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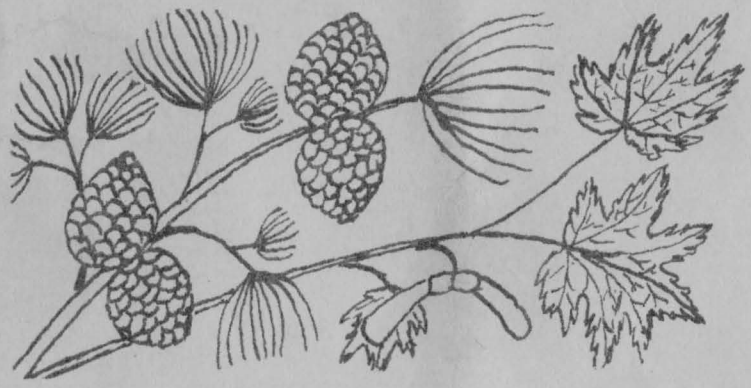
July. 1959

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 in Canada.

The Violin Makers Journal

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OFFICERS OF THE ASSOCIATION:

PRESIDENT: MR. GILSON HEYWORTH, 1683 RENFREW ST.

VICE PRESIDENT: MR. HAROLD BRIGGS, 13367 NORTH BLUFF RD. WHITE ROCK, B.C.

TREASURER: MR. FLOYD HOLLY, 2636 W. 6TH AVE.

SECRETARY: MR. DON WHITE, 4631 W. 14TH AVE.

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A VOICE CRYING IN THE WILDERNESS

A letter from Dr. Frederick Saunders of Hadley, Mass. has prompted the writing of this Editorial. My fr
scientific discoveries and information which has proved worthwhile, are acted upon by those for whom they could be useful, then these investigations may just as well cease their inquiries.

Dr. Saunders suggests that very few even of our local group have tested any of his observations. This, I feel, is a very true indictment. How many makers have tested the Doctors findings regarding Tap-Tones? How many have put Joseph Michelman's theories on the pre-varnishing treatment of plates into action, or even tried his varnish? Stephen Kawjawa has spent a life time studying this same varnishing problem yet he tells me very few try the results of his labor.

These men work not for remuneration but because they are simply built that way - they are only happy when solving a problem. Yet how much more satisfaction they would receive if their discoveries were proved by Makers to be true!

It would seem to this writer that too many simply read such periodicals as The Violin Makers Journal for enjoyment at that moment. These good people write in saying how good the Journal was last month, but have they followed up any of the ideas presented?

"The Voice Crying in the Wilderness" gets very little satisfaction unless, as with the originator of this phrase, he sees the results of his discoveries.

.....

Stand still and silently watchthe world go by

——— it will

.....

LOCAL NEWS

by HAROLD BRIGGS

Hello Everybody:

Our Super Craftsman, Mr. Peder Svindsay says the Best Violin hasn't been made yet. This is just to let you all know I am working on it now, but the date of completion will have to be announced later. I was just glueing the little piece that controls the tone into place when it fell among the shavings and was lost. By the time I made another one I had lost the place to glue it, then the glue tipped over and also got lost. By the time I had cleaned up that mess I had lost my patience and then I lost my ambition.

Now it is someone else's turn to tell one.

Our last meeting, held on June 13th, turned out to be mostly a business meeting. The question of our society operating a booth of exhibits at the hobby show again this year was discussed at length and voted down by a large majority. A Committee composed of Messers. Wreight, Friess, Svindsay and Helin was appointed to look into the advisability of holding some other sort of exhibit outside of the Hobby Show. It was hoped that some sort of competition and exhibit could be arranged where it might be possible to find a possible sale for some of our instruments.

Mr. Friess gave us a talk on wood and then led a discussion on the amount of time required to season wood properly for violin making. Some members feel that wood dried under modern kilndrying methods is suitable for making violins, while others are equally sure that several years seasoning is necessary for best results. The final out come seemed quite inconclusive and I felt that each man had the same ideas at the end of the discussion that he had at the beginning.

At the time of our meeting, Mr. Ernie Lindberg was still in General Hospital but we were glad to hear he is improving and would be glad to have visitors.

Visitors at this meeting were Mr. Graham, Mr. Luckton and Mr. Crabtree of Kennedy. Mr. Crabtree
degree of craftsmanship as well as very good tone.

The rest of the news hasn't been made yet.

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OUR TRADING POST

Farmer: "Be this the Woman's Exchange?"
Woman: "Yes"
Farmer: "Be ye the woman?"
Woman: "Yes"
Farmer: "Well, then, I think I'll keep Maggie."

.....

WHY MAKE JUST ANOTHER FIDDLE?

by Josephy Michelman

Why should a violin-maker, especially an amateur who is not in the business, buy wood, tools and Heron-Allen's book, and then devote days and nights of painstaking labor, without some wellfounded prospects that he will not produce just another fiddle? Of couse, there is the satisfaction in fulfilling the challenge: "Given a log of wood; make a fiddle." There is an outlet for one's skill as a wood-worker and the fascination in making a violin. There is the debatable idea that a hand made instrument is better than a machine made one.

But what will the final product be? A violin differing little from the countless number that have been made and will be made throughout the world! Occasionally a violin maker may display above average ability and produce a better looking and/or better sounding violin. Too frequently such violins are "better" because of personal or friendly appraisal. But if all violin makers continue to make violins by the established methods without some change and without departing in some manner from the beaten path, then can they reasonably expect their instruments to be much better than average violins? By following methods that have been tried and found wanting, can they reasonably expect to produce instruments equal to those of the old Italian masters?

Four hundred years have passed since the violin was given its present form and construction. It is startling that in the intervening centuries only a very few improvements have been made (longer necks and stronger bass bars). In the same period of time man can pride himself on myriads of marvellous advances in the Arts and the Sciences. The violin making profession as a group can be confronted with the fact that it has not even equalled with certainty the products made by its Italian predecessors hundreds of years ago. How many other professions or industries are in the same position or have similar records?

One cause for this absence of progress, which directly influences the production of average violins, can be attributed to the frustration that is propagated about the old Italian instruments. One hears such cynical secrets of wood selection, varnish preparation and craftsmenship were soon lost, never to be rediscovered". The word "never" indicates a long, long, interminable time. It should not be applied in this age of eye-opening discoveries. The "lost art" was once used by mortal men (about 200 of them) and can be rediscovered--but not by sceptics and cynics--but by eager, open-minded and dedicated men. Progess has also been retarded by violin makers who fail to comprehend the assistance that properly applied scientific reasearch can give them. On the other hand, a disparaging effect is also imparted by misload scientists who waste time, effort and money on projects that can be of little in any direct value to violin makers. Such projects have an adverse effect in that they supply encouragement to critics who cry: "Even this or that well known professor of a big college or university has been unable to rediscover the secret of Stradivari".

What is the solution to this perplexing situation? Violin makers should welcome new ideas and workable technical and scientific reports of research and try to apply them when they are fashioning and finishing their instruments. For example; Violin makers should consider the preliminary treatment of the wood of their instruments. This is a virgin field for experimentation because so little has been reported to date. The need for some pretreatment of the wood has been discussed in an article by the author in "Violins and Violinists," October issue, 1952 page 242. New varnishes have also been discovered based on years of laboratory research and supported by convincing confirmatory evedence. Violin makers have tried these new ideas and have been highly pleased; but many are still sceptical or inert or welded to their own opinions.

Violins should be made according to the best traditions or the art--but augmented by modern advances. This revitalizing spirit injected into violin-making will make it even more exciting and intriqueing that it is. And it will definitely be more rewarding than merely making just another fiddle.

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THE UNIVERSAL DICTIONARY OF VIOLIN AND BOW MAKERS

In our last issue we gave a hurried review of a literary work which we consider may well prove to be one of the most important reference books in the Violin world. Imagine a dictionary containing details of the work of every violin maker past and present and you have some idea of the mental and physical force necessary to produce this immense output of work. It could only have been undertaken by a man of the calibar of the late William Henley, a man who did so much for the violin and received all too little recognition.

William Henley was one of the finest violin virtuoso ever produced by England. He was known as "The wonderboy Paganini" and played before all the crowned heads of Europe. He almost retired from the Concert platform when he took up the study of violin making and after visiting every well known maker of his day became inspired to construct in English a Dictionary to contain every name possible of persons who by actual practise had contributed to violin making.

William Henley died in 1957 before his creation was published. The task of completing and publishing this monumental work has fallen on the shoulders of Cyril Woodcock, also a well known figure in the English violin world.

