary to produce a Master Violin.

To our critics we can retort, with confidence, that. "Until we learn the scientific principals underlying the construction of violin making we will never with complete certainty, produce a good violin.

Link your hand with science for SCIENCE IS ALWAYS RIGHT.



LOCAL NEWS

By Kayd Holly

The October meeting of the Violin Makers Association, opened with a resume, by our President, Mr. G. Heyworth, of his visit with Mr. Pierre Josephs of San Francisco. Mr. Tom Hawes also visited him early in the summer.

Mr. Josephs apparently is a fourth generation violin maker, a mine of information, ever ready to discuss his views. The opinion of our two members is that he makes a very fine-toned instrument.

Mr. Norman Miller of Australia sent over a fiddle, so that it may be entered in any future exhibitions. All credit is due to Mr. Millar for his interest and enterprize; for our part we certainly enjoyed playing it looking over and comparing it with our own fiddles.

Mr. George Friess has completed another cello, which is said to be a fine instrument, as yet we have not seen it at the meetings. Perhaps we shall see it at the Christmas Party.

Speaking for myself, last week I completed a Bass Viola-da-gamba. It was played over the week-end, and found to be satisfying in every respect, particularly in tonal qualities.

I am very confident that it is the first to be built in B.C., and from my fruitless efforts to obtain specifications in Montreal, New York, Chicago, and many other North American sources, and later strings etc., from the same sources, I can only presume that it might be the first in Canada, I know of a maker in the States, who made two, but he long since has lost his patterns.

The pinnacle will not be held long by yours truly, as I understand Mr. George Friess is also making one.

Such is the vitality of making these days in the Vancouver centre, Gamba's, cello's being turned out faster than you can look, sprouting up over night it seems.

This spirit will create a fine school of making I am sure for enterprize and competition are its life-blood.

oOo

Never argue with your doctor. He's got inside information.

oOo

THE AIR TONE OF THE VIOLIN

By Carleen M. Hutchins, Alvin S. Hopping, Frederick A. Saunders

A great many string players are incredulous and astonished to discover that at one note they have virtually a wind instrument under their bow. That the air inside the body of the violin, viola, and cello adds resonance to a small range of tone surrounding only one note on each of these instruments often comes as a completely new idea.

The air inside the box of a string instrument acts very much like the air in other partially closed chambers. If one blows across the top of an empty bottle in just the right way the blow-tone of the air in the bottle will be heard. The pitch of this note can be varied in two ways: by changing the volume of the enclosed air, and by varying the size of the opening through which the air escapes. Putting some water in the bottle makes the air space smaller and causes the pitch of the blow-tone to rise on the musical scale. Varying the size of the air column in some way is a feature of nearly all wind instruments. This is most vividly illustrated by the pipes of an organ where each tone is produced by a pipe of a different size; that is, the organ has a pipe for each note throughout the whole range of the instrument.

The pitch of the blow-tone also moves up the scale as the opening through which the vibrations of the air escape becomes larger; conversely it moves as the opening is made smaller. The latter can be illustrated by blowing across the top of an empty large mouthed bottle and gradually closing the top part-way with a piece of cardboard. The pitch of the blow-tone moves down scale as the opening becomes smaller.

The violin, viola, and cello each have their particular blow-tone or Air-Tone as it is called. This tone can be heard in these instruments by blowing across one f-hole somewhat in the same manner as across the top of the or as a flautist blows across the mouthpiece of his flute. With a little practice the pitch of the air-tone of each violin, viola, and cello can be identified. The quality of the air-tone differs from that of adjacent notes, being richer and somewhat more vibrant, due to the added strength in its fundamental tone.

In most violins the pitch of this air-tone the open D string (260-300 cps.) (cycles per second); in the viola A to B on the G string (220-250 cps.); in the cello A to B on the G string (110-125 cps.). In each of these the pitch of the air-tone is regulated by the volume of air inside the instrument and the combined area of both f-hole openings. From the point of view of the violin maker the pitch of the air-tone is affected by the arching of the top and back, the height of the ribs or sides, the area enclosed by the ribs, and the size of the f-hole openings.

The experiment of lowering the pitch of the blow-tone or air-tone in the bottle may be applied quite easily to the violin or viola. So also with the cello only it is more cumbersome. Blow across one f-hole from the edge of the C-bout and determine as closely as possible the pitch of the air-tone. It may help to match this pitch with the corresponding note on the piano, unless of course one is lucky enough to have absolute pitch. Then plug one f-hole closed. With a bit of practice and careful listening the pitch of the air-tone can be heard to move down scale several semitones when one f-hole is plugged.

The effect of this change in pitch of the air-tone from both f-holes open to only one open can be shown as the instrument is bowed. The violist for example usually finds an area of rich mellow tone in the A to B range on the G string. This

is the pitch of the air-tone produced by blowing across one f-hole when both are open. When one f-hole is plugged the rich mellow tones of the A to B area will have disappeared. They will be found several semitones down scale near the open G. The violinist will find that the particularly resonant area around the open D string moves down to about B flat or A on the low G string when one f-hole is closed.

This area of strong resonance that can be moved about so simply is the Air-Tone of the particular instrument in hand. It actually comes at one pitch or frequency, but its effect spreads to several semitones on either side. Our experiments^(a) show that there are no useful resonances from the possible overtones of this air-tone. However we have found a strong resonance an octave below the air-tone in these instruments, but under normal conditions it contributes nothing to the tone of the violin, viola, or cello because in each instrument it falls below the lowest note on the fingerboard.

It is interesting to locate this sub-harmonic, as it may be called, on a violin by lowering the pitch of the G string about a fifth to the C or D below. It is somewhat easier on the viola, because the sub-harmonic an octave below the air-tone is only two or three semitones below the open C string. This strong resonance occurs because the air-tone, say at open D on the violin, acts somewhat as the first overtone of the D an octave below, and our ears hear this as an increase of the loudness of the low D. This may sound strange is true.

It occurred to us that this strong subharmonic resonance which lies just below the lowest tones of the C string of the viola might be put to work by being moved up in pitch, bringing it onto the C string. There it might help to strengthen the lower tones of the C string on the viola that are often weak. This would mean raising the pitch of the air-tone from B or B flat up to the open D of the viola.

The two methods for doing this were the same as for the bottle; (1) changing the volume of the enclosed air; (2) varying the size of the opening or openings through which the air vibration escapes. In this case the air box needs must be smaller and the f/holes larger in order to raise the pitch of the enclosed air.^(b)

Cutting the f-holes almost twice as wide as normal on several inexpensive violas did raise the pitch of the air-tone about two semitones. But this was not enough. Besides, the effect of cutting such wide f-holes spoiled the appearance of the top and seemed to change some of the wood resonances adversely. A series of experiments to change the volume of the enclosed air by varying the height of the edges or ribs was more successful.

A viola was constructed with ribs of the conventional height, about $1\frac{1}{2}$ ". Tests showed the air-tone to be at B flat on the G string (233 cps). One half inch was then sawed off the height of the ribs and the instrument put back together. The air-tone had moved up about two semitones to middle C. We needed

(a) RECENT WORKS ON VIOLINS, F.A. Saunders; Journal of the Acoustical Society of America, Vol.25, No.3, 491-498, May, 1953. Five methods of studying the vibrations of the inner air are described in detail.

(b) To raise the pitch of the enclosed air a whole tone requires approximately a 20% reduction of air volume (no change in f-holes) or a 44% increase of f-hole area (no change in rib height).

it up at least another whole tone to D. Another half inch was cut off the ribs leaving them only $\frac{1}{2}$ inch high. When the instrument was put back together it was very thin and strange looking, but the air-tone was up almost to D sharp (300 cps). The air-tone at this point did exactly as expected: namely to strengthen the octave below, thus giving the first four or five semitones on the C string a strong rich tone.

Another viola was constructed on the same pattern, but with ribs two inches high, $\frac{1}{2}$ inch greater than normal. The air-tone in this unusually thick instrument was near A (220 cps).

