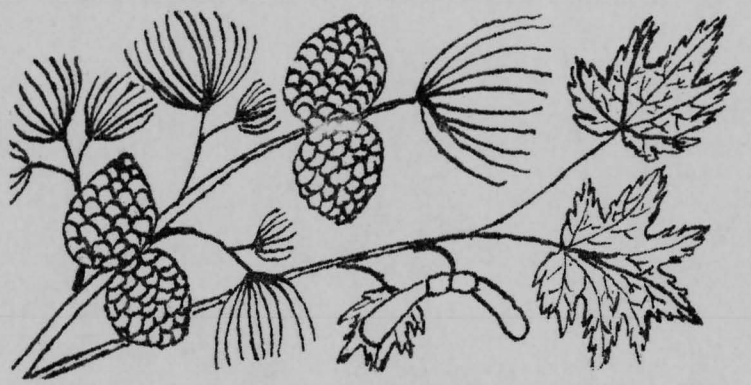
March 1960

The Violin Makers' Journal

THE OFFICIAL MONTHLY PUBLICATIC:
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

PUBLISHED MONTHLY BY THE VIOLIN MAKERS ASSOSIATION OF B.C.

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EDITORIAL

ORGANISTS HAVE THEIR TROUBLES TOO!

The recent visit to Vancouver of E. Power Briggs probably America's finest organist was of interest not only from the standpoint of a musical treat to those who heard him but also from the aspect of a man who knows all about organs.

Interviewed by Francean Campbell of the "Vancouver Sun" Mr. Briggs remarked, "We are coming to realize that you cannot build a better organ than those of the period of 1650 to 1700. The old ones are superior tonally because they were made in a certain way, electrically controlled action is totally unnecessary . In fact organs have been gradually deteriorating.

This is somewhat of a parallel to the violin maker's frustration. Note particularly the dates when the best organs were made 1650-1700, the period of Stradivarius most productive work. Surely "There were Giants in those days!"

What was the secret of these old organ builders? Mr. Briggs does not tell us. Can we continue the parallel with the violin and suggest that it was superior craftsmanship combined with the mellowing of the centuries? And what of Science? Are we to suggest that science cannot help us in this matter? Is it something that only experience and intuition can produce? Perhaps the gift of knowing good tone wood from poor and the correct mating to tops and backs.

At any rate it gives us food for thought.

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THE WORLD IS MY COUNTRY,

ALL MANKIND ARE MY BRETHERN

TO DO GOOD IS MY RELIGION.

...Thomas Paine

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LOCAL NEWS.

By HAROLD BRIGGS.

Hello Everybody:

Our regular monthly meeting held on January 9th was as usual very interesting. We were pleased to welcome a new member in the person of Mr. McKay. There were also several visitors, including Mr. Lajos Kalfman who is musical instrument repairman for the Western Music Co., Mr. Sid Engin of Dauphin, Manitoba and Mr. Wm. Stewart of White Rock. Mr. Engen has been making violins for many years and had four instruments in our exhibit at the hobby show in 1958. He is a subscriber to our journal and has sent in an occasional article for publication in that paper. Mr. Stewart has made a few violins and we are hoping he may also decide to become a member of our group.

Our President, Mr. Heyworth stated that up to the present, altho we had had several exhibitions of our work, and many visiting artists and speakers as guests at our meetings, he felt we were losing sight of the objectives for which our organization had originally been formed namely, to try to learn how to produce better violins. All the members present had agreed with this and so most of the evening was spent in a discussion of bass bars. Several members gave an outline of their views and experiences. Mr. Kalfman tried to explain his ideas on the subject but owing to his limited mastery of our language he found it difficult to explain his ideas. He promised to come back to our February meeting with an interpreter and the subject was left open until he can more fully explain his views.

In accordance with a motion passed at a meeting several months ago. New violins made by Mr. Engen, Mr. Kalfman and myself were given an official audition - also a prize winning violin by Mr. Svindsay was played to see how they all compared. No vote was taken on the ratings of the different violins but under the bow of Mr. Art Jones they all sounded grand.

Considerable interest was shown in a drum sanding machine which I had made up. It is a somewhat simplified version of the one as made by Mr. E. Slaby and described in detail in the September-October issue of our Journal. I have since tried it out and it works fine - does much faster and more uniform work than can possibly be done by hand.

All our members should be looking forward to attending our next meeting to learn what we can about bass bars.

If each one will come prepared to contribute about five cents worth to our discussion, we should each get one dollars worth in return. That looks like good interest on a small investment and it should be tax free.

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TOPICS OF INTEREST

by Wm. Hall
Listowel, Ont.

I'm afraid I didn't dwell much on fiddle mattersin my last letter to you. It threw me off the track, when socialism was mentioned. The word again brings to mind my visit to Belfast, where I had a lovely time with Davey Curry, conductor of the B.B.C. there. His father was my teacher, and friend. He was an excellent musician, being one of the finest viola players in the country. Also he had a brilliant mind, and was a socialist, which in those days was the equivalent of being a criminal, as he really suffered for his views, which to-day would be regarded as mild. The B.B.C. orchestra is a fine one, and Davey like his father is an idealist, who looks upon it as a jumping off place for young talented players, who have the ambition to advance. I noticed in the violin section, all the instruments appeared to be modern. However, I didn't talk violins.

In the old days, many fine violins, Italians and others were brought to the fathers home for appraisal, and I saw the best of them, which caused me to be intensely interested, so that I soon developed a discriminating "ear", as I was told. There were a few of the very rich class, who studied with him, that were constantly buying and exchanging fiddles, and he was never out of hot water with them, owing to his views, which he did not hide. His mind became deranged, and he developed a complex such as getting the hold of music critics, and telling them exactly what they didn't know. Some of the situations he created were most violent, but were perfectly legitimate when all things were taken into consideration. His appearance when in one of his moods, was anything but pre-possessing. I have never seen two persons more alike than he, and Beethoven, in appearance-even to the scowl one notices on some of the latter's pictures. The strange thing, he worshipped Beethoven almost as a God, and could play from memory the viola part of all his quartets as well as talk for hours on the construction of his symphonies. So you can understand the interest I had in talking to his son.

On reading the journals, as well as the Strad, it just seems yesterday since I heard all the present problems discussed. Curry was an expert model yacht builder, as well as a fine hand at adjusting old violins. He had a remarkable knowledge of mathematics and it was his pet theory, that violins were based on mathematical formula. Also that they were built in a period of the World's greatest artistic development, when money didn't count in the way it does in our present system. I think G.B. Shaw held the same theory.

Now, re: the propolis, the Russians used this for a different purpose viz: waterproofing. Their wooden vessels
as a vibrating body, like a violin. From my own experience, when I played in a variety theatre in Belfast, which is notoriously damp, I used a fine old Mittenwald del Jesu copy at least 100 years old. It had no inner filling, yet on the most humid night it could be heard in every part of the hall despite the fact the gut D, A, and E strings were soggy. This was not so with dozens of other violins I tried out for friends. At the time a Brother-in-law who was a fine player, and managed a large importing firm would always bring violins to be tested for carrying power to me. He would go to all parts of the building to listen, and then decide upon their qualities. It was not so about tone. His claim was how musical is the listener, and what has he been used to playing on. It is possible to find folk who sing well, and who are regarded as being musical, but yet cannot define the difference in tone from one violin to another. This is a sense that requires training, like any of the others. A good singing teacher can tell the possibilities in a voice, and again, there are many highly trained singers, I wouldn't walk to the door to hear, this being the result of high pressure advertising or management. Again what makes the violin such a disturbing

thing to analyse, is: one maker, I, and my friends knew well couldn't tell the difference between the National anthem, and the Old Hundreth, yet he made lovely violins that won prizes all over. Others that presumably knew all the answers couldn't make one, to sound any better than a factory one.

The propolis that figures so much in the articles, and comments of readers is nothing more, or less, than gums collected from the buds of trees, and used by the bees to fasten, frames that hold the comb in the hive. Also for filling up cracks, or other defects in the construction of the hive.

In the spring of the year, the first propolis is gathered, usually from the buds of the willows. The bees pack the little gummy threads into the little pouches on their hind legs, carry it back to the hive, and proceed to fasten the new frames the bee-keeper has introduced to the colony, for the purpose of holding the first crop of honey, which comes from the bloom of Dandelion, and fruit trees.
propolis is concerned as a wood filler, the same result could be obtained, from ordinary clear resin dissolved in wood alcohol, and applied to the wood with a rag; thus saving the messy job of rendering the propolis, in a heated wax-press and then purifying it with sulphuric acid added to hot water. When the bees apply the propolis to the hive fixtures, the substance does not penetrate the wood to any marked degree, although it holds securely anything it is attached to. Spirits of turpentine removes easily from the hands as does hot water and soap.