The Dictionary is being published in 12 separate parts and I have part one on hand. You can spend hours reading the different methods employed by every maker from Gasparo da Salo to the present day makers. An education and a "must" to all lovers of the art. As I mentioned last month it is not too late to have your name included. Simply send your name to Cyril Woodcock, c/o The "Amiti" Publishing Ltd., 44 The Lanes, Brighton, Sussex, England. Give Date and place of birth, number of instruments made, model followed, varnish, etc.: You could also send the same details of any maker you knew, now deceased. Above all send for Part one and see for yourself the quality of this most desireable work.

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HINTS ON POLISHING A VIOLIN by S. Kujawa

The last two coats on any violin job should be a natural varnish. When you put on the next to the last coat you polish your violin with rotten stone and oil, use a mineral oil, any good lubricating oil will do. It should be a light in body oil, do not use linseed oil. You will find that oil comes off much easier from this varnish, just a few strokes and it is bright and clear. This varnish does not creep, but dries fast, so work carefully to prevent runs. When everything is bright and clear put on your last coat, polish again and you will find no higher luster. Rotten stone is Tripoli powder. The city of Tripoli was where rotten stone was first used as a polishing agent. Ground salmon bones is the finest form of calcium known, best polishing agent for metals, wash bones clean, dry, then powder. Do not hang violin in the sun, outdoors in the shade is best possible place.

I am experimenting with a varnish that will not dry unless wet clothes are around it, Japanese varnish. As far as that goes all varnish dries better in shade, and faster.

A good brush is important. I use an artists oil brush, it is flat $\frac{3}{4}$ inch brush cand costs $4.50, but it is sure worth it. It flows the varnish on very even and being small in size you never get too much varnish on the job at one time. This varnish levels off very good, I have not much on hand, but I expect to get more of these gums soon.

Sun causes linseed oil and other fixed fatty oil to expand when drying and become more or less porous.

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THE VIOLIN MAKERS JOURNAL

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"THE BIG NOISE"
by Don White

It would appear to me that it is high time someone attacked this modern craze for a loud tone in a violin. Should this incessant demand continue it is likely that many makers (excepting those that know better) will end up by producing instruments that do nothing but give off a "Big Noise".

Some of my good friends go so far as to suggest, perhaps with tongue in cheek that violins should be tested in an open field! What are we trying to do, conduct a pig-calling contest? Others, perhaps with this same lowly animal in mind, claim that a violin should have "intestines" (but they state it more vulgarly). Either these people are ignorant of the qualities desireable in a violin or they are themselves unable to produce a good tone on the instrument.

I am in agreement with Mr. Clifford Hoing, one of the best makers in England today. He believes that a good violin will always be heard in a large hall while one of inferior quality carries only a short distance, I cannot believe that loudness is the reason for this.....it is "

Some claim that a violin must be loud in order to be heard above a modern orchestra. A good violin will carry as far as any piano and far better than a flute, yet we have satisfactory renditions of both piano and flute concertos. Conductors must control their players so that correct balance is always maintained.

Have you heard Campoli in person? I cannot say that his Strad has a big tone yet his softest pianissimo travels to the far end of the auditorium.

Possibly the reason is that a good player, with a good instrument, gets the "feel" I know from experience this is possible with a singer..once get of the the feel of the hall and you can project yoursoftest tones to any person in the largest hall. I believe, however, that he would have to visualize that person in order to make contact. That is the feeling one gets when you have the "feel"

No, we must seek something else than the "Big
and I would suggest that something is timbre...which is a far different quality than mere noise. Timbre is an attribute which if not possessed by a violin or human voice very little projection can be attained.

The Oxford Companion of Music describes "timbre" as tone color. For instance the trumpet is described as "scarlet" the 'cello as "rich brown" the fluet "
and quote "The one and only factor in sound production which conditions timbre is the presence or absence or relative strength or weakness, of overtones."

You have heard singers with what is called a "colorless" voice, many so called "crooners" can be classed as such. These singers would never be heard without the aid of a "mike". So also a violin without color is a dead thing carrying only a short distance.

I rather like one of the French definitions of timbre which is "bell". Hence we hear of a bell-like quality in a singer or instrument. Here we have the suggestion of ringing.

The problem then, for the maker is to produce a violin with the correct overtones. He will then have an instrument with a "soul'" one that is alive. Let us please cease this craving for a "big noise" and insert in our instruments that bell-like singing quality that will not only project its tone but at the same time so inspire the

artist as to encourage him to display his talents to the full. He will then so control his audience as to place them in that hushed receptive mood in which even a pin drop will be heard at the far corners of the hall.

.....

ABOUT PRIMERS by Clifford Hoing

We see a number of references to priming in the Journal, mainly recommending linseed oil. Wulme Hudson an old English maker (now dead) used to use this but admitted that the Italian makers could not have used it. His reason was that a well used violin treated with linseed oil, wears black with contact with the hand, where varnish is removed at the top let hand edge, of the back of the fiddle. An Italian fiddle does not show this colouration in the same circumstances. I know of several other makers who have tried this method of priming but have never heard a fine toned fiddle that had been treated in this way. I know other methods are better....because I have tried it myself.

I can confirm Mr. Jacklin's remarks about Rocca tone and Pressendas also. I have had several of both and found that I could always make a fiddle with a far better tone. But it is not because Rocca's are fairly modern, that the tone does not have the quality and carrying power. It is because the thicknesses of the plates (and weights) are wrong.

.....

One thing that will make a man forget a passing fancy, is something fancier....

.....

"[illegible]" by Larry Owen

Of all the defects of stringed instruments, weak tone is the greatest! Imagine a violinist with a w[illegible] the orchestra! Or in a sonata recital with a 9 foot grand piano, or even playing late Beethoven or Brahms quartets in a medium sized hall. Any professional will quickly admit that the small tone is impossible in nearly all professional situations, so lets be careful of looking down on full tone unless it is certai[illegible] bad. And study th[illegible] as well as a large tone (all things being reasonably equal). No, I can't bury the idea that carefully conducted blindfold tests aren't valid. Perhaps playing with one other instrument may be a valid method of comparison, maybe a string quartet. Plenty does show that way, admittedly. One of the problems of playing one violin, then another is that each string has its own quality, and when four varying voices are compared with four more varying voices, the problem becomes complicated. No doubt few (if any) human ears are capable of judging tone without a standard of comparison. But if one string is quickly compared with same string on a violin of established excellence, a uniform result can fairly consistently be made.

.....

A pint of example is worth a gallon of advice.....

.....

THE LATE JUSTIN GILBERT

By Carl Forseth

Dear Don:

I found your write up on Justin Gilbert very interesting. You said Gilbert violins have depreciated in tone. Violins that lose tone are thin at edges. When Gilbert wrote his book in 1937 he said he had used his method for a decade. He graduated his tops then like his backs and only 1/16" along edge.

However, Gilbert grew mentally until his death. A year and a half after the publication of his book, he came out flat-footed for Stradivari (after 1700) and Guarneri graduation, that is, the edges of his tops were left 1/8" thick and rest of plate about 6/64" and late in the '40's he no longer insisted on the .85 tone interval between top and back . He increased the interval for less suitable wood.

For a ten-year period 1937-1947, I received 30 letters from Gilbert the greatest confirmation of the correctness of his method he received from reading Otto Mockel's "Die Kunst dis Geigerbaues", where graduation and plate tones of several Strads is given.

I believe Justin Gilbert deserves a biographical write up. And what better place would you choose but in his home British Columbia.

Carl Forseth, 4024 Elliot Avenue
Minneapolis, Minn.

.....

JUSTIN GILBERT'S METHOD OF MAKING VIOLINS

A thick clarinet reed vibrates at its own noisy frequency. To make the reed behave, the instrument maker shaves it so thin that it must obey the musical frequencies of the vibrating air column of the clarinet.

Likewise, a thick violin top vibrates inharmonious freqencies. To bring it under control, the violin maker thins the top down evenly so that it must obey the musical frequencies of the vibrating strings.

The best thickness for violin tops is about 6/64th inch. But spruce light enough and strong enough to stand the strain is so rare that a follower of Cremona makers must use a penetrating filler that strengthens the wood and adds to its resonance.

Filling the plates has the added advantage that it stabilizes them so that they will not contract and expand with the humidity of the air. This stability is especially appreciated in a seaport like Victoria, B.C., on Puget Sound, where it is apt to rain "forty days and forty nights."

Modern violin makers know the best average thickness for untreated tops is 1/8th inch. The fairy tale that Cremona violin plates have shrunken is so fantastic that ordinary mother Since violins with tops only 6/64th inch thick have been solo instruments for 200 years, they must have been made thin originally.