In both of these altered instruments the normally strong tones of the B to B flat on the G string were missing. In the case of the thin viola (small air box) the air-tone had moved up scale. In the case of the thick viola (large air box) the air-tone had moved down.

Musicians playing these two instruments discovered interesting features. Neither of them was suitable in playing the Mozart two-violin Quintets. Mozart had written so well for the normally strong tones of the viola that the outstanding parts lacked their full expressive qualities when these experimental instruments were used. The strong resonance of the air-tone was not where the musicians expected to find it, or where Mozart seems to have counted on it.

The most surprising feature of the two violas, the thin one and the thick one, was that the thin shallow instrument had a full rich tone and a particularly strong low C string. The thick one with two-inch ribs had a thin tone that lacked richness, and its low C string was weak. Many musicians who have played the two alternately have said with astonishment as they played the thin one, "Where does all the tone come from?"

The ribs of the thin viola are too low for practical purposes, but several excellent violas have been made with ribs about an inch high. Another application of the same principle has made possible the construction of good small violas for young people who need a viola between 12 and 15 inches long. (c)

(c) ON IMPROVING VIOLINS, Frederick A. Saunders and Carleen M. Hutchins; Violins and Violinists, Vol. 13, Nos. 7/8 November-December, 1952. This gives a further discussion of the air-tone and its usefulness in small violas.

The above article has been -
Reprinted from THE STRAD, September, 1959 by kind permission of Dr. F.A. Saunders.
And The Strad Magazine.

- 0 -

Man's chief merit consists in resisting the impulses of his nature

.....Johnson

Anybody can start a movement by beginning with himself.

.....Stephen Leacock

Men never turn rogues without turning fools.

.....Thomas Paine

- 0 -



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OPINIONS ON VIOLIN MAKING

by J. Fred Fehr

Oh! me oh! my, my mind is in a whirl my impulses are at a variance with my own good sense, and if I should ever attempt to make another violin I am sure I would end in making the worst ever that one could call a violin, I am not going to stick out my neck by challenging all of the writers of your estimable Journal. But I have made more poor violins in getting the plates too thin, their tone was so harsh that in placing the instrument under your chin, the feeling was that you had a tin pan placed there, and in taking them out for the distance test you could barely hear them a block away. I might say these violins were more of an experiment in graduation than in trying to produce a well sounding instrument. Now then as soon as I made a new plate I had a violin that I and some of the orchestra members seem to think was a real instrument, it has a vibrant, incisive tone, sounds well to the player as well as the listener. The lower plate at the bridge position is a strong $4\frac{1}{2}$ mm the top at the center is a shade less than 4 mm, and then only the circle encompassing the feet of the bridge.

In the present issue, which is a very fine one, some writer says that you should take your old Heron Allan book to the incinerator. I think he is going a little too far, and if this writer would turn to page 19 of his Allan book, it might set him to change his mind about the fiddlemakers best friend.

I just bought a violin at an auction sale, the owner is a soldier, one of his hobbies is to buy fiddles, he had 5 of them, not one besides the one I bought was worth anything at all. But the one I got was made I gather by the name, was a Frenchman. It is red in color, and the most beautiful workmanship you could ever want, it is so perfect it hurts your sensibilities. Nothing can be so perfect and not do so. Now the tone of this instrument is harsh, I tried every different kind of a gimmick to get the tone a little subdued, but no soap. No work had been done to it before I got it. And here is the pay off, the thickness is at the bridge is just over $2\frac{1}{8}$ mm, and rather thin as you scan the "f" holes near the edges. You can see the maker was an artist, the varnish is perfect, no brush marks, you can almost look down into the wood. The makers name is written freehand, in a rather jerky indication, as the maker was in the 60 or 70 years of his life. Now here is what you have been waiting for, his name: J. Didelot, just that and that is all.

I bought an old Hornsteiner violin make in 1748, a little brown was the color, the height at the upper end was not the usual, and the lower end was not an inch and a quarter. And while on the subject of heights, one of the orchestra members has an old Ficker the heights are much less than the usual ones advocated by most makers. We also have an old Joannes Gagliano, which is the same. Both of these violins have a beautiful tone, soft and vibrant.

I enjoy reading the different theories in the Journal but, as for me, I will continue to make violins as my very able German teacher taught me. A fine workman, he made his tops a little over 3mm. at the center, and the price we sold them for, \$250. They were good honest violins, that he claimed would be better than Strads in another hundred years. I think that the difference between the old Italian makers and the present maker is age.

Another factor that we must consider is that a piece of wood that has no protection on the inside is bound to shrink a bit as age has its inning which taking all things under consideration, maybe the old makers made them thicker and age has thinned them a little.

MORE ABOUT THE ACTION OF THE SOUND POST

by Egerton W. Shrubsole
Sault Ste. Marie, Ontario

I was very interested in Mr. Skou's remarks on pages 9 & 10 of your May 1960 Journal. His concept of the functions of the sound post coincide almost exactly with my own and I don't think can be reputed. However since it unquestionably acts as a teeter-totter point, it is also depressed or forced downward at the same time and thus by moving it backward or forward the amount of downward thrust can be controlled or altered, thus balancing the amount of vibration apportioned to the back and belly, and this I believe is a prime factor in tone production. Now it follows that since the top vibrates in two sections (in front of and behind the post) and since the post is forced downward at the same time, the top must also vibrate as one piece, that is the whole plate is depressed and raised alternately.

So much for the belly, but how about the back which I think is too often neglected. Since the greatest curve or should I say the curve with the shortest radius sideways occurs at the exact centre of the length of the back it follows that if the back is arched correctly (a true arc of a circle lengthwise) that a similar vibration occurs in the back as occurs in the belly, due to the resistance to movement in the centre (lengthwise) of the back. Now any variation in thickness (graduation) of the back must take this fact into consideration, and accentuate this teeter-totter effect in the back. Hence I make my backs thickest at the exact centre of the length. Further more I believe that the graduations both in front of the exact centre of the back, and behind that point should be identical in order to facilitate the teeter-totter. As a matter of fact I use a compass to draw the boundaries of the various thicknesses, centering it in the exact centre of the back. I have found that resonance is greatly increased, by using this method; as one might expect. So the problem resolves itself into the question of how much wood to leave in the back since if the back is too thick you will not get the downward and upward oscillation of the sound post and hence the same vibration pattern in the belly is interfered with, the fundamental vibrations of both plates will be reduced resulting in the partial vibrations of the plates (in front of the centre of oscillation and behind it) becoming more prominent and hence the tone is hard and harsh and hard to produce.

oOo

Arrested for passing a car ahead at excessive speed, the defendant was asked if he was guilty or not guilty.

"Your honor, I plead not guilty. It was a case of self-defense."

"Self-defense? What do you mean?"

"Your honor, the driver of the car ahead of me was a woman. At a crossing she put out her hand for a left turn, turned on her turn lights for a right turn and then went straight ahead. What would you have done?"

"Case dismissed," said the judge.

oOo

FIRST FIDDLE

by R.R. Leng
Bedford, England

I have wanted to make a violin for as long as I can remember but it seemed unlikely that I should ever realize my ambition. In the first place, the job seemed to be completely beyond my skill and, in the second, I could certainly never afford to equip myself with the many expensive tools and appliances that, according to the text-books, were essential to the would-be luthier. A set of scroll-cutting gouges at £13 10s. and £4 for a set of round-sole plane, to quote but two of the many items in the catalogue, were beyond my means, and in any case there didn't seem much sense in acquiring a lot of specialized tools when there was no certainty that, having made one violin, I would wish to continue with the craft. A couple of years or so ago, however, I read somewhere of a penniless violinist who, without any particular training or equipment, had made himself an instrument out of a packing case - and that triggered me off!