Re linseed oil for varnish, why the neccesity to hang a violin on a clothes line exposed to the sun, for weeks on end? Surely the same result can be obtained by taking the moisture out of the oil first, this may be done by an old Russian method used to water proof wooden cooking vessels. The procedure is to keep the oil on a hot stove for about three weeks, without allowing it to boil, then to add ½ part of bees wax, to 1 part of purified propolis, and add two parts of the stove treated oil. The wooden vessel to be immersed in the solution for 15 minutes, allowed to dry, then polished with woolen cloths. It then becomes water-proof.

Mr. Sangster presumes every one has the same sense of color, when he recommends cooking the resins until the desired color is reached, which is assumed to be that of Strad., Amati, or the Guarneri, how could anyone tell these colors without a violin to copy from? Even then, it would be doubtful if a person without training in matching colors, could manage the feat, of duplicating the old Cremonese colors, as time, and climate, are factors to be taken into account; also the skill of the person applying the varnish. I find it no easy matter to apply varnish, as there is the choice of brushes to consider, the density of varnish, which is no small matter, as, unless the varnish flows freely, an uneven job is the result. If the varnish is too thin, there is no body to it, and if applied with a coarse brush, it becomes streaky with the color unevely spread. In applying the varnish, I have found the better method is to brush it on across the grain, and finish with long strokes lengthwise of the violin, brushing out the strokes, with final light sweeps of the brush. The quality of your varnish will show up in the last proces , for, if it is not elastic, and free flowing, a good job cannot be done. In all cases I use an undercoat of yellow varnish after the filler coat. Each coat is rubbed down with wet durite waterproof paper tufbak. This does an excellent job, and is not messy. Here again, practise is essential for developing a light touch, or feel, in smoothing the varnish evenly. It is understood each coat must dry hard, before rubbing down. I find from 10-14 coats gives the desired result. The last two coats should be clear. One has to be certain that each coat is carefully washed, and dried with clean cloths, after each rubdown. Also the varnishing is done in a dust free room, in an even temperature of at least 70 degrees. Allow at least three days for drying between coats, and make sure to get your varnish from a reputable dealer, or violin maker.

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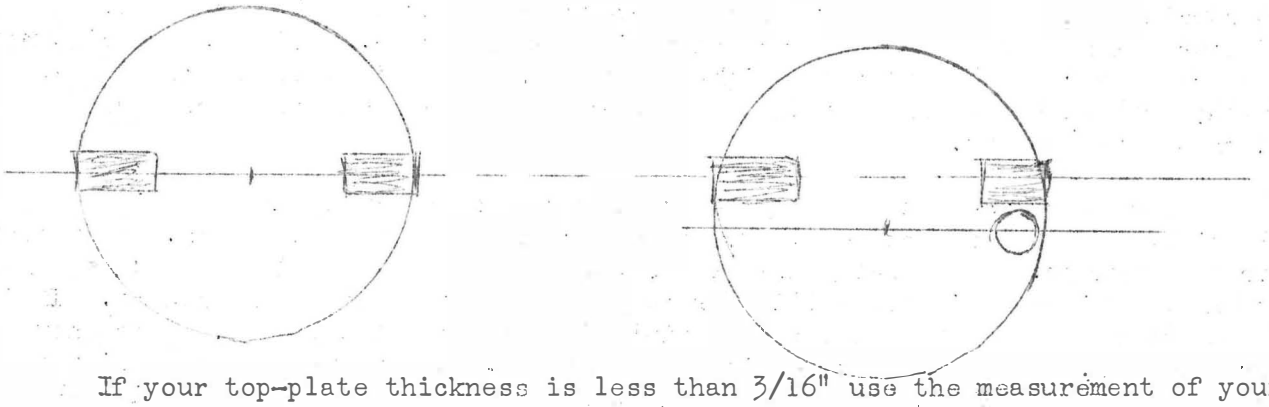
TECHNIQUE OF NORMAN MILLER

Queensland, Australia

I use a Guarnerius plan of thicknesses as a normal standard and vary each different piece of wood as the wood demands by my elasticity test on the spine tester which appeared in the last issue. I would say then that all my violins so far follow the same plan of thickness, which has a centre thickness at least 3/16" tapering to 1/16" at the ribs; back thicker and to suit the tap tone of the top.

I start my balance and centre of thickness from the soundpost line. Some may ask how do I know where the sound post line will be. My rule for this is simple. sound post is set behind the bridge to the thickness of the top. viz; if the top is 3/16" thick, set the post 3/16" from the back edge of the bridge foot, or putting it another way the centreline of the post will be 9/32" from the centre line of the bridge (the bridge-line) I have found that when I set the post of the spot marked, after the violin is constructed that it requires very very litte, if any shifting for the maximum tonal quality. You can say that by this method of thicknessing and balance, that the position of the post is determined before the violin is put together. And so it proves. When I have thicknessed the back and given it the final sanding inside, I mark a circle just the bare $\frac{1}{4}$" diameter where the post will go. A body stop of 7 and 9/16" (bridge-line) plus 9/32" gives 7 and 27/32" this is the soundpost line; using half the width of your bridge as radius draw a circle with the centre of the plates and the soundpost line as the centrepoint of the circle. The edge of the sound post will touch the line of the circle.



If your top-plate thickness is less than 3/16" use the measurement of your thickness to determine where the post will be. I think that it can be accepted as a rule of thumb, that whatever the thickness of the top, that will be the distance the post will be back from the bridge.

Accordingly the sound post is nearer the bridge when the belly is thin.

The interval between the bridge-foot and the sound post gives elasticity to the impacts and with a thinner belly a smaller interval is required, and if the belly is thick in the middle, the distance is accordingly increased. From this we understand that no great change can be made in the position of the sound post. The place where it is set and the tension at which it is adjusted when fixing have a strong influence upon the acoustics of the instrument. Move the sound post too close to the bridge and the tone quickly becomes hard because the impacts become too inelastic. Move it far down, and while the belly at this point certainly becomes capable of more extended vibrations, the
back and the latter come into less close alliance with the bridge. The main adjustments then would be closer to the G string if it needed strengthening, or closer to the E string if that string needed to be brighter. The general position remains where it is calculated for right on the soundpost line.

There has much been said in the pages of the Journal on the use or not of linseed oil. I feel that it all depends on how it is used, and how it is prepared before use, and what method of application is applied.

For my own part, as I have told you I have found it to be really excellent as an undercoat and filler, and feel that the way I use it is not to be confused with the empirical methods of oil application such as I have read so many times in books on violin construction. Most of them seem to imply that all you do is just to get some boiled linseed oil and paint it on the violin. Some say apply it hot, some say cold. I have not yet seen anyone describe reasonably how to use it. Firstly linseed oil on its own takes a long time to dry properly. Everyone seems more or less agreed on that point. Why not
of in previous issues is comprised of boiled linseed oil, terebene, and turpentine; sometimes with a little white spirit to further reduce viscosity. 5% terebene is the maximum, as any more will cause the film to crack and hairline. The terebene will ensure overnight hardening and this is one of the most essential parts of linseed oil application, I think.

Method of application;- It is obtained by several well-rubbed applications. The mixture can be used cold or it may be warmed before each application.

The vital point is to ensure that each coat is cured or hard before the next is applied. If an uncured coat is sealed off by another coat it may never harden. The oil mixture is rubbed into the surface using a soft non-fluffy material made into a pad. This pad is dipped freely into the mixture and rubbed briskly over the surface for fiteen minutes or longer. After each rubbing there will be too much oil on the surface. It is essential that this is rubbed off so that only the thinnest possible film remains. Any attempt to speed the process by laying on thick coats will result in failure with a soft tacky surface that will never harden. Under normal circumstances the above mixture will harden overnight or sooner, but it is well to ensure that the previous coat is hard. This is done by rubbing the clean hand over the surface. The hand should remain dry.

Terebene speeds up the drying by acting as a catalyst. However it is essential not to hasten this too much. Too much terebene will ruin the film. We repeat 5% is the maximum. I generally use two coats, though I have used more. I have found no signs of this oil mixture dulling or dampening the tone of an instrument. If it does not improve the tone, it most certainly does not do it any harm. I do know that it is a finish, that does improve with time and age. I have used it to finish table tops and the like without the added application of varnish over it, and find that with the years it has all the characteristics of a good finish such as good transparency, minute thickness, great toughness and perfect integration with the timber so that cracking of the film is impossible even under the most adverse circumstances. Stands up well to hard wear, dry or moist heat, will stand the impact of boiling water and, in fact the only household hazard likely to mark it is excessively dry heat such as a burning cigarette. Some of the critics may say "what has all this got to do with a violin?" My findings are that it is a wonderful undercoat before the application of your favourite varnish, and allows less coats of that varnish to be applied to give a wonderful finish. It does not choke the wood. It is thin and elastic. Some day I am planing to use it and nothing else on a violin, and see what the result is. It would take about 3 or 4 weeks to do as many applications as would be necessary.