From 1908 to 1911 Mr. Hardman (Lancastrian) worte several articles in the Strad magazine of London revealing the weight and thickness of the plates of Stradivari violins.

In 1902 a court reporter, Justin Gilbert, of Victoria, B.C., became interested in violin making. By 1908 he produced violins commercially. In 1927 he turned to filling the plates with resins and gums, and ten years later he wrote a book on his method.

But Mr. Gilbert's mind was always active, and it grew till his death in 1948. Gilbert's book recommended a sort of Frank DeVoney top heavy in the center and thin at the edges. A few months after his book was published in 1937, the author turned to even-thickness top which he never subsequently abandoned. He sent out a correctional page, 91A, to all his subscribers. Mr. Gilbert thus followed in the footsteps of Antonio Stradivari, who abandoned the thick top in the closing years of the 1600's and in the following century carved his tops of even thickness, a thin edged violin top sooner or later loses its tone.

Two years later (June 1939), Gilbert simplified his method futher. He now left the edges unfinished till the plates were sized. Then it was no longer necessary to remove top and back after four months of maturing to establish their final weight and tone. After maturing for several months, the plates were now outlined, the arching trough dug, the purfling inserted and the edges rounded.

Any violin maker knows he had a good violin when the pitch of top is over F. For such a top Gilbert matched a back 85 per cent of a note higher in pitch (circa 18.7 vibrations per second). But when the top could not be raised above F, Gilbert in 1943 advocated a greater interval that .85 note. He fitted backs 3,4,5, and even up to 8 half tones higher that the top, depending on the pitch of the top. This means a heavier back.

These changes of views show his mind was constantly growing. The second edition of his book, incorporating his new views, never materialized. What gave him the keenest pleasure in the decade after he wrote his book was confirmation in 1938 of Stradivai plate tones and graduation in Otto Mockel's book, Die Kunst des Geigenmacher."

Later, in 1946, Gilbert says C.E. Mertzanoff of New York city confirmed Lancastrian's 1918 statement in regard to the weight of Strad tops and their high pitch. This all fortified Gilbert's claim that his weights, graduations and plate tones were like Stradivari's. Mockel's book was to Gilbert a great tonic.

Justin Gilbert's method in detail is as follows:

Tops rough-graduated to 13/64 over all are selected if they do not weigh over 3.5 oz. and the ring to C or C#.

Since Gilbert's sizing method shrinks the plates, they should be cut over all at least 3 mm wider than final in lower bouts, 2 mm wider in upper bouts and 1 1/2 mm too wide in the waist. For the time being, the edges of the plates are left as a flat ribbon 11/64 thick (so the edge can be rounded properly later on) and the ribbon should be left a full 3/8 inch wide. The rest of the plate is then graduated and all is sized a la Gilbert. The shrunken plates are now clamped on the mold encased in the ribs, and the ouline of the plates is drawn outside the ribs.

Now, digging the arching trough, inserting the purfling and beading (rounding) the edge of plate will lower weight of both plates almost equally, and it will alter pitch of plates very little.

Sizing plates adds little if anything to weight, since it replaces moisture content of 10 to even 25 per cent. Sizing may add .13 oz. to top and .08 oz. to back.

The top graduated, polished, efs cut (except at wingtips), edges trimmed, should weight 2.17 oz. (If bar is added before applying foundation use waterproof glue.) The finished bar increases weight of the top .2 oz.. Varnish will increase weight of plate .12 oz. and maturing adds another fraction.

Strad playing tops weight 2.40-2.50 oz., back 3.0 oz.

Guar. playing top weight 2.60 oz., back 3.25 oz.
(Either figure .04 oz. more or less)

Sizing a la Gilbert increases pitch of both back and top 2.65 half tones. The bar will raise pitch of top about four half tones. If now the top rings to F#, to G#, or even to A, you are lucky. Such a high pitched top can with advantage be thinned in the center. But remember that freeing the wingtips of the efs after several months and the maturing itself may lower the pitch another half tone.

With the final pitch of the top known or estimated, proceed to tune the back .85 note higher. Use a variable pitch pipe for the rough work. Then insert a 35 mm long wedge at the nut under a 13-inch G-string which is tuned to the pitch of a new top being readied.

To mature the plates clamp each plate to a flat surface for 3 to 4 months in a climate like that on Puget Sound. Six to eight weeks should do in Minnesota.

Gilbert did not use a mold but built his ribs on the back and then sized the ribs. First he stained the ribs yellow, so that with the size they would be colored like the top and back which were never stained.

The common practise is to build the ribs on a violin mold. After a rib is heated and bent, some makers clamp each rib in an individual rib mold. Such a bent rib can easily be stained and sized by Gilbert's method, and then while still hot be put back into its mold to prevent warping. The size penetrates the rib rapidly.

At the end of the maturing period the wingtips of the efs are freed, the back is tuned to .85 note higher than the top if top rings higher than F. Thinning plate in center lowers tone, thinning plate near edge raises tone.

Better start with a top 7/64 in center. This can then if necessary be thinned to 6/64 or every 5/64 if pitch of top permits. The pitch interval between top and back is more important than weight.

A top thin in center is very responsive, and in rapid passages the tone is never scratchy.

Any surface worked over for tone or weight should be warmed (not heated) and hot size daubed on.

GIBBERT'S FOUNDATION

Soft resins or gums, as mastic, damar, rosin, Denison's transparent amber sealing wax, are used for top. Use only sealing wax for first top. One part mastic, two parts sealing wax and two parts resin is a good mixture. For back add to above gums a harder resin like copal or amber. Use no opague gums.

Dissolve gums in a small double boiler in four to five parts oxygenated turpentine. To prevent fire, the kettle should be only partly filled, the cover should be within reach, the heat should be easily turned off. Keep some large towels in a pail of water near the door. Each plate needs a cup (half pint) of the hot "soup".

Meanwhile heat the plate with dry heat--electric stove, infra-red electric bulbs, wood drum stove or gas stove covered with sheet iron to exclude the moisture given off by the burners. Turn the plate every minute or so. The plate is free of moisture when it turns to an ashen gray. If the wood turns brown it is too hot. The plate is temporarily handled by a three foot long stick. Each end of the plate is clamped fast to the stick to discourage opening of the center joint. At these two places the stick is a full 1 1/4 inches wide, but the stretch under the plate is narrowed down to one-half inch. Gilbert re-inforced the thin parts of the joint with crack buttons. Gilbert also lengthened the handle of his paint brush. Even so, he often wore gloves.

Daub the filler on the wood. The more filler the wood absorbs, the closer the plate can be brought to the source of heat. The whole process takes about an hour.

Then when the plate is still hot clamp it on a flat surface. A good "surface plate" is a guitar-shaped board with 3/8 inch holes on its edge to anchor the clothes pins that clamp down the violin top or back. Several large augar holes along the center of the board provide ventilation for inner side of plate.

HUMIDITY AND TEMPERATURE

Wet weather increases weight of a plate and lowers its ring.

Dry weather lightens a plate and raises its ring.

Mark down the humidity (from a hygrometer) and temperature when recording data on a plate.

RAPPING THE PLATES

Many sounds can issue from a plate, depending on how you rap it or bow its edge. Gilbert claimed his method elicited the lowest tone inherent in the plate. He held the plate loosely across the C's in one hand, and with the narrow end hanging down he tapped it 2 1/2 inches from the end with the pad of a finger.

CONVERSION TABLE

From Gilbert's decimal ounces to grains and grams.

Oz. by tenths	Grains	Grams	Oz. by tenths	Grains	Grams
.1	44	2.84	.6	262.5	17.01
.2	87.5	5.67	.7	306	19.85
.3	131	8.51	.8	350	22.68
.4	175	11.34	.9	394	25.52
.5	219	14.18	1.0	437.5	28.35
.01	4	.28	2.17	2--72	61.53
.04	17.5	1.13	2.40	2--175	68.04
.08	35	2.27	2.50	2--219	70.88
.12	52.5	3.41	2.60	2--263	73.71
.13	56.9	3.69	3	3	85.05
			3.25	3--108	92.14
			3.5	3--219	99.23

Postscript:

The secret of an evenly thick 6/64 top is partly to leave its edges thick, about 1/8 inch.

After 1720 Stradivari arched his backs about 1/8 inch higher than his tops. It is safe to go even beyond this arching.

The G-string becomes more musical the farther apart the bar is from the post. This is brought about by spacing the upper circles of efs almost 1 3/4 inches apart, a practice followed both by Guadignini and Stradivari in his later years.

It is easy to space the resonance points in a small violin.