I didn't use a packing case, but I can quite believe that to be possible, and I have since heard of amateur makers acquiring their wood for next to nothing from all sorts of unlikely places. Somebody has told me, for example, that old Post Office telegraph poles, which sell for around 2/6d. per running foot, yield fine mature bellies, although I haven't got round to trying them myself yet.

For cutting out the front and back I used an ordinary coping saw, whilst all the modelling and hollowing out was done with a 5/8" No.4 gouge. Old razor blades substituted for scrapers. Gauging the thickness of the plates seemed likely to be a problem until I came across an excellent series on violin-making in "Woodworker" by Mr. E.H. Varney of Messrs. E. & R. Voigt. In the June 1958 issue he described a simply made plywood calliper gauge which I have found in use to be both effective and accurate. The groove for the purfling was marked with ordinary compasses, cut with a 2/6d. Swann-Morton craft knife, and cleaned out with an old jewellers screw-driver bent over slightly at the tip and ground to a chisel edge. The same knife was used for cutting the f-holes.

My electric bending iron cost me 5/6d., this being the price of a government surplus 350 watt immersion heater. This measures 7" x 1" diameter and, mounted on a wooden stand, does the job satisfactorily so long as it is not allowed to overheat. The conflicting opinions of the experts on the respective merits of inside and outside moulds left me very confused, and it was particularly easy working without a mould, as my uneven margins bear witness, but I daresay that the knack of it will come with practice.

Carving the scroll wasn't as difficult as I had anticipated, although rather tedious. The only special tool I used for this was an X-acto modellers gouge costing 1/-d. and much of the carving was done with a pocket knife. The finished scroll won't stand up to expert scrutiny, but I'm rather pleased with it as a first effort.

Finding it impossible to beg, borrow or steal a peg-hole reamer, I had almost resigned myself to buying one at a cost of 49/6d. when, by chance I came across some slightly used No.4 Taper Pin Reamers for sale at 2/-d. each. I bought one and, with its six cutting edges, it proved to be very satisfactory although, having a maximum diameter of only $\frac{1}{4}$ ", it could really have done to have been a shade larger. I have since learnt that the new price of these tools is only ten or eleven shillings and I shall probably invest in a No. 6 which tapers from 11/32" to $\frac{1}{4}$ ".

Having completed the violin in the white on a shoe-string, as it were, I didn't feel inclined to go to any great expense on special varnish, and after reading countless articles by the experts on what constitutes good varnish I was far too confused to attempt to make my own. I sincerely hope that what follows will not come to the eyes or ears of Messrs. Skou and Sangster. Using materials that I already had in stock, I gave the instrument a coat of Colron wood dye and followed on with three good coats of boat varnish. After rubbing down with pumice powder and tripoli the result was much better than you would probably expect.

The finished fiddle looks and sounds exactly what it is - the first attempt by an inexperienced amateur - but despite its faults I'm very proud of it. It has not been easy working with such a primitive tool kit but at least I feel that I have gone some way to demonstrating the truth of Ebsworth Hill's dictum (vide "Woolf Notes" in the May 1960 issue of this Journal) that a violin maker can make an instrument with a knife and fork.

For my second fiddles I shall obviously have to improve my equipment if I wish to obtain a more professional result but I am sure that I needn't go to too great an expense in doing so. Perhaps as a result of this article some of your readers may care to say what they consider to be the basic essentials for an absolute beginner to the craft, or pass on details of their own favourite gadgets.

oOo

THE THIRD ANNUAL ARIZONA VIOLIN CONTEST

A most successful contest for new instruments was held at Tempe, Ariz., on October 23rd, 1960. A large number of entries, many of very high quality made the judging most difficult. Among the main winners was Mr. Robert Wallace who scored very high on his violins.

The contest was sponsored by the Arizona Violin and Guitar Makers Association. Following is a full list of winners:

PERFECT SCORE ON TONE: Grand Loving Cup - Bob Wallace Sr. Irvin Lunday, Carmen White.

First Prize - Bob Wallace, Irvin Lunday, Eldon Haught

Second Prize - Earl Sangster, Joseph Horvath

Third Prize - Irvin Lunday, Van Ornam, F.L. Laffoon,
Dr. E.A. Johnson

TOTAL POINTS - TONE, VARNISH, WORKMANSHIP:

Grand Award - Bob Wallace Sr.,

First Prize - Irvin Lunday, Earl Sangster

Second Prize - Bob Wallace Sr.

Third Prize - Bob Wallace Sr., Eldon Haught, Joseph Horvath

VIOLAS: - First Prize - Lothar Mesiel, Owatonna, Minn.

Second Prize - Joseph Horvath - Cleveland, Ohio

Third Prize - Lothar Mesiel; Owatonna, Minn.

GUITARS - First Prizes - Garland Green - Tempe, Ariz.

Bob Wallace Jr. - Tempe, Ariz.

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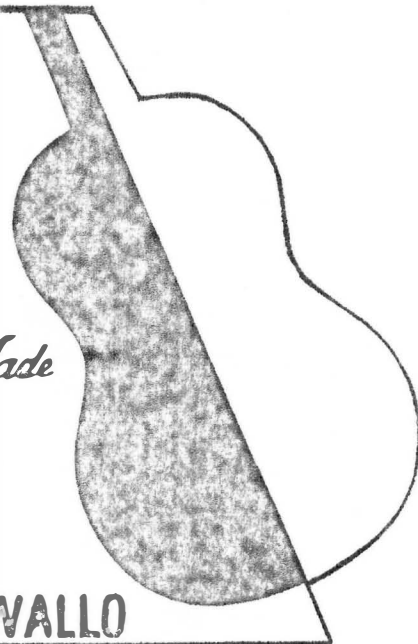
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RING OUT WILD BELLS

-0-

Ring out the old, ring in the new,
Ring, happy bells, across the snow:
The year is going, let him go;
Ring out the false, ring in the true.

Ring out old shapes of foul disease;
Ring out the narrowing lust of gold;
Ring out the thousand wars of old,
Ring in the thousand years of peace.

Alfred Lord Tennyson.

WHAT ABOUT THICK WOOD IN VIOLINS?

by Carmen White

Mr. Norman Miller has written quite impressively about leaving more wood in our violins. He quotes Jalovec as saying that some of the famous old Italian violins were 4 to 5 millimeters in thickness. Let me remind you violin makers that 3 millimeters is $\frac{1}{8}$ of an inch. If you have trouble in reducing millimeters to inches, just make a small piece of wood to the exact millimeter thickness you have in mind and measure it with your inch ruler graduated to 64ths--you can do it in two minutes with accuracy. But we must comment on these thick violins.

It was stated that Otto complained that many Stradivarius violins have been scraped by "vandals". But it does not follow that these "scraped" violins are worthless! Far from it! Many of the present day Stradivarius instruments are much thinner than 4 to 5 millimeters in thicknesses, and are known to be fine instruments. In other words, suppose some "vandal" has scraped a Strad--has he ruined it? Far from it. If that thinned violin is now riding the crest of the wave in some symphony orchestra or pleasing some great virtuoso in a major concerto with orchestra, who can say this violin is worthless because it was "Vandalized"? Many of these old Italian violins are known to have passed through the hands of Vuillaume. He calipered them before anyone else saw them. Had he found 4 to 5 millimeters of wood in these old violins, would he not have duplicated it in his own new violins? Surely he wished to duplicate the old Italian tone? Did he leave his violins 4 to 5 millimeters in thickness? We know he did not; his thicknesses are closer to 3 millimeters, as are those of many known famous old Italian violins.

Otto says "vandalism" and scrapers" have ruined these old fiddles by reducing their thicknesses. Where are these "thin ruined fiddles" and who is playing them? And where are these 4 and 5 millimeter fiddles and who is playing them today? Did Jalovecs give any information as to whether these 4 and 5 millimeter Strads were good Strads? Can anyone point to a 3 millimeter Strad that is bad? If so, who, when, and where? Let's get down to cases. We cannot draw general conclusions unless we have actual cases to back up such conclusions.