I do not dry my violins in the sun. All the varnishing and drying is done indoors. No Sunlight! or should I say that the direct rays of the sun are never allowed to strike the fiddle during the manufacture of it.

Incidently at the time of writing four days before Christmas, the temperature is 90 degrees F. pretty good drying weather. Nice dry heat.

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BRITAIN'S SCHOOL BANDS SPEARHEADING A REVIVAL?

The following comments have been extracted from a recent survey published in the Financial Times of London, England and sent to us by John Lawson also of London.

The British may be a nation of music lovers, but this affection generally takes the form of listening rather than playing, and sales of musical instruments in this country can scarcely be said to have reached a mass market. Every few years, however, this indifference gives place to a sudden burst of enthusiasm, which fades almost as rapidly as it begins, for a particular type of instrument, generally played by the teenage public.

In the immediate postwar years, for example, accordians were all the rage. A few years later came the boom in trumpets and this was superseded by a record demand for guitars, which reached its peak about two years ago.

The demand for guitars at that time is ascribed to the unusually large number of guitar-playing (or guitar-slapping) teenagers who were making appearances on television. The popularity of these performers grew to such dimensions that many teenagers were forced to buy the instrument, not with any intention of playing it, but rather as an article of apparel - "like a rucksack" as one manufactuere put it.

This was too good to last, as the trade realized, and sales of guitars dropped sharply in 1958, though they are still running at much higher levels than in the years before the boom. A few small-scale guitar makers went out of business as a result, but most guitars are imported from Western Europe (supplement in 1957 by Chinese, Japanese and even Russian guitars) and domestic output is comparatively small.

Televised music-making has had its impact on sales of other instruments, and the percussion instrument manufacturers in particular reckon that they owe a large part of their increased business to television.

Percussion instruments are probably
ry and their prosperity appears to have a more solid base than the short-lived boom in guitars. This is because a good deal of the increased demand has come from schools and colleges setting up their own orchestras and bands for the first time, and the industry regards this as the most promising development for many years.

This country still has a long way to go in the matter of school bands if it is to catch up with the U.S., where there are believed to be some 30,000 large school bands in existence. As a result, there is a vast demand for musical instruments, particularly of the cheaper sort. Sales of clarinets, for instance, running at about 100,000 a year, are 20 times larger than in the U.K. European countries are beginning to follow
pected to catch on here.
the

Not all sections of the trade, however, will benefit from the development of more school bands and orchestras. Some dealers regard the sort of Violin which the schools want, costing £5 ($14) or less, as hardly a musical instrument at all. The demand for the high-class violin, varying in price from £20 ($56) to upwards of £200 ($560), has remained static over the last 10 or 15 years.

The violins which concert performers require, or course, are the second-hand models, venerable with age,
world in search of them. One of the leading dealers, Hills of Bond Street, has a small manufacturing section, but this is not aimed at the school orchestra market; a number of Hill's violins are bought by international stars as their reserve instruments.

PROPOLIS

by Harold Briggs

Editor's Note:

Mr. K.E. Newton writing in the September issue of "The Strad" describes the application of Propolis, and also suggests a reason for fact Strad produced few instruments around 1705. I quote as follows:-

"According to writers on the subject etc. He could not get the material for his priming coats, which was a yellow wax collected by the bees from the spring flowers of the poplar and lime (their favourite trees) and used by them to seal their hives airtight. This wax is known as propolis and is not the ordinary beeswax of commerce.

When collecting propolis (most bee keepers would assist in this), no beeswax whatever should be included, and, as far as possible, the clean orange coloured wax only. The hives in the early days were probably made in basket form and were not so airtight as the modern hive. The bees were, therfore, forced to collect a great deal of this wax and it was easily obtainable by violin and furniture makers of that period until the great storms caused a temporary shortage.

According to writers on the subject, it has, I believe, been accepted that Stradivari made, or at least finished, but a few instruments in the two or three years following 1703. A friend of mine has checked documents and ambassadors' reports at the British Museum and in the year 1703 the most violin storms ever known were experienced in Northern Italy and hardly a tree was left standing."

(End of quote).

It will be noted Mr. Newton insists on the use of yellow propolis mostly it is of a reddish color. He states that three or more thin coats are necessary to produce the most lovely yellow ground, which shows through any colored varnish. He believes this is the yellow ground color that Charles Read in his letters of 1872 states was always present in the best violins.

Has anyone a source of yellow propolis? If so please advise your Editor.

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All of us who are interested in making better violins are looking for some reason why we seem unable to build instruments that will produce what is known as the Italian Tone. My experience is quite limited, but lately I have developed some theories along these lines that I would like to pass on to others that are also seeking that elusive quality. Recently I talked to a salesman for one of the large steel companies and he told me that during the war, very thin steel sheets were required for radar installations. Steel so thin taht it would be only 1/1000 of an inch thick. All the old experienced steel workers knew at once that steel sheets as thin as that could not be produced except perhaps in very small quantities in some laboratories so the job was turned over to younger men who did not know it was impossible and the succeeded in doing it, and such thin steel sheets ware worth about $1,000.000 a tone, and so a bunch of inexperienced violin makers just might come up with an idea worth while.

Last winter I was priveleged to read Hill & Sons great book "The Life and Works of Strad" in which Hill gave his opinion that the tone of the old Italian instruments was due in great measure to the varnish they used. Some months ago Mr. Joseph Reid, in an article which appeared in our Journal stated that it had been proven that the old Italian makers used some substance produced by bees in the preparation of their varnish, but Mr. Reid did not know what the substance was. I made inquiries of a neighbor, Mr. Maurice Lowe, who is a fine musician and also a bee keeper, and he came up with the information that the substance was propolis, or bee glue - a substance

the bees collect from plants and use to seal up cracks in their hive. Mr. Lowe gave me some of this propolis and I divided most of this up among our club members who atteded our next meeting in the hope that enough of us could experiment and possibly find the best way to use it. Several members I presume made some tests with it, but Mr. Geo. Wright is the only one who has given in any detail a report on his tests and their results. He states he had an unvarnished violin of such a poor tone he was going to wreck it but decided to experiment and treated both inside and out with propolis dissolved in grain alcohol, and the violin then became his best toned instrument. All the club members who reported at all said the propolis was not soluble in turpentine but at our January meeting we were happy to meet Mr. Sid Engen, from Dauphin, Manitoba, Mr. Engen had exhibits of violins in our booth at the hobby show in 1958 and I have been corresponding with him on the subject of violins for the past year or two. He informed me that he has had samples of propolis from Manitoba bee keepers that dissolved in turpentine.

Now I want to head off at a few different angles for awhile. A few months ago our club enjoyed the very great privilege of having Mr. Irwin Hoffman, conductor of the Vancouver Symphony as a guest speaker and during the course of his remarks he told us that modern violins were now being produced by some of the best makers in Italy, that were selling at prices into the 4 figure mark and were expected to compare favorably with the best Strads after a period of playing in.

During the past week I have been studying the book "Italian Violin Makers" by Karel Jalovec, which tells of some of the qualities of the Old Italian varnish - some of it after 200 to 300 years is so soft that if you hold a finer pressing against it for a few minutes it will leave a slight impression but that the impression disappears of itself before long. Jalovec states "that propolis properly disolved -- the methods have yet to be studied - possesses all these qualities and can be given various degrees of consistency for which reason it is admirably suited to form a gradual transition from the grounding to the upper coatings." He shares the opinion "that it was widely in use in Italy for over three centuries, and not only by instrument makers since it is very common."

Now from the study of these various books I learn that Carlo Bergonzi studied violin making under Joseph Guarneri Del Jesu and then worked in Strads workshop and lived in Strads house after 1746. Experts place his work on a par with Guarnerius and Strad. Hill & Sons say his varnish and the tone of his instruments resemble the works of Guarnerius even after he was working with Strad and following Strads patterns and graduations.

Now to bring these angles back together again. It would seem that bees in different countries must collect propolis from different kinds of plants. Possibly the propolis from Italy is a little different from anything produced by the bees here. And if present day Italian violin makers were again using propolis, could not that be the reason why the new Italian violins are so good. In the old days the violins from each violin building center seemed to have certain distinctive tone qualities and it might even be that the propolis produced by Cremona bees was superior to that which came from another area in Italy.

I would just like to add that since reading of Mr. Wrights experience with propolis improving the tone of his violin, I regraduated one of my earlier instruments and coated the inside with propolis. It is certainly much improved and is now my sweetest toned violin but of course I don't know how much of the change is due to the propolis, and how much due to the regraduating.

I am not going to even try to give you any conclusions on these questions. I am just trying to advance some theories on the subject and would be glad if someone else could come up with some deeper and better ideas along these lines.