-- Carl Forseth

.....

The following obituary was printed in the Victoria Daily Times Wednesday, July 14, 1948:

JUSTIN GILBERT
COURT REPORTER
VIOLIN MAKER, DIES

Funeral services were held at Hayward's B.C. Funeral Chapel today for Justin Gilber, who was an official court reporter in Victoria for half a century and who recor ded many of the most famous trials heard in the city. Mr. Gilbert died in St. Joseph's Hospital Sunday at the age of 81.

Mr. Gilbert was an inventor of note and known throughout the world for violin making. He had been a violin maker for 40 years and was known as one of the world's three greatest.

He invented the back-spacer on the typewriter and collected royalties on the patent for many years before it became public property. He also invented one of the earliest types of fountain pen, the Gilbert pen, which was in production for several years. He devised and built a wooden bicycle, which he rode.

A native of Dowds, (southeastern) Iowa, Mr. Gilbert came to Victoria in 1892 and began work as a court reporter, a postion he held until his retirement in 1942. He joined the Rotary Club here in 1916, three years after its formation and played the violin in the club orchestra, until a few weeks before his death.

He leaves his wife, Mrs. Esther W. Gilbert, at the family home, 326 Douglas Street; a daughter, Miss Justin Gilbert, California; two sons, Walton of New York and Riley of New Orleans.

Burial was in the family plot at Ross Cemetary.

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THIS MONTHS AUTOBIOGRAPHY

A Handi-capped Kid by Rev. Geo. R. Wright

It seems that I was especially blessed with a very strong liking for the music of all stringed instruments, from my earliest child-hood. Of course the music of the violin out classed them all.

I was 6 years old when I heard the first violin played and it seemed to carry me up into the 3rd heaven. Immediately after that I tried to make a simple violin, by slitting the skin of a corn stock, and lifting it up in 2 or 3 strings, then placing a small piece of wood under them near one end, like a bridge. I then made a bow on the same idea and with a bit of rosen I was well away towards becoming a violin maker. This simple experience, seemed to create in me a strong desire to own and play the violin. So at the age of 12 I ventured to ask my parents, if they would get me a violin. The answer was shocking to me. They said, "No!" "The violin is the devil's instrument and we don't want you to have anything to do with it."

But the desire remained, until that desire developed into a determination to make a violin for myself, for I knew I could learn to play it.

Up to that time, I had never had one in my hands, and had only seen one played, but I hurried to an old catalog and looked at the pictures of violins. I had to guess at the size because I had no one to help me, however, I got some bits of wood together and made a start.

I used cedars for the top, poplar for the back and birch for the neck, I think I would have been stuck for the ribs, had it not been for an old grape basket.

I was thrilled, as I saw it actually taking form under my own hands, and when finished, I was surprised to see it looked so much like a violin, But a great problem still confronted me, the strings. "What would I make them from?"

We were pionees in Alberta, and were accustomed to making and mending most everything, so I remembered the moose sinues we got from the Indians for mending our mitts and moccasins. So I straightway proceeded to manufacture 4 strings from this moose sinue, and behold it worked, then the problem of tuning up was solved by the help of my sister, on the old organ. I then went to the horse stable where I stayed till I learned to play, (Home Sweet Home). Next morning, I proudly played to the whole family, and all their mouths opened considerably. That was the beginning of my violin making and playing.

I have been making violins, as a hobby, for 63 years and my interest is stronger now than it ever was.

In Sardis, B.C., in 1911, I organized both a brass band and an orchestra and played in both. And in Abbotsford, B.C. in 1920, I organized a band and an orchestra, the band after training for 4 years, came into the P.N.E. and took 2nd prize for the province of B.C.

Two and a half years ago I organized the Violin Makers of Vancouver into an Association. A full report of this can be seen in the Strad Magazine January, 1958.

The more I learn about the violin, the more I am convinced it is the King of Instruments.

Yours for better fiddling.

Rev. Geo. R. Wright.

.....

Encyclopaedic Dictionary

OF VIOLIN AND BOWMAKERS - BY PROFESSOR WILLIAM HENLEY

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COMMENTS by Carmen White

Just received and read the latest issue of the Journal and want to compliment you for it. I also enjoyed the letter from Mr. Walter Jacklin and glad to note that he is in general agreement with my ideas, as he is evidently a fine professional violin maker and knows all about the art.

I would like to comment on Mr. Sangster's article, which I was glad to see in the April issue. I am in fundamental agreement with him everywhere except about the varnish. Yet, he may be right. It does seem to me that if the recipe were that simple, everyone would have "Italian Varnish" everywhere. Surely the Hills would have it, as they published the recipe and the book he got it out of. Has anyone ever pronounced a Hill violin "Italian" in varnish? Chemical analysis has proved the presence of iron, aluminum, and metallic substances in the genuine old Italian varnish. Surely, anyone with an elementary knowledge of chemistry would know that such substances cannot be put into a varnish by boiling some gum or galipot in linseed oil. In fact, this Italian varnish, yet, such varnished may be, and frequently are good varnishes. No one considers, for example, that Lupot and Vuillaume failed at varnish making, but on the other hand, we do not claim for their varnishes the same beautiful and desirable result that we recognize in the old Cremona varnish. Our friends seem to think that by advocating an honest trial of Michelman varnish, we are at the same time condemning known and tried gum-in-oil varnishes. This is not the case. Let us compare them as scientists and note their differences in a scientific manner. Let us decide which are most likely to account for all the known variations in the Italian varnish.

Mr. Sangster says the old Italians probably did not know anything about P Potassium carbonate and other chemicals. Perhaps he is right--the Apothecaries could have made the varnish substance. Now, my grandmother died a few years ago in West Tennessee, and she never knew anything about Potassium carbonate either, but she made gallons and gallons of lye soap in her lifetime, and she made her lye water by pouring water through a barrel of strong wood ashes. The chief chemical component of wood ashes is Potassium carbonate! I have actually made varnish this way; Mr. Sangster saw it and commented favourably on it, but he did not know that it was made in this way, because I did not volunteer that information at the time! But somebody knew about potassium carbonate in Italy in 1550--they certainly dyed cloth in brilliant colors by a dyeing process that involved using a basic indicating dye in a basic solution--if cloth could be thus dyed, why not resin? We seem willing enough to accept any help we may get from Dr. Saunders and his electronic equipment; why not accept the help offered by elementary chemistry?

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PUBLISHERS OF VIOLINS AND VIOLINISTS, A MAGAZINE FOR STRING DEVOTEES...

Mr. Sangster says in his letter, quote, "No. 64 was a beautiful golden brown, and No. 68 was a beautiful dark golden red. So, now you have it from Mr. Sangster himself as to his own definitions of the colors he produces by heating his mixture of linseed oil and resin. You violin makers who saw these violins may check your memories for these colors and decide for yourselves whether you saw a "beautiful golden brown"or a "beautiful dary golden red". I have seen and played both of these violins, and they are cetainly beautiful instruments in every sense of the wood--that we all must admit. But I cannot admit that these colors are brown and red by the standards of the old Italian reds and browns that I have seen--to my unpractised eye, the colors appear more like yellow and dark yellow. So, I leave this matter to those who have seen the colors and who have a well developed sense of color.

Actually, this is a small matter and we could both be wrong; certainly Mr. Sangster has made and is making some of the finest new violins I have ever seen and played on, and I should not be criticizing or disagreeing with him at all; as I regard him highly as a personal friend and a great violin maker. I always enjoy playing on his violins and talking to him about violin making.

To your president, Mr. H.G. Heyworth, thanks for your good message with its sincerity of purpose for all violin makers. May I say that in my thirty odd years experience with professional musicians, it has been my observation that noneof them will do other than play your new violins and be "polite" and "damn them with faint praise". This is a common experience, and it is caused by two conditions, about which none of us can do much. First, professional musicians are taught by their teachers that Old Italian violins are superior. Established dealers as the Hills and others carefully nourish this opinion; concert artists use only old Italian violins, and every professional orchestra boy wants to be like the concert artist, in fact, secretly regards himself as quite an artist, and thus he buys himself an old and expensive fiddle. Now, we cannot expect him to come and play on our new violins and say that these new violins are as fine as his expensive old violin, no matter what we may think. It is just a matter of personal pride. Thus, the professional musician has a stock saying to all of these new violin makers, "This may be good when it is played in for 25 to 60 years." and that is about all you are going to get! If a new violin today is to get a hearing and fair test, the maker has to be Italian. He may live in Canada or America, but his name has to be Italian. Names like Briggs, White or Smith are not traditionally assocatad with violin making--carpentry, perhaps, but violin making, never!