Again, let us look carefully at what we know. Now, we know that many, many German, French, and other makers have succumbed to this idea of leaving "plenty of wood" in the fiddle. Thousands of German violins have been made of unquestionably fine woods, with perfect workmanship, and correct measurements--and with 4 to 5 millimeters of fine wood left inside for thickness. What about their tone? Need we comment on it? It is simply impossible. It never improves. It is nauseous, to borrow a word from Mr. Miller himself, and it becomes more so with the years. Now, if thick plates were the answer, it would be simple indeed to just leave a little more wood in these fiddles and we would all have fine tone at once! Calipers are easy to come by, and any unskilled maker could come up with a fine instrument--even these Germans who love to leave thick plates! But have any of them come up with anything really good? Let your good judgment answer that question!

On the other hand, some makers, as Justin Gilber, have come up with good tone with thinner plates than even Stradivarius used. It is true enough that some thin plates do "roar" as Mr. Miller has stated. But how shall we know in advance which thin plates will "roar" and which thin plates will produce unquestionably good tone, as some are now doing, even in Strad. violins (thinned by vandals, as

Otto claims, yet tone is fine!). If a present day "thinned plate" produces good tone what difference does it make whether a "vandal" thinned it, or whether a fine violin maker thinned it? Could not Vuillaume himself have been one of these "vandals" if they existed at all? Who is ready to write Vuillaume off as a "vandal" if any of you are, join with Otto and produce your proof for your action!

We can develop some ideas which plates will "roar" and which will produce fine tone. Weight is a better guide for wood density and pitch is a better guide for resonance qualities than any maker's ideas of "artistic wood judging". For example, recently, I took a back from an old violin of unquestioned value--it weighed only 94 grams, which is lighter than I am used to seeing--yet, it was 4 millimeters thick in the center, and gave a tone pitch of B-natural at 78 degrees F, using Mr. Gilbert's method of taking the pitch. The average back of fine seasoned maple will weigh 110 grams and give a pitch of B-flat or A-natural below that B-natural at the same temperature--so what does this teach us? Merely that wood varies in pitch, resonance and density--and that probably the old Italians had wood of a high resonance, high pitch, and light weight. But if we know these factors, we can pre-judge in advance what the plates may do, at least to some extent, and leave those thick which need to be left thick, and thin those which need to be thinned. There is no need to guess about it. The scales and our ears can tell us if we have too much wood, back or top. I believe that the old Masters had a piece of wood handy weighing the same as the top and back of a violin of known value, and that they used this as a guide to finishing their plates. It is all so simple. No knowledge of mathematics, or acoustics, or of science is required at all! With my own experiments I can point to a top which finished out at 79 grams with bar and varnish, pitch of F-sharp, thickness of $6/64$ " all over and to another with a thickness of $8/64$ " all over, same weight with bar and varnish and same pitch! And tone is equally as fine from one as from the other--as many have claimed! How, then, can we account for this apparent variation in thicknesses? Easy enough, if we consider weight and resonance or pitch--is there some other way? If so, let's hear it.

What does this teach us? Merely that tone can be produced from thick plates and from thinner plates--if conditions of weight, resonance, and varnish are satisfied, and that these conditions vary with the woods used. So, if you have light wood with a high ring, by all means, leave it thick, as Mr. Miller says. He is right. On the other hand, if you have a heavier wood with a lower ring, you may have to thin it, but you must not go below F-natural at 78 degrees F. in a top and you must not go much above 80 grams of weight in a top, including bass-bar and varnish if you want fine tone. For a back, you should stay above A-natural with 100 to 112 grams of wood--let the thicknesses take care of themselves so long as you satisfy these conditions of weight and resonance, and the thicknesses will vary according to the wood used.

oOo

Girl: "You play beautifully. Why did you take up the piano."

Pianist: "My beer kept falling off my violin."

oOo

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"SOME PROOF THAT A THICK CENTERED TOP CAN BE SUCCESSFUL"

By Norman Miller

I feel that it is beneath one's dignity to engage in vulgar argument, especially when we are all supposed to be trying to help the progress of the art of violin-making, and to materially assist each other. It was no doubt, not the intention of Mr. Skou to argue, but I cannot see that he has the authority to make such positive statements that what he thinks is right, and that other methods are incorrect. I do not see where he obtains his authority to state what Mr. Jalovec imagined. There is no mentioning the text of Jalovec's book that the plans have nothing to do with reality, as Mr. Skou would have us believe, and I feel that it is not Mr. Skou's prerogative to make statements on Mr. Jalovec that the plans in his book are based on supposition.

What purpose would Jalovec have in publishing plans with these dimensions, if they are held to be incorrect. I am sure that Mr. Jalovec has no intention to make fools out of those with perhaps less knowledge than Mr. Skou, those who desire to see all aspects of methods of construction and not have to accept only one way of building a violin. If they are based on supposition, I hold that the other measurements given in the chapter on Stradavarius are also based on the same supposition.

It would appear in the text, that Mr. Jalovec accepts some tops to be 2.8 mm as he says; "the belly varies in thickness which is mostly 2.4mm - 2.8mm sometimes even less". It is with complete fairness then, that he publishes plans in his book of existing old masters that he has the measurements of, and not merely supposition as Mr. Skou would have us believe. However if Mr. Skou disbelieves Jalovec at the back of the book, he must also disbelieve the measurements given in the text, and suggest also that they have nothing to do with reality. Of course this will be hard to do as those particular measurements are in accordance with Mr. Skou's beliefs.

I understand that Mr. Jalovec is still alive. Could he not be contacted and asked to explain his plans as given, and where he obtained the measurements.

We all have our pet theories and methods, and feel that they are the acme of direction in violin making. Theories are being investigated and propounded by men of learning and high degrees of physics and science, yet many of us, even these men of learning are forgetting that there could be more than one way to obtain success in violin construction. Surely it must be accepted that the two great makers, Guarnerius and Stradavarius used principals completely different in execution. That fact remains true. Why then do some advocates become so adamant and positive with their statements, excluding any possibility that there could be another way, apart from theirs, to successfully make a fiddle?

I am championing the use of thicker centres than edges, only because I know how successful they can be, but even tho I advocate and use thick centres I do not try and drive this method home as being the only existing way to make a good fiddle.

I praise the thick centre as a way of making a fiddle that will be substantial many years after my corporeal self no longer remains substantial. Mr. Andrew Priest in the June issue and also in July-August wrote solid words on the necessity of more wood than 2 mm. Continued next page.

We have a saying in my country that goes; - "put up, or shut up!" meaning that talk is cheap. Produce the article so that it can be seen that the claims being made are backed up by factual evidence. In this case, it is easy to make claims and extol theories on fiddle making. I am sending to Don White one of my fiddles chosen at random from some of mine. A fiddle made this year. Its presence will be the factual form of my claims, not however to uphold one method in particular, but to show that other ways can be equally successful, and will stand as a representation of a fiddle with the centre of the top-plate $3/16$ in thick, and the wood used in such manner to add to and assist the tone. Its lines and curves, both inside and out smooth and flowing. Evenly tapered and not consisting of pits and hollows, that when you see them marked on a plan (K. Skou July-August) it becomes apparent that the maker was a careless chap, or that over the years, compressions in certain areas have caused the thickening to become uneven. I remember reading in Honeymen that if you became addicted to "maddness lay that way. It would appear that something similar would be the lot of a maker trying to make a plate with innumerable little spots varying in minute degrees, all over the inner surface of the plate.

I am sending this fiddle and want it tried and played and tested. To undergo any test that a fiddle should be capable of withstanding.

I am confident that this fiddle will receive honest judgement, and even tho Don seems to lean towards the thin theory, and the opposite method of procedure that the way this fiddle is made, I am sure that his opinions, and the opinions of those who play it and judge it will be fairly presented.

I would ask those who judge it, are not told before-hand that it has a thick centre, as this fact may cause their judgement to be influenced and probably impaired if they have any leanings to the theory that it could be called "too thick in wood".