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MR.LAUBI AND HIS TONE-WOOD

by Dr.John C. Moessinger
Zurich, Switzerland

You asked me to write a short article on my impressions of Mr. Laubi, his business and the work he is doing to produce good violin woods.

I am glad to oblige but ask you to blame the simplicity of the following remarks strictly to the fact that I am only a novice being initiated in the"dark secrets of violin making".

Mr. Laubi's tone wood warehouse in Dubendorf (near Zurich) Switzerland, is a two storey structure filled with all kinds of woods, whole logs, quarter logs, stacks of cut pieces of various sizes and ages. On the ground floor is the machinery plant.

To the uninitiated it is difficult to understand how one can evaluate the various pieces simply by inspecting tapping or cutting. This, says Mr. Laubi, is like testing wines -- experience alone is the teacher. And of experience Mr. Laubi has plenty.

Born in Italy, of Swiss parents, he studied violin making among others, with Ansaldo Poggi of Bologna, a pupil of the famous Giuseppe Fiorini, who donated to the Cremona Muescum the collection of working tools used by Stradivarius and the "Memoires of the Count Cozio di Salabue".

Mainly for experimental purposes, to test woods or wood combinations, and also for his personal use since he is a good player, Mr. Laubi has made about 40 instruments, violins, violas, guitars and several keyboard instruments such as virginals and harpsichords. This practical knowledge, plus the information gathered in discussions with a great many masters and amateurs violin makers, has given him a great knowledge of instruments, materials and tools, which knowledge he most freely and generously imparts to all interested visitors. He wrote a detailed article on tone woods for the "Strad" July, 1955.

Naturally, Mr. Laubi feels that the quality of the wood is most important but holds that without good workmanship, correct proportions, proper varnish, etc., excellent wood will also produce poor instruments. The proper balance of these factors is one of the compelling reasons for using wood of Swiss origin since the Cremona masters, living less than 50 miles from the Swiss border, are known to have employed similar material.

Mr. Laubi gets most of his pine wood from the region Mr. Heron-Allen calls "Les Grisons". The living trees are from 150 to 300 years old. They have grown on the northern slopes of the Alps at altitudes varying between 4500 to 5500 feet, protected from the wind and sun, in not too fertile ground.

The trees are felled in the winter at the time when they contain a minimum of sap. Then they are examined, first on the cross section, peeled and picked finally on the basis of perfect straight growth. Out of 100 trees examined an average of only two are fully satisfactory. The logs are immediately cut into pieces as required by each group of instruments, to avoid spoilage by micro-organisms which would feed on the sugar of the sap. Cutting in small sections speeds up the ageing process which soon changes the sugar into cellulose-like materials. This chemical change, concurrent with drying, explains why the simple process of expelling water by artificial means has not been successful for producing good tone wood.

Only about 25% of the log is useful for tone wood purposes, (for violin tops even less). The wood must have straight and regular grain and be free of knots, resin holes and other defects. It takes from 3 to 5 years of storage in a dry, well ventilated and shady place for a wedge to be made ready for use. During the ageing process the density of the wood is slowly increasing. Aged wood assure the violin maker that the thickness, arching and flexibility and tone will be lasting features of his instrument. It will also facilitate the varnishing process.

The maple wood found in Switzerland has often a flame of narrower design than the maple wood found in other parts of central Europe but generally has excellent tone properties as pointed out by Otto Mockel in his book about violin making.

Good tone woods, pine as well as maple, are more and more difficult to find, especially logs of large diameters suitable for violincellos and doublebasses, although a great deal still grows in Switzerland but in regions often difficult of access. Competition with veneer and high grade ply wood is another reason for its scarcity.

Mr. Laubi feels that the important quality for a good looking instrument is a pine of straight and regular grain and a maple of pleasant design. For tone alone however, old and dense woods are to be preferred to good design. An initiated violin maker gets most of his information of the suitability of a piece of wood simply by cutting a wedge and noticing the degree of toughness.

Mr. Laubi's shop is full of ingenious old and new tools for violin making as well as woods of all ages, origins and shapes.

One of the difficulties of the tone wood business is the considerable capital invested in a slow moving stock. One must almost be in business for generations to accumulate sufficient varieties to satisfy the demands of all customers.

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A PENT UP STRAIN
by Rev. Geo. R. Wright

Said the fiddle to her Beaux, "you grate me much",
"I wish you had a softer touch".
That would make me vi-br-ate
Till I with laughter would sing out.
Then I would yield the harmony,
Which has for years been stored away.
A hope has lingered, that some day,
A Master's touch might come my way.
Then I would lift my head, (my scroll).
Which long, (so long), has droped in shame,
Because of un-trained hand and soul,
While lesser kin has stole much fame.
Then I would do the thing for man,
That God intended, and I can,
If we could only talk and plan,
We'd find Him some-where in the Land.
The velvet tone is in the wood,
God put it there, I know it's good.
But how to make me understood,
I do not know, but if I could,
I'd tell the world in tones so sweet.
They'd bow reverence, and repeat
"It's like the strain of Angel's harps"..
"Devine, it stirs the human hearts."

continued next page..

Alas My dear old fiddle stick,
It's not your fault, I am just sick.
Of waiting, longing, O' so long,
To sing my own cre-ative song.
The Blessed Book says, "watch and pray",
"Have faith in God, He'll bring the day",
When everything will praise his name,
In Heaven and Earth and Sea the same.

- O -

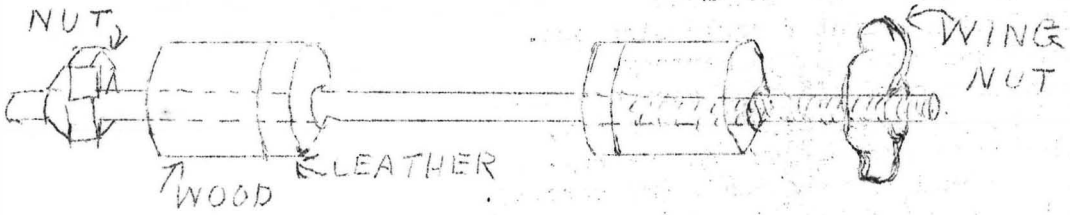
FREE REDWOOD AND HOW TO MAKE CLAMPS

by Robert Cottom
Cherryvale, Kansas

I have a jointed piece of red-wood roughly sawed out and partly worked down on top that will make some one a good fiddle top so if you know of any one that can use it drop me a line and I'll send it to them free.

Just got the back glued on my latest creation and if the wife doesn't run me out of the house with my shaving's I'll finish up the top for it in a couple of emenings. Haven't had time to rig up my sander using the Dragon skin sand paper yet.

Made me a nice bunch of violin clamps out of a round broom handle, chucked a piece of it in my metal lathe and drilled a 3/16" hole in it with a long bit and then set my cut off tool and cut it up in 5/8" lengths and found some 1/8" thick leather and took a piece of aircraft tubing and sharpened one end of it and cut pads to fit the broom handle to protect the fiddle, took some 3/16" bronze welding rod and cut it in 4" lengths and threaded one end for 1/4" to take a fiber stop nut and the other end I threaded 10/32" for 2½ inches and use wing nuts on this end, that way I can use it for any depth of fiddle from 4/4 down to ½ size. I rather make my own tools than buy them.



- O -

Britain School Bands Spearheading a Revival cont. from Page 7

Manufacturers of this sort, indifferent to the needs of the popular market, have suffered a contraction in demand at the other end of the scale - the decline of the wealthy amateur. The mansions which 50 years ago could provide their own quartets for an evening's entertainment are now content, with a few exceptions, to rely on recorded music. If there is to be a revival of amateur music-making in the home, it will have to begin in the school and manufacturers may be permitted to hope that as the habit spreads, the public will become more discriminating in its choice of instruments.

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AN INVESTIGATION INTO THE GRADUATIONS OF STRADIVARIUS AND GUARNERIUS VIOLINS

by Don White

Continued from February

THE THEORY:

In presenting my theories I feel that much of what I present may be contradicted, nevertheless I believe I am right in giving my opinions if for no other reason than that I might direct my readers thoughts into new and perhaps unorthodox channels. Channels which might eventually solve our many problems. I feel we have in the past accepted too readily theories which have not been proved, at least to my satisfaction. I believe that if we can determine a logical basis for a theory we will proceed with more confidence in the building of our instruments.

I used above the expres ion "unorthodox" which means "The accepted line of procedure".

Those of you who would like to think you are still following violin making in the traditional manner can take comfort in the fact that this is what Strad actually did. I have, I hope, now forstalled any rebuttle starting with the phrase "Stradivari did not do it in this manner."