Another thing that helps foster this prejudice against new fiddles is that actually, many of our new fiddles are bad. This is a condition which we can and

should remedy, and I consider this very matter the highest purpose of the Journal! Many of us are making violins and rushing to show them to musicians when neither the violin or the maker is ready for such a critical examination; then, when the musician tells us the obvious truth, which we should have known in the first place, we yell "prejudice"! I have been guilty of this, and I am sure many of you have been.

With kindest personal regards, I am,

Carmen White

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THE SAUNDERS GROVE

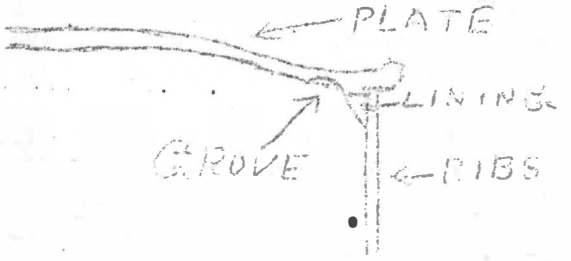
by The Editor

It occurs to me that not sufficient has been written about what has now become known as "The Saunders Grove".

I have several times mentioned that Dr. Saunders insists on thin edges especially in the Top Plate, but up to now I had not known that there was a scientific reason for the "grove". I quote Dr. Saunders:-

"A sudden change of thickness gives rise to reflection of waves so that they concentrate more on the plate and you get more tone."

The correct manner then to execute this grove correctly is not a gradual thinning from centre to edge but to hold the thickness fairly well then grove the last $\frac{1}{4}$ inch thus:-.



Graduation at the thinnest place should be not more that 5/64th inch and the grove should be $\frac{1}{4}$ inch wide. The grove should not be made round the end blocks or during the length of the inner bouts (each side of "F" holes).

Dr. Saunders has had the privelege of testing the graduation of several "Old Masters" and all the best toned Violins he found, had quite thin edges. This led him to investigate the parcularity. With no suggestion of boasting but merely to impress upon me the importance of the "grove" Dr. Saunder informs me. Quote:-

"When "The Stanley Quartet" were here 3 years ago, I had (in the college collection) two violas that were cheap and quite alike in the badness of their tone. Mr. H. "ditched" one of these, and I showed the quartet first the untreated one and then the other. Their viola man played them and they were very slow to believe that the violas had ever been alike.

Mrs. Hutchins ditched a $30 cello that came out of the attic, and was the only one a cello friend of ours could use. It was hers already. After the treatment she said it was 10,000 times better. Later on she was playing in a quartet and asked one of the others (who was quite a good judge) how much she might hope to get for it. He said "at least $1200", and that was not said as a joke. A doctor in Kentucky had a child in a school orchestra, and the school violins were quite miserable, so he ditched one himself (he was an amateur maker). He likedit so much that he did 15 more, and wrote me that we had done more for school orchestras than Strad ever did." End of Quote.

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NEW ADDITIONS TO VIOLIN LITERATURE

In Europe the centre around which all things relating to the violin family pivot is the well known House of Hill and Sons. Here, in the North American Continent a House of hardley less distinction is the establishment of William Lewis & Son. Chicago. Their name has become the symbol of integrity this side of the "water". If you want the best in materials - instruments - bows or accessories," send to Lewis & Son" has become a saying. Every worthwile "Old Master" violin seems at one time or another to pass through the Lewis Shops.

For many years their magazine, "Violins and Violinists" has entered the homes of thousands of lovers of the instrument.

Enclosed with this issue of the Violin Makers Journal you will find a circular describing a series of small books now being published by Violins and Violinists. These are little masterpieces of their kind.

They are reprints exactly as they appeared in Violins and Violinists, articles written by the late Ernest N. Doring, founder of the magazine. While I cannot be accused of being a traditionalist, I do, however, believe that any maker should have an artistic and practical knowledge of the "Old Masters", for it was they who set that high standard of perfection which at best we can only equal. These books will certainly create that desirable background.

The two sample books I have received are, "The Amati Family" and "Matteo Gofriller of Venice". Both are full of illustrations of all the important instruments made by these masters. Measurements and descriptions of the instrument are also given as well as a complete history of their lives. Written in a most entertaining and informative manner. Lewis and Son have also a book on "The Bow" by Joseph Road also should be part of any makers Library.

Prices of the series books are $1.75 each plus 6¢ postage while the price of the book on bows is $20.00 per volume. Deluxe edition $40.00. This is the last word in Violin Bow Literature.

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NOTICE

Several subscribers have written in informing us that they did not receive their May and June issues of the Journal. Should you happen to be one of these "unfortuates" please advise us and copies will be sent immediately.

.....

Don't forget the Vancouver Festival starts July 11th. The Musical Event on this Continent this month.

.....

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

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

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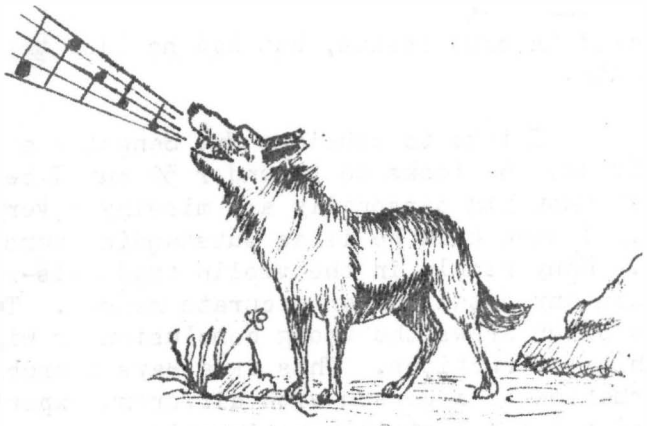
WOOLF NOTES

by The Editor



Our last issue was rather late in going to press and I am afraid this months might also be somewhat delayed. No apologies as we do our very best. If you badger me I will just think you are jealous of me and don't want to give me any time to make violins in case mine might be too good - Joke! Just the same one of the last two I made did satisfy me considerably. You want to know the method I followed? O.K. Here are the details:

Back, one piece Laubi's Swiss Maple. Top, Bob Wallace's redish colored high altitude spruce, quite wide grain especially at edges. Plates tuned as per Dr. Saunders: Top F & G - back F#. Ribs, 1 3/16 to 1 1/8. Model Strad. "F" holes wide. Finished violin in the white subjected to 6 hours in drying box at 100°. While still hot treated with filler obtained from Lee McNeese, 170 South Tisdale, Buffalo, Wy.

Filler applied hot, just under boiling point, this went right through plate in one minute. Violin replaced in drying box and kept there 4 days at 85°. Three coats of S. Kujawa's varnish applied. Kirkwood's Bridge.

Deductions: I give much credit to Bob Wallace's wonderfully toned top wood, at the same time the Saunders "system" proved itself. However as this violin is superior in tone to what it was "in the white" then the McNeese filler and Kujawa varnish must get special mention.

The other violin was treated in the same manner but linseed oil with some resin and turps was used as filler, then varnished with Michelmans varnish. Tone is quite good but not as brilliant as "in the white". I put this down to the filler as the Michelman varnish is not "heavy"
should have been used. Thenagain the tone might take longer to "come back". Michelman varnish is not hard to make, once you have good ingredients, quite easy to apply and produces a beautiful finish. Kirkwood's Bridge will give "new life" to any fiddle but thin it down - one third.

AN OUTSTANDING CHARACTER

It has often been said that kind words should be said while a person is still alive and not kept till after they leave us. I therefore take the liberty of quoting from a letter just received. This is not the first letter I have received praising the character of "The finest Gentleman in the violin making profession". Long may he live to receive similar compliments. Quote:

Dear Mr. White:

Mr. Sangster loaned me a back issue of your journal to facilitate my writing to you. I had seen your journal in his shop, but had never read it before. This issue had Mr. Snagsters name in debate in almost every page. I knew his articles had

appeared in some issues, but had no idea there had been so much reaction from his comments.

I like to consider Mr. Sangster a very good friend of mine. His person is deceiving. He looks to be under 50 but I believe him to be in his 70's. People who do not know him personally are missing a very fine experience. Of the many unusual people I have known he is an outstanding person with patience and great personal integrity. Many people in the violin trade mis-represent fact. He very patiently will explain any detail in an accurate manner. The person receiving these words of experience often draws the wrong conclusion or will do something in error by mis-interpreting his instructions. This is always a problem with a master craftsman departing his information to a person with different experience. Some of these comments on his articles I can certainly rationalize.