It will be a pity that Mr. Skou will not be there to hear it and play it. I feel sure that he would be given cause to revise his dogmatic statements that a violin with a thick centre, cannot be equal. It should be remembered also that this violin is not "broken in". It is new, and will improve; but for all that, it will astound those who hear it, with its voice and quality. To those reading this, it should be evident that I have full confidence in this fiddle and in sending it forth to do battle for the thick centre, and to qualify its existence. This confidence is based on the fact that this fiddle is not a singular production that happens to be good in contradiction to some principals, or by some freakish means, but is one of a number all made to the same having the same splendid quality. I send it, not with regret at losing something that could not be repeated. It is not singular in this respect. I send it with pride as a true representation of a method that can and does produce instruments of outstanding quality, and without having to resort to adopting the role of a "mad scientist" little bit from there, resulting in a plate that is wierdly uneven and so varied in thickening, that one could almost imagine that a fiddle top should have no wood in it at all.

To my way of thinking, 1.8mm, is no wood at all. Gosh! That's nearly a hole! I do not think that Mr. Balestrieri really wanted portion of his fiddle back to be that thin! (K. Skou page 25, fig.2a July-August issue of the Journal) In Mr. Skou's model of Balestrieri it must be that thin of course. But how and why it became so can only be mere conjecture.

Data on the fiddle that is being sent.

Top-plate $\frac{3}{16}$ " under the bridge tapering evenly in all directions to $\frac{1}{16}$ " at the linings.

Back Plate $\frac{1}{4}$ " under the bridge tapering evenly in all direction to be $\frac{1}{16}$ " at the linings.

Weight of top plate $2\frac{1}{2}$ oz

Weight of back plate 3 oz

Weight of fiddle (strung) 13oz

DON WHITE REPORTS ON THE NORMAN MILL R VIOLINS:

First let me say that it has been a most exciting experience receiving a violin from the farthest corner of the Globe. Especially as a gift from a man such as Norman - a man with the courage of his convictions. To prove that a violin made with the graduations he recommends can be a first class instrument, for it is a very fine violin.

Mr. Miller and I have engaged in friendly debate - through the medium of the mails - regarding the correct graduations of violin plates. Norman is an advocate of "plenty of wood" but if we examine his graduations for a top plate we find he gets down to $\frac{1}{16}$ " at the edges. Certainly not much wood there! His center is $\frac{3}{16}$ ", which does give strength for the stress.

In the first place may I point out that nowhere in the series I have written on the graduations of old master violins, have I really suggested thin plates. I stated that-- Strad and Guarnerius tops were mostly thicker at the edge than at certain places between the edge and bridge point, in fact my last violin, which was used in the test which I will presently describe, is a far heavier violin than the Miller violin. A violin top made $\frac{1}{8}$ " thick at edges will naturally weigh more than one thin at the edges, but the overall strength should be at least equal.

Mr. Miller has asked that his violin be tested against the best in our local association and particularly against mine, it being the only one graduated different to authordox "text book" graduations.

We conducted a test at our last meeting. The different violins were played by one of our best violinists, playing behind a curtain. Two contrasting pieces were played and voted upon separately, with the following result: - 1st piece: - Norman Miller violin 6 votes, Don White violin 9 votes. 2nd piece: - Norman Miller 7 votes, Don White 8 votes.

It will be seen that there is not too much to choose between the two. Most of the audience, and those who played the violins afterwards, thought the two lower strings of the Miller violin were very fine while the two higher strings lacked strength.

An informal test was made after the meeting and Mr. Miller's violin was considered the 4th best of about 12 violins.

We all feel that possibly Mr. Millers violin has not yet recovered from its long journey and that it should improve in given time. The Miller violin is beautifully finished and the workmanship of a very high order. Further tests will be made and reported in the pages of the Journal.

AN INVESTIGATION INTO THE GRADUATIONS OF STRADIVARIUS AND GUARNERII VIOLINS

by Don White

PART 10:

In my last instalment I promised to continue my friendly argument with Dr. Saunders regarding the amount of sound created inside a stringed instrument. Mr. Kristian Skou has removed this task from my shoulders.

I had hoped to "say my little piece" but lack of time and Kristian Skou have changed my plans. I wrote both Dr. F.A. Saunders and Mr. Skou describing some experiments I had made, and asked some questions pertaining to these experiments. I present first an outline of these questions, followed by comments by Dr. Saunders then Mr. Skou.

THE QUESTIONS:

What makes violin sound? as say different to a cello or a drum... I am trying to say that the shape of the inside combined with the graduations and the material, create what we call Violin tone. Do you consider I might be correct, and if not then just what does cause violin tone as opposed to drum tone?

I feel that if we don't know what makes violin tone then how can we expect to make a violin.

To prove that sound can be heard inside I have made several experiments. Take a tin 5 gal. can (it stands about 18 inches high, and 12 inches wide, or less.) Put your head to the open end, tap the far end of can, you can hear a hollow noise (inside). Tap the sides, less sound! Take an empty quart milk bottle, put your ear to the open end and tap far end, a musical noise. tap the sides of bottle, no noise, or very little (inside). Fill the bottle half full of milk (milk seems to sound better than water, try both), now tap the sides with finger nail. With your ear to open end you hear a nice note, listen outside and you will find the note is about a minor third higher. Why is this? And are you convinced that there is sound inside?

The reason the tin can sound well if the end is tapped and the sides poor could be; the end is a perfect membran but the sides have no grip to anything solid at the top. Or it could be, the well known fact that a flat surface will vibrate better than a curved one.

I would also like you to comment on nodal points. It was brought up in an article in the September issue.

DR. F.A. SAUNDERS REPLIES:

I am delighted that you are experimenting but you need a few warnings. If you tap a violin string with a pencil it will vibrate very sweetly for you and produce sound waves of a simple sort. But if you tap a tin can, or even a milk bottle you start very irregular waves, unless you have (as when you strike the bottle on the inside) a chance to create an air tone. The air in the bottle will sing (briefly) with its air tone when you strike it on the inside, but not giving any other tone of a musical sort. The other tones are noises and they die out at once without being able to gain any reinforcement; only the air tone gets it.

Who suggested "silent insides" for violins? Not me, Sir. What comes out of an "f" hole is usually an insignificant sound. Go into a clothes closet packed with garments, and shut the door. Then clap your hands. You hear a sound alright but not a musical sound. Its the same in a bare bathroom (no towels hanging) and you'll get some low bass notes of quick good quality, higher in pitch the smaller reinforced by the good reflections of sound from the room. A small hard ball inside a milk bottle will generate a tone inside composed of the noise of the impact (which dies out quickly) and the air tone which any noise can generate (lasting long enough to be heard).

Conclusion (you say) "a diaphragm attached to all sides" this runs away with you. You mean by diaphragm a sounding surface? Like the top of a drum? You have two little ones in each ear. You could have a punctured drum which would give some sound but not so much as it did when whole. But there isn't a diaphragm in a 5 gal. can!

I don't smoke, so I have no tobacco can. It's sides don't vibrate easily because their curvature makes them too strong; the ends are more yielding, being flat. A door doesn't transmit much sound when tapped lightly, does better when it is slammed. Too heavy and too stiff, shave it down till it is like a piano sound board and then it works better. So do the plates of a violin, even if not flat.

I could put a mike inside a big bottle, but I know what I'd get - the air tone of the bottle!

Why does your G string give G so much better than other notes (so long as you don't shorten it). It is tuned to it. A violin box can transmit any sound but does so feebly, except at the air tone, to which it is tuned. Your trouble is that you don't know what waves are!