It is a generally accepted theory that the top plate is the sounding board of a violin. Through choice of wood and manipulation of graduation we obtain equal strength on all strings, responsiveness, pure tone and all the other attributes desired by the player, excepting strength and character of tone, which appear to be duty of the back. The arching also enters the picture and governs sweetness of tone and can assist in strength. On the other hand the density of the wood used governs to a certain extent the arching.

I have a feeling that this investigation will lead into an examination of parts of the violin other than the top-plate. If this will assist the reader to gain a clearer understanding of my reasoning than I am quite willing to drift with the tide, and the current is about to carry me off!

We are all familiar with the old problem: - "Take a log of wood and make a violin."

I think we can define the problem clearer than that, at any rate we would need two logs! How will this do:- "Make a box about 14 inches long 7 or 8 inches wide and about 1¼ inches high, with a neck at one end and 4 strings tuned to G, D, A and E upon which with a bow you produce tones which have been established as Violin tone."

Immediately we are confronted with the problem, "what makes that tone? where in this box will it come from?" We enquire of those who have spent years of investigation and they tell us "The tone comes from the outside of the violin, and is augmented by choice of wood and graduation." The latter is achieved by keeping the centre thick and gradually reducing its thickness in all directions to the edge, the object being to get all vibrations to travel the full length of the wood. You pick up a violin and play it testing with your left hand just where the instrument vibrates and you immediately detect the vibrations do not travel to the edge. For each note, or set of notes, the plates vibrate in different spots. You try to reason this out and it doesn't make sense. If you don't discard the the practice at least you must discard the theory.

Let us examine the statement that tone comes from the outside. If we set a piece of wood in vibration does it only give off a tone from one side ? No the tone comes off all sides. Then what happens to the tone that comes off the surfice of a piece of wood forming the inside of a box ? Let us accept the theory that it does not come out of the F holes. (I only accept this as unproven). For the sake of argument, then I will accept it and will suggest the following theory as to what happens to sound waves coming off the inside of a box. "Sound waves traveling in an enclosed area proceed, in all directions, until they reach another surface of the enclosed area and rebound from point of contact and start traveling again. This cycle is continued until the sound fades or another set of vibrations absorb them. This rebounding and mingling creates what is known as "Violin Tone". This is proved by the fact that practice violins are made simply by making a violin with sides, top but no back. These practice violins , as they are called, can be played in apartments or other places where noise is not allowed. They are almost silent.

We have arrived at the point where we admit that the shape of the box creates violin tone and we hear it as such. Did I say HEAR it ? I thought we were told "No tone comes from the inside !

We find that by using the same wood but different dimensions and graduations we can create what is known as Viola tone, cello tone or we can use a different material for sides top and bottom and make a drum. Here again we find that by changes in size and shape we can have a Side drum, Kettle drum or any other kind of drum and we may still be told: " No tone comes from the inside of that drum."

Mention of the drum should immediately set up in your mind the suggestion of a diaphragm which vibrates in a specific manner. This was my intention and the reason I mentioned drums.

We may find that we might have to change our whole idea as to the action of the top plate and insted of thinking in lines of trying to push vibrations to a far point, try to imagine that there are certain portions of the top that vibrate to certain notes and must therefore be made thinner (or thicker) in order to produce a clear strong note.

The problem then is not quite so easy as we might think. Certainly it would seem that the standard method of gratuation "Thickest portion at the bridge and gradually thinner to the edge" would be a much simpler method but, to my way of thinking, that is not the way the best instruments will be made. There does not seem much science to it, just a hit and miss business which is not "Violin" making.

Since writing the above I have received pages and pages of material from readers who seem highly pleased at at these investigations I am attempting. This material I will use from time to time, as my treatise advances. These readers I thank, and will be glad to hear the viewpoints of others.

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A SLEEPING MAN IS SAID TO MOVE EVERY TEN MINUTES...

THAT'S MORE THAN SOME PEOPLE DO WHEN THEY ARE WIDE AWAKE ! !

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UNORTHODOX CONSTRCTION TECHNIQUES

by Howard L.Apps
Luton, England

Both Mr. Norman Miller and Mr. W.G. Hall (Journal, November 1959) have something to say about the available literature on violin construction methods and since the former invites comment may I, from a very limited experience gained the hard way, add a few remarkes on this absorbing subject.

From extensive reading I have come to the conclusion that practical men do not as a rule write books on their methods. It may be that they are too busy getting on with the job or that they distrust the written word as a means of imparting information that can really only be gained from practical experience. Most books go so far as to give a list of tools but they mention gouges, perhaps the most important of all, in the vaguest manner. The bewildered aspirant wants to know how many gouges, of what size, and of what curvature, inside-ground or outside-ground. The books are silent on these points. I believe most of them have been written by enthusiastic amateurs who have consulted professional makers or gleaned information from other writers. They clutter their works with poetry, anecdotes, latin tags , and scores of other irrelevent matters, and they make a profound mystery of a simple job like sawing a piece of wood in two.

I fully agree with Mr. Miller that the peg-box should be mortised before the scroll is carved because the process of levering out the chips with the chisel cannot then damage the delicate fluting of the volutes. This is a very old and sound principle of allowing your waste wood to protect that which is later to be finished. I have not gone so far as to drill the peg holes before cutting out the peg-box for fear that the chisel might foul the holes and splinter the brittle maple. At the other extreme, some of the books even advise leaving the drilling of the peg-holes until the neck is attached to the fiddle! While on the subject of the scroll I should like to say that I use templates of thin flexible perspex. Here again the books usually advise making these templates of cardboard or thin sheet metal with "peep holes" cut to guide placing the templates on the centre line marked on the wood. Perspex, being transparent, can have a centre line scratched on it which can be made to coincide exactly with the line on the wood. I push the volute template up under the throat of the scroll, wedge it there bend it over the head and down the back, thus being able to position it easily and accurately for marking out.

For hollowing plates I now use a form cut out to fit the arching of back or belly. Most books advise supporting the plate either on a cushion or on the bare bench against a wooden peg or stop, holding the plate with one hand while gouging with the other. I have found neither of these methods satisfactory; even on a soft cushion there is consid rable risk that one of the thin corners of pine might catch in the material and be irreparably damaged. A form such as I use is very easily made from a block of beech 16" x 10" x 1½". Using arching templates in reverse, it is a simple matter to hollow the block to the approximate depth. Great accuracy is not required as the bottom of the depression can be padded so that the form may be used for any model. Similarly the outline can be cut from a piece of 3/16" plywood (again making generous allowance for different models) and this can then be glued or screwed to the beech, thus avoiding the necessity for tedious gouging to obtain the thickness of the plates' edges. At each end of the form simple hardwood turn-buttons are fixed which can be swung into position over the flats to which will eventually be glued the violins top and bottom blocks. In this manner the plate can be held immovably with its fragile corners safely imprisoned.

I use a loose lining of velvet padded in the centre. This can be removed and

shaken every time the plate is taken out for gauging with the callipers, but in practice I have found that very few chips find their way under the plate. The advantage of this form is that both hands may be used on gouge and scraper and for this reason I think it well worth the little trouble needed to make it. Experienced violin makers may smile on reading of such methods, but I am all for making a difficult job simpler, whatever the means employed.

Editors Note: Since it is nice to know a little of the background of our contributors I take the liberty of adding the following which is an extract from Mr. Apps letter which accompanied this article.

The very interesting account of your own entry into the art prompts me to give a few personal details. My Grandfather collected violins; he hung them on the walls of his house as we should hang pictures. He was a fine craftsman, doing all his own repairs, but I do not think he ever attempted to make a violin; he would have thought it presumptuous to have tried to imitate the masters. His wife played the piano (one with a pleated silk front and candles for illumination.) My uncles played the 'cello, double bass and clarinet, forming a kind of family orchestra which was common enough in those days but a rare thing now. My grandfather was a self-taught player but had his sons taught by professional musicians. I suppose their playing would not have rated very high by today's standards, but in those far-off pre-radio days it was a wonderful experience for me to listen to them. My uncle had a very old 'cello that had never been fitted with an end pin and he used to play it gripped between his knees in the way that 'cellos, and their forerunners the violas da gamba, must have been played in the old days.

I studied the violin for a number of years and after a great deal of work got far enough to join amateur orchestras and occasionally was even privileged to play in Canterbury Cathedral when a string orchestra was used to augment the organ in the great choral works of Bach and Handel. As I grew to manhood I began to be affected by the old family affliction of deafness and by the time I was thirty I found it difficult to tune my instrument in the din that always precedes an orchestral performance. I could not very well shout "silence verybody while I tune my fiddle", so I took to arriving early to make sure that at least I started properly in tune. I grew disappointed with the tone of my instrument and I suppose I made unpleasant noises touching the wrong string with out noticing it. With the interest and responsibility of raising a young family, the fiddle came more rarely from its case until it was almost entirely abandoned. I suppose this is a stage reached and never passed, by many a player, in my case being aggravated. by my deafness.