I had difficulty in obtaining accurate information to build a violin. Most of the books and patterns are made by violin makers and if you are already skilled in violin making the missing information is not critical. On my first violin I used Joseph Reid's patterns and instructions which are splendid and reflect an engineers attention to all of the necessary details. Thru the past four years I have tried to record Mr. Sangsters practices, and invariably when I stray from his ideas I find the result not satisfying. Mr. Sangster and I have exchanged much varnish information, and I have succeeded in locating the raw materials which we use. I own his No.59 which is the first violin made according to his current method and was his turning point to great fiddles.

J.B. Erwin, Dallas, Texas

VIOLIN COMPETITIONS:

The Arizona Association of Violin Makers and Musicians will hold a competition for Hand made violins early this fall. This will be open to all North America and they expect to have a fine exhibition. For particulars write Bob Wallace, 330 West 8th Street, Tempe, Arizona.

VANCOUVER HOBBY SHOW:

The Violin Makers Association of B.C. have definately decided not to enter the Hobby Show as a group this year. Individuals however may enter violins on their own initiative, and we hope members will do so. Makers from distant points may also enter this competition. For particulars write, Mr. Norman Collingwood, Manger Hobby Show, Exhibition Park, Vancouver, B.C. The suggestion has been made that the Violin Makers Association might hold a competition some time this fall, but no definate announcement can be made at present. A committee has been appointed to investigate the possibility.

ROELOF WEERTMAN'S BOOK:

We present the second instalment of the book on Violin Building by Roelof Weertman. This can be removed from the Journal and placed at the end of the first instalment issued last month.

.....

The father played possum while his youngsters tried to rouse him from a Christmas afternnon nap to take them for a promised walk. Finally, his five-year-old daughter pried open one of his eyelids, peered carefully, then reported, "He's still in there".

.....

CHAPTER ONE

Before we can determine how to fashion the different parts of a violin, we should know the function and purpose of each one. All the parts such as the scroll, neck, sides etc. can easily be copied. The soundbox offers more difficulty, besides, very small changes in archings, thicknesses of wood, effect the tonal quality out of proportion to the scale of changes. We will confine our search to the soundbox.

The feeble sounds of the strings to the soundbox, bowed or plucked are highly amplified thru means of the body or soundbox. As the strings are bowed, they stretch and deform sideways, the tension changes constantly, resulting in variable changes in the amount of pressure that the bridge transmits to the top or belly of the violin. The top in turn communicates this pressure and the pressure changes to the bottom or back by means of the sound post.

The top is strong enough to support the weight of a man, if carefully and evenly spread over its surface, but the downward pressure of the bridge, while not insignificant can be counter-acted by two fingers under the strings, but still enough vibration can be imparted to the top to bring the inside air of the box into violent emotion. Thus it seems certain that a careful balance must be struck when making the choice of woods, its archings and thicknesses; somewhat on the order of the choice of automobile springs - stong enough to support - supple enough to provide a cushioned ride with shock absorbers strong enough to check rebounds but not so strong as to hamper spring action. As it took years and years to find the proper balance and proportions for automobile springs and develop formulae for their future design, so it will take at least a few fiddles, before a nice balance between design and artistry will create a violin that will sound perfect. From the above statements it seems clear that part of the action in the violin is purely mechanical.

The strings from the saddle at the peg box to the tail piece saddle above the end pin are forced up by a wedge, commonly known as the "bridge". The top of the violin then becomes a support for this bridge. However since the sound post connects the top to the back, the back then helps the top in supporting the bridge. Of course we may assume that the top contributes say 60% and the back 40% towards the support. This would be pure guesswork. It would be safer to assume that under a certain pressur the back would "give" or deflect just as much as the top would "give" or deflect - in other words, both top and back share the downward pressure of the bridge in equal amounts.

Coming back to the soundpost, the question arises, should this cylinder of spruce be wedged tightly or just barely so that the bridge pressure keeps it from falling over? The answer seems obvious. Since the top must communicate its vibrations to the back, both as far as possible be free from strain, so they can "give their all" to the demand of the bridge action; we certainly would not want a post so tight, that the top and back are forced apart, because what would happen? First the bridge would tend to force the top down, thus relieving the existing stress in the top somewhat, but then by forcing the back down the existing stree therein would be increased even more and a wholy unbalance set of forces would be set up; a more or less relaxed top an overly stressed back, resulting in overall lessened vibrations. Also it can be shown that under a given load condition top and back when properly made will oscillate or vibrate with the same natural frequency. The higher the load, the less the frequency, the lower the load, the higher the frequency.

Very much again like the old style automobile that with the driver only would give a choppy ride, but with several passengers the ride became softer, the undulations slower.

With a soundpost that is too tight as we have seen due to the bridge load, the top would become less stressed, hence responds with a high number of vibrations, or rather would like to do so. While the extra highly stressed back tends to vibrate more slowly, but both top and back are forced to vibrate in step with the bridge, so everything is at loggerheads and thus not help the tone one bit.

The Dissertation about the soundpost makes it clear that the top and back should work in perfect unison and harmony.

So then when the top is stressed, due to the pressure of the bridge and we could measure the amount of deflection of the top under the bridge, we may very well reason that if we were to place the soundpost, neither tight or loose, the back then would help support the bridge in equal amounts. Then if top and back each care for 50% of the bridge load, the right foot only, they should deflect the same amount under this load. Even if we were to apply half of the bridge load to the back independently from the load on the top, the deflection must be same, then the natural vibrations of the top and back will be identical. The stresses set up in the spruce and maple must be within safe limits so that great resilience is maintained and they are equally strong.

The artist may have a highly developed touch so that by twisting a nearly finished top or back by grasping diagonally "corners" he may judge the relative "give". A better way is to take samples of the chosen spruce and maple and subject the samples to certain tests. The finished top and finished back would have the same properties and relationships as the tests would indicate.

Proceed to cut the longest bars that can be had from the intended woods, without cutting the wood (for the fiddle) too small.

Accurately dress the samples down, let's say 2 cm wide, 1 cm thick, 25 cm long, or whatever is convenient. Also make 1 piece any kind of hardwood 2 x 1 x 5 cm. Proceed to clamp one maple sample down as per figure 1.

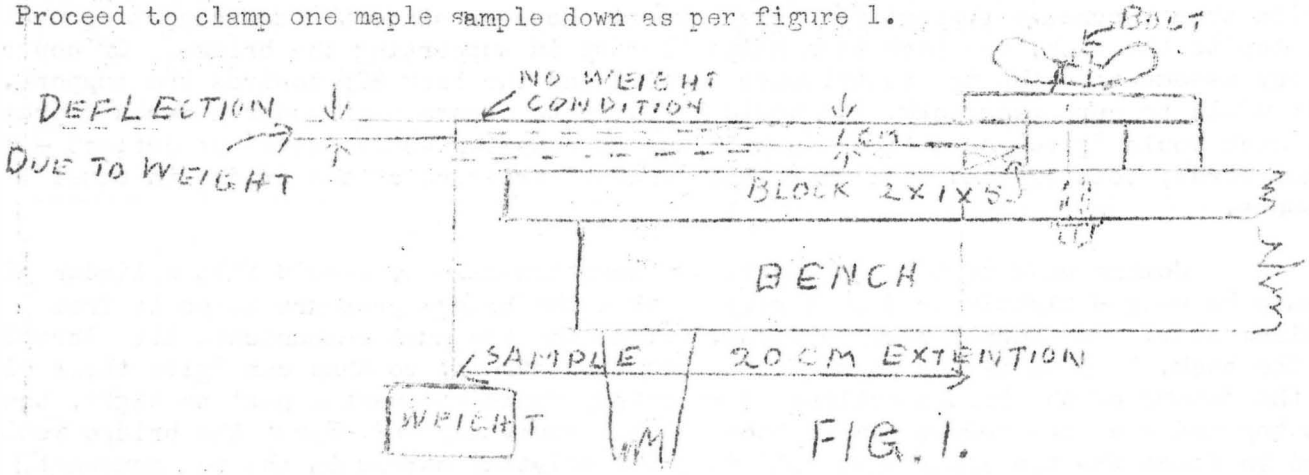


FIG. 1.

The sample must be perfectly horizontal. After the weight has been hung as shown, measure the sag or deflection of the sample very carefully. Remove maple sample.

Now weigh the samples. The maple sample may weight perhaps 1.2 as much as the spruce.