A water wave consists of a series of humps and hollows which travels along at a certain speed. Suppose we are at a shallow pond, splashing in the water, but not close together. You could make quite a decent wave in the water if you patted the water with both hands rhythmically, choosing a rhythm which matches what the wave likes to do. The wave comes over to me, and there is a slim pole striking out of the water partway over. I can see the length of the part of the stick above water change as the waves go by. If you do your part correctly this part of the stick will change regularly, as the water's height changes. O.K. so far? Now I start to imitate you exactly and to send you regular waves. What will happen at the stick? At one instant the two sets will agree in pushing the water up higher on the stick, and at some other moment the first wave will push up at the same time as the other pushes down. The two waves as they spread over the pond will show a pattern of what we call interference (places where the two waves oppose each other most of the time) and its opposite (agreement) where they combine to make a higher wave all the time. We would probably not make waves regular enough to produce this pattern, but it could be done by a mechanical device like a double paddle rocking about its middle.

The point about all this is that you can make waves destroy each other. I asked you to try it in a dish with a lot of hands (or spoons) disturbing the water. In this case you'd have circumstances such as occur inside a violin, with air waves. Of course, we can't see air waves, and they don't have surfaces where we can watch levels; but all waves can be examined one way or another, and they all can be made to do the things water waves can do. With a lot of spoons disturbing the surface of water in a dish you do not get terrific big waves, but a confused mess of motion in which each single wave may fight with many others, and they produce a moderate commotion only; far less important.

That is what happens inside a fiddle. You get at the "f" hole only a confused motion which isn't strong enough to be heard. Except that there is one pitch to which the motion can be tuned. At that pitch (only) the disturbance builds itself up into a motion inwards (compressing the air inside) followed by an expansion outwards (expanding the air inside), repeating itself over 250 times in a second (usually) when you blow across the mouth of a bottle you make random motions at first inside the bottle, but in 1/100 th second they begin to settle down to the regular in and out motion I have just described. This makes the musical note we hear, and it is reasonable that we get a high note for a small bottle, and vice versa.

If we think of sound waves we have to deal in compressions and expansions following each other at the rate of 1100 ft/sec and the picture is hard to imagine. It is lucky that their actions are like water waves in many ways, which we can see.

You worry about where the sound comes from in a violin. The whole body is in motion but to such a small extent that it could be seen only in a very high powered microscope. But if you have a piece of very thin glass with one side silvered it is possible to send light diagonally down on it and catch the reflection on a white surface a long way off. Sunlight does it best. When the sound is going (and the mirror is waved on to a violin surface) the spot is stretched out into a line, proving the existence of the motion. If an area of some part vibrates a little, but they are already in vibration from the motion of the strings, so we can't separate one from the other.

The voice is a very complex musical instrument. The violin would be too if we could easily alter its shape of the mouth cavities. These changes do not supply the energy, which comes from the vibrating vocal chords, and its quality (as you say) is greatly affected by the shapes and different volumes of the cavity through which it passes. You can reproduce all the mouth effects by a machine - a vibrating reed connected with changeable cavities and a mouth that can be shut and opened. I have heard it done by Sir Richard Paget (I think that was his name). He could say "mama" perfectly. This was at a meeting of the British Assoc. for the Advancement of Science. I went to one in Toronto and a later one in Winnipeg. Can't remember which one it was.

You should keep in mind that Physics is built up on the basis of exact experiments that form a foundation that nobody can doubt the truth of. When I tell you a physical fact you must not call it a theory. A theory is a perfectly respectable thing. It is a group of ideas that can (usually) be tested by experiment. If it has been so tested it is accepted and becomes a group of facts. If it has not been tested it may still be generally acceptable even if the experiments to test it are so difficult (or expensive) that they have not been made. So there are lots of theories that are more or less respectable. If a man says the Cremona varnish was so good because it had myrrh in it, this is not a theory; it is an assumption; it can't be proved, partly because we don't know what we mean by "good". We know that the old violins have beautiful varnish, but so have others. And if we think the varnish affects the tone favorably, that is a theory because it has not been proved. If you say you know that a violin is improved by varnish which you put on in June, you would test it in July, Aug., Sept., etc. Your memory of what it sounded like in the white is too unreliable to enable you to compare the tone in March with that in Sept. Moreover it has absorbed more water in summer than in a heated house; so any changes you think is there is uncertain.

again in Sept. This is what Meinel did in 1937 and showed very little change and what little was found was unfavorable.

IS THERE SOUND INSIDE A VIOLIN?

by Kristain Skou

To prove, or not to prove - that is the question! But how to prove that there is sound inside a bow instrument? Take a double bass, and remove the top, then take a boy (I would never treat a girl in that way), and put him into the bass. Glue on the top, and string up the bass. The boy can place the sound post for you. Then play on the ass, and ask the boy if he can hear anything - voila!!

Unfortunately I have not been able to persuade anybody to enter the bass. They were all afraid of the big noise that would be inside.

But joking apart, I think I have to assist you in your arguments with Dr. F.A. Saunders. I should think it a somewhat hazardous assertion that there should be hardly any sound inside a bow instrument when played. There is plenty of sound inside a violin (and other bow instruments) when played, and it is very easy to prove.

But as we cannot get our head with the ears into a violin we have so to speak to extend our ears in a way that allows us to hear what happens inside the instrument.

The most convincing test should be to place a very little microphone in the air volume inside the violin. Take a small microphone with a loud-speaker in a room so far away that the direct sound from the violin cannot be heard. When the violin is played, a listener in the room with the loud-speaker will hear the sounds from the inside of the violin. These sounds are very much alike the sounds emitted from the outside of the violin, even if the tone character is a little different. I can point out (if Dr. Saunders should have no knowledge of it) that some violinists who are playing at places where it is quantity rather than quality of tone that accounts, have a little microphone placed inside the violin (through a hole in the button (end pin)) combined with an amplifier. It makes plenty of sound.

But as not everyone has such a little microphone, I will give you another test easily to perform. Take a stethoscope - in its simplest form only a piece of a rubber tubing, plastic tubing or the like - of suitable diameter, that is: it has to be able to go through a "f" hole, and to suit your ear (the outer part of the auditory meatus). To prove for yourself that this instrument is usable for testing sounds, place one end of the tubing in your ear. When silent in the room you will hear nothing (apart from the weak sounds always amplified with a suitable air volume close to the ear - confer the well known test). Then place the free end of the tubing near a played violin (without touching the violin), and you will hear the sound rather amplified. Close the opening with a finger end, and you will hear nothing but the usual sound from the played violin (mainly through your free ear). Consequently the tubing with the farthest opening free is able to transfer the sound waves in the air just in front of the opening. Then put the free end through one of the "f" holes, and take care that the tubing does not touch the sides of the "f" hole (it makes little or no difference, but for the sake of the test being a proof, take care of that). When now the violin is played, you will hear the sounds from the air volume inside the violin - and there is plenty of sound.

Also, Dr. Saunders assertion that there is no movement of air at the "f" holes, (except when the note of the air tone is played) can bear a closer

examination. Only place the free end of your tubing wherever you like at the "f" holes, and you will hear the sound. And as you can hear the sound, there must be sound waves at the opening of the tubing, that is at the "f" holes. And sound waves mean periodical movements in a transferring material - in that case the air. Quite another thing is that there is no movement of the air at the "f" holes in proportion to the edges of the "f" holes, because the edges and the air between these have the same frequencies and the same amplitudes (except with the "air tone", where the amplitude of the air is greater than the amplitude of the edges.)

Regarding the "quantity of sound" - if we can say so - there is nearly the same quantity of sound inside the violin as outside, but while the sound pressure outside the violin theoretically (in practice it may occur a little otherwise) is falling with the square of the distance, the sound pressure inside the violin seems to be nearly the same everywhere in the air volume.

Theoretically there should be a possibility of "dead" zones in the air volume on the lines of the "dead" zone in the middle of an open resonance tube, but in practice such zones seem to be difficult - if not impossible - to find.

NOTE BY DOMA WHITE:

The following is a statement received from Mr. Harry Adkins of Chicago who is very conclusive in his evidence "Quote:-

"The air escaping from the "f" holes of a good bass (when picked) will blow out paper matches--most of the register will do this. I am not sure about this in upper thumb positions, but the air column is this strong on most notes."