About six years ago I reached the point where I was obliged to wear a hearing aid. When I had passed the breaking-in period I found that it certainly helped me to hear better and with great hopes I tried my violin on it. The result was disappointing: almost failed to recognize it. Then two years ago I acquired a transistor aid which reproduced sound with great clarity and a minimum of distortion. I heard my playing as I had not heard it for nearly twenty years. Oddly enough, about this time I came accross two books on violin making in the local public library; Robert Alton's "Violin Making and Repairing" and Edward Heron-Allen's "Violin Making, As It Was And Is". I opened the former and read a few lines out of curiosity. There and then I resolved to make a fiddle with a better tone than that of the one I possessed. In 1932 I had bought a copy of Alberto Bachmann's "Encyclopedia of the Violin" which also contained a section on violin making. I now read all three books with care but was little the wiser than when I read Bachmann's book twenty-five years ago. Nevertheless I set to work and produced a fiddle the making of which I have already described to you. Its tone surprised me. True, It was coarse and new-sounding, uneven in power on the upper and lower strings, but it was a pointer to what could be done.

Since then I have read everything I could lay hands on about fiddle making, varnish, wood, and acoustics, with the result that my theoretical knowledge far outweighs my practical experience. I wish now that I had given myself to the art thirty years ago, but on reflection I feel that lutherie is not a young man's hobby. In those days I was more interested in what could be got out of a fiddle than in what could be put into it.

COMMENTS ON THICK EDGES AND FILLERS

by Roelof Weertman

Years ago I heard about some Guarneri having thicker topwood along the edges than in the middle; and I built a fiddle that way the results were not so hot, of course at that time none of my instruments were much good. The workmanship was not too bad, but I knew next to nothing about archings and graduations. However, from a design standpoint, it really is possible to make the top so; However the top would weigh more; but the flexual near the bridge would increase, even if near the edges the wood would be more immobile. Perhaps the sides would flex more. Certainly, it would be very interesting to build two instruments nearly alike, with the exceptions of the top. By tone character there almost sure would be a great difference, even if both were of good quality. When I get back to Beaver I will try this again. The excursion in the breast would be of a greater magnitude than the flexing of the wood near the edges of the customary building system and could very well be the reason for the more powerful tone; however the quality may be affected to a point where loudness alone is not reason enough to build a fiddle this way. However it deserves more study and you have the right idea.

Kristian Skou has a point, wood is so inconsistent, that an enormous amount of artistry must make up, where exact science is hamstrung on account of the wood not being uniform but it does not mean that we should not try to find ways to lay down at least minimum rules, in order that there should be no excuse for a bad fiddle.

Anon "fillers" when I was young and a cabinet-makers' apprentice a "filler" was a paste applied to coarse grained woods, such as oak, before we waxed it or used French polish. Linseed oil was not considered a "filler" but only a pre-treatment of wood, before we proceeded with the french-polishing.

Not having a real "standard" of word usuage I denied using fillers; but please notice in the chapter on varnish; that I do use a coat of raw linseed oil. The oil penetrates the wood and "homogenizes" it as it were. When I come to ascertaining the pitch of tone of top and back, I have found it very difficult to recognize a pure pitch particulary to use it as a gage in order to proceed to thin the top or back. Graduating it and using the balancing and weighing methods, to me seems the more accurate way of doing things; unless perhaps that by means of electronics better standard ways of doing things can be set up.

I tend to disagree with those who think that with science we can produce better instruments than Strad; because every piece of wood we use is different from any other piece of wood; and so, while we may advance certain empirical rules; a great deal must be left to artistic interpredation and so each fiddle, even the finest, will have a slightly different character than its cousins. This makes and keeps fiddle-building an art; as it should be.

Recently saw the Strad of the 2nd violin of the Juilliard Quartet. Its varnish is fantastic, pure and limpid. Surpass it? How can anybody really believe that this is possible! Before I dream of doing better I ardently hope, to do nearly as well as the Cremona boys. On the average, modern makers have reached very high levels, make no mistake, but Strad and the other "old boys" are still very secure in their niches.

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MORE ABOUT NEW ZEALAND MAKERS

by Norman Westwood
Auckland, New Zealand

I have no further news for you regarding the violin makers of New Zealand except one piece of good news in as much as my old friend Sam McLean has finished a violin which has turned out to be excellent, and is to be played by one of the leading soloists in New Zealand in a concerto with the National Orchestra. The soloist has two very fine old Italian violins but is so impressed with McLeans new fiddle that he is using it for a very important performance.

Sam used varnish sent to me by my good friend Leo D. Larsson of San Francisco so it all goes to prove the world is a small place. Now don't please think I can make a violin but only wish to be included in the enthusiasts since I love them for their own sakes. I have been a cellist for over 55 years and have had a few good instruments over the years.

I have just made a purchase of an old Thor Smith cello about 1780 and am anxious to have delivery shortly. I believe there are one or two good cellos made by New Zealand makers but I have not had the luck to try one as yet. In both cases the makers are dead and I do not know of any cellos being made at present which is not surprising since the wood has to be imported and is expensive for amateurs.

A.E. Smith of Sydney and Dolphin of Melbourne are real fine makers - especially A.E. Smith, whose instruments have won prizes in the Brussells Competition. He is an old man now but still makes a fine violin.

Best wishes to all you makers in America and other parts of the world.

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A man is rich

in proportion to

what he is able

to do without.

(Thoreau)

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A tomcat looked at a pussycat and purred: "I'd die for you, you beautiful thing!"

She leaned closer and looked into his eyes: "How many times?"

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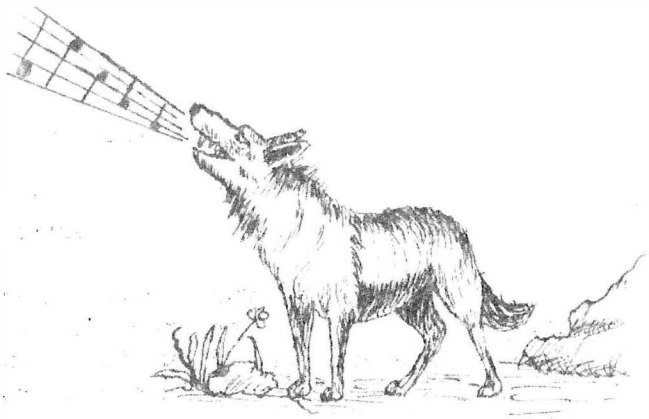
WOOLF NOTES

by The Editor



Last month I found it difficult to fill this column, possibly through mental fatigue at time of writing. However at this moment I could go on for pages.

With the February number we really thought we had at last produced a "perfect" issue only to find after mailing that the "Woolf Notes" page was inserted in the wrong place. Being Page 27 it should have come after 26 followed by the installment of Weertman's book pages 33-34-35-36. Some of the copies were corrected.

You will have noticed a marked improvement in the illustrations which up until now have been poor. We are now aquainted with the correct technique. Possibly we might reprint some of the old illustrations in the near future, only lack of time holds us back.

CATALOGUE OF VIOLIN BOOKS:

I have just received a most comprehensive catalogue of new and used books on the violin from Wm. Reeves, Bookseller, London, England (see advertisement in Journal).

This catalogue lists most of the well known works on the History of violins and makers including the celebrated "Stradivari, His Life and Work", by Hill & Sons. Also Justin Gilberts "Cremona Violin Technique". This latter book priced at $17.50. Several of our readers have asked me where it might be obtained. Ask for Catalogue No.24. While on this subject I should tell you that The Amati Publishing Co. are endeavoring to place a copy of The Universal Dictionary of Violin and Bow Makers by Wm. Henley on the shelves of most of the Public Libraries throughout Canada. The idea being that once you examine it you'll want one for yourself.

HORSETAIL GRASS:

Mr. Wm. Hall of Listowel, Ontario informs me he has tried the Horsetail Grass suggested by Mr. Laubi in his article last month. Mr. Hall says, "It gives excellent results in polishing the wood to a high gloss, giving the appearance of having had a filler applied." I have also tried it on my new fiddle and it does a splendid job of smoothing the wood and bringing out the figure and grain.

PROPOLIS:

Mr. Harold Briggs in this issue puts up some good arguments in favor of propolis as a filler. Capt. MaDonald another of our Local members has recently completed a Viola with exceptionally good tone, a strong C string and quite mellow A. The two strings which give so much trouble to the viola maker. This viola was treated inside and out with propolis. It would appear that the advantage of propolis over any resinous compound is in the fact that propolis never gets real hard as does resin. Possibly

this accounts for the statements we so often hear that a Strad after nearly 300 years will still show the imprint of finger marks.