Now put the spruce sample in the test stand. Using the same weight, again measure the deflection. Should this deflection be less than with the maple, plane the spruce down a very little bit, to perhaps 9½ mm and test again, repeat if needed

until the maple and spruce samples exhibit the same deflection. Supposing then that the finished spruce sample measures 9 mm thick and the maple sample 10 mm thick. Then the final finished maple back and the spruce top retain the same relationship for instance if the top were to be 3 mm thick or one third of 9 mm, then the back must be held to one third of 10 mm or 3 1/3 mm thickness.

Assuming that the maple weight 1.2 times as much as spruce when all dimensions are alike, we now proceed to fashion the top and back, but finish the outside only. As we go along, we balance the top and back on a knife edge in way of the bridge. When done and completely finished on the outside the back must weight in our particular case 1.2 times as the top and both top and back must neatly balance on a knife edge, held at right angles to the lengthwise center line, the knife edge being in line with the bridge or just barely in front of it.

Now we are ready to chop out and finish the inside of top and back.

In the neighborhood of the bridge area in our particular violin the back is about 11% thicker than the top (top 3 mm, Back 3 1/3 mm). If the thicknesses were all over 11% thicker the finished back should weigh 1.2 plus 11% as much as the top. However as we make the wood gradually thinner towards the sides or edges and the top and the back are practically of the same thickness around the edges then in our case we may have a top that has a maximum thickness of 3 mm diminishing gradually to $1\frac{1}{2}$ mm towards the edges and the back would then have a thickness ranging from 3 1/3 to $1\frac{1}{2}$mm. The difference in the former being 3 - $1\frac{1}{2}$ or $1\frac{1}{2}$ and for the latter 3 1/3 - $1\frac{1}{2}$ or 1 5/6. 1 5/6 ÷ $1\frac{1}{2}$ = 11 ÷ 9. The volume total then would be 29 + 27 ((3 1/3 + $1\frac{1}{2}$) + 2 x area) + ((3 + $1\frac{1}{2}$) + 2 x area) = 29 + 27. Then the final finished weight would be, in our

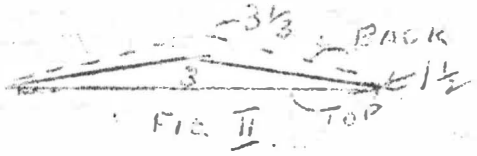


FIG. II

particlar case, 29 + 27 x 1.2 - say 1.3 more for the maple than for the spruce. Should the spruce top finish to a weight of say 60 grams - the back would weight say 80 grams (making allowance for the neck extension.

In all cases again the top and the back must balance as before. Of course, no two pieces of wood are alike and the relationship may easily go as far as $1\frac{1}{2}$ to 1 and as low as 1.2 to 1.

It also must be held in mind that exceedingly small differences in thicknesses exhibit out of proportion results. Supposing that the back in our case was made 10% too thick 3.7 mm instead of 3 1/3 mm (or say about 1/64th inch), its resistance against deflection would have increased about 27% (to the square of ratio of thickness 3.7^2 ÷ $3\ 1/3^2$).

Thus it is clear that no one should fool around and re-graduate fine old fiddles, unless both back and top are removed and first are subjected to very careful flexure tests.

Thus it also is clear why the strads sound better than even the finest copies, unless the latter should be really "designed" as well as copied. Since only a fraction of a small error has disastrous results. On top of this it is exceedingly important that the archings chosen match the particular characteristics of the chosen woods. However that domain becomes under the "art department" and fall somewhat outside of the scope of this treatise.

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EDITOR'S NOTE TO CHAPTER I:

The mathematics envolved at the latter part of this chapter are not too important to the average maker, who may not be too familiar with formulas. Other makers too, may desire to carry thickness of the plates well to the outside which would upset the figures presented.

It is, however, of the utmost importance that both plates when completed retain the same relationship as those which were arrived at by the bending test carried out before commencement of building which in the case of this particular violin involved, were 60 gramsfor top and 80 grams for back. In other words the top when completed is 1/3 lighter than back. It might be well to illustrate other figures so as to familiarize the "layman" with the procedure.

I will use the authors words but substitue different figures:

"Supposing then that the finished spruce sample measures 7 mm thick and the maple sample 8 mm thick. Then the final finished maple back and the spruce top retain the same relationship.

If the top were to be 3 mm thick or 3/7 of 7 mm then the back must be held to 3/7 or 8 mm or 3 3/7 mm thickness.

Should the top when finished weigh 64 grams then the back must weigh 64 + 3/7 of 64, (3/7 x 64/1 = 192/7 = 27 3/7) 64 + 27 3/7 = 91 3/7 gram.

Finish the top, then, to desired thickness, weight it, then make back 3/7 more in weight, plus a little more for neck extention.

Any mistakes occuring in Editors notes are not to be attributed to the Author of this book.

Don White
Editor.

CHAPTER II

Up to now all of our observations and deductions have been gleaned from the action and aim of the "sound post" so aptly named "L'ame" or "The Soul" by the French.

A nearly as important a role is played by the bass bar, that is glued under the top, parallel to the G. String.

The sound post is just behind the right foot of the bridge and the bass bar that runs under the left foot. The right foot of the bridge exerts a pressure of about 4200 grams on the top. The top and back each then carry one half or 2100 grams of this load.

The left bears down with a magnitude of 3250 grams. By rights it seems that the top should carry no more than at the most 2100 or perhaps 1600 grams and some help should come from somewhere else. We do not want to thicken the top, but we still want no more strain on the top in way of the left foot of the bridge than in way of the right foot of the bridge.

Now if we were to force and glue under the top in way of the bridge a narrow deep beam - more strongly arched lengthwise than the inside of the top - this beam would force the arching of the top up a little bit. Now if we apply the load of the bridge, the top would come down again and be in a relaxed position, ready to respond to the minutest changes of vibration of the bridge. The bass bar however is even more stressed than it was, when just glued against the top, so any downward action of the top meets an immediate opposition and reaction. The purpose of the Bass bar is a multiple one, as it also causes a "pre-stressing" of the top. A method often employed in engineering under certain conditions, where higher loads can successfully be borne while employing less materials.

When properly made and installed a delicate balance between bass bar - top and bridge can be struck so that a bowed "G" or "D" string will sound and resonate long after the bow has been removed. A good average for the bar is to have the ends 2 to 3 mm free from the top before glueing in.

Due to the complex inside contour it would be exceedingly difficult to design an exact bass bar, but in later chapters a method of approach will be shown. Again; an artist with a well developed sense and feel for wood will install just the right bar anyway. But it is nice to philosophise and find at least partial answers, further studies are indicated.

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CHAPTER III

Up to now we have discussed relative conditions of top and back and the reasons why. Now if we examine the shape and outline of an instrument, we find that the bridge lies well below the middle of the body or sound box.

Then also the inside airmass is being excited by the action of the bridge the center of percussion. In a well balanced body the center of percussion is located right on the balance point and as shown in a previous chapter we balanced the top and back on the knife edge, in line with the bridge location.

Imagine that our shoulder is where the top supports the bridge and that the top is replaced by a long pole or yoke - one end longer than the other. From the long end suspend a weight - such as a partially filled bucket of water; then to counter balance it, suspend a full bucket of water from the short of the pole. Shift the pole if necessary to make it lie horizontal. We will then see that the partially full pail bears the same proportional realtionship to the full pail as the short end of the pole does to the long end. Thus we get the same answer.

Small Bucket times long _____pole_____ equal as

is Large Bucket times short ___pole___

Suppose the large bucket weighs 10 pounds and the short end of the pole is 5 feet then 10 x 5 equals 50. Suppose then that the long end of the pole is $12\frac{1}{2}$ feet long, the small bucket will weigh 4 pounds as 4 x $12\frac{1}{2}$ is also 50. In the same manner, is the part above the bridge long but narrow and the part under the tailpiece short but broad.

Now if we walk with this loaded pole over our shoulder, we will have to regulate our step in time with the up and down and also swinging motion of the buckets or pails of water, not faster nor slower than the natural rhythm of the loaded pole, we do not want to "zag" when the pole wants to "zig". In a similar manner should the top and the back and the airmass in the soundbox oscillate and vibrate in the period that the bridge action demands. The difference is however, with the yoke, it is we who must alter the step to suit. With the fiddle the step or pace is set by the bridge and we will regulate the top and back thicknesses and archings to bring harmony. Not easily done, but since we may perhaps copy an existing good fiddle, we would come very close to being right to start with.

In the beginning of this chapter we mentioned the center of gravity or center of percussion. We realize that this should be where the bridge is located. But would like to make sure of this assumption. So let us proceed to make a cardboard outline of a violin. Anywhere near the edge pierce a hole and string a thread thru the hole. Suspend the form or outline from this thread, with a plumb bob and line as a guide, draw a vertical line on the form down from the pin hole suspension. Repeat this operation once more, but from another pinhole. The two vertical lines thus drawn will cross at the center of percussion.