MR. SKOU NOW CONTINUES:

Regarding experiments with the tin can, and the milk bottle. First I may say that presumably we have not just the same types of milk bottles as you, and for that reason I have not been able to repeat your experiment exactly, but I have tried with our own bottles, and cans, and I think I can explain the sounds you have heard.

As you know we have two main types of resonance tubes: the closed resonance tubes, with only one end open, and the open resonance tube, with both ends open. (If both ends are closed we are not talking about a resonance tube). The air volume of such resonance tubes can give resonance to certain frequencies, and we are talking about stationary vibrations (by air volumes always longitudinal oscillations). The closed resonance tube has nodal points at the closed end, and an antinode at the open end: the vertical lines indicating the amplitudes of the vibrating air-particles (that is: air particles are here a fictive idea, not identical with air molecules, which have movements in all directions, but imaginary particles representing the every movement directions of a great number of air molecules), and you will notice that there are movements all over the air volume of the tube (except at the nodal points at the closed end), that is: there are sound waves inside the tube, but the greatest amplitude is at the open end, and here is also the loudest sound.

The open resonance tube has nodal points in the middle, and antinodes at both ends, and you will notice that the open resonance tube has to be twice as long as the closed one to give resonance for the same pitch. The proper length of a resonance tube for a certain pitch, say the pitch of a common tuning fork (440 cps)

we can find by experiments, but we can also calculate it very easily. The velocity of sound waves in the air by common living room temperature is about 340 m per second. When distributing 440 cycles on 340 m you will get nearly 0.77m (77cm) to each cycle which is the wave length for this pitch. Considering one cycle (symbolized by a sinus curve: by a closed resonance tube) you will notice that the sound wave has to pass the length of the tube 4 times per cycle (down-up-up-down), that is, the length of the tube has to be 4 times as short as the wave length - say 19cm. When placing a vibrating tuning fork just above a closed resonance tube of that length (or rather a little shorter, the amplitudes coming a little above the edge of the tube) you will hear the sound rather amplified. The same will be the case if you take a tube 3 or 5 or 7 or 9 (and so forth) times as long. For a tube 3 times as long the nodal points and arcs will be:

An open resonance tube has to be 19cm x 2 equals 38cm long to give resonance to the tuning fork (or 2 or 4 or 6 or 8 (and so forth) times as long). For a tube 2 times as long the nodal points and arcs will be:

And now we can take the tin 5 gal. can about 19 inches high - that is 45.7cm. The wave length to which the can should give resonance is 45.7cm. x 4 equals 182.8 cm. and the pitch of that note should be 340/1828 equals nearly 180 cycles per second. When tapping the flat bottom of the can you will hear a note of similar pitch, but I should think the note is not well defined, because the bottom is too thin for that purpose (too many disturbing overtones). A more musical sound (but of a little higher pitch) you will get if you pour a little water into the can, because most of the overtones are checked by the weight of the water. When tapping the curved sides you will not get much resonance from the air volume because the pitch is too high for that volume, a curved membrane giving much higher pitch than a flat one (confer the playing on a saw blade, where the different notes are obtained by changing the curvature of the saw blade.)

And now the milk bottle. The bottle is presumably more solid (the sides and the bottom being much thicker in relation to the air volume) than the tin can, but also the bottle is physically a closed resonance tube, and even with the bottle in empty state you will hear a musical note when tapping the flat bottom. Pour a little water (or milk) into the bottle and you will hear a higher note according to the diminished air volume. When pouring still more water into the bottle you will hear a still higher note. The bottle behaves as a closed resonance tube if the bottom is tapped - otherwise if you are tapping the sides. Repeat the experiment with the bottle from empty state to more and more filled with water, but now with the sides tapped, and now you will notice that instead of a still higher note (on side the bottle) you will hear a still lower note - and why? Because the bottle is no longer behaving mainly as a closed resonance tube (even if you can hear also this effect with your ear to the open end), but simply as a sound staff. You know that if we have two sound staffs of equal dimensions, and equal modulus of elasticity, but unlike in specific weight, the staff with the greatest weight will give the lowest pitch. Water in the bottle means that the bottle becomes more heavy, but the bottle in itself, which alone accounts for the vibrating power, is the same. Consequently the tone pitch will become lower. Another thing: if you cover the open end of the bottle with a cap, you will get no resonance from the air volume, and when tapping the bottom you will hear nearly nothing (at any rate not the musical sound as if the end is open), but when tapping the sides you will hear nearly the same sound (outside) as without cap. - As you see: with the ear to the open end

of the bottle you will hear the sound from the bottle behaving as a sound staff. As the pitch in the first case is increasing with increasing water content in the bottle, but in the second case is decreasing with increasing water content, you will notice that very different intervals may be observed. The note from the outside may be lower than the note from the inside, the two notes may be in unison, and the outside note may be higher than the inside one. In your case the outside note was a minor third higher than the note from the inside. That milk should sound better than water I have not been able to observe, and I cannot think any reason why. But only a little difference in the volume of liquid (and thereby the air volume) may cause a better or worse state of harmony between the inner and the outer notes, and in that way account for the difference in quality you have heard.

I hope by these words to have solved your problem - if not, you have to protest.

And now the problem: what does cause violin tone as opposed to drum tone (and different to cello tone)?

To give an exhaustive account of the why and what in a few words seems impossible to me, but a few fundamentals I can point out.

The sound from a drum represents nearly all what we intend to avoid in violin tone, and "tone" is perhaps a somewhat pretentious term for that sound which so to say is situated in the border between tone and noise. "Tone" means that the frequency is constant during a certain space of time - short or long - if not, the sound is "noise". The drum - when beaten - gives a sort of tone, a fundamental note dependent mainly on the air volume and the tension of the drumhead, but to this fundamental note comes a complex of variable, uncontrolled overtones, originating from mainly longitudinal vibrations in the drumhead (tightening and relaxation of this in an uncontrolled manner.)

Opposite the drum the violin has to be constructed in such a way that it gives resonance not to one special note (with matching overtone complex), but to all playable notes - and further in such a way that not only the fundamental notes, but also the overtones are controlled. The bass bar, and still more the sound post in relation to the action of the bridge are controlling factors. If the sound post is missing, variable, uncontrolled overtones are formed similar to those in the drum, partly originating from longitudinal vibrations in the plates. The longitudinal factor has to be reduced as much as possible. Also the archings of the plates (especially the arching of the top) - the height as well as the form of the archings are very important to the character of the violin tone, but a violin tone of real quality can only be obtained with arched plates. Also the special contour of the violin contributes not to favour the resonance of one special note.

All the above said about the violin in relation to the drum can also be said about the cello, but why does a violin sound different to a cello?

The much larger cello is built to a duodecim lower pitch than the violin, but that is not all. Even if the same notes are played on the two instruments the tone character will be different. I think that especially two conditions account for the difference.

Commonly we are thinking that a musical sound is built up from a fundamental note with a complex of overtones, but besides this also lower notes than

the fundamental note can be part of the musical sound. The condition that these lower notes can be amplified to assert themselves, is however that they can find resonance in the sound body, and in that case they will give the tone a character of more volume. The larger sound body of the cello is just disposed to such a resonance, and mainly for that reason the cello tone has more volume than that of the violin. We can fit a violin with viola strings, but we will not get viola tone for that reason - the tone is lacking volume. (For the rest the same can be said about many violas, especially about the tone of the C-string).