I should also have mentioned that the Captains' viola hasa Canadian Red Cedar top which should encourage those of you who would like to experiment with Cedar or Redwood for top plates.

JOSEPH REID'S NEW BOOK:

One would imagine that a man such as Joseph Reid would be busy enough with his violin making and also would be content with the tremendous success of his book "You Can Make A Stradivari Violin" to bother about any other subject. Which just shows you don't know this remarkable man. He informs me he is now engaged in writing a book on Golf! What next - what energy!

Joseph Reid keeps a record of the "tap tones" of all his violin plates and sent me a record of the notes from 25 violins. These I hope to sort out and endeavor to come up with some definite pattern. They vary all the way from C below middle C to A below middle C. - Yes Norman I know I should be using the Helmoltz system!

SOUND POSTS IN FRONT OF BRIDGE:

I received a breezy letter from Raymond Hoake of Whitefish, Montana in which he says: "I learned something from Paul Derr(Spokane) during the holiday season he says that "George Blair" used to place his sound post in front of the bridge in high arched violins. I tried it on one of my violins and it made far better tone. Harmonies came out better and the whole tone was improved."

Another friend from Whitefish, a neighbor of Raymonds writes: "A chemist friend of mine Mr. Earney Harder, who works for The Doll Chemical Co. suggested that I use Tung oil in the place of linseed oil for wood filler. So far I have been well pleased. Have any other makers used it? It penetrates the wood good and hardens faster when exposed to the sun".

CAN YOU HELP:

Mr. Fred Fehr, Box 324, Kankokei, Ill., wants to know where he can buy Mastic Copal, Madder, Juniper and other materials used for violin varnish. He has tried many of the Chemical houses without success. Can any reader help? Write either Fred or myself.

DISCOVERY BY NORMAN MILLER, AUSTRALIA:

Quote from one of Norman's letters:

"I would like to ask the Journal and its readers a question or two on points of construction that are shown frequently in pictures and would seem to be a true portrayal of the fitment on the instruments as the paintings were done by many artists, in different years and countries. Perhaps this fact has been thrashed out many times, but I have not seen or heard anything positive on it. I know that some of these things are inclined to be passed over, or only vaguely explained by the experts and men of authority in violin matters but I sometimes think that they are deliberately evading the issue. If brought out and considered fully, it could perhaps serve to throw some light on the reason for construction as made by Strad and others of two hundred years ago. The factor that is most obvious in all these paintings is that the bridge is not in the centre of the F holes but is placed much lower near the tailpiece. The sound post would have to be much futher back as well, and balance and thicknessing would be in a different position. In Leopold Mozarts book, the instruments illustrated there are so. And that was 50 years after Strads demise. Indeed up to 1800 the paintings show this placement for the bridge. Perhaps Hills books mention all this but as I have not read them I do not know. I really think that the fact should receive a lot of thought and consideration.

VARIETIES OF SPRUCES AND FIRS:

Just received a letter from R.H. Williams of Okanagan Falls, B.C., with the list of the Spruces and firs of B.C.; the list is not complete or perfect states Mr. Williams, but I am sure it will be a great help to use in our search for violin wood.

SPRUCE

White Spruce	Picea Glauca	Square needles, smooth cones
White Spruce	Picea Densata	Black Hills, South Dakota, U.S.A.
Engelman Spruce	Picea Engelmani	Red bar, rough cones
Black Spruce	Picea Mariana	(North) knobby tops
Sitka Spruce	Picea Sitchensis	Very large, B.C. Coast
Blue Spruce	Picea Pungens	Rocky Mountains, 6,500 ft.
Colorado Spruce	Picea Parryana	Rocky Mountains

FIRS

Douglas Fir	Pseudotsuga Taxfolia	B.C. Coast
Douglas Fir	Pseudotsuga ?	B.C. Interior
Balsam Fir	Abies Balsamea	40 to 60 ft. Interior B.C.
Noble Fir	Abies Nobilis	100 to 150 ft. 6 ft. diameter, Oregon
Alpine Fir	Abies Lasiocarpa	80 to 100 ft., 6,000 ft., Purple cones
Grand Fir	Abies Grandis	May reach 200 ft., sap pockets in bark
White Bark Fir	Abies Ambilis	Coast Range
Silver Fir	Abies ?	North Cambell River, Vancouver Island

All abies are commonly known as "Balsam" or "Silver Fir". Some of the "Abies" branches grow in whorls around the trunk at 14" to 16" intervals. Ideal to split for fiddle tops. Also some of them have pitch in the bark, not in the wood, this is one of their best qualities.

The wood of the Abies Balsamea is soft even grain with a bar.
The wood of the Abies Ambilis is harder with a good ring.
The wood of the Abies Grandis is wide grain hard bar.
The wood of the Picea Sitchensis some wood grain veryvery fine.

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THE ROELOF WEERTMAN BOOK

Another instalment of Mr. Weertman's book follows on the next page.

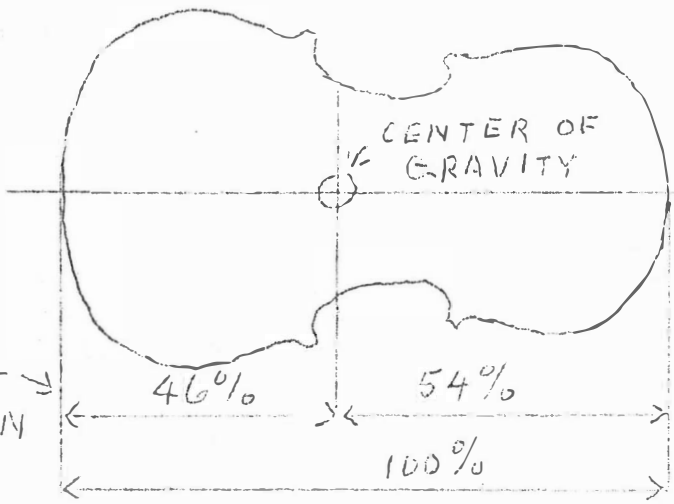

TABLE II

TABLE OF PROPORTIONAL TOTAL WEIGHTS AND LEFT AND RIGHT REACTIONS

TOTAL WEIGHT	LEFT REACT	RIGHT REACT	TOTAL WEIGHT	LEFT REACT	RIGHT REACT	TOTAL WEIGHT	LEFT REACT	RIGHT REACT	TOTAL WEIGHT	LEFT REACT	RIGHT REACT
50 62	27	23	10065	54	46	1506	81	69	300	162	138
52	28	24	102	55	47	155	84	71	325	175	150
54	29	25	100	56	48	160	86	74	350	189	161
56	30	26	106	57	49	165	89	76	375	202	173
58	31	27	108	58	50	170	92	78	400	216	184
60	32	28	110	59	51	175	95	80	425	230	195
62	33	29	112	60	52	180	97	83	450	243	207
64	34	30	114	61	53	185	99	86	475	256	219
66	36	30	116	62	54	190	102	88	500	270	230
68	37	31	118	64	54	195	105	90	525	283	242
70	38	32	120	65	55	200	108	92	550	291	253
72	39	33	122	66	56	205	110	95	575	310	265
74	40	34	124	67	57	210	113	97	600	324	276
76	41	35	126	68	58	215	115	100	625	337	287
78	42	36	128	69	59	220	118	102	650	350	300
80	43	37	130	70	60	225	121	104	675	364	311
82	44	38	132	72	60	230	124	106	700	378	322
84	45	39	134	73	61	235	127	108	725	392	333
86	46	40	136	74	62	240	130	110	750	405	345
88	47	41	138	75	63	245	132	113	775	418	357
90	48	41	140	76	64	250	135	115	800	432	368
92	49	43	142	77	65	260	140	120	825	445	380
94	50	44	144	78	66	270	145	125	850	459	391
96	51	45	146	79	67	280	151	129	875	472	403
98	53	45	148	80	68	290	157	133	900	486	414