See Figure III A & B

It will be found that the knife edge balance point and the cardboard pinhole method will all give the same results. Since however the sides of a fiddle generally are a little bit lower near the neck than near the tailpiece, the center of percussion of the air mass in the sound box is actually nearer the sound post location. While we of course cannot make a piece of air and shape it like the inside of the violin sound

box and experimentally determine its properties, we may safely assume, that if we make the shell, composed of top, sides and bottom, each one of them according to the previously laid down rules, then the inside air must also very nearly abide by these same rules.

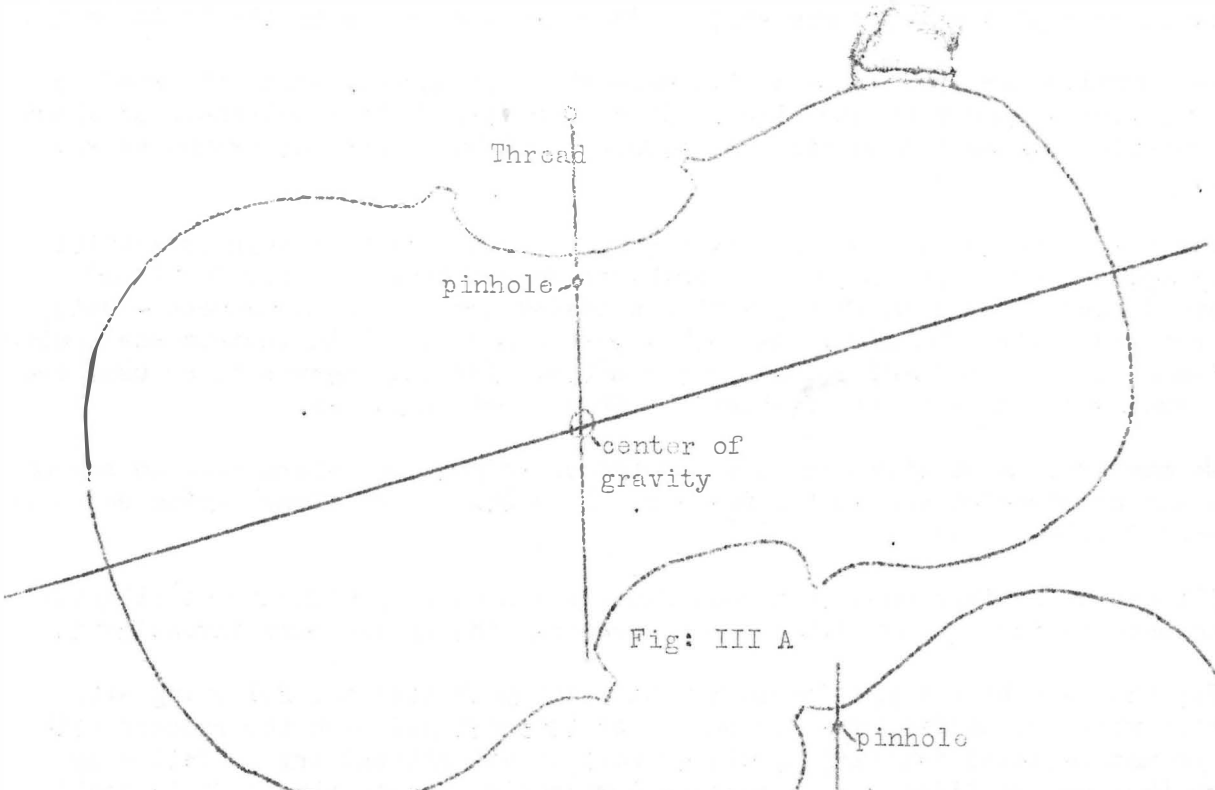

Fig: III A

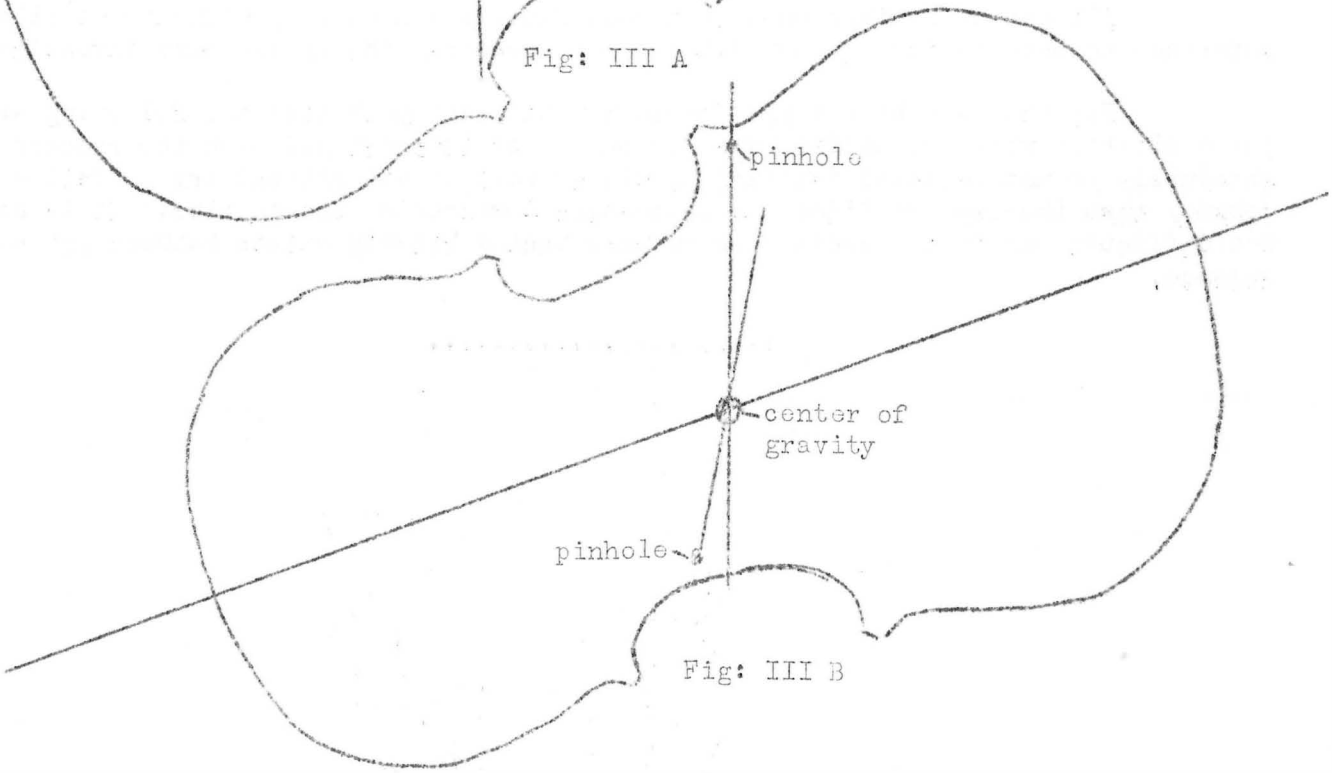

Fig: III B

CHAPTER IV

Very much of the quality of the tone depends on the archings employed. The closes attention to details of workmanship - graduations - weight balance and distribution can be nullified by poor architecture. Archings must be even and mellow, devoid of reverse curves - cupid bows, except near the very edge. The inside archings must be parabolic in character or near hyperbolic, in every case clear to the inside edge.

The outside archings are a little more strongly curved, since the wood is thicker in the center than near the sides. Since the edges have a thickness of about 3 mm - the outside arching has to rise and causes a slight trough all around or reverse curve.

For a more powerful tone the arching may be a bit flatter than an arching for a warmer and somewhat softer tone the archings should have the same family of curves in any direction as seen when throwing a shadow across the instrument - using a strong light and a straight edge. Any other curves may result in instruments having piercing high notes and dull and colorless low notes. The only curves to be used are well worth studing in the fine old Italians or their best followers.

We may experiment with archings and the corresponding thicknesses in search for the perfect combination apparently forever. Even Stradivari always tried something else with each fiddle he built.

All above writings show that good fiddles can be made without the slightest reference to mathematics but not without some research and preliminary investigation.

For thoe who have a yen for mathematics and mechanics the following attempt for a slightly more scientific approach may be of interest and even the readers with absolutely no mathematical training should do well to attempt and try to follow my journey thru the land of fiddles - accoustics - mechanics and physics. It is really not difficult and it is fascinating to know that a kinship exists between art and science.

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