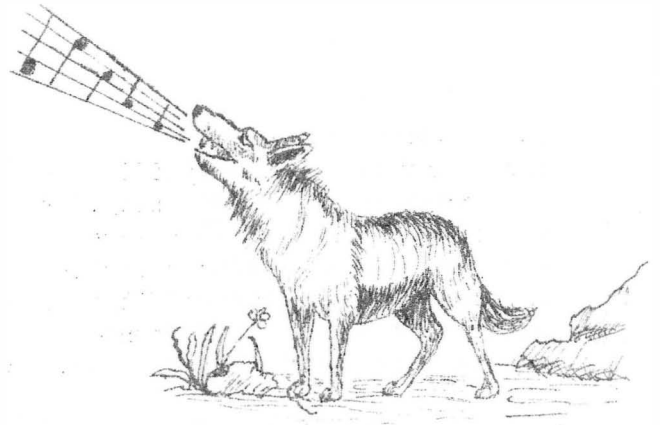
But there is another thing that makes a difference between cello tone and violin tone which I shall point out. The way in which a tone is formed, the way in which it grows up from the very first action during a certain space of time up to the time when the tone has come up to its proper character (we can speak about a fore-phase, a preliminary phase, of the tone) is very, very important to our impression of the tone character. If very different instruments are played with the same note - say a violin, a piano, and a flute, we have no difficulty to hear from which instrument the tone originates, but cut off the fore-phase (it can be done by means of a tape recorder, where we are cutting off the fore-phase on the tape), the origin of the tone can be difficult to decide. The fore-phase of a violin tone or a cello tone is the phase from the bow starts its grip on the string until the tone has gained full resonance (or so nearly full resonance as the instrument allows) and this fore-phase is longer on the cello than on the violin because the sound waves have to pass a longer distance (also in some degree because the strings are thicker). Especially in rapid passages where the fore-phase amounts a considerable part of the whole tone, the difference is remarkable. Oscillograms from the tone of an instrument can tell us something about the tone quality, but perhaps not so much as one should imagine. It should be of much greater value if also oscillograms of the fore-phase could be given.

Nodal points in a free violin plate is a rather simple problem, but nodal points in a played violin I will only reluctantly comment, as the problem is rather incalculable. There are a lot of relative nodal points, but they are changing all the time the violin is played, and absolute nodal points we should hardly find. Even not the "seesaw points" at the sound post are absolute nodal points, as there are movements also here. Mr. E.J. Stuekerjuergen's point of view (Sept. 1960), that there should be a (relative) nodal point at the bass bar just in front of the left bridge foot, is interesting, even if I am not sure the assumption is quite correct. There is an arc just below the left bridge foot, and from this point the vibration waves are transmitted through the bass bar in both directions, but of course, nodal points and arcs may be formed along the bar, and it seems not impossible that the point in front of the left bridge foot for some frequencies should be disposed to be a relative nodal point, but for the present I cannot say anything definite about that.

oOo

WOLF NOTES

by The Editor



CHRISTMAS 1960:

I am afraid that by the time most of our readers receive this issue Christmas will be over. Possibly I should concentrate on New Year wishes. Just the same, as I write this, the spirit of Christmas is in my mind and I could not possibly let this issue go without passing this Christmas spirit on to my readers.

We have, I feel, become to associate Christmas with peace among all nations, which is, at least, a step in the right direction. Let us all carry this thought throughout the entire year and continual peace will be assured. The Journal is now read by makers in many countries and is, perhaps, in its own small way contributing to world peace. I cannot imagine any of our readers in those far off lands having any desire to kill and destroy the families and homes of other readers of our Journal, and I can assure you we here in Canada have no evil intentions.

Christmas, at least on this side of the water has certainly become commercialized? But when the day arrives the old sentiment is still there, and as I write this I feel a great urge to wish you all Happiness, so on behalf of the Staff of the Journal, and all makers here - I wish you a Very, Very, Happy Christmas and Prosperity and Health throughout the New Year.

NEW ADVERTISERS:

Readers will note the appearance of several new advertisers in this issue. I had hoped to introduce each firm in a proper manner but time has not allowed me to do it fittingly, so with their permission I will leave introductions till next month.

BOWS AND DOUBLE BASSES:

I have mentioned before that some of our readers would like information on these two subjects. Will some of you makers who have had experience with Bows and (or) Basses try and get the ball rolling.

Here is a letter which shows only too well the shortage of information available.

Dear Mr. White:

Your name has been given me by Joseph V. Reid, of Grunsby, Ontario, in regard to bow making and also Bass Viol making. I have searched somewhat for books on these two projects but always nil. I will appreciate if you can give me some information on how to get started.

Respectfully yours
Tony Jacobucci
Denver, Colorado

A NOTE FROM CARMEN WHITE:

"I appreciated your articles in "Violins and Violinists" about the treatment of woods--and appreciated your reference to my work--however, I do not use strong heat, as you suggested in the article. In fact, I am against strong heat. Otherwise, your article is fine. I am familiar with the work by Christ-Iselin which you referred to--I cannot speak for the success of his work or of the nature of his results; the general statements you make about this tempera business are somewhat challenging--if it fills the "in-between" spaces in the wood with some substance which dries, matures, and adds to the general resonance of the woods, I see no reason why it could not be used as a filler--to me, it seems quite "messy", as it is an organic vegetable substance, and subject to deterioration. On the surface, it just seems to me that a resin or rosin in oil, thinned with turpentine, would be a more permanent and agreeable compound for a filler, and since it has proved itself to me not once, but many times, I am reluctant to abandon it. As I have said many times, I believe this filler business has no one answer, but that many, many substances might be used with success--including Christ-Iselin's tempera filler. I would appreciate hearing more from your own experiments, and hope you will publish in the Journal whatever you boys find good about this and other fillers."

I appreciate Carmen's kind remarks and am sorry if I exaggerated the amount of heat applied to plates before treatment. I feel that another article by Carmen on his treatment and the Michelman varnish would be in order so that our new readers will be brought up to date on an important subjects. How about it Carmen?

AN INTERNATIONAL MAKERS ASSOCIATION:

I received the following suggestion from Mr. Clifford Hoing and would appreciate readers opinions on this important suggestion. I have always thought our Subscribers might become some sort of Honorary Members. What do you think?

"Why not call the Association an INTERNATIONAL ONE and open membership to all subscribers.

By doing this your local members would lose nothing and others from abroad would feel more interested if regarded as "MEMBERS".

What advantage does anyone have by being a member? I suggest that if called "International" it would encourage your local members by giving them a broader outlook as being, not just one of a local club, but a member of an international association that others from abroad admire and wish to join, in a common purpose."

THAT AMBER VARNISH:

Mr. Floyd Holly in his "Local Notes" mentions the name of Pierre Josephs a very fine maker living in San Francisco. Here are his views on Amber. Quote:-

"I have been asked to write articles on the violin, but have hesitated to do so, due to some of the wild and non constructive ideas appearing."

The amber these fellows have been playing with, is oxidized. Just north of Cremona there is a mine of amber that has been mined for centuries, further I have imported Turkish amber that has the same texture as Chios turpentine and melts at a low temperature, the only difference one has electric properties and fossilized while the other is from the cypress tree.

Further many species of pine forest were tapped for the same balsam in Lombardy, where in 1865 the Italian government put a restriction. However the trees were destroyed by this mis-use. Further all along the east Sicilian coast there were vast pine forests that at one time were destroyed by fire, there are out-croppings of red amber along the shores. I have made research on these subjects pertaining to the violin and have compiled three generations of material in my manuscript."

A TESTIMONIAL AND A GOOD HINT:

I don't think anyone has done more to boost the Journal than Mr. Carl F. Jeth of Minneapolis. He has been instrumental in sending many new subscribers into our fold. Take heed to his words. Quote:-

"I believe your magazine will revive Cremona violin making."

Arthur Weston, local violin maker who died some 10 years ago, wondered why Stradivari's late models were so easy to play. One reason was the thin top, another the high arching of back (1/8th inch more than top) which eased the tension under bridge."

A NOTE ON THIS ISSUE:

Owing to the length of some articles in this issue several very fine contributions have been omitted. We apologize to the writers and promise these will appear in the January issue.

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MERRY CHRISTMAS

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HAPPY NEW YEAR

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