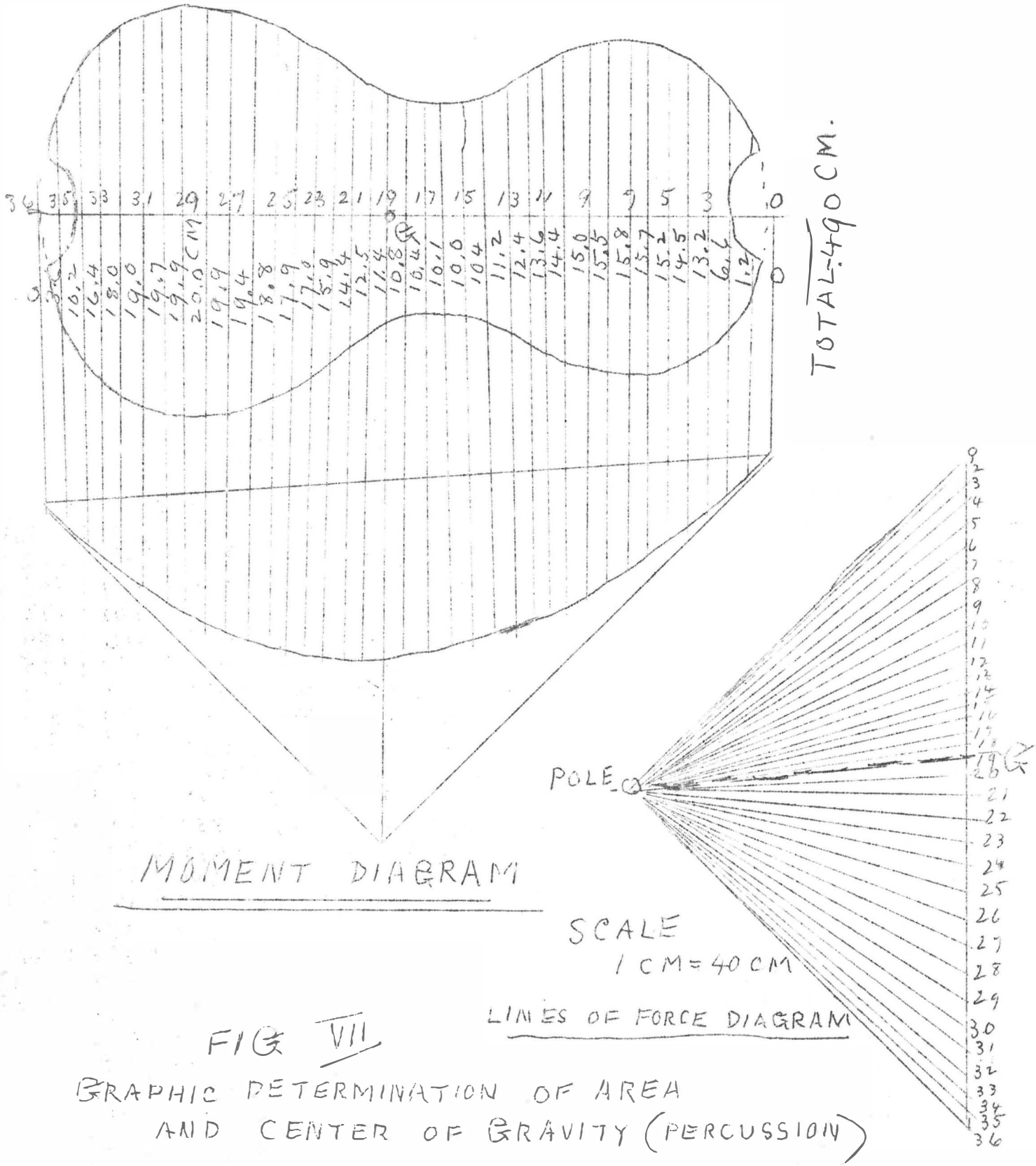

FIG VII

GRAPHIC DETERMINATION OF AREA AND CENTER OF GRAVITY (PERCUSSION)

REV. 1958

We know now how to balance a finished top and bottom, but at the same time we must determine the relative thicknesses of the wood in the top and the back. All we have so far is the pressure of the bridge - 4200 grams in front of the soundpost and 3250 grams over the bass bar. A total allotted weight of 150 grams - more or less for top and back. So before we do anything else we cut sample bars from the spruce and maple to be used and subject them to tests. We cut and finish the two bars exactly alike - say 1 cm thick - 2 cm broad - 25 cm long, and clamp the same as shown in Fig.1. The sample becomes a cantilever beam - see fig VIII.

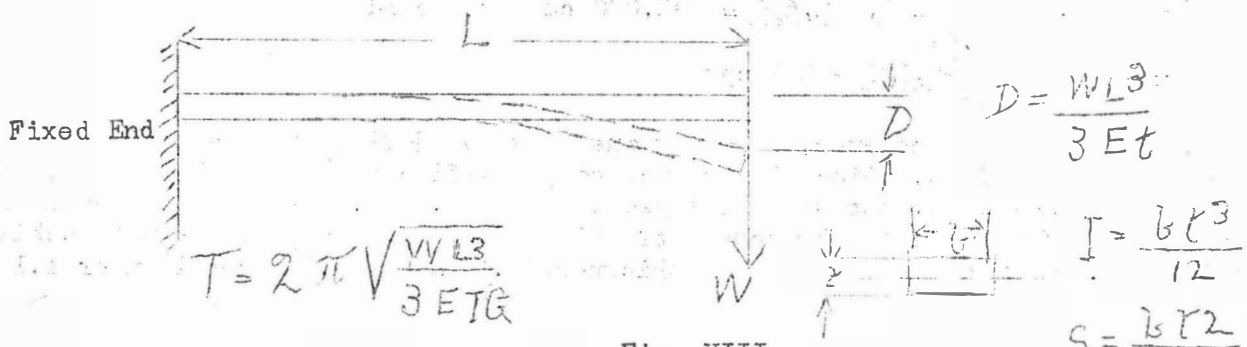

Fig. VIII

The clamped bar extends 20 cm and the notation reads, Lenght L = 20, Thickness t = 1, Width b = 2. The specific Gravity M = .415 (specific gravity of water = 1)

For spruce M = .415
For Maple M = .545 Typical

The Weight W = 2400 grams, Y = (see chapter 5) 76cm x 13.59

$$Y = \text{(see chapter 5) } \frac{76 \text{ cm} \times 13.59 \text{ (specific gravity of mercury)} \times 980\text{cm}}{\text{Barometric pressure}}$$

(acceleration cm per second per second - due to gravity)

Y = 1,012,630
D = Deflection due to super imposed load
T = Time of one oscillation of resilient sample under load W
I = Moment of Inertia
S = Section Modulus
F = Frequency or cycles per second of vibrating sample
V = Velocity of sound thru sample

$$V = \sqrt{\frac{EY}{m}}$$

.28 = constand for transverse vibrations with sample clamped at one end.

$$f = .28t/L^2\sqrt{\frac{EY}{m}} \qquad .28tV/L^2$$

The spruce sample actually deflected 5 mm or .5 cm under load and the maple sample 6 mm or .6 cm. The measurements were obtained by employing a tapered thickness gage on which 1/10 mm could easily be estimated.

$$I = \frac{2 \times 1 \times 1 \times 1}{12} = \frac{1}{6}$$

$$D = .5 = \frac{2400 \times 20 \times 20 \times 20 \times 6}{3 \times E \times 1} \quad E = 76,800,000 \text{ grams per cm}^2$$

$$V = \sqrt{\frac{76,800,000 \times 1,012,630}{.415}} = 433,300 \text{ cm per second}$$

$$f = \frac{.28 \times 1 \times 433,300}{20 \times 20} = 303 \text{ cycles per second}$$

$$D = .6 - \frac{2400 \times 20 \times 20 \times 20 \times 6}{3 \times E \times 1} \Rightarrow E = 64{,}000{,}000 \text{ Gr/cm}^2$$

$$V = \sqrt{\frac{64{,}000{,}000 \times 1{,}012{,}630}{.545}} = 345{,}000 \text{ cm per second}$$

$$f = \frac{.28 \times 1 \times 345{,}000}{20 \times 20} = 242 \text{ cps}$$

As will be shown however, the back must give or deflect the same distance as the top under the same load. Since the spruce sample deflected $\frac{1}{2}$ cm - the maple should have been thicker than 1 cm, because the maple deflected .6 cm. However the resistance against deflection increases to the square of thickness of the sample. Then to achieve a deflection of .5cm we must increase the thickness $\sqrt{\frac{.6}{.5}}$ = say 1.1 times 1 cm or 1.1 cm thick.

The frequency f will then be 1.1 x 242 -266 cps. The relative weights of top and back would be as .415 for the top and 1.1 x .545 - .6 for the back assuming that we have a total of 150 grams more or less allotted to the combined weight of top and back, the top would then weigh some 62 grams and the back about 90 grams. Since the bass bar weighs a little more than the wood taken out for F holes, make the top to weigh about 60 grams.

The above results shown will not necessarily be the same for other samples, but are typical of a well chosen selection. Read next few lines, because we must introduce one more correction factor.

Thus we know now that if the top happens to work out to a thickness of 3 mm in the breast, we must make the back 3.3 mm thick, gradually making the wood thinner towards the edges. In that case, if the edges have the same thickness - spruce and maple, the back would not quite be $1\frac{1}{2}$ times as heavy as the top. If the wood of equal thicknesses should weigh as 1 to 1.3 the back would actually weigh between 1.3 and 1.5 times or 1.4 as much as the top. Supposing the top still is held at 60 grams. The back would then come out at 84 or 85 grams. The total is still about 145 grams.